Gaziosmanpaşa Üniversitesi Ziraat Fakültesi Dergisi
Journal of Agricultural Faculty of Gaziosmanpasa University
http://ziraatdergi.gop.edu.tr/

Araştırma Makalesi/*Research Article*

JAFAG
ISSN: 1300-2910
E-ISSN: 2147-8848
(2017) 34 (1), 86-93
doi:**10.13002/jafag1080**

Gender Differentials in Accessing Forest Products as Means of Livelihood in Ondo State, Nigeria

Adewale Isaac FATUASE[1] Lawrence Olusola OPARINDE[2,3*] Taiwo Timothy AMOS[3]

[1]Department of Agricultural Technology, Rufus Giwa Polytechnic, Owo, Nigeria
[2]Institute of Food Economics and Consumption Studies, University of Kiel, Johanna-Mestorf-Str. 5, 24118 Kiel, Germany
[3]Department of Agricultural and Resource Economics, The Federal University of Technology, Akure, P.M.B. 704, Akure, Nigeria
*e-mail: looparinde@futa.edu.ng

Alındığı tarih (Received): 04.08.2017 Kabul tarihi (Accepted): 13.03.2017
Online Baskı tarihi (Printed Online): 12.04.2017 Yazılı baskı tarihi (Printed): 02.05.2017

Abstract: This study examined gender differentials in accessing forest products as means of livelihood in Ondo State, Nigeria. The specific objectives are to identify socio-economic characteristics of the respondents, main forest products assessable in the area, factors influencing level of participation of the respondents in forest products and problems encountered in accessing forest products. A multistage sampling procedure was used to select 196 respondents. Descriptive statistics and truncated regression model were used to analyze the data collected. The results revealed that men (59.7%) were more than women (40.3%). Majority of the women (82.3%) engaged in Non-Timber Forest Products (NTFPs) while men (76.1%) that were engaged in timber forest products (TFPs) were high. The results of the truncated regression model revealed that age, source of information, non-forest income, land tenure, experience, household size and unit price of forest product were the main factors that significantly affected the level of male and female's participation in forest products. This study, therefore, recommended that government should put in place a sustainable governance structure in the forests communities for a conducive and friendly environment that will ease the burden of the women, being the most vulnerable.

Key words: Income, non-timber, truncated regression model, forest products

1.Introduction

The contributions of forest to all aspects of human life cannot be over-emphasized especially in terms of goods and services as means of livelihood for the communities around the forest reserves and society at large. According to the Centre for International Forestry Research (2005), over two-thirds of Africa's 600 million people rely directly and indirectly on forests for their livelihoods, including food security. Wood is the primary energy source of at least 70% of households in Africa (Centre for International Forestry Research, 2005). Despite the decline in the contribution of forestry to GDP compared with pre-independence (less than 1%), it still provides employment opportunities for thousand of Nigerians. About 80% of the rural population of Nigeria is engaged in agro-forestry and other agro-allied activities (Kalu and Okojie, 2009). Again, it supplies many products in form of wood (basic material for construction, furniture and paper) and non wood items (extractions, bark, dye, fibre, gum, incense, latexes, oils, resins, waxes, shellac, tanning compounds), food, bush meat, flowers, fruits, honey, nuts, leaves, seeds, spices etc. as well as decorative, ceremonial and medicinal items. The forest serves vital roles as raw material provider for other sectors of the economy, source of employment and stimulant of entrepreneurship especially in the logging and saw milling wood based industries (Adebayo, 2009). In addition to this, forest products also serve as a source of nutritional and food supplement thus providing alternative nutrients, minerals and vitamins to the usual staple food (Jodha, 2006).

