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Engagement of forest-dependent communities in the sustainable management of Akure forest reserve

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Abstract

Sustainable forest management is linked to stakeholder involvement, openness, accountability of decision-makers, adherence to the rule of law, predictability, efficient and effective management of natural resources. It is essential in accomplishing the goal of good governance.

This study was conducted to evaluate the involvement of the forest-dependent people in the management of the Akure forest Reserve in Ondo state, Nigeria. Two-hundred structured questionnaires were distributed to respondents in four specifically chosen communities out of the twelve communities bordering the Reserve. A total of fifty structured questionnaires were distributed to respondents in each of the four chosen localities. Data were examined using descriptive statistics and chi-square analysis. The results revealed that the majority of the community's population consists of males (72.5%) and individuals aged 43 and above (38.5%), followed by individuals aged 31-36, accounting for 28.0% of the population. The majority of the residents (40.5%) visit the reserve on a daily basis, while thirty percent (30%) visit weekly to collect firewood and for agricultural production. The level of participation of community dwellers in Forest Management and Conservation is significantly influenced by their age (χ^2= 9.456, df = 6, p = 0.024), marital status (χ^2 = 11.873, df = 2, p = 0.003), and occupation (χ^2= 44.237, df = 4, p = 0.000). The primary endeavours undertaken by the inhabitants of the reserve are agricultural in nature. Age, household size, marital status and monthly income were the primary factors influencing their decision not to participate in forest governance in the Reserve.

Keywords: Akure; Forest Dwellers; Participation; Sustainable Management

1. Introduction

The constructive and rational attitude of individuals towards forests, forestry, and forest industry is contingent upon their comprehension, expertise, and scientific acumen (FAO 1997). Nevertheless, the notable absence of genuine engagement from the residents of forest-dependent communities in regards to forest management is noteworthy. In order to achieve the fundamental objective of enhancing the quality of life for those who rely on forests and promoting the sustainable management of forests, it is crucial to involve the communities that depend on forest resources to a greater extent (Warner, 1997; FORIG, 2011). The objective of promoting and engaging stakeholders in community-dependent forest management relies on providing incentives to residents living in and around forest reserves. However, a significant number of these residents lack the motivation to collaborate with state forestry authorities in effectively enforcing forest regulations within and around the reserves (Jimoh and Adebisi, 2005). A multitude of obstacles are being encountered in the execution of forest policies and laws in Ondo state, with variations observed among different forest reserves. Some of the issues include: insufficient funding, inadequate training, and inadequate logistics (such as

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patrol vehicles and communication gadgets). As at 2007, the extent of intrusion into the Akure forest reserve was calculated to be 21.37%, which is equivalent to approximately 14.94 square kilometres of the reserves total land area (Per. Comm. Adetayo, 2016). Nevertheless, these issues are indicative of inadequate forest reserve management, and it is crucial to identify effective control measures to address these concerns. Forests, as natural resources, are considered as reserves or supplies. The available physical quantity is mostly constant: what is consumed presently will not be accessible in the future. Therefore, they are not capable of being renewed. Extracting forest resources below a specific minimum size will make afforestation programmes ineffective. In order for forests to be effectively maintained, neither the role of an altruist nor that of a free rider will yield significant outcomes. All individuals who utilise forest resources are interconnected groups and are required to adhere to the regulations that regulate forestry practices. Forest resources cannot rely on altruism as a means of sustenance, and the 'tragedy of the commons' is primarily caused by free riding. The establishment of a common property regime between the government and the people is unavoidable. The common property regime ensures the sustainable availability of resources that are collectively relied upon by all individuals. The implementation of either private or state property rights would not guarantee the same outcomes in terms of productivity, sustainability, and equity. Regrettably, Nigeria lacks forest governance and instead only has forest administration that neglects the needs and concerns of the people or users (Olajide 2005). The government's endeavours to safeguard forests are weakened by its failure to fulfil its obligations in other vital aspects of residents' lives. For example, the lack of employment prospects for the country's residents, combined with the forest conservation programme, renders the forest policy illogical and unclear, especially when people are willing to work in any capacity (even through farming) in order to survive but are unable to find jobs (Jimoh and Adebisi, 2005).

Engaging in participatory forestry in the state-owned forest reserves and community forests is extremely important for safeguarding the remaining tropical forests in Ondo state. However, if forest law enforcement is not prioritised, it is highly probable that the current generation will unintentionally deplete the forest resources, greatly disadvantaging future generations. This study evaluated the involvement of forest-dependent communities in the management of Akure forest reserve in Ondo state, Nigeria.

