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Assessment of the Prospects of Community-Based Forest Management in Ondo State, Nigeria

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ABSTRACT

Deforestation has been the major issue in the Nigerian forest sector, however, Government's sole management of forest reserves has not helped in solving the problems of deforestation and forest degradation. There is therefore need, for the government and forest community dwellers (who depend directly or indirectly on forest resources for their daily subsistence) to work hand-in-hand to ensure sustainable management of forest resources in Nigeria. This study assessed the prospects of Community Based Forest Management System (CBFMS) in Ondo State, Nigeria. Out of the 12 forest reserves in the high forests of Ondo State, two were randomly selected. The selected Forest Reserves were: Idanre and Akure Forest Reserves from two different Local Government Areas. Two communities closest to each of these Forest reserves were randomly selected and 30 copies of semi-structured questionnaire were distributed to 30 respondents in each community, making a total of 120 respondents. The data collected was coded and analyzed using descriptive statistics. The result shows that majority of the respondents are poor farmers earning between ₦10,000 - ₦30,000 (30-90 USD) per month. The result showed that 98% of the respondents were ignorant of Community Based Forest Management Systems. Forests in Nigeria are owned and controlled by the government, thereby restricting people from accessing its resources. Despite the restriction, 30% agreed that the forest was greatly encroached into by illegal fellers and non- indigenes. With the decline in socio-economic development in these communities, the people showed 100% willingness in participating in Community Based Forest Management System (CBFMS). To show their interest, 44% of the respondents added that they are willing to play the role of securing the forest and also work as laborers in the forest. In addition, 32.5% of the respondents desired that the proceeds from the forest be shared equally between the government and the community. Since majority of them are farmers (68.3%), they expected farm lands and financial support to be given to them in return for their loyalty and commitment to the system.

Keywords: Forest Management, Communities, Poverty, Rainforest, Ecosystem.

Introduction

Over 2.4 billion people's livelihood depend on the forests directly or indirectly for generation of income, obtaining a wide range of economic, cultural, social, spiritual and environmental benefits This is the key driver for deforestation and degradation of the forests (FAO, 2011). The increasing global population will have an impact on the demand for land and wood to bring about an increased rate of urbanization in most developing countries (FAO, 2011). Nigerian forests contain over 560 tree species which can grow to about 12m in height and 60cm in girth when matured (Borokini *et al*, 2012). Due to the large number of species identified in Nigerian forest ecosystems, the country ranks 11th in biodiversity in Africa (Myers *et al*, 2000). The tropical Rainforest ecosystem of Nigeria is by far the most diverse of all forest ecosystems in the country (Borokini *et al*, 2012). However, as a result of

the massive logging, poaching, fuel wood harvesting and agricultural land expansion, Nigeria is losing most of her natural forest and wildlife (Borokini *et al.*, 2010). Nigeria was known to have the highest rate of deforestation of primary forests in Africa, 55.7% of her natural forest was lost between 2000 and 2005 (FAO, 2006).

Ondo State has very rich vegetation ranging from the mangrove and fresh-water swamps through the high forest to the savannah (Onyekwelu, 2012). The diversity of species, notable goods (timber, herbs, fuel wood etc.) and other ecosystem services rendered by the high forests in the state have led to encroachment into the forest, resulting in deforestation and degradation of the forest (Onyekwelu *et al*, 2005). Therefore, there is need for intervention by both Governmental and Non-governmental bodies to sustain the forest and also to alleviate poverty among the rural dwellers that depend on the forest. In Nigeria, forests are owned and managed by the government (Adekunle, 2007). The management of the forest solely by government forestry departments has failed to curb the drivers of deforestation and forest degradation (Onyekwelu, 2012). This calls for Community Based Forest Management System, which has been described as a great tool to reducing deforestation, achieving sustainable forest management and poverty alleviation (Lasco and Pulhin, 2006). Due to their day-to-day interaction with the forest, forest community dwellers are presumed to have a good knowledge and understanding of the resources, terrain, opportunities and constraints in the forests (Ascher, 1995). As such, the forest community dwellers are in a better position to see and respond quickly to issues like wildlife poaching, fire outbreaks, deforestation etc. Therefore, Community Based Forest Management uses the local resources such as indigenous knowledge and institutions in promoting sustainable forest management.

