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Assessment of Incentives for Forest Biodiversity Conservation in Rainforest and Derived Savannah Vegetation Zones of Ekiti State, Nigeria

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Abstract

This paper examined the assessment of incentives for forest biodiversity conservation in rainforest and derived savannah vegetation zones of Ekiti State. Structured questionnaire was use to obtain information on the level of incentive allocation and impact of incentive measures to the people for forest conservation. Data collected were statistically analyzed with Multiple Regression analysis at 0.05 significance level of confidence limit. The results showed that personal factors jointly and independently influence respondents perception on the impact of incentive allocation for forest conservation and sustainability. The beta coefficient showed that the contribution of age to the dependent variable was the only significant variable while gender, marital status, and the level of education were not significant. The level of involvement of government in the conservation of forest is higher than personal and sacred efforts at conserving forest biodiversity. Furthermore, the result showed that there was no significant difference between the incentive allocated in rainforest and incentive allocated in derived savannah for forest conservation and sustainability. Therefore, it is recommend that, government and non-governmental organization should shift attention into the area of incentive allocation to the people for forest conservation and sustainable biodiversity.

Keywords: Allocation; Biodiversity; Communities; Conservation; Distribution; Sustainability; Incentive

Introduction

Tropical forests are the habitat for at least half of the globally known species [1]. Nigeria is a nation endowed with large and diverse forest resources which has considerable potentials with respect to economic, social, cultural, and ecosystem services development. The various tree species diversity require different levels of degree of human intervention, ranging from actions aimed at safeguarding and maintaining the forest ecosystem and its functions, to favoring specific socially or economically valuable species or groups of species for the improved production of goods and services [2]. Biodiversity can only be conserved through vigorous human actions for the preservation of these tree species within their various ecosystems. It is presently realized that the continuing deforestation is due to the failure of the past conservation approaches that aimed to bring more forests under state tenure and protection as reserves or parks [3]. Many developing countries Nigeria inclusive have inadequate funding and lack of political will on the part of government for proper preparation, implementation and monitoring of forest management strategies. There are no plans and lack of mechanisms to ensure the participation and involvement of all stakeholders in forest planning, monitoring and management of the resources development. Various importances of forests and forest ecosystem services for local communities are enormous as reported by Nkem et al. [4]. In addition, many countries lack appropriate forest legislation, regulation and incentives to promote sustainable forest management practices due to lack of information on the goods and services produce by the forest. The goods and services of the forest includes production of industrial wood, fuel wood, Non-Timber Forest Products (NTFPs) (e.g. animal fodder, apiculture, essential oils, tan bark, cork, latex, food) and

ecosystem functions which includes soil conservation, carbon sequestration, recreational gardens, erosion control and rehabilitation of degraded lands, landscape and amenity enhancement. Countries with low forest cover the only way to obtain the multiple benefits for the forest is the creation of forest estate in form of reserves which can be done mainly through forest establishment [5]. Proper incentive allocation to forest conservators should be channel appropriately towards conservation of forest resources. The impacts of incentive allocation for forest conservation should create enabling environment for forest management practices and enhance the knowledge of different forest stakeholders to support the long term economic, social, cultural and ecological sustainability of forest. The objective of this study is to assess the impact of incentives administration for forest conservation and sustainable forest resources in the two ecological zones of Ekiti State, while the hypothesis of this study was to test the significant level in the age, gender, marital status, religion, and educational status of respondents on the impact of incentive allocation on forest conservation and sustainability.

Methodology

Study area

Ekiti State is one of the thirty-six states in Nigeria, located within the South-western part of the country. The state which was carved out from the territory of old Ondo State in 1996, covers the former 12 local government areas that made up of Ekiti zone of old Ondo State. On creation, it took off with 16 local government areas. Ekiti State is located between longitude 4051 and 50 4.51 east of the Greenwich meridian and latitudes 70151 and 8051 north of the equator. It lies south of Kwara and Kogi State, east of Osun-State and bounded by Ondo State in the south. Ekiti State covers an area of 6,353 km²; the vegetation pattern across the state varies in accordance with the

climate and rainfall. There are two ecological zones in Ekiti State; tropical rainforest exist in the southern part while the derived savannah predominates in the northern peripheries of the state.