Women's and men's differential access to social and physical goods or resources is one of

the key dimensions of gender inequality. Women's social positioning in many situations means that the roles they are expected to take on are often supportive and reproductive, centred around the home and local community rather than the public sphere. This does not mean that women do not play crucial roles in agricultural production or other activities crucial to sustainable livelihoods and national economies. But the roles they play are generally less visible and attract less public recognition than the work men engage in (BRIDGE, 2008). Although rural women and men play complementary roles in guaranteeing food security, women tend to play a greater role in natural resource management and ensuring nutrition (Food and Agriculture Organization (FAO), 2008). Ashimolowo and Otufale (2012) also reiterated FAO's definition which states that gender issues focus on women and on the relationship between men and women, their roles, access to and control over resources, division of labour, interests and needs. Women often grow process, manage and market food and other natural resources, and are responsible for raising small livestock, managing vegetable gardens and collecting fuel and water (FAO, 2003). Women are responsible for 70–80 percent of household food production in sub-Saharan Africa, 65 percent in Asia, and 45 percent in Latin America and the Caribbean. They achieve this despite unequal access to land, information, and inputs such as improved seeds and fertilizer (CIDA n.d.). Women's role in natural resource management is considerable whether it is water, agriculture, forest or wildlife ecosystem, and coastal zones (Parikh, 2007).

Gender imbalance is very glaring in developing countries, Nigeria inclusive. It cuts across all activities in agriculture in which accessing forest products is one of the activities. This has results to a wide gap between men and women, most especially in accessing timber forest products. It has been observed that an increasing number of women depend upon forest resources as a major source of livelihood (Jodha, 2006) and majority of them are also involved in subsistence food production to support the family and generate additional income. A decline in food security and livelihood opportunities can cause considerable stress for boys and men, given the socially ascribed expectation that they will provide economically for the household. Again, women's access to economic resources in terms of income and property ownership – including land – is already often unequal (BRIDGE, 2008), particularly in Nigeria. Despite the fact that gender roles differ from place to place, men are usually ascribed more difficult jobs like tree felling, climbing, fishing or beekeeping, while women mostly deal with marketing of products (Olaleye and Omokhua 2012). Moreso, women have been seen as most vulnerable group. This is because they are often dependent on natural resources for their livelihoods, do most of the agricultural work, and are responsible for collecting water and fuel (Parikh, 2007).

Despite women restrictions, their contributions in involving in forest activities have facilitated coordination, participation, cooperation for mutual benefit, confidence and transparency in forestry projects (Olaleye and Omokhua, 2012). Again, forests are vital for food resources. Their unsustainable use would result in a shortage of non-timber forest products (NTFP) – which could lead to malnutrition and infant mortality (Parikh, 2007). This has further deepened the poverty level among the rural women. It has been estimated that about 70% of the 1.3 million people in the world are living below the poverty line (Intergovernmental Panel on Climate change (IPCC), 2007). Therefore, gender-disaggregated approach is required in order to shed more light on the ways women (being most vulnerable) have been coping and competing with men in assessing forest products. Again, understanding of how the different social expectations, roles, status, and economic power of men and women affect, and are affected differently in the forest communities, will be a vital tool in the hand of policy makers to address gender inequality problems in the society. It has also been reported by Parikh (2007) that preservation of non-timber forest products with women's help will ensure livelihood and food security. This study will help in assessing gender

inequality and how women can be empowered in order to cope with home challenges.

Based on these facts, this study looked into the following objectives and employed gender-disaggregated approach to achieve the objectives:

i. socio-economic characteristics of the respondents;

ii. main forest products assessable in the area;

iii. factors influencing level of participation of the respondents in forest products

iv. problems encountered in accessing forest products.

2.Materials and Methods

The study was carried out in Ondo State, Nigeria. Primary data were used with the aid of questionnaire for the collection of the data. A multi-stage sampling technique was used to select respondents for the study. Four forest reserves were purposively selected based on their contributions to the output of forest products in the State. They are Akure-Ofosu, Owo, Idanre and Oluwa forest reserves in Akure South, Owo, Idanre and Odigbo Local Government Areas (LGAs) respectively. Fifty respondents were randomly selected from each reserve; thus making a total of 200 respondents but only 196 copies of questionnaire were valid and used for the study. The data collected were analyzed using descriptive statistics and truncated regression model.

Model Specification

This study Truncated Regression model was used to analyze the factors that influenced the level of participation of the respondents in forest products as means of livelihood. Observations on respondents, who do not earn income from forest products were excluded therefore, form the lower bound of the truncation. A zero value of Y_i* is observed when a respondent is not involved in any of the forest products as means of livelihood. On the other hand, Y_i* = 100 if a respondent is involved in any of the forest products as a means of livelihood.