Bhaskar and Skutsch (2010) reported that deforestation rates were considerably reduced in the Nepal Himalaya since the commencement of CBFMS in the 1970s, while Acharya and Sharma (2004) reported high reduction in deforestation rates due to the implementation of CBFMS. Onyekwelu, (2012) reported the effectiveness of CBFMS in Cross River State is drastically reducing deforestation, leading to the recovery of the forests.

This study therefore assessed the prospects of Community-Based Forest Management Systems in Ondo State, Nigeria in order to know the willingness and expectations of the communities in participating in Community-Based Forest Management System.

Materials and Methods

Description of the Study Area

This study was carried out in Ondo State 7 °10' North, 5° 4' East, Nigeria. Ondo State is situated entirely in the tropics. The state has 18 Local Government Areas (LGAs) with the capital at Akure. The state, which has a total land area of about 14,798.8 km^2, is located in tropical rainforest zone of South-western Nigeria. Ondo state has three vegetation types, which are: mangrove forest/freshwater swamp, tropical rainforest and derived savannah. The vegetation types have varieties of important tree species like: *Milicia excelsa, Antiaris africana, Terminalia superba, Lophira procera,* etc in tropical rainforest; *Blighia sapida, Parkia biglobosa,* etc in derived savanna. The major agricultural tree crops include cocoa, kola, coffee, rubber, oil palms and citrus, cocoa being the most dominant.

Selection of the Study Area

There are 17 forest reserves in Ondo State (Table 1), 12 of which are located in the high forest. Out of the 12 forest reserves in the high forests in Ondo State, two were randomly selected. The selected Forest Reserves were: Idanre and Akure Forest Reserves. Idanre Forest Reserve is the second largest Forest reserve in Ondo state, covering a total land area of 540.53km^2. It lies between the latitude 6°51'28" North and longitude 5°6'20"East. It is bounded by Ore – Benin express road in the south, river Ofusu to the East and river Owena to the West. Akure Forest Reserve is located between latitude 7°17'40"North and longitude 5^{0}2'4"East. The reserve covers an area of 69.93km^2.

Method of Data Collection

The data for this study were collected using semi-structured questionnaire. The response format was a close-ended question so as to aid statistical analyses. The semi-structured questionnaire was used to obtain information from the respondents on their willingness or otherwise to practice community based forest management. Two forest reserves in Ondo state were selected, while two communities were systematically selected from each forest reserve based on their nearness (within 1-20 kilometers) to the forest reserve. 120 copies of the questionnaire were administered, 60 for Akure Forest Reserve and 60 for Idanre Forest Reserve, i.e. 30 copies of the questionnaire were administered in each community. The communities selected were; Janiyi community and Commander Community for Idanre forest reserve, Obada community and Kolawole community for Akure forest reserve. The households to which the questionnaires were administered were systematically selected by selecting one household and every other household. In addition, a face to face interview was conducted with the staff of the Forestry Department in Ondo State Ministry of Agriculture to ascertain their preparedness and willingness to allow the participation of the communities in CBFM. Where available, existing policies and structures for CBFM was obtained.

Table 1: Forest reserves in Ondo State

S/N	Forest Reserves	High Forest Sq/Km	Savannah Forest Sq/Km	Mangrove Sq/Km	Total Area Sq/Km	Area Encroached Sq/Km	%
1	Akure	69.93	-	-	69.93	14.98	21.37
2	Akure-Ofusu	401.45	-	-	401.45	99.88	24.87
3	Akure-Ofusu Ext	20.89	-	-	20.89	20.89	100
4	Ala	199.43	-	-	199.43	88.27	44.26
5	Eba-Island	-	-	18.13	18.13	-	-
6	Idanre	540.53	-	-	540.53	206.90	38.28
8	Ifon Game Reserve	150.22	132.09	-	282.31	160.31	56.79
9	Ipele-Idoani	18.13	23.31	-	41.44	38.32	92.47
10	Irele	36.00	-	-	36.00	36.00	100

