THE ROLE OF FOREST RESOURCES IN POVERTY ALLEVIATION AMONG RURAL HOUSEHOLDS IN SUDANO-SAHELIAN REGION OF NIGERIA

Shuaibu, R. B., Dishan, E. E and Yekini, N.

Department of Forestry and Wildlife Management, Modibbo Adama University of Technology, Yola, Adamawa State, Nigeria

Corresponding email: srabibinta@yahoo.com

Abstract

*This study examined the role of forest resources in poverty alleviation among rural households in Sudano-Sahelian region of Nigeria. Presently, the majority of the world's poor live in rural areas, and their livelihoods are dominated by gathering of forest resources. This study was carried out in Twelve (12) States of the Northern Nigeria namely Adamawa, Bauchi, Borno, Gombe, Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto, Yobe, and Zamfara State which represents the Sudano-Sahelia region of Nigeria. A multi-level approach was used for the collection of the data, and cross validation of information.Data were collected from two LGAs which were randomly selected from each of the Twelve States making Twenty-Four (24) LGAs within the Study Area.The data were subjected to descriptive analysis. All statistical analyses were done using Microsoft Excel.The result reveals that the rural households across the Study Area makes livelihood from the collection and sales of fuel wood; staking materials; poles; medicinal herbs, sponge, rope, rattans, collection and production of seeds from the trees such as Vitalleria paradoxer, Moringa oleifera, Azadirachta indica; Balanites aegyptiaca, Prosopis africana, Parkia biglobosa, Adansonia digitata,Borassus aethiophum, Vitex doniana, Tamarindus indica, and Hyphaene thebaica into oils; soup condiments; making spices from tree nuts; making dyes from tree leaves; making Brooms; Basketry; Matting; fan; and chewing sticks. The result revealed that the highest annual income realized from the sales of forest resources were₦385,000 - ₦504,000 and ₦382,000 - ₦497,000 in Ganjuwa and Alkaleri LGA in Bauchi State. While the lowest annual income realized from the sales of forest resources is ₦98,000 -₦122,000**and**₦101,000 - ₦130,000 in Goronyo LGA and Dange Shuni LGA in Sokoto State. This study revealed that the rural household make their livelihood from the total number of Fifty-Seven (57) tree species, Twenty-Three (23) shrub species, and Five (5) species of herbs which belongs to Twenty-Nine (29) families, and Nineteen (19) orders in the Study Area.*

Key Words: *Forest Resources; Livelihood; Poverty Alleviation; Rural Households; Role*

Introduction

Forests are the home to the bulk of the world´s biodiversity and living environment of indigenous people and constitute a resource from which rural communities derive sustenance and livelihood. According to FAO (2010), a forest can be defined as a land with a tree canopy cover of more than 10%, area of more than 0.5ha and a minimum tree height of 5m. The forest provides a wide range of wood and non-wood products as well as social and environmental services. Forest resources are key component of the natural resources base of any rural community, region or country and they play a fundamental role in the socio-economic well-being of the people of these rural communities (Unongo et al, 2019).Forests make numerous contributions directly and indirectly to sustainable livelihood and well-being of billions of people across the world through the provision of ecosystem services including environmental services, wild food, fodder, fiber, wood andmedicine (Katerere et al., 2009). Plants and animals in forests, woodlands and wooded savannas as well as planted trees on farms are very important to rural livelihood in Nigeria. On the average, forest resources make up about 39% of the livelihoods of rural populations in Nigeria (Onyekuru & Marchant, 2014). According to Adekunle (2010), forest products are the main source of income to a large number of families in Nigeria. The value from the forest resources is derived through harvesting, processing, and marketing of products based on wood, non-wood and provided by the forest materials and services (Adebisi and Kareem, 2011). Access to forest resources helps rural households diversify their livelihood base and reduce their exposure to risk. Earnings from forest products are often important as a complement to other income. Very large numbers of households generate some of their income from selling forest products, often when farm production is not enough to provide self-sufficiency year round. Thus, benefits of forests and forest trees to households and community members, particularly women, for fuel wood, staking materials, and management for fruits, vegetables, seeds, soup condiments, herbs and income can draw their attention into practicing forestry (Shuaibu, 2015).