Data collections

Ekiti state was stratified into two ecological zones. (i) Rain forest, (ii) Derived savannah, in each vegetation zone, a forest reserve was selected making a total of two forest reserve and two communities in each forest reserve. Thirty (30) questionnaires were distributed within the communities and another thirty (30) questionnaires were administered to community around the forest reserve estate, a total of one hundred and twenty (120) questionnaires were administered for the study. Purposive sampling technique was employ for the administration of questionnaire to respondents in form of interview for immediate retrieval for analysis. Eda forest reserve (Eda-Ile community and Omuo Community) while Ise forest reserves (Ise community and Egbira Community) were selected for this study.

Method of data analysis

Data collected were subjected to descriptive statistics in form of frequency and percentage distribution, tables and bar charts as done by Kayode [6], Wily [7] and Malla [8]. In addition, multiple regression and analysis of variance (ANOVA) arranged in complete randomized design (CRD) were also employed to test for significant difference of the parameters of forest incentives measure within the two ecological zones. The linear statistical model for complete randomized design (CRD) is:

$$Y_{ij} = \mu + T_j + \Sigma_{ij}$$

Where:

Y_{ij} = Individual observation for the treatment in the sampled community

μ = General mean

T_j = Incentive allocation and distribution

Σ_{ij} = Experimental error for all uncontrolled variation

Results and Discussion

Socio-economic characteristic of respondents

The result (Table 1) shows that in the two vegetation zones considered for this study (Rainforest and Derived savannah) larger percentage of respondents (36-40%) are working-age adults. This indicate that higher percentage of respondents are in their middle age class with fairly large incidence of the people been working-age adults, this was supported by the earlier work of Ajibefun et al. [9]. This could bring about more and constant conservation of forest resources in the area with adequate incentive allocated to the people. In the rainforest zone, 85% of the respondents were male and 15% of the respondents were female while in the derived savannah zone 90% of the respondents were males and 10% of respondent were females. This shows that more men are involved in forest conservation than the women as indicated in the result of the two vegetation zones. The marital status of respondents indicates that 85 and 90% are married in rainforest and derived savannah vegetation zones respectively. The study revealed that majority of the respondents are educationally backward, with about (31.7 and 36.7%) of the respondents said they have no formal education while (45 and 33.3%) had secondary education in rainforest and derived savannah vegetation zones respectively. Low educational status observed among the people is supported by studies earlier carried out by Adams et al. [10] and Adhikari et al. [11]. Earlier study by Stoian [12], also affirmed that education is one of the important human capitals, which plays important role in determining household status in the society. It is the main factor of socio-cultural and economic change in a society. Without education people' attitude, knowledge cannot be developed and so with the society. Education is expected to contribute to one's ability to read and understand instructions and hence it is expected to help in the adoption of new technology that relates to forest conservation issues and development. The result analysis showed that 65% and 71.7% were farmers in the rainforest and derived savannah vegetation zones respectively. This findings confirmed that majority of the people are entirely engaged in farming as their primary occupation as confirmed by Adekunle et al. [13]. The large population of people involved in farming could be attributed to the fact that Ekiti State is an agrarian state and farming has been an age long occupation of people in and around forest reserves.

Description		Vegetation Zones			
		Rainforest Zone		Derived Savannah	
		Frequency	Percentage	Frequency	Percentage
Age Range	<30	1	1.7	1	1.7
	31-40	22	36.7	20	33.3
	41-50	10	16.7	13	21.7
	51-60	24	40.0	23	38.3
	>60	3	5.0	3	5.0

Gender	Male	51	85.0	54	90.0
	Female	9	15.0	6	10.0
Marital Status	Single	2	3.3	1	1.7
	Married	51	85.0	54	90.0
	Divorced	2	3.3	1	1.7
	Widowed	5	8.3	4	6.7
Education status	No Formal Education	19	31.7	22	36.7
	Pry Education	12	20.0	17	28.3
	Sec Education	27	45.0	20	33.3
	Tertiary Education	2	3.3	1	1.7
Occupation/Source of Income	Farming	39	65.0	43	71.7
	Civil Service	7	11.7	8	13.3
	Public Service	8	13.3	6	10.0
	Contractor	2	3.3	1	1.7
	Private Sector	4	6.7	2	3.3

Table 1: Socio-Economic Characteristics of Respondents. Source: Field survey 2013.