2. Material and method

2.1. Research Field

The research was conducted within the Akure Forest Reserve, located in Ondo State, Nigeria. The reserve spans 69.93 square kilometres and has an estimated land size of 6,993 hectares. The Akure Forest Reserve is situated in the rainforest region at coordinates 7°17′39′′N latitude and 5°02′04′′'E longitude. It is located at an altitude of 229 metres above sea level. The climate in this region is characterised by high humidity and temperatures that range from approximately 20.6°C to 33.5°C. The rainy season spans nine months each year, starting in March and ending in November, while the dry seasons occur in December and January.

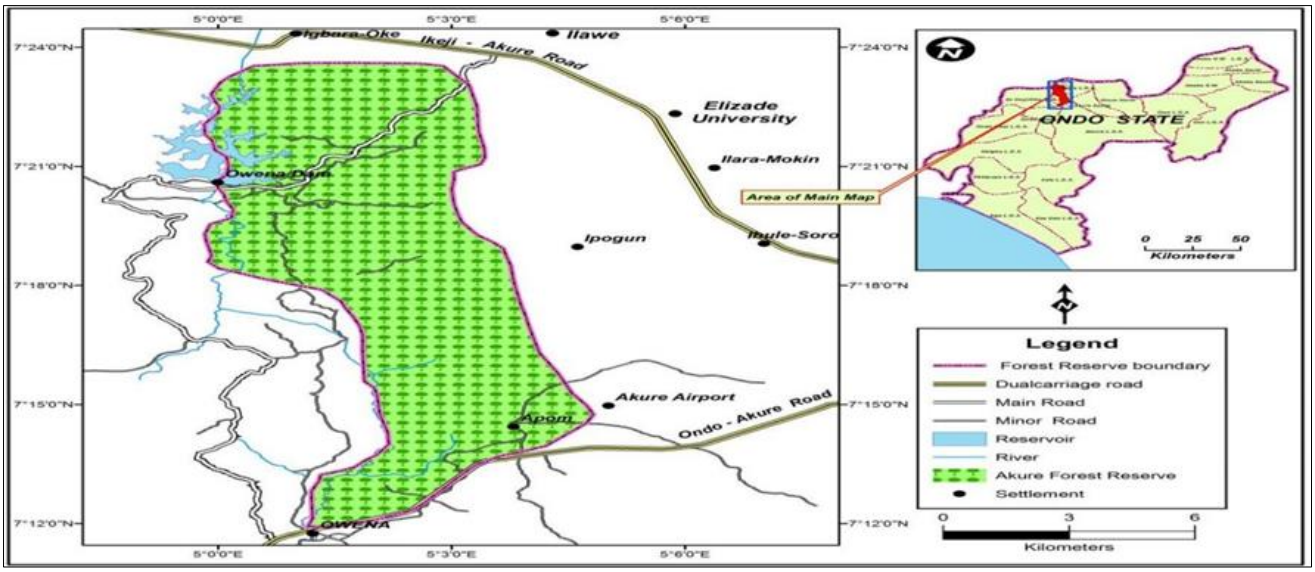

Figure 1 Map showing Akure forest Reserve

2.2. Sampling Procedures

A total of 200 structured questionnaires was administered to villagers living within the reserve. Four communities were purposely selected (Kajola, Sokoto, Elemo and Apommu) of the total twelve communities. Fifty copies of the structured questionnaires were administered to the respondents in each of the four selected communities. The sampling intensity used was is in accordance with the recommendation of Diaw *et al.* (2002).

2.3. Statistical analysis

Data collected were analysed using descriptive statistics and chi-square

3. Results and discussion

3.1. Demographic attributes of Individuals residing in Forest-dependent Communities

The demographic profile of respondents in the chosen communities revealed that individuals residing in the forest-dependent community fall between the age bracket of 25 to 43 years. The village is mostly populated by individuals aged 43 and older, accounting for 38.5% of the population. This is followed by individuals aged 31-36, making up 28.0% of the community. The smallest age group in the community is individuals aged 25-30, comprising just 9.5% of the population (Table 1). Out of the total respondents, 145 (72.5%) are males and 55 (27.5%) are females. Among the respondents, 17 (8.5%) are single, 171 (85.5%) are married, and 12 (6.0%) are widows. Out of the respondents, 22 (11.0%) had no formal education, 117 (58.5%) had primary education, 44 (22.0%) had secondary school, and only 17 (8.5%) had university education. In terms of household size, 10% of the respondents have a household size of 1-3 family members, 36.0% have a household size of 4-6 family members, 36.5% have a household size of 7-9 members, and 17.5% have a household size of 10 members or more. Out of the total respondents, 82 individuals (41%) are engaged in farming, 29 individuals (14.0%) are involved in trading, another 29 individuals (14.0%) gather Non-Timber Forest Products (NTFPs), and 30 individuals (15%) are both timber contractors and hunters. Out of the respondents, 43.5% derive their money from farming, 45.5% are involved in trading, and 11.0% rely on hunting as their source of income. Out of the respondents, 106 (53%) have a monthly income of less than N50,000.00. Seventy (35%) have an income between ₦50,000.00 and ₦100,000.00, while twenty-four (12%) have an income between ₦100,000.00 and ₦150,000.00 (Table 1).