The objective of this paper is to examine the roles of forest resources in poverty alleviation among rural households in Sudano-Sahelian region of Nigeria. Currently the majority of the world's poor live in rural areas, and their livelihoods are dominated by gathering of wood and non-wood forest products (WNWFPs).Rural households make livelihood from the collection and sales of forest products such as vegetables, fruits, soup

condiments, staking materials, fodder, fuel wood, poles, medicinal herbs and other products for sponge, basket weaving, brooms, and rattans. For the poorest households, forest resources can play a critical role not only in food provision but it also provide income which is often used to purchase seeds, hire laborers for farmland cultivation, or generate working capital for trading activities.Therefore, examining the roles of forests to the rural livelihoods in the Study Area cannot be overemphasized.

The Study Area

This study was carried out in Twelve (12) States of the Northern Nigeria namely Adamawa, Bauchi, Borno, Gombe, Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto, Yobe, and Zamfara State which represents the Sudano-Sahelia region of Nigeria. Nigeria is a country in West Africa. It lies on latitude 8°N and longitude 10°E. It has a total area of 923,768km² with a population of 177,155,754 (Wikipedia) as shown in figure 1. Nigeria is bounded by Benin on the South-West region, Cameroun on the South-East region, Niger on the North-West region, Lake Chad on the North-East region, and Atlantic Ocean to the South-South region. The Sudano-Sahelian region of Nigeria is roughly located on longitude 3^0 and 15^0E and latitude 10^0 and 14^0N. The Study Area lies north of latitude 8° 10^1 N and extends to latitude 13° 53^1 N within the Savanna region of Nigeria (Olaniran, 1987; Abaje *et al.*, 2011). The Tropical Hinterland climate dominates in the Sudan zone, while Tropical Continental climate prevail in the Sahel zone of the Study Area.

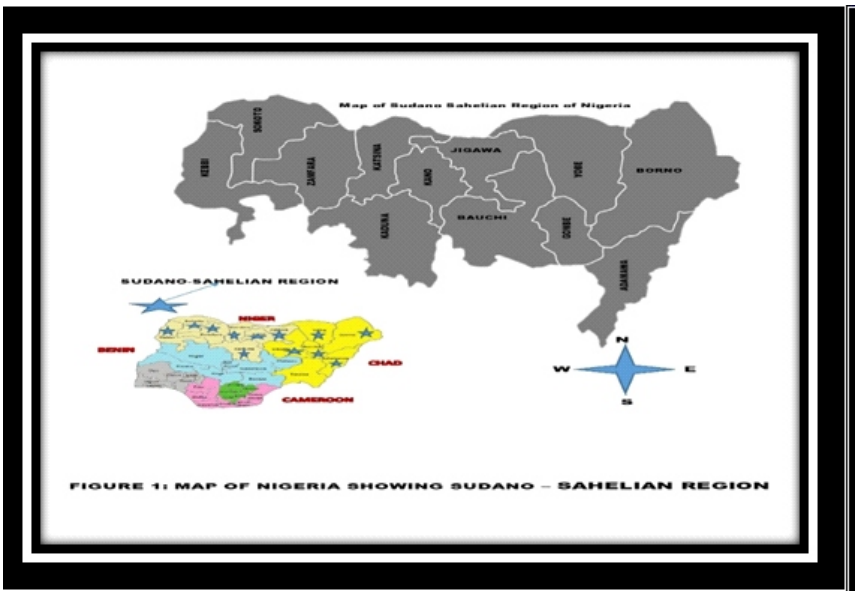

Figure 1: Map of Sudano-Sahelian Region of Nigeria

The vegetation of the Study Area has been grouped into the Sudan Savanna and Sahel Savanna (Olaniran, 1987). The temperature is high during the dry season, cold and windy during the harmattan season. Eva-pour transpiration is usually high most especially in the hot season (Desankar and magadza, 2001). The region expend roughly through Kebbi, Sokoto, Zamfara, Kaduna, Katsina, Kano, Jigawa, Bauchi, Gombe, Adamawa, Yobe, and Borno State respectively. The topography of the Sahel is mainly flat, and the region mostly lies between 200 and 400 meters in elevation. Annual rainfall varies from around 100 mm - 200 mm, in the north of the Sahel, to around 600 mm in the south. The Sudano-Sahelian region of Nigeria is drained by many rivers which suffer seasonal alterations in their volume and flow.