11	Ojigbobini	-	-	28.59	28.59	-	-
12	Okeluse	106.19	5.18	-	111.37	59.06	53.03
13	Oluwa series	878.16	-	-	878.16	462.31	52.65
14	Onisere	98.42	-	-	98.42	73.82	75.01
15	Out	84.90	-	-	84.90	77.21	90.94
16	Owo	225.33	16.83	-	242.16	50.03	20.66
17	Oyinmo	5.18	17.27	-	22.45	4.30	19.15
	TOTAL	**2834.76**	**194.68**	**46.72**	**2986.16**	**1392.28**	**46.62**

Adapted from the book: Facts and Figures on Ondo state, published by the Department of Research and Statistics, Ministry of Economic Planning and Budget, Akure, Ondo State

Method of Data Analysis

After retrieval, the questionnaires were coded to obtain quantitative values for statistical analysis. Every option under each variable (i.e. question) on the questionnaire was assigned a value. Data analysis was undertaken using descriptive statistics such as frequencies, percentages, tables and charts.

Results and Discussion

Table 2 shows that amidst other occupations, a large number of the respondents (82 respondents) in all the communities are farmers having the highest percentages while a few of them are into one form of business or the other. In Janiyi, 6.7% are plank sellers while 3.3% are timber contractor. Two respondents indicated themselves as hunters and other respondents indicated that they were into other forms of employment like; Mechanic, Apprentice, Clergy and private sector employment.

Table 2: Distribution of Respondent's occupation

Occupation	Communities							
	Kolawole		Obada		Commander		Janiyi	
	Freq.	Percentage	Freq.	Percentage	Freq.	Percentage	Freq	Percentage
Farming	25	70.0	18	60.0	20	66.7	19	63.3
Business	5	16.7	8	26.7	5	16.7	6	20.0
Private employment	2	6.7	1	3.3	2	6.7	1	3.3
Mechanic	2	6.7	1	3.3				
Apprentice			1	3.3				
Student			1	3.3	1	3.3		
Clergy					1	3.3	1	3.3
Plank seller							2	6.7
Timber contractor							1	3.3
Hunter					1	3.3	1	3.3

Respondent's Income

Table 3 shows the income of the respondents, in Kolawole, Obada, Commander and Janiyi 50.0%, 46.7%, 23.3% and 40.0% of the respondents respectively earn between ₦10,000 and ₦30,000 in a month, while a good number of them earn below ₦10,000 monthly, a few of them that own Cocoa plantation lease out a portion of their farmlands and earn above ₦50,000 monthly.

Table 3: Distribution of respondent's income

Income (monthly)	Communities							
	Kolawole		Obada		Commander		Janiyi	
	Freq.	Percentage	Freq.	Percentage	Freq.	Percentage	Freq	Percentage
Less than ₦10,000	5	16.7	8	26.7	8	26.7	12	40.0
₦10,000-₦30,000	15	50.0	14	46.7	7	23.3	12	40.0
₦31,000-₦50,000	7	23.3	3	10.0	12	40.0	6	20.0
Above ₦50,000	3	10.0	3	10.0	3	10.0		

Activities carried out in the forest

Table 4 indicates the idea of respondents on activities carried out in the forest in the various communities. The results reveal that 86.7%, 96.7%, 76.7% and 76.7% of the respondents in Kolawole, Obada, Commander and Janiyi communities, respectively said that farming is the major activity carried out in the forest, while 23.3% in both Commander and Janiyi opined that lumbering is the major activity. 6.7% and 3.3% in Kolawole and Obada reported that illegal felling is majorly carried out. 56.7% respondents described the activities carried out in the forest (Farming, Lumbering and Illegal felling) to be of no effect in both Kolawole and Obada, while 60.0% and 76.7% described these activities to be of no effect in Commander and Janiyi respectively, only a few described these activities to be of negative effect, 16.7% respondents described these activities to be of negative effect in Obada and Janiyi and those are the highest.