According to the survey, 38.5% of the individuals in the communities were in the highest age group (43 years and above), while the lowest percentage, 9.5%, was found in the age range of 25-30 years. The community is predominantly male, with approximately 27.5% being female. In terms of marital status, the majority are married, while a small percentage (8.5%) are single and (6%) are widowed. A small proportion (8.5%) of the community residents had obtained tertiary education, while the majority had only completed primary education. The households with the biggest number of family members (7-9) were most common, while those with the fewest members (1-3) were least common. The results also indicated that the majority of the community residents are primarily engaged in farming, timber contracting, and hunting. A small but equal share of the residents are involved in trading and gathering NTFPS. The highest monthly income range (₦100,000 - ₦150,000) was reported by residents of twenty-four localities, while the majority of respondents (53%) had the lowest monthly income (< ₦50,000).

Table 1 Demographic characteristics of forest-dependent communities dwellers

Variable	Frequency	Percentage
Age caterory		
25-30	19	9.5
31-36	48	24.0
37-42	56	28.0
43 and above	77	38.0
Gender		
Male	145	72.5
Female	55	27.5

Marital status		
Single	17	8.5
Married	171	85.5
Widow	12	6.0
Educational Background		
None	22	11.0
Primary Education	117	58.5
Secondary Education	44	22
Tertiary Education	17	8.5
Household Size		
1-3	20	10.0
4-6	72	36.0
7-9	73	36.5
10 and above	35	17.5
Occupation		
Farmers	82	41.0
Traders	29	14.5
NTFPs gatherer	29	14.5
Timber contractor	30	15.0
Hunters	30	15.0
Source of income		
Farming	87	45.5
Trading	91	45.5
Hunting	22	11.0
Income(monthly in ₦		
≤ 50,000	106	53
50,000 - 100,000	91	45.5
100,000 - 150,000	22	11
Total	200	100

3.2. Policy Regarding the Sustainable Management of Forests

Out of the respondents, 81 (40.5%) visit the reserve daily, 60 (30%) visit weekly, 55 (27.5%) visit monthly, 1 (1%) visit quarterly, and 1 (1%) visit yearly (Figure 2). The findings from Figure 3 showed that 38 respondents (19%) visited the forest reserve specifically to collect non-timber forest products (NTFPS). Additionally, 19 respondents (9.5%) obtained firewood, 32 (16%) obtained bush meat, and 111 (55.5%) monitored their farm and farm produce in the reserve. Residents of the settlements frequently visit the reserve on a daily basis. The primary reasons for their visits are to gather firewood, hunt for wild game, and monitor their farms and agricultural products. Prior to entering the reserve, they typically pay fees.