Data Collection Method

A multi-level approach was used for the collection of both qualitative and quantitative data, and cross validation of information. Collection tools used for the collection of both the quantitative and qualitative data which were used to generate both primary and secondary data included the followings: document review checklists, structured surveys questionnaires, key informant interview guides, andField observation of forestry activities. Data were collected from two LGAs which were randomly selected from each of the Twelve States making Twenty-Four (24) LGAs within the Study Area using structured questionaire and oral interview of respondents. Structured questionaire were administered on Twenty (20) randomly selected respondents from each of the LGAs making a total number of Four-Hundred and Eighty (480) respondents.

Data Analyses

The data were subjected to descriptive analysis. All statistical analyses were done using Microsoft Excel. Tables were used to present the findings, and were interpreted to meet the objective of the research.

Results

Demographic Characteristics of the Respondents in the Study Area

Demographic analysis was obtained through descriptive statistics which provides simple summaries about the sample and about the observations that have been made. According to Mann (1995), Descriptive statistics is the discipline of quantitatively describing the main features of information collected, or the quantitative description itself. Table 1 presents the summary of respondents' gender status; marital status; occupational status; educational level, and age. The results of gender status shows that they were 79.17% male respondents and 20.83% female respondents in the Study Area. The gender status shows that the women in the regions were few in the activities because most of them were in Purda which does not allowed to participate in forestry activities since their men regarded it as a threat to their ways of life. According to Agarwal (2001), the ability to participate and the terms of participation are shaped by a number of factors, including rules of entry, social norms, perceptions, and the assets and attributes of those affected. Marital status results show that 52.71% were married, 25.63% were single/divorce, and 21.67% were widow/er. Occupational status shows that 56.46% were farmers, 10% were civil servant, 16.46% were trades, and 17.08% were into other occupations. The results of educational qualification reveals that 4.79% had tertiary education, 18.33% had secondary education, 35.63% had primary education, and 41.25% had informal education. The low level of education has made most of them to lack the knowledge of sustainableutilization of forest resources that could benefits the environment, increases their output and improve the fertility of the soil by properly managing the trees. These set of people believed that it is a mere waste of time planting trees, since trees are known to grow naturally on land as a gift of nature (Alao and Shuaibu, 2011). Age of the respondents results shows that 29.58% were between 16 – 25years, 21.46% were between the ages of 26 – 35years, 12.71% were between the ages of 36 – 45years, 15% were between the ages of 46 – 55years, and 21.25% were above 56years.The result show that majority of the forest resources exploitation were between the ages of 16 and 25 years, which means forest utilization activities within the Study Area is characterized by economical active group.

Tree Species in which the Rural Communities Derived their Livelihood in the Study Area

The result of this study shows that the rural household make their livelihood from the total number of Fifty-Seven (57) tree species, Twenty-Three (23) shrub species, and Five (5) species of herbs which belongs to Twenty-Nine (29) families, and Nineteen (19) orders were encountered in this Study. Table 3 presents the species of trees encountered. *The result of livelihood obtained from forest resources and tree products revealed* that the men hunt wild animals for sales and uses the products of trees to make sponge; mattings; basketry; producing brooms; rope; local fan; rattan; medicinal herbs; poles for staking and roofing their thatched houses; harvesting honey from bees on the forest trees; making tools such as wooden spoons, hoes, moulta / pestle for pounding things; and collecting fodder for the livestock. While the women collect fuel wood, wild vegetables, fruits, produce oils and soup condiments from the seeds and fruits of trees of different species. Approximately 80% of Nigeria's population (of more than 100 million) depends on fuel wood for cooking (Nigeria, 1981). It was observed that the women and children in the Study Area benefits and make livelihood from forest products. Women and children collect fuel-wood, fodder, nuts and other edible forest products and medicinal herbs for household use (Kaur, 1991). Exploring the differences in men's and women's knowledge in forestry is very important in sustainable forest management. *It was observed that some of the women and young people across the Study Area makes livelihood from the collection and sales of fuel wood; staking materials; poles; collection and production of seeds from the trees such as Vitalleria paradoxer, Moringa oleifera, Azadirachta indica; Balanites aegyptiaca, Prosopis africana, Parkia biglobosa, Adansonia digitata, Borassus aethiophum, Vitex doniana, Tamarindus indica,* and *Hyphaene thebaica into oils; soup condiments; making spices from tree nuts; making dyes from tree leaves; making* Brooms; Basketry; Matting; and chewing sticks.According to Shuaibu and Alao (2013), women are the key to the management of environmental systems because their roles in meeting of day–to–day needs of their households have important influence on the forest resources. **The participation of rural households in forestry activities is critical to success since most of their livelihood depends on forest resources. The rural households managed and protects the forests around them for more utilization of the resources.**This is due to the fact that rural people see forests and their resources as wealth creating and livelihood supporting assets (Adedayoet. al., 2010). **Adedire (2012) observed that forest and forestry activities contribute to the economic development, particularly in the rural areas through food production, provision of useful medicinal plants, provision of rural infrastructure, and provision of employment.**