The mathematical notation for the analysis is presented following Omiti et al. (2009); Oparinde and Daramola (2014):

$Y_i^* = \beta_i X_i + \mu_i$

$Y_i = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + \mu_i$

Where

Y* = Proportion of income from forest products out of total household income

X_1 = Age of the respondent (years)

X_2 = Education level

X_3 = Household size

X_4 = Proportion of non-forest income in total monthly household income in Naira

X_5 = Market information source/arrangement

X_6 = Average price at which each unit of output is normally sold in Naira.

X_7 = Land tenure

X_8 = Average distance from farm to main point of sale in Kilometer

X_9 = Years of farming

μ_i = Error term

3.Results and Discussion

Socio-economic Characteristics of the Respondents

Table 1 showed that the mean age of the male respondents (55 years) was more than their female counterparts (44 years), while the maximum ages of the male and female respondents were 75 years and 70 years respectively. This could be attributed to higher strength inherent in men than women as they grow older. This study is in conformity with the study of Ogunbanjo and Aina (2013) who stated that majority of the respondents fell within the ages of 41 and 56 years. The mean household sizes of the male and female respondents were 4 and 5 respectively, while the maximum household size for male and female respondents was 8 and 10 respectively. This scenario could be as a result of the fact that women usually have more people to be taken care of than men because of their nature. Olaniyi et al. (2013) observed that majority of the respondents had higher household size of 6-10 members relatively to the findings from this study. Also, the average year of

farming experience of the female respondents (37 years) is more than that of their male counterparts (35 years) in forest products activities, while the maximum years of experience for male and female respondents were 40 and 50 years respectively. This is an indication that female respondents had early participation in forest products activities than their male counterparts especially in accessing NTFPs. The mean year of experience (19 years) of the respondents recorded in the study carried out by Aruwajoye and Ajibefun (2013) was lesser compared to the findings from this study. The average distance covered by male and female respondents before getting to the site where forest products activities take place was 4 and 3.2km respectively, while the maximum distance covered by male and female respondents was 7 and 6km respectively. This is probably due to more strength exhibited by male than female which gives them the opportunity to cover more distance than their female counterparts. Table 1 also revealed that the mean income realized from non-forest products activities by male (₦60,000 (USD340.9)) was more than that of female (₦50,000 (USD284.1)), while the maximum income from non-forest products activities for male and female respondents were ₦100,000 (USD568.2) and ₦80,000 (USD454.6) respectively. This indicates that male respondents were involved in non-forest products activities than female respondents which serve as the diversification of means of livelihood. Probably, this is necessitated by more responsibilities carried by male than female respondents in the study area. There is a wide gap between income realised by the respondents in this study and Olaniyi *et al.* (2013) who stated that majority (54.6%) of the respondents earned less than ₦5,000 (USD28.4) per annum. The average percentage proportion of male and female forest products' incomes to the total household income were 75% and 87% respectively. The implication of this scenario is that female households engaged more in accessing forest products as means of livelihood than their male counterparts.

Table 1. Summary statistics of the respondents

Variable	Male (n = 117)				Female (n = 79)			
	M	SD	Min	Max	M	SD	Min	Max
Age (Years)	55	35.5	23	75	44	30.1	28	70
Household size	4	3.7	1	8	5	4.8	2	10
Experience (Years)	35	33.4	3	40	37	26.7	4	50
Farm Distance (Km)	4	2.2	0.5	7	3.2	1.5	0.2	6
Non-forest Income(₦)	60,000 ($340.9)	49,000 ($278.4)	10,000 ($56.8)	100,000 ($568.2)	50,000 ($284.1)	44,000 ($250)	8,000 ($45.5)	90,000 ($511.4)
Forest Products Income Proportion (%)	75	22	3	89.1	87	21.6	15.5	98.0

Note: M = mean; SD = standard deviation; Min = Minimum value; Max = maximum value
1USD = ₦176 as at the time of data collection.
Source: Computed from Field Survey, 2014

