



Socio-Economic Benefit of Fuel-Wood Marketing on the Host Communities of Onigambari Forest Reserve, Nigeria

G. Ayetan¹, A. S. Alli-Balogun^{1*}, O. A. Fadele¹ and K. T. Layade¹

¹Forestry Research Institute of Nigeria, Jericho hill, Ibadan, Nigeria.

Authors' contributions

This work was carried out in collaboration among all authors. Author GA designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors ASAB and OAF managed the analyses of the study and wrote the second draft of the manuscript. Author KTL managed the literature searches. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJRAF/2021/v7i1130120

Editor(s):

- (1) Dr. Md. Abiar Rahman, Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU), Bangladesh.
- (2) Dr. Hamid El Bilali, International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM), Italy.
- (3) Dr. Nebi Bilir, Isparta University of Applied Sciences, Turkey.

Reviewers:

- (1) Larisa Nicoleta Kanto, Babes-Bolyai University, Romania.
 - (2) Siuta-Tokarska Barbara, Cracow University of Economics (CUE), Poland.
 - (3) Ibiwani Alisa Hussain, Asia Pacific University of Technology and Innovation, Malaysia.
- Complete Peer review History: <http://www.sdiarticle4.com/review-history/63110>

Original Research Article

Received 22 October 2020
Accepted 29 December 2020
Published 15 February 2021

ABSTRACT

Fuel wood extraction and marketing is one of the off farm activities for rural dwellers around the forest reserve of Oyo State, Nigeria. The assessment of fuel wood extraction on the rural dwellers' livelihoods was carried out using multi-stage sampling techniques. Purposive sampling was used to select Onigambari Forest Reserve where fuel wood extraction is one of the major off-farm businesses by the rural dwellers. Random sampling was also used to select 50% of the registered fuel wood marketers by Oyo State department of forestry. Structured questionnaires and in-depth interviews were used to generate data. Data collected were analysed through tables of percentage. Results showed that fuel wood marketing is a profitable business with an average of 54,000 gains per month by the respondents. Fuel wood business has helped the respondents to possess properties such as houses, land for building, farmland and vehicles. Farming activities in

*Corresponding author: E-mail: abiolaallibalogun001@gmail.com;

the study area have also improved drastically as many of the respondents had farming as their primary occupation and their gains from fuel wood business were re-invested into farmland and haulage vehicles.

Keywords: Fuel wood; marketing; forest reserves; impact; livelihoods.

1. INTRODUCTION

A forest is an area of land predominantly dominated by trees while shrubs and herbs are in small proportion, while a forest reserve is an area of land separated or dedicated for the management and development of forest practices. In forest reserves, forest laws and policies are strictly adhered to. Plantation and enrichment planting are not left out as these help to increase forested land and enriched the natural vegetation. Forest serves as habitat for plants and animals. Forest occupied a total 349.278km² of Nigeria land area of 997.936km² [1]. It can be estimated that forest covers 35% of Nigeria land mark.

The forest is a source of wealth for timber operators, orthodox and traditional medical practitioners, fuel wood marketers and every one that does one thing or the others in the forest. Olawumi et. Al [2], stated that non timber forest product such as chewing stick is a major source of livelihood in Ogbomoso metropolis providing income for the sustenance of person's engaged in it and their dependants. Ayetan et al [3], submitted that Nigeria is naturally blessed with large forest that when we harness its natural endowment through the use of non-timber forest products it will ameliorate poverty and also militate against economic meltdown by reducing expenses on daily needs through the use of fuel wood, chewing sticks, mushroom and other non-timber forest products so as to be able to create room for savings. Oyo state has 7 forest reserves, namely Onigambari forest reserves, Oso forest reserves, Lasehinde forest reserves, lanlate forest reserves, Igangan forest reserve, Okooro forest reserves, and Baasi forest reserves. These forest reserves are distributed around the major cities and towns in the state and some of the forest reserves serve as boundary to other states. OFR was established in 1902 following the Ibadan forest enacts of 1902 [4]. It covers 9000 hectares of land and consists of largely state dominated land, privately owned and federal government research plots. The presence of the forest reserve created avenue for the rural communities around the reserve to extract firewood use as cooking energy and source of revenue [5].