Lists of Sampled States, and LGAs with the Annual Income Realized from Utilization of Forest Resources by the Respondents in the Study Area

This study was carried out in Twelve (12) States and Twenty-Four (24) Local Government Areas of the Northern Nigeria namely Mubi and Numan (Adamawa State); Alkaleri and Ganjuwa (Bauchi State); Biu and Gwoza (Borno State);Balanga and Nafada (Gombe State); Birniwa and Gwaram(Jigawa State); Kagarko and Kubau (Kaduna State); Bichi and Dambatta (Kano State); Kankara and Safana (Katsina State);Argungun and Bunza (Kebbi State); Dange Shuni and Goronyo (Sokoto);Bursari and Potiskum (Yobe State); andShinkafi and Zurmi

(Zamfara State)which represents the Sudano-Sahelia region of Nigeria.the annual income realized by the respondents of each LGA is as follows: ₦246,000 – 350, 000; ₦233,000 - 361,000; ₦382,000 - 497,000; ₦385,000 - 504,000; ₦148,000 - 215,000; ₦133,000 - 205,000; ₦201,000 - 343,000; ₦199,000 - 322,000; ₦121,000 - 263,000; ₦126,000 - 255,000; ₦309,000 - 472,000; ₦313,000 - 479,000; ₦202,000 - 274,000; ₦200,000 - 271,000; ₦251,000 - 326,000; ₦289,000 - 353,000; ₦103,000 - 166,000; ₦100,000 - 147,000; ₦101,000 - 130,000; ₦98,000 -122,000; ₦111,000 - 132,000; ₦106,000 - 133,000; ₦274,000 - 399,000; and ₦281,000 - 406,000 respectively as shown in table 4.

Table 1: Demographic Characteristics of the Respondents in the Study Area

Variable	Adamawa	Bauchi	Borno	Gombe	Jigawa	Kaduna	Kano	Katsina	Kebbi	Sokoto	Yobe	Zamfara	Total	%
Gender Status														
Male	28	31	35	34	36	16	30	36	34	32	35	33	380	79.17
Female	12	9	5	6	4	24	10	4	6	8	5	7	100	20.83
Total	40	40	40	40	40	40	40	40	40	40	40	40	480	100
Marital Status														
Single/Divorce	12	9	8	12	9	13	15	6	7	11	9	12	123	25.63
Married	18	28	17	24	22	12	17	25	27	23	21	19	253	52.71
Widow/er	10	3	15	4	9	15	8	9	6	6	10	9	104	21.67
Total	40	40	40	40	40	40	40	40	40	40	40	40	480	100
Occupational Status														
Farming	23	29	21	22	25	23	25	19	23	21	22	18	271	56.46
Civil Servant	3	3	4	4	2	6	5	5	3	3	4	6	48	10
Trading	8	4	4	7	5	8	4	7	5	7	9	11	79	16.46
Others	6	4	11	7	8	3	6	9	9	9	5	5	82	17.08
Total	40	40	40	40	40	40	40	40	40	40	40	40	480	100
Educational Qualification														
Tertiary Education	3	2	2	3	1	4	1	2	1	2	1	1	23	4.79
Secondary Educa.	16	8	7	5	4	12	4	8	4	6	5	9	88	18.33
Primary Education	12	17	15	14	13	19	12	16	15	14	11	13	171	35.63
Informal Education	9	13	16	18	22	5	23	14	20	18	23	17	198	41.25
Total	40	40	40	40	40	40	40	40	40	40	40	40	480	100
Age of the Respondents														
16 - 25 years	14	9	12	12	11	13	11	13	11	12	11	13	142	29.58
26 - 35 years	8	8	9	9	9	8	9	7	8	9	10	9	103	21.46
36 - 45 years	5	6	5	5	6	4	6	5	4	6	5	4	61	12.71
46 - 55 years	6	8	6	7	5	7	5	6	7	5	6	4	72	15
56 years and above	7	9	8	7	9	8	9	9	10	8	8	10	102	21.25
Total	40	40	40	40	40	40	40	40	40	40	40	40	480	100