Main Forest Products Accessed in the Study Area

Table 2 indicated that 82.3% and 23.9% of the women and men respectively engaged in non-timber forest products (NTFPs). In the same vein, most of the men (76.1%) engaged in timber forest products (TFPs) compared to the 17.7% of the women. The results imply that men dominated in accessing TFP while the women take the lead in accessing NTFP. The main NTFPs accessed by

the respondents were mushrooms (*Basidiomicotina*), locust bean (*Pakia biglobosa*), vegetables, fruits, medicinal plants, wild animals, snails, wrapping leaf (*Thomatococcus spp*), alligator pepper (*Afromonium meligata*), raffia palm (*Raphia spp*) and *Newbodia lewis*. Olabode (2003) reported similar main NTFPs being accessed by forest products gatherers in Osun State, Nigeria. Also, the main TFPs accessed by the respondents were teak (*Tectona grandis*), afara (*Terminalia superb*), iroko (*Melisia excels*), opepe (*Nauclea spp*), obeche (*Trplochiton scleroxylon*), ebony (*Diosyros spp*), ceiba (*Ceiba pentandra*) and gmelina (*Gmelina arborea*).

Table 2. Distribution by the main forest products accessed in the area

Forest products	Male		Female	
	Frequency	Percent	Frequency	Percent
NTFP	28	23.9	65	82.3
TFP	89	76.1	14	17.7
Total	117	100.0	79	100.0

Source: Computed from Field Survey, 2014

Factors Influencing the Respondent's Participation in Forest Products

The proportion of income from forest products out of the total income of the respondents was used as proxy for the level of participation of the households in forest products as means of livelihood. The factors that influenced the level of participation of the respondents in forest products as means of livelihood as indicated in Table 3 shows that the age, household size, experience and land tenure were significant in determining the level of participation of the male households in forest products as means of livelihood. A unit increase in the age of the household head will lead to 1.32 increases in the level of participation of the household in forest products as a means of livelihood. This implies that as the male household head grows old, he tends to increase his level of participation in forest products as a means of livelihood as he will see the needs to meet up with the expected increasing responsibilities in the family. There is a positive relationship between the level of male household participation in forest products and the household size. The reason for this could be attributed to the fact that there will be increase in the number of mouths that will be fed. Also, a unit increase in the experience of the household head will lead to 2.75 decreases in the level of participation of male household head in forest products. The negative relationship between the level of participation in forest products and experience of the household head could be traced to the diversification of most of their resources to non-forest products activities. This could be as a result of non-satisfaction of the respondents in forest products. The negative relationship that exists between the level of participation of male household head in forest products and land tenure could be attributed to the high costs expended on the plots of land being used for forest products activities. This could also be as a result of utilization of plots of land for urban development which reduces the activities of the households in the area of forest products.

Also in Table 3, land tenure, unit price, non-forest income and information source were the significant factors that determined the level of participation of female household head in forest products. Land tenure by the female household head had a negative relationship with the level of participation of female household head in forest products. The outcome of this study supports Shackleton et al. (2011); Eneji et al. (2015), who posited that property rights significantly influenced gender participation in forest resources management. Participation of women in forest resource management is prominently constrained by cultural and traditional beliefs in the community (CIFOR, 2008; Christie and Giri, 2011). Another reason could be linked to high costs incurred on the plots of land used for farming activities, which may discourage the

respondents from using such land for forest products activities. The negative relationship between unit price and the level of participation of the female household head could be as a result of the nature of some of the forest products as regards its storability, which may make the farmers not to be bothered by increase in price. Another reason could be attributed to inability of the farmers to increase the output level of the products as it is determined by nature. Non-forest products income significantly increased the level of participation of the female household head. The reason for this may not be unconnected with the use of money realized from non-forest products activities for forest products activities, which will increase the level of participation of the household head. The source of market information and the level of participation of the female household head were positively related, which means that the more they have access to market information the more the level of participation of the female households. This positive relationship could be as a result of the fact that the respondents were receiving information about the market dynamics from reliable sources.