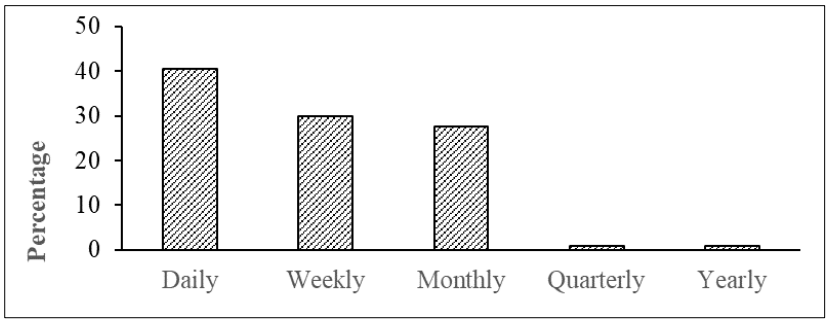

Figure 2 Rate of visitation to the Forest Reserve

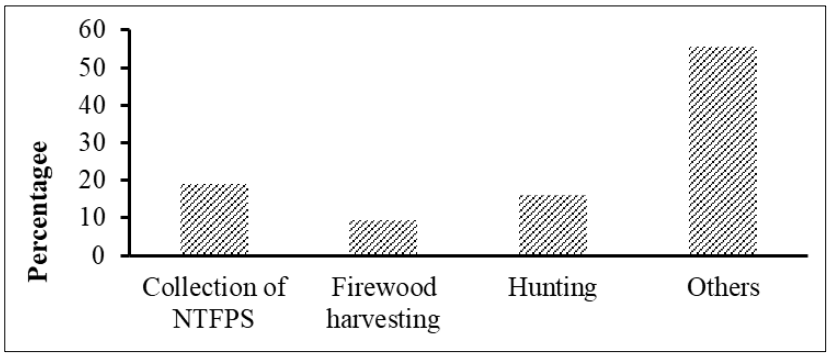

Figure 3 Purpose of visiting the forest reserve

3.3. Engagement of Forest-Dependent Communities in the Management of Forest Resources

The findings indicated that 90.5% of the respondents confirmed the existence of a community forestry association, totalling one hundred and eighty-one individuals. A majority of the respondents, specifically one hundred and nineteen individuals (54.5%), verified their membership in the community forestry association. The survey results showed that 7.5% of the respondents obtain firewood from the forest, 50% obtain food through cultivation, 0.5% obtain poles, 12.5% obtain timber, and 29.5% obtain non-timber forest products (NTFPS). According to the findings, 45% of the respondents confirmed their involvement in the management of the reserve, as shown in Table 2. The findings of community participation in forest management indicate that forest-dependent people possess a comprehensive understanding of forest resource utilisation, ownership, regulations, and access to forest property. This aligns with Udo's (2005) assertion that participation in exercise entails a dynamic collaboration between policy-makers, planners, bureaucrats, and the intended beneficiaries of a programme. The primary activities undertaken by the residents of the reserve in relation to the forest's resources are food cultivation, while the least significant activity is the extraction of poles. The statement on deforestation and forest degradation in relation to inadequate law enforcement was supported by the FAO (2005) report. The report defined forest degradation as a modification in the characteristics of a forest that results in a reduced ability to produce, induced by an escalation in disturbances. According to ITTO (2011), sustainable forest management necessitates effective and responsible governance, as well as safeguarding the rights of individuals who depend on forests.

Table 2 Community Engagement in forest management of Akure Forest Reserve

Variables	Frequency	Percentage
Is there community forestry association?		
Yes	181	90.5
No	19	9.5
Are you a member of the community forestry association?		
Yes	109	54.5
No	91	45.5

If yes which user groups are you registered under?		
None	91	45.5
Agbeloba cooperative society and timber organization	109	54.5
What products do you get from the forest?		
Firewood	15	7.5
Food through cultivation	100	50.0
Poles	1	0.5
Timber	25	12.5
Others	59	29.5
Does the association have a specific goal on afforestation without waiting for the government?		
Yes	91	45.5
No	109	54.5
Have you ever participated in forest management?		
Yes	90	45.0
No	110	55.0
Has participatory forest management process helped you as an individual?		
Yes	90	45.5
No	110	55.0
Total	200	100

3.4. Relationship between forest-dependent communities' dwellers demographic characteristics and Participatory Forest Management

Table 3 Relationship between community dwellers demographic characteristics and participation in Akure Forest Reserve management and conservation

Demographic characteristics	Chi-square (χ^2)	Df	p-value
Age	9.456	6	0.024*
Marital status	11.873	2	0.003*
Gender	2.475	1	0.116ns
Household size	0.354	3	0.949ns
Educational background	2.025	3	0.567ns
Occupation	44.237.	4	0.000*
Source of income	48.468	2	0.000*
Income (Monthly)	26.674	2	0.000*

*=significant (p<0.05), ns = not significant (p>0.05)

The participation of community dwellers in Forest Management and Conservation (FMC) is significantly influenced by various factors. These factors include age (χ^2= 9.456, df = 6, p = 0.024), marital status (χ^2 = 11.873, df =2, p= 0.003), occupation (χ^2= 44.237, df = 4, p = 0.000), source of income (χ^2 = 48.468, df= 2, p= 0.000), and monthly income (χ^2 = 26.674, df =2, p=0.000). However, the participation of community dwellers in FCM is not significantly influenced by household size (χ^2 = 0.354, df =3, p= 0.949), gender (χ^2 = 2.475, df= 1, p= 0.116), and educational qualification (χ^2 = 2.025, df= 3, p=0.567) (Table 3). The chi-square analysis of participatory forest management revealed a strong and significant association between sources of income and occupation, indicating that the participants' income is largely

dependent on their work. However, the analysis did not find a significant relationship between household size and participation in forest management.

4. Conclusion

The study revealed that age, household size, marital status, occupation, source of income, and monthly income were the primary factors influencing their decision not to participate in forest policy management in the reserve. Compulsory community involvement should be implemented in forestry conservation and protection programmes. This will incentivize these tribes to consistently develop indigenous techniques to prevent excessive exploitation of the forest. Additionally, they will cultivate a feeling of possession and dedication towards all choices made about the mitigation of deforestation. Finally, it is imperative to regularly conduct workshops, lobbying campaigns, and seminars to enhance the knowledge of rural farmers regarding the adverse impacts of deforestation. This would enable rural stakeholders to get comprehensive information regarding the government's latest initiatives pertaining to the forestry sector.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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