Table 2: Livelihood from Tree Products and Forest Resources

Adamawa	Bauchi	Borno	Gombe	Jigawa	Kaduna	Kano	Katsina	Kebbi	Sokoto	Yobe	Zamfara
Gums	Oils	Date fruits	Rattan	Gum	Fuels	Fuel	Oils	Herbs	Oils	Fuels	Herbs
Fuels	Seeds	Horney	Rope	Oils	poles	Herbs	Spices	Horney	Herbs	poles	Fuel
Spices	Fruits	Dyes	Dyes	Date fruits	Oils	Sponges	Fuels	Dyes	Fodder	Matting	Brooms
Hoes	Tools	Fuels	Fuels	Fuels	Seeds	Rattans	Poles	Poles	Fuels	Basketry	Fan
Utensils	Mortar	Matting	Brooms	Basketry	Fruits	Horney	Brooms	Fuels	Dyes	Brooms	Fodder
Rattan	Coal	Basketry	Matting	Brooms	Tools	Gums	Matting	Matting	Horney	Date	Poles
Nuts	Fuels	Brooms	chewing stick	Rope	Mortar	Poles	Fan	Brooms	Poles	Horney	Tools
Matting	Poles	Herbs	Herbs	chewing stick	Coal	Tools	Herbs	Basketry	Matting	Dyes	Nuts
chewing stick	chewing stick	Oils	Sponges	Tools	Matting	Brooms	Fodder	Fodder	Basketry	Herbs	Condiments
Tools	condiments	Spices	Fan	Herbs	Basketry	Dyes	Dyes	Fan	Brooms	Fodder	chewing sticks
Condiments	Herbs	Fodder	Fodder	Fodder	Condiments	Matting	Bush meat	Spices	Sponges	Meat	Matting
Herbs	Fodder	Bush meat	Bush meat	Dyes	Herbs	Basketry	Date fruits	Meat	Fan		Bush meat
Fodder	Nuts		Vegetables	Fan	Hoes	Fodder	Vegetables		Meat		Vegetables
Bush meat	Spices		Mortar	Bush meat	Utensils	Fan	Honey				
Mushroom	Sponges		Pestle	Poles	Rattan	Nuts	Gum				
Vegetables	Bush meat			Staking	Nuts	Spices					
Mortar	Mushroom			Mortar	chewing stick	Bush meat					
Pestle	Vegetables			Pestle	Bush meat	Mortar					
	Pestle				Mushroom	Pestle					
					Pestle						

Table 3: Species of Trees in Which the Rural Communities Derived their Livelihood in the Study Area