Table 4: Respondent's idea of activities carried out in the forest

Forest activities	Communities							
	Kolawole		Obada		Commander		Janiyi	
	Freq.	Percentage	Freq.	Percentage	Freq.	Percentage	Freq	Percentage
Farming	26	86.7	29	96.7	23	76.7	23	76.7
Lumbering	2	6.7			7	23.3	7	23.3
Illegal felling	2	6.7	1	3.3				

Illegal felling in the forest

Results indicated that 23.3%, 30.0%, 3.3%, 26.7% of the respondents claim that illegal felling do occur in the forest in Kolawole, Obada, Commander and Janiyi respectively as shown in Table 5. 53.3% of the respondents said illegal felling does not occur in the forest while a higher percentage of the respondents said they do not know if illegal felling occurs in their forests. Figure 1 shows the suggestions given by the people towards curbing illegal felling in the forest, 6.7%, 10.0%, 3.3% and 6.7% in Kolawole, Obada, Commander and Janiyi respectively of the respondents suggested intensive supervision by government while 6.7% and 3.3% in Kolawole and Obada spoke about the involvement of the forest guards in illegal felling by granting access to illegal loggers, while 10.0% suggested that another way to curb illegal felling is through government supervision with community support in Janiyi.

Table 5: Respondent's knowledge about illegal felling in the selected forest

Illegal Felling	Communities							
	Kolawole		Obada		Commander		Janiyi	
	Freq.	Percentage	Freq.	Percentage	Freq.	Percentage	Freq	Percentage
Yes	7	23.3	9	30.0	1	3.3	8	26.7
No	9	30.0	11	36.7	16	53.3	8	26.7
I don't know	14	46.7	10	33.3	13	43.3	14	46.7