Rural households often combine number of livelihood activities, such as agricultural crop production, wage labour and forest products collection to meet subsistence needs. Rural areas are a key sector in every nation's economy and their rapid development and modernization have gained the attention of policy makers and government all over the world. This is because a sizeable majority of the population lives therein, therefore the future of the country depends largely on the rural area. Typically, rural dwellers are less vocal, characterized by a culture of poverty, as most people live barely above subsistence level [6]. The rural sector of Nigeria is very vital to the socio-economic development of the nation. Given the contributions of the rural sector to the national economy, enhancing the livelihood of the people living in the rural areas cannot be over emphasized. Fuel wood is the dominant source of cooking energy in the rural communities. It was estimated that rural populace generate 82% of the cooking energy from wood, 11% from kerosene and 7% from other means [7]. Wood is considered human being first source of energy as it was available naturally for human use since inception of life. It is also a source of renewable energy providing about 6% of the global total primary energy supply [8]. More than 2 billion people depend on wood energy for cooking in households in the developing countries [8].

Wood is the only domestically available and affordable source of cooking energy as it can be gotten from garden urban forest and any place where there are trees. Fuel wood is a non-timber forest product readily available in the neighbourhood of most rural communities of the South West Nigeria and more abundantly where there are forest reserves. It is also a vital source of livelihood as some people within the rural communities gather fuel wood and arrange into cords and dozens for commercial purposes. This means that, fuel wood availability in rural communities around forest reserve areas serve as domestic source of energy and commercial enterprises for those who are enterprising among the rural people. Off farm sectors such as fuel wood marketing have not only fostered hope but also have potential for poverty reduction in the rural areas. Fuel wood being renewable natural

resources available in rural areas, is one of the most valuable natural resources in the rural area. Forest reserves also serve as habitat for plant and animals. It is natural for trees to grow old and die. Trees can also be brought down as a result of heavy rain fall, and at times tree branches naturally break and come down to the reach of man for extraction as fuel wood. As a result of the abundance of fuel wood in the rural areas, the need to research on its marketing can not be understated. The presence of fuel wood arranged in arrays for sales becomes an attraction to passersby around forest reserve area. This study intends to know the respondents achievement through fuel wood business in the study area and how Onigambari Forest Reserve in Oyo State have contributed to the livelihood of the rural dwellers around the forest reserve.

2. AREA OF STUDY

OFR is situated in oluyole local government of oyo state and its surrounded by the following host communities: idi-Ayunre, Aba-nla, Oja-ibadan, olubadan, Sheriki, Adebayo, Onipe, Longe, Bussogboro, Onigambari, Dalley and Olubi.

3. RESEARCH DESIGN

The research design for this research is descriptive survey and interviews which involves the use of structure questionnaires to retrieve vital information from the respondents on the contributions of fuel wood marketing to their livelihood.

4. RESULTS

It was revealed in Table 1 that 56.9% of the respondents are middle age people. It can be concluded that people between the ages of 41-45 are more involved in the marketing of fuel wood as business followed by people above the age of 50 which carries 25.9% of the respondent's population.

Table 1. Age of respondents

Parameter	Frequency	%
Below 20	0	0
21 – 31	8	3.4
31 – 40	32	13.8
41 -50	132	56.9
51 & Above	60	25.9
	232	100

Table 2 show that 65.5% of the respondents are male meaning that male are more involved in the marketing of fuel wood in the studied area. Although female are also many in the business with the population of 34.5% of the respondents.

Table 2. Sex of respondents

Parameter	Frequency	%
Male	152	65.5
Female	80	34.5
Total	232	100

Table 3 show that most of the respondents had formal education, with 39.7% having secondary education, 36.2% having primary education and 6.9% of them attended a tertiary school while only 13.8% of them did not go to school at all.

Table 3. Educational qualification of respondents

Parameters	Frequency	%
Non Formal Education	16	13.8
Primary	42	36.2
Secondary	46	39.7
Tertiary	8	6.9
Adult Education	4	3.4
	232	100

Table 4 show that 89.66% of the respondents are married while 6.90% of them are widow.

Table 4. Marital status of respondents

Parameter	Frequency	%
Single	4	1.72
Married	208	89.66
Divorced	4	1.72
Widow	16	6.90
Widower	0	
	232	100

Table 5 show that 53.45% of the respondents extracted fuel wood directly from the forest without having to buy bush price.

Table 5. Sources of fuel wood for marketing

	Frequency	%
Direct extraction from the forest	62	53.45
Buying bush price	18	15.52
Both	36	31.03

Table 6 show that 58.62% of the respondents have spent between 11-20 years in the fuel wood business while 27.59% have spent between 21-30 years in the business.