Table 3. Factors that Influenced the participation of the households in forest products as means of livelihood

Variables	Male (n=117)			Female (n=79)		
	Coef.	Std. Err	T ratio	Coef.	Std.Err.	T ratio
Constant	9.456	3.4786	2.718	9.021	2.238	4.031
Age	1.321**	0.703	1.89	-0.432	0.353	-1.224
Education	3.401	2.540	1.33	-0.834	1.637	-0.509
Household size	3.567**	1.788	1.995	-2.342	1.453	-1.612
Experience	-2.752***	0.924	-2.97	-0.075	0.384	-0.195
Farm distance	-1.273	1.533	-0.830	-0.282	1.435	-0.197
Land tenure	-12.795**	4.745	-2.697	-13.240***	2.373	-5.579
Unit price	-0.874	0.616	-1.419	-0.754***	0.345	-2.180
Non-forest income	3.47E-3	6.82E-4	5.088	3.73E-5***	5.24E-6	7.118
Information source	2.722	1.564	1.740	9.127***	2.234	4.086
	Log Likelihood ratio = -145.5267			Log Likelihood ratio = -99.2126		

*Note: **= Significant at 5% level, ***= Significant at 1% level*
Source: Computed from Field Survey, 2014

Problems Encountered in Accessing Forest Products

The constraints highlighted by the respondents in the study area were presented in Table 4. Inadequate capital was ranked first for both men and women with the percentage of 98.3 and 100.0 respectively. Men were encountered with the problem of environmental hazard, government restriction, transportation problem, insufficient labour, theft, storage facilities and organized market which were ranked as 2nd, 3rd, 4th, 5th, 6th, 7th and 8th respectively in the study area. In the case of the women, the main problem encountered in accessing forest products were storage facilities, organized market, theft, transportation problem, environmental hazard, government restriction, and insufficient labour with the rank of 2nd, 3rd, 4th, 4th, 6th, 7th and 8th respectively.

Table 4. Problems faced by the respondents in accessing forest products

Problem encountered	Male			Female		
	Frequency	Percent	Rank	Frequency	Percent	Rank
Inadequate capital	115	98.3	1st	79	100.0	1st
Theft	62	53.0	6th	58	73.4	4th
Storage facilities	59	50.4	7th	73	92.4	2nd
Government restriction	87	74.4	3rd	54	46.2	7th
Environmental hazard	111	94.9	2nd	51	64.6	6th
No organized Market	34	29.1	8th	61	77.2	3rd
Insufficient labour	71	60.7	5th	26	32.9	8th
Transportation problem	80	68.4	4th	58	73.4	4th

Note: Multiple Responses.
Source: Computed from Field Survey, 2014

4.Conclusion and Recommendations

It can be concluded that the level of participation of the respondents in forest activities is according to the gender. Male households were more involved in TFP enterprise than female respondents who were into NTFP. Age of the respondents, family size, experience and land tenure were vital factors determining the level of participation of male households in accessing forest products as means of livelihood, while land tenure, unit price, non-forest income and source of information were the significant factors that determined the level of female households in accessing forest products in the study area. With the growing recognition of women and their contributions to the economies through forest products and processing, there is a need to bridge the imbalance between men and women in accessing forest products. This can be done by empowering women through access to credit; land and agricultural inputs that could make them compete favourably with their male counterpart. In addition to this, Government should take into consideration forest-based policies that will have positive effect on the women as it concerns land tenure and the right of a woman. Women should be educated through training in order to develop new entrepreneurial activities that could add to their incomes since the non-farm income was significant in participating in forest products as a means of livelihood. Women are known for NTFP in the study area, therefore, government should build and develop conducive markets and provide other social amenities that will promote forest products internationally. This will contribute significantly to the household income since some of the women are the bread winners of the family and as well supportive to their husband's income.

References

Adebayo AA (2009). Attaining Sustainable Rural Development in Nigeria through Effective Management of Forest Based Resources. *International Journal of Creativity and Technical Development,* 1(1): 1 – 3.

Aruwajoye AS and Ajibefun IA (2013). Assessment of Livelihood Strategies among Households in Forest Reserve Communities in Ondo State, Nigeria. *International Journal of Scientific & Engineering Research*, 4(7): 1650-1655.

Ashimolowo OR and Otufale GA (2012). Assessment of Domestic Violence Among Women in Ogun State, Nigeria. *Greener Journal of Social Sciences*, 2(3): 102 – 114.

BRIDGE (2008). Gender and Climate Change: Mapping the Linkages. A Scoping Study on Knowledge and Gaps. Prepared for the UK Department for International Development. In: Alyson Brody, Justina Demetriades and Emily Esplen (eds), *BRIDGE, Institute of Development Studies (IDS)*, UK.