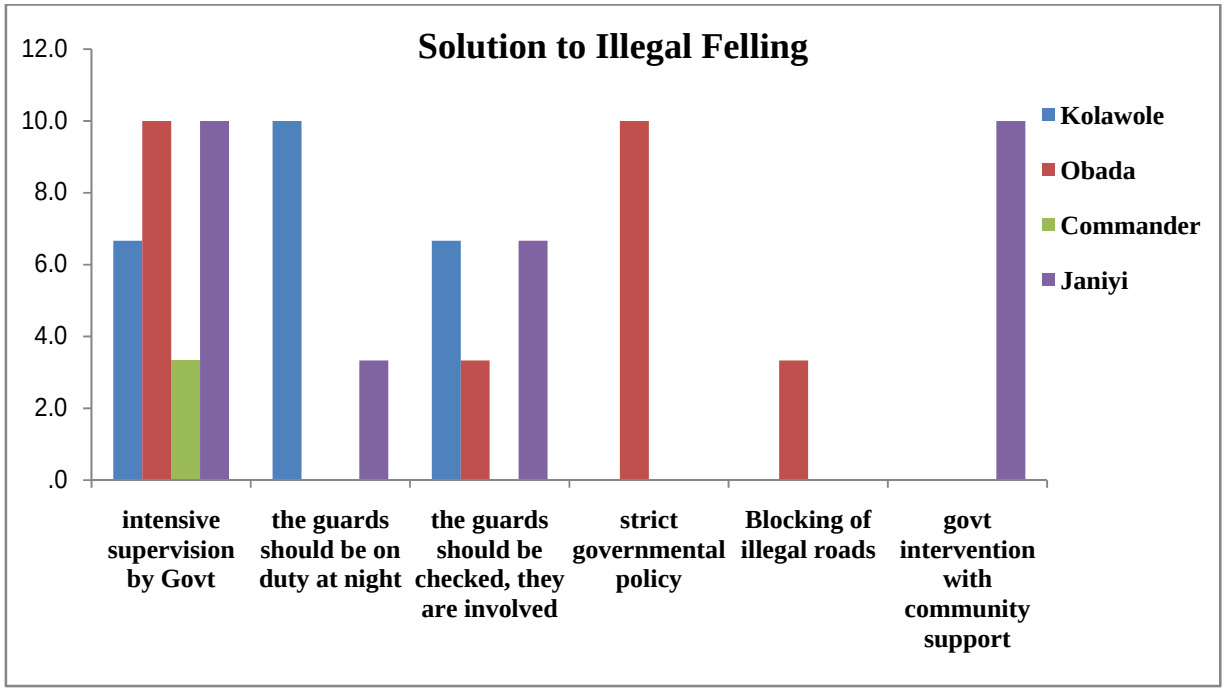

Figure 1: Solution towards curbing illegal felling in the forest

Encroachment into the forest

A higher percentage of the respondents opined that there is encroachment into the forest (Table 6). Table 7 shows the people's knowledge of those encroaching into the forest. About 6.7%, 13.3%, 3.3% and 6.7% of the respondents in Kolawole, Obada, Commander and Janiyi, respectively indicated that the encroachers are community members. 26.7%, 10.0%, 10.0%, 10.0% in Kolawole, Obada, Commander and Janiyi respectively pointed out that the encroachers are non-residents while, 6.7%, 13.3%, 10.0% and 16.7% of the respondents in Kolawole, Obada, Commander and Janiyi respectively revealed that forest loggers are responsible for the encroachments. However, a large number of the respondents in all the communities claimed to not know who the encroachers are out of the fear of the forest officials involved.

Table 6: Knowledge of respondents about forest encroachment

Forest encroachment	Communities							
	Kolawole		Obada		Commander		Janiyi	
	Freq.	Percentage	Freq.	Percentage	Freq.	Percentage	Freq	Percentage
Yes	14	46.7	14	46.7	9	30.0	13	43.3
No	16	53.3	16	53.3	21	70.0	17	56.7

Table 7: Categories of people responsible for encroachment in the various communities

Illegal felling	Communities							
	Kolawole		Obada		Commander		Janiyi	
	Freq.	Percentage	Freq.	Percentage	Freq.	Percentage	Freq	Percentage
Community members	2	6.7	4	13.3	1	3.3	2	6.7
Non-residents	8	26.7	3	10.0	3	10.0	3	10.0
Loggers	2	6.7	4	13.3	3	10.0	5	16.7
I don't know	17	56.7	19	63.3	23	76.7	20	66.7

Fore knowledge of Community Based Forest Management System (CBFMS)

According to table 8, only 6.7% of respondents from Janiyi claimed to have heard about Community Based Forest Management System, while the rest claimed they do not know about it. The 6.7% of the respondents with knowledge of CBFMS noted that this happened a long time ago and that at that time it was jointly managed by the community and forestry officials. However, they could not recollect the year the CBFMS project started or ended.

Table 8: Community's knowledge of CBFMS

Community forest	Communities							
	Kolawole		Obada		Commander		Janiyi	
	Freq.	Percentage	Freq.	Percentage	Freq.	Percentage	Freq	Percentage
Yes	-	-	-	-	-	-	2	6.7
No	30	100	30	100	30	100	28	

Willingness to participate in CBFMS

Table 9 shows that 100% of the respondents in Kolawole, Obada and Commander were willing to participate in CBFMS, while in Janiyi community 93.3% were willing participate in the scheme. Table 10 shows the profit sharing ratio the people desire as reward for participating in CBFMS. Majority desire the profit be shared equally (i.e. 50:50%). Furthermore, some respondents want the profit to be shared in the ratio of 60:40, meaning that government takes the bigger share. While, the remaining respondents selected the option "others", i.e. they do not have an opinion.