S/N	Tree Species	Common name	Family	Life forms
1	*Acacia nilotica*	Gum Arabic tree	*Fabaceae*	Tree
2	*Acacia seyal*	red acacia	*Fabaceae*	Tree
3	Acacia tree	Wattles	*Fabaceae*	Tree
4	*Adansonia digitata*	Baobab	Malvaceae	Tree
5	*Albizia chevalieri*	Albizia durazz	*Fabaceae*	Shrub
6	*Alyscicarpus vaginalis*	buffalo clover	*Fabaceae*	Tree
7	Anacardium occidentale	Cashew	Anacardiaceae	Tree
8	Andira inermis	Bastard Mahogany	Fabaceae	Tree
9	Annona senegalensis	African custard-apple	Annonaceae	Shrub
10	*Anogiessus leiocarpus*	African Birch	Combretaceae	Tree
11	Asparagus africana	Asparagus	Asparagaceae	Tree
12	Aspilia africana	Haemorrhage plant	Asteraceae	Tree
13	*Azadirachta indica*	Neem tree	Meliaceae	Tree
14	Balanites aegyptiaca	*Desert date*	Zygophyllaceae	Tree
15	*Borassus aethiophum*	Fan palm	Arecaceae	Tree
16	*Cassia sieberiana*	drumstick tree	*Fabaceae*	Shrub
17	*Casuarina equisetifolia*	Australian pine tree	Casuarinaceae	Tree
18	Citrus aurantium	Bitter orange	Rutaceae	Tree
19	*Combretum hereroense*	Russet bushwillow	Combretaceae	Shrub
20	*Combretum lamprocarpum*	bushwillows	Combretaceae	Shrub
21	*Commiphora africana*	African myrrh	Burseraceae	Tree
22	Cordia Africana	Sudan Teak	Boraginaceae	Tree
23	Crateva adansonia	sacred barna	Capparaceae	Tree
24	*Dalbergia sissoo*	North Indian rosewood	*Fabaceae*	Tree
25	Daniellia oliveri	African copaiba balsam tree	Fabaceae	Tree
26	*Delonix regia*	royal poinciana	Fabaceae	Tree
27	Detarium microcarpum	Tallow tree	Fabaceae	Tree
28	Diospyrus mespiliformis	African ebony	Ebenaceae	Tree
29	Entada africana	Callingcard Vines	*Fabaceae*	Tree
30	Eucalyptus camadulenses	African red gum	Malvaceae	Tree
31	Euphorbia Kamarunica	spurge tree	Euphorbiaceae	Shrub
32	Euphorbia poisonii	Candle Plant	Euphorbiaceae	Shrub
33	*Fadherbia albida*	apple-ring acacia	*Fabaceae*	Tree
34	*Feretia apodanthera*	Red-leaved medlar	Rubiaceae	Shrub
35	*Ficus iteophylla*	Fig tree	Moraceae	Tree
36	Ficus polita	Heart-leaved Fig	Moraceae	Tree
37	Ficus sycomorus	fig-mulberry	Moraceae	Tree
38	*Ficus thonningii*	Fig tree	Moraceae	Tree

39	Gardenia erubescens	sububga	Rubiaceae	Shrub
40	*Gmelina arborea*	beechwood	Lamiaceae	Tree
41	Guiera senegalensis	Moshi medicine	Combretaceae	Shrub
42	Hyphaene thebaica	Doum palm	Arecaceae	Tree
43	Hyptis suaveolense Poit	Bush tea	Lamiaceae	Herb
44	Indigofera tictora	true indigo	*Fabaceae*	Shrub
45	Isoberlinia doka	doka savanna	*Fabaceae*	Tree
46	Khaya senegalenses	Mahogany	Meliaceae	Tree
47	Lannea microcarpa	Tree grapes	Anacadiaceae	Tree
48	*Leptadenia hastata*	Leptadenia	Asclepiadaceae	Herb
49	*Lonchocarpus cyanescens*	indigo vine	*Fabaceae*	Shrub
50	Maerua angolensis	Bead-bean	Capparaceae	Tree
51	Maerua crassifolia	Meru	Capparaceae	Tree
52	*Mangifera indica*	Mango tree	Anacardiaceae	Tree
53	Mimosa pigra	giant sensitive tree	*Fabaceae*	Shrub
54	Mitragyna inermis	*Willd Oktze*	Rubiaceae	Shrub
55	*Moringa oleifera*	Drum stick tree	Moringaceae	Tree
56	Pakia biglobosa	Locust bean tree	*Fabaceae*	Tree
57	*Perguleria tomentosa*	Pergularia	Apocynaceae	Herb
58	Pericopsis laxiflora	African teak	*Fabaceae*	Shrub
59	*Phoenix dactylifera*	date palm	Arecaceae	Tree
60	*Piliostigma reticulatum*	camel`s foot tree	*Fabaceae*	Shrub
61	*Polyalthia longifolia*	Indian mast tree	Annonaceae	Tree
62	Pilostigma thonningii	Monkey bread tree	*Fabaceae*	tree
63	Prosopis africana	Iron tree	*Fabaceae*	Tree
64	Pterocarpus erinaceus	barwood	*Fabaceae*	Tree
65	*Rogeria adenophylla*	Desert Floxglove	Pedaliaceae	Herb
66	*Roystonea oleracea*	Caribbean royal palm	Arecaceae	Tree
67	Salix babylonica	Weeping willows	Salicaceae	Tree
68	Sclerocarya birrea	Marula	Anacardiaceae	Tree
69	*Securinega virosa*	Snowberry tree	Phyllanthaceae	Shrub
70	Senegalia polyacantha	White Thorn	*Fabaceae*	Tree
71	*Senna siamea*	cassia tree	*Fabaceae*	tree
72	Sesbania dalzielli	Riverhemp	*Fabaceae*	Herb
73	Sesbania puniceae	rattlebox	*Fabaceae*	Shrub
74	*Stereospermum kunthianum*	pink jacaranda	Bignoniaceae	Shrub
75	Strychnos spinosa	Natal orange	Loganiaceae	Tree
76	Syzygium guineinse	Water berry	Myrtaceae	Shrub
77	Tamarindus indica	Tamarind tree	*Fabaceae*	Tree
78	Terminalia avicennoioides	Terminalia	Combretaceae	Tree
79	*Terminalia glaucescens*	Terminalia L.	Combretaceae	Tree