Canadian International Development Association (CIDA). (undated). Gender Equality and Climate Change: Why Consider Gender Equality When Taking Action on Climate Change? http://www.acdi-cida.gc.ca/INET/IMAGES.NSF/vLUImages/Climate%20change3/$file/Gender-2.pdf.

Centre for International Forestry Research (CIFOR) (2005). Contributing to African Development through Forests: Strategy for Engagement in Sub-Sahara African. *Centre for International Forestry Research*, Bogor, Indonesia. June. (34).

Centre for International Forestry Research (CIFOR) (2008). CIFOR's Strategy 2008-2018: making a difference for forest and people. Center for International Forest Research, Bogor, Indonesia (online) URL: http//www.cifor.org/publications/pdf_files/Books.CIFORstrategy0801.pdf

Christie ME and Giri K (2011). Challenges and Experiences of Women in the Forestry Sector in Nepal. *International Journal of Sociology and Anthropology*, 3(5): 139-146.

Downing TE, Sokona Y, Smith JB (2000). Action on Adaptation to Climate Change. Presentation to the UNFCCC Workshop on Article 4.8 and 4.9 of the Convention: Adverse Effects of Climate Change 9 - 11 March 2000, Bonn, Germany, Oxford Environmental Change Institute, University of Oxford, 2000.

Eneji CVO, Mubi MA, Husain MA and Ogar DA (2015). Factors Influencing Gender Paricipation in Forest Resources Management in the Cross River National Park Enclave Communities, Nigeria. *Journal of Environmental Protection and Sustainable Development*, 1(5): 234-244.

Food and Agriculture Organization (FAO) (2003). Climate Change and Food Security: A Framework Document. Rome. www.FAO.org/clim.

Food and Agriculture Organization (FAO) (2008). Climate change and food security: A Framework Document, Rome.

Intergovernmental Panel on Climate Change (IPCC) (2007). Climate Change: Impacts, Adaptation and Vulnerability. *IPCC Working Group II Report, Chapter 19*, IPCC, http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-chapter19.pdf.

Jodha NS (2006). Mountain Commons: Changing Space and Status at Community Levels in Himalayas. Sr. Research Associate (Policy Analyst) *International Centre for Integrated Mountain Development (ICIMOD)*, Kathmandu, Nepal.

Kalu C and Okojie CEE (2009). Economic Contributions of Forests in Nigeria 1970 – 2000. *Research Journal of Social Sciences*, 4(1): 69 - 73.

Ogunbanjo OO and Aina AS (2013). Non-Timbers Forest Products for Poverty Reduction in Ogun Waterside Local Government, Ogun State, Nigeria. *Journal of Agri. Science* 4(1): 49-53.

Olabode SO (2003). Contributions of Selected Non-timber Forest Products to Household food Security in Osun State, Nigeria. A paper submitted to the XII World Forestry Congress, Quebec City, Canada, 21-28 September, 2003.

Olaleye SM and Omokhua GE (2012). Women involvement, empowerment and control of Non-Timber Managrove Forest Products in Rivers State. *Nigeria Journal of Agriculture, Food and Environment*. 8(3): 9 – 13.

Olaniyi OA, Akintonde, J.O. and Adetumbi, S.I. (2013). Contribution of Non-Timber Forest Products to Household Food Security among Rural Women in Iseyin Local Government Area of Oyo State, Nigeria. *Research on Humanities and Social Sciences*, 3(7):41-49.

Omiti J, Otieno D, Nyanamba T and Mc Cullough E (2009). Factors Influencing the Intensity of Market Participation by Smallholder farmers: A Case Study of Rural and Peri-urban Areas of Kenya. *African Journal of Agricultural and Resource Economics*, 3(1):57-82.

Oparinde LO and Daramola AG (2014). Determinants of Market Participation by Maize Farmers in ondo State, Nigeria, *Journal of Economics and Sustainable Development*, 5(1): 69-77.

Parikh J (2007). Gender and Climate Change Framework for Analysis, Policy and Action. Paper Prepared for International Research and Action for Development. Retrieved from: http//www. http://www.acdi-cida.gc.ca.

Shackleton S, Paumgarten F, Kassa H, Husselman M and Zida M (2011). Opportunities for enhancing poor women's socioeconomic empowerment in the value chains of three African non-timber forest products (NTFPs). *International Forest Review* 13(2): 136-151.