Table 9: Respondent's willingness to participate in CBFMS

willingness To participate	Communities							
	Kolawole		Obada		Commander		Janiyi	
	Freq.	Percentage	Freq.	Percentage	Freq.	Percentage	Freq	Percentage
Yes	30	100	30	100	30	100	28	93.3
No	-	-	-	-	-	-	2	6.7

Table 10: Distribution of CBFMS proceed sharing between Government and community

Community forest	Communities							
	Kolawole		Obada		Commander		Janiyi	
	Freq.	Percentage	Freq.	Percentage	Freq.	Percentage	Freq	Percentage
80-20	-	-	2	6.7	1	3.3		
60-40	12	40.0	7	23.3	4	13.3	7	23.3
50-50	9	30.0	11	36.7	8	26.7	11	36.7
70-30	2	6.7	1	3.3	1	3.3	2	6.7
others	7	23.3	9	30.0	16	53.3	8	33.3

Roles to be performed by communities in CBFM

The possible roles that can be performed by communities in CBFMS are: forest security, financial contributions, labor, managerial expertise, materials and seeds/seedlings production, and so on. More than one option was selected by respondents with majority (13.3%, 26.7%, 36.7% and 43.3% of the respondents in Kolawole, Obada, Commander and Janiyi, respectively) offering to contribute to forest security and labor.

Table 11: Preferred roles to be performed by community inhabitants in CBFM

Community role	Communities							
	Kolawole		Obada		Commander		Janiyi	
	Freq.	Percentage	Freq.	Percentage	Freq.	Percentage	Freq	Percentage
Forest security	2	6.7	1	3.3	1	3.3	-	-
Financial contribution	1	3.3	3	10.0	-	-	-	-
Labour	1	3.3	1	3.3	2	6.7	1	3.3
Forest security & Labour	4	13.3	8	26.7	11	36.7	13	43.3
Seedlings production/ materials	2	6.7	3	10.0	3	10.0	4	13.3
Managerial expertise	6	20.0	1	3.3	6	20.0	2	6.7
Financial contribution & labour	2	6.7	1	3.3	1	3.3	-	-

Expected benefit for participating in CBFM

Figure 3 reveals that about 30.0%, 30.0%, 40.0% and 40.0% of the respondents in Kolawole, Obada, Commander and Janiyi, respectively desire to be given financial compensation and farmland as a reward for their participation in CBFMS. More than one option was selected by the respondents.

Table 12: Benefits expected in return for participating in CBFMS

Expected benefits	Communities							
	Kolawole		Obada		Commander		Janiyi	
	Freq.	Percentage	Freq.	Percentage	Freq.	Percentage	Freq	Percentage
Financial reward	2	6.7	1	3.3	-	-	2	6.7
Farm land	8	26.7	7	23.3	3	6.7	4	13.3
Financial reward & farmland	9	30.0	9	30.0	12	40.0	12	40.0
Financial reward & farmland & NTFP	5	16.7	4	13.3	1	3.3	3	10.0
Farmland and NTFP	2	6.7	1	3.3	3	10.0	1	3.3
Fuel wood	2	6.7	2	6.7	3	10.0	-	-
Improved standard of living	1	3.3	1	3.3	1	3.3	2	6.7

Discussion

Knowledge of CBFMS

The result shown in Table 8 indicates that only 6.7% of the respondents in Janiyi community claimed to have heard about CBFMS, no respondent in the other communities have heard about it, in fact Only 2 respondents out of the 120 respondents have any idea about the system. This was also corroborated by staff of Ondo State Forestry Department, who stated that though they have come up with a blueprint for CBFMS; Government is yet to approve the project for takeoff in the state, hence the lack of awareness about CBFMS in the communities. However the project "Assessing the contribution of Community Based Natural

Resource Management programme to environmental sustainability in Ondo State, Nigeria" points to the fact that community forestry has been carried out in some parts of the state before now (Adisa, 2013). It is likely that the project was not widespread therefore majority of the forest communities did not know about it.