Table 7 show that 44.83% of the respondents are farmers while 31.03% are traders before engaging in the fuel wood business.

Table 8 show that more than 71.56% of the respondents have either 6 or more than six persons in their houses that they cater for from the business.

Table 9 show that more than half of the respondents get an average of 3 loads of fuel wood for sales per week from the forest.

Table 6. Duration in the business

Parameters	Frequency	%
Below 10 years	28	12.07
11 – 20 years	136	58.62
21 – 30 years	64	27.59
31 - 40 years	4	1.72
Above 40 years	0	0
	232	100%

Table 7. Respondents primary occupation

Parameter	Frequency	%
Farming	104	44.83
Trader	72	31.03
Craftsman	56	24.14
Civil servant	0	0
Others	0	0
	232	100

Table 10 show that an average fuel wood marketer in the study area gains between 3000-4000 per load.

Table 11 show that an average fuel wood marketer in the study area has achieved from the business except for 13.79% who have not gotten

physical possession except that they only feed their family from the business.

Table 8. Household size of respondent

Parameter	Frequency	%
< = 3	6	2.59
4	18	7.76
5	42	18.10
6	64	27.59
>6	102	43.97
	232	100

Table 9. Number of loads of fuel wood extracted per week

Parameter	Frequency	%
2 Loads	42	18.1
3 Loads	156	67.2
4 Loads	22	9.5
5 Loads	10	4.3
5 Loads	2	0.9
	232	100

Table 10. Average gain per load

Parameter	Frequency	%
2000	3	2.6
3000	6	5.2
4000	43	37.1
5000	55	47.4
6000	9	7.8

5. DISCUSSION

It can be deduced that male are more involved in fuel wood business in the study area as revealed by Table 4 which shows that 65.5% of the respondents are male. Although, female respondents are also active in the business

Table 11. Achievement through fuel wood bussiness

Possessions	Frequency	%
House, Land, Farmland and Haulage Vehicle and Car	8	6.90
House, Land, Farmland and Haulage Vehicle	8	6.90
House, Land and Farmland	4	3.49
House, Farmland and Haulage Vehicle	20	17.24
Land, Farmland and Haulage Vehicle	8	6.90
House and Haulage Vehicle	8	6.90
Land, and Haulage Vehicle	8	6.90
Farmland and Haulage Vehicle	4	3.45
Farmland only	16	13.79
Land only	12	10.34
Haulage Vehicle Only	4	3.45
No Possession	16	13.79
	116	100

because they were 34.5% of the respondents. Adults of between ages of 40 and above are more involved in the business according to Table 1 which shows that adults between 41-50 were 59.9% of the respondent while adults that are older than 50 years were also 25.9% of the respondents. This is an indication that, youths of 30 years and below are few in fuel wood business as they were 27.2% of the respondent population. However, when considering the duration of the respondents in the business, one will discover that the middle aged and people who are involved in fuel wood business started the business when they were youths. This can be deduced from the respondent's duration in the business. Table 3 also shows that many of the respondents have formal education because 6.9% of them have post-secondary educational certificate 39.7% also have undergone secondary school while 36.2% of them only possess primary school leaving certificates. Only 13.8% of them did not attend any form of school.

More so, many of the respondents have been in the fuel wood business for over a decade because 58.62% of the respondents have been in the business between 11-20 years, while 27.59% of the respondents have been in the business for over 20 years shown by Table 5 which indicated that 58.62% of the respondents have been in the business for about 11-20 years while 27.59% have also been in fuel wood business for more than 20 years from now. Table 4 also shows that 89.66% of the respondents are married; this can also be linked with Table 9 that indicated that over 70% of the respondents in the study area have at least six dependants that they cater for going by their household size (27.59% for 6 and 43.97% for above 6). It is also a fact that fuel wood marketers in the study area were able to care take of their family responsibilities as a result of their involvement in the business.

Fuel wood business also helps the respondents to increase their capacities to cultivate more farmland as 44.83% of the respondents are farmers as shown by Table 7 which indicated that many of the respondents have farming as their primary occupation. This is also supported by Ellis (1990) which established that rural households often combine numbers of livelihood activities to meet their subsistence needs.