80	Vitellaria paradoxa	*shea* tree	Sapotaceae	Tree
81	Vitex doniana	Black Plum	Lamiaceae	Tree
82	*Waltheria indica*	sleepy morning	Malvaceae	Shrub
83	Ximenia americana	*tallow wood*	Olacaceae	Tree
84	Ziziphus abyssinica	Large jujube	Rhamnaceae	Shrub
85	*Ziziphus spina-christi*	*Christ's thorn*	Rhamnaceae	Shrub

Table 4: Lists of Sampled States/ Coordinates, LGAs and Annual Income Realized by Respondents from the Utilization of Forest Resources in the Study Area

S/N	States	LGAs	Cordinates	
1	Adamawa			
		Mubi		246,000 - 350,ooo
		Numan		233,000 - 361,000
2	Bauchi		10°30′N 10°00′E	
		Alkaleri		382,000 - 497,000
		Ganjuwa		385,000 - 504,000
3	Borno		11°30′N 13°00′E	
		Biu		148,000 - 215,000
		Gwoza		133,000 - 205,000
4	Gombe		10°15′N 11°10′E	
		Balanga		201,000 - 343,000
		Nafada		199,000 - 322,000
5	Jigawa		12°00′N 9°45′E	
		Birniwa		121,000 - 263,000
		Gwaram		126,000 - 255,000
6	Kaduna		10°20′N 7°45′E	
		Kagarko		309,000 - 472,000
		Kubau		313,000 - 479,000
7	Kano		11°30′N 8°30′E	
		Bichi		202,000 - 274,000
		Dambatta		200,000 - 271,000
8	Katsina		12°15′N 7°30′E	
		Kankara		251,000 - 326,000
		Safana		289,000 - 353,000
9	Kebbi		11°30′N 4°00′E	
		Argungun		103,000 - 166,000
		Bunza		100,000 - 147,000
10	Sokoto		13°05′N 05°15′E	
		Dange Shuni		101,000 - 130,000
		Goronyo		98,000 -122,000
11	Yobe		12°00′N 11°30′E	
		Bursari		111,000 - 132,000
		Potiskum		106,000 - 133,000
12	Zamfara		12°10′N 6°15′E	
		Shinkafi		274,000 - 399,000
		Zurmi		281,000 - 406,000

Conclusion

From the above findings, forests and tree based resources are an embodiment of most of the main ways through which rural household livelihood of developing countries can be achieved. The results of this study reveals that the majority of rural households made their livelihood from forest resources.Looking at the roles played by forest and its components in human livelihood, the intervention of the foresters, wildlife scientist, agriculturists, and government at all level, NGO, and individuals' is very necessary in ensuring the sustainable management of forests and its resources.