Community's willingness to participate in CBFMS

The assessment carried out on community's willingness to participate in CBFMS as shown in Table 9, revealed that all the respondents (100%) in Kolawole, Obada and Commander were willing to participate, in Janiyi 93.3% of the respondents were willing to participate in CBFMS. This implies that the communities desire such a system and are willing to show their support and play the necessary roles needed to ensure the success of the programme. Figure 2 shows the roles the people are willing to play in CBFMS, while some community inhabitants desire to play more than one role, the roles selected mostly by the community dwellers are forest security and labour. The results indicated that about 13.3%, 26.7%, 36.7% and 43.3% of the respondents in Kolawole, Obada, Commander and Janiyi respectively, offered to participate in both forest security and labour. About 23.3%, 30.0%, 3.3%, 26.7% of the respondents claim that illegal felling do occur in the forests at Kolawole, Obada, Commander and Janiyi respectively as shown in Table 5, while Table 6 revealed that encroachment into the forest is still prevalent in the investigated communities. The respondents were confident that employing them as forest guards will solve the problems of encroachment and illegal felling. It has been demonstrated that Community-Based Forest Management Systems (CBFMS) emerged in response to the deteriorating conditions of state-controlled forests due to illegal felling, deforestation and encroachment into the forests (Onyekwelu, 2012).Due to their day-to-day interaction with the forests, forest dwellers are presumed to have a good knowledge and understanding of the resources, terrain, opportunities and constraints in the forests (Ascher, 1995). This was affirmed by the result of this study which demonstrates that forest community dwellers were willing to use their peculiar knowledge of the environment to ensure the success of CBFMS. In Yelwa, a community close to Ngel Nyaki Forest Reserve in Taraba State, Nigeria, virtually all the staff members of the Forest Reserve are local people of the community, this makes security of the forest reserve very effective and it also enhances community cooperation with the forest reserve staff (Borokini *et a.l*, 2012). The result of this study indicates the desire of dwellers of forest communities in Ondo state to secure the forest and sustainably manage it. This coupled with their high interest in CBFMS is an indication that the system will succeed when implemented in the state.

Benefits expected from CBFMS by community inhabitants

Table 4 shows the benefit sharing ratios from CBFMS suggested respondents from the various communities, with majority desiring for the benefits to be shared equally between Government and the community. Figure 3 shows the benefits people expect from CBFMS, with 30.0%, 30.0%, 40.0% and 40.0% of the respondents in Kolawole, Obada, Commander and Janiyi desiring to be given financial reward and farmland. This desire is corroborated by the results in Table 2, which reveals that the major occupation of the respondents is farming with little income as well as Table10whichshows that farming is the major activity carried out in and around the forest. Thus, except CBFMS is promoted, the people may encroach more into the forest in

search for more fertile land for farming.FAO (2017) had shown that many of the people in rural communities, like the ones investigated in this study, are rural poor, subsistence producers, family farmers or landless agricultural workers.

One of the motivations for community forestry programs in most tropical countries is to improve the socio-economic conditions and alleviate poverty of the people through the promotion of social justice and equitable access to and sustainable development of forest resources (FAO, 2005; Lasco and Pulhin, 2006).According to Borokini *et al*(2012), agricultural activities meet majority of the needs of local community dwellers, while collection of forest products, timber and Non-Timber Forest Products (NTFPs) forms a great part of the income of at least 20% of rural families. Therefore, with government allowing access and providing land for local farmers though CBFMS, they can be able to meet their own basic needs and also sustain the forest.

Conclusion

Based on the result of this study, 60%-70% of the respondents are farmers with a good number of them earning less than 10,000 naira per month. This strengthened the view that majority of the inhabitants of communities around forests are farmers depending on forest and agricultural resources for livelihood sustenance. The rate of forest encroachment is attributed to lack of local access to forest resources and land, and this is as a result of the centralized form of forest governance practiced in the state. Results show that close to 100% of the respondents know nothing about CBFMS, however, when enlightened about the concept they were all willing to participate. The respondents were also of the view that if this system is adopted, it will help in mitigating forest degradation, promote Sustainable Forest Management, improve livelihoods by reducing rural poverty and bring socioeconomic development in a way that both the community and Government will benefit.

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