From Table 10, it is established that most of the respondents extract at least 3 loads of fuel

woods per week while Table 11 shows that more than 80% of the respondents gain between NGN3000 to NGN 4000 per load. This is supported by [9] which submitted that an average fuel wood marketer in Ibadan metropolis made an average of #6500 as profit per week. It is observed that many of the fuel wood marketers have achieved some tangible properties from the fuel wood business. According to Table 12, 6.9% of the respondents have personal house, land farmland, haulage vehicle and car, another 6.90% have personal house, farmland and haulage vehicle, 3.45% have house, land and farmland only. 17.24% of the respondents also have house, farmland and haulage vehicle. It is just 13.79% of the respondents that have not been able to possess any tangible properties from the business. These people who have not been able to possess tangible achievement from the business are majorly those who started fuel wood business recently. A look at Table 6 shows that 12.07% of the respondents are still young in the business. Other prominent achievements by the respondents are farmlands and haulage vehicle. It can be observed that they will see farmland as they priority properties as a large number of them are primarily farmers and they also leave in rural and sub-urban areas. Also, their possession of haulage vehicle was also given priority as fuel wood business involves movement of fuel wood from the forest reserve to the nearby community for display to the buyers.

6. CONCLUSION AND RECOMMENDATION

The relative cost of energy from petroleum, fuel gas and electricity make them not readily acceptable alternatives to the rural dwellers. Moreover, in order to utilize a modern source of energy a high initial investment is required to install the necessary appliances.

There is also a cost associated with maintenance of appliances. These also make modern energy sources unattractive for industrial and domestic application in the rural areas.

Therefore fuelwood business will still remain a relevant venture in the rural areas of Oyo state especially communities that are around the forest reserves where fuelwood is abundantly available.

It was discovered in this research that fuelwood marketing in the study area is a profitable business and many of the respondents have been relying greatly on it as a means of

livelihood. Most of the respondents are adult, showing that with increase in responsibility; they also look around then for other sources of revenue to meet their needs.

According to World Bank [7], also proved that energy generated from wood is still the cheapest source of cooking energy except energy generated from agricultural residues. Hence, the demand for fuelwood will continue to increase in third world countries such as Nigeria where poverty and employment rate is on the increase yearly. Therefore, those who are trading in fuelwood will be increasing because more people will come into the business as means of employment and demands for its supply will also increase with increase in poverty as many people especially in the rural and sub urban will continue to use it as source of energy for both domestic and industrial uses because it relatively cheap.

It is therefore recommended that government at all levels should encourage fuelwood marketers by granting them loans to boost their businesses. Extension agents should also be employed to train the rural dwellers around the forest reserves on how they can sustainably generate revenue without causing damage to the ecological system by ensuring that only dead trees and debris are converted into fuelwood, because, green vegetation or living trees help to ameliorate environment and produces oxygen that we breath. They should not be sold for money.

Women should also be encouraged to involve in fuelwood marketing to be able to support their husband financially.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Osulale OS. Socio Economic benefits of Forest Reserves. A case of Onigambari forest reserve of oyo state Nigeria, Project submitted to Federal College of Forestry Ibadan. 2011;1-13.
2. Olawumi AT, Oluwalana SA, Momoh Aduradola AM. Cost and return on chewing stick marketing in South West Nigeria. Journal of economic and sustainable development. 2013;4(3).
3. Ayetan G, Adebago CA, Adeniyi MI, Agbele MA, Olajire BA. Utilization of non-timber forest products. A panacea to economic Recession Control. International Journal of Crop Science. 2010;2(1):27-30.
4. Ige PO, Adio AF, Awosusi BM Akinyemi GO Adesope AA. Contribution of the forest sub-sector to national economy and gross domestic product. Journal of Sustainable Environmental Management. 2009;2(2):50-52.
5. Ayetan Gbenga. Socio-economic benefits of forest reserve, a case of onigambari forest reserve of oyo state. A seminal paper, presented at the Department of Agriculture, Tai Solarin University of Education Jagun Ogun State. 2017;5 unpublished.
6. Laah DE, Abba M Ishaya DS. Gana JN. The mirage of rural development in Nigeria. Journal of social science and public policy. 2013;5(2).
7. World Bank. World development report. Washington D.C. World Bank. 2002;23-25.
8. FAO. The fuel wood crisis and population in africa. Part. 1990;1-4.
9. Olugbire OO Kayode OT and Faleyemi MO. Profitability of fuel wood marketing in Ibadan metropolis, Journal of forest products. 2016;2:35-36.

© 2021 Ayetan et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
The peer review history for this paper can be accessed here:
<http://www.sdiarticle4.com/review-history/63110>