References

Abaje I. B, Ati O. F & Iguisi E.O. (2011): Drought in the North-Eastern part of Nigeria and the risks on human health, in E.O. Iguisi, O. A. Ati, R.O. Yusuf and A.E. Ubogu (eds) *NMets Zaria 2011 Proceedings of the International Conference of the Nigerian Meteorological Society,* 527-538.

Adebisi; L. A. and Kareem, A. A. (2011). Marketing and utilization of Zingiber Officinale in Ibadan North and South East Local Government Areas, Oyo State. In: Labode Popoola,

Adedayo, A. G., Oyun, M. B., Kadeba, O. (2010): Access of Rural Women to Forest Resources and its Impact onRuralHousehold Welfare in North Central Nigeria: Forest Policy and EconomicsVol. 12, Issue 6. DOI: 10.1016/j.forpol.2010.04.001 Pages 439-450.

Adedire, M. O. (2012): Forestry for the Future Sustaining Social and the Environment. Un-published paper presented in Year 2012 Alumni Lecture Organized by Tree Club, Department of Forestry Resources Management, and University of Ibadan pp14.

Adekunle, V. A. J., Olagoge, A. O. and Olatilewa T. N. (2010). The Socio – economic impacts of strict Nature Reserve on Rural Livelihood in Ondo State, Nigeria. Proceedings of the 33rd Annual Conference of the FAN held in Benin City, Edo State, Nigeria. Pp 270 – 278.

Agarwal, B. (2001): Participatory Exclusions, Community Forestry, and Gender: An Analysis for South Asia and a Conceptual Framework. World Development 29(10): 1623–1648.

Alao J.S. and Shuaibu R.B. (2011): Agroforestry Practices and Preferential Agroforestry Trees among Farmers in Lafia Local Government Area, Nasarawa State, Nigeria. Waste Management and Bio-resource Technology Journal (1) p12-20

Desankar, P., and C. magadza, (2001): Climate Change 2001: Impacts, Adaptation and Vulnerability (IPCC), Cambridge University Press. Contribution of Working Group II.Pp:494-499, 517-524.

FAO(2010). Guidelines on sustainable forest management in drylands of Sub-Saharan Africa. Arid Zone Forests and Forestry Working Paper No. 1,Rome.

Katere, Y., Minag, P., Vanhanen, H. (2009). making sub-saharah African forest work for people and nature. Policy approaches in a changing global environment. Nairobi, Kenya, World Agroforestry Centre. Kaur, R. (1991): Women in Forestry in India. Washington, D.C: World Bank.

Mann, Prem S. (1995): Introductory Statistics (2nd ed). Wiley. ISBN 0-47131009-3

Nigeria (1981): Technical Report Submitted at the United Nation Conference on New and Renewable Source of Energy, Nairobi, Kenya. Pp 10-12

Olaniran O. J. (1987): A Study of the Seasonal Variations of Rain-Days of Rainfall of Different Categories in Nigeria in Relation to the Miller Station Types for Tropical Continents, *Theoretical. Applied Climatology,* 38, 198-209

Onyekuru, A. N. & Marchant, R. (2014). Climate change impact and adaptation pathways for forest dependent livelihood systems in Nigeria. African Journal of Agricultural Research, 9(24), 1819-1832.

Shuaibu, R. B. (2015): Women's Involvement in Forestry Practices as Livelihood Options in Igalamela /Odolu Local Government Area, Kogi State, Nigeria. *Journal of Research in Forestry, Wildlife & Environment,* Volume 7, No. 1. Pp 13-22

Shuaibu R. B. and J. S. Alao (2013): Centrality of Forestry Education in Environmental Sustainability. In the Proceedings of the 36th Annual Conference of Forestry Association of Nigeria held in Uyo, Akwa Ibom State, Nigeria. 4th – 9th Nov., 2013. Eds: L. Popoola, O. Y. Ogunsanwo, V. A. J. Adekunle, I. O. Azeez, and N. O. Adewole pp262 – 267.

Unongo E. A.; Yanjo E.T.; and Bogbenda, A. (2019): Analysis of Effects of Forest Resources Exploitation and Their Utilization on theSocio-Economic Well-Being of Rural Households in Benue State, Nigeria. IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS). Volume 12, Issue 6Ser. I, Pp 62-68. e-ISSN: 2319-2380, p-ISSN: 2319-2372.