Management practices for forest conservation and sustainability

The result (Figure 1) revealed that government effort at conserving forest biodiversity is high with 53.4% and 55.0% in the rainforest and derived savannah respectively. The level of involvement of government in the conservation of forest is higher than personal and sacred efforts at conserving forest biodiversity. Most forest reserve in the state are been owned and control by government which agrees with earlier study of Pathak [14], that government play a major role in forest conservation and protected areas.
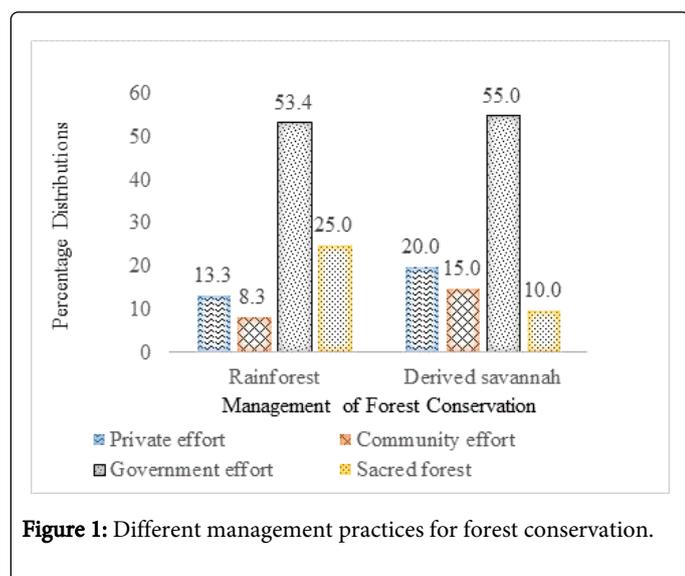
Different incentive measure for forest conservation and sustainability

The result indicated that many respondents agreed that land was the major incentive allocated to them for their farming activities and conservation of forest biodiversity, with 73.3% and 66.7% in rainforest and derived savannah respectively. The outcome of the result supported the finding of Kothari et al. [15], that incentives allocation is an important tool in forest conservation. The people within and around the study are engaged in Taungya farming, which in turn gave them opportunity of land for their arable farming. This has increase the level of forest conservation and sustainability in the two vegetation zones selected for this study.
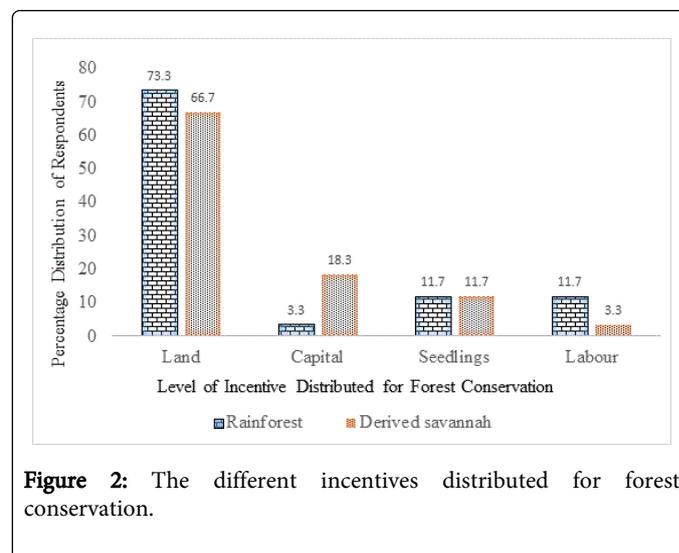

Figure 1: Different management practices for forest conservation.

Figure 2: The different incentives distributed for forest conservation.

Benefits from forest conservation and sustainability of conservation

In the two vegetation zones (Rainforest and Derived Savannah), economic benefits was rated high by the respondents 56.7% and 66.7% while social benefits was 23.3% and 21.7%. This indicated that values in terms of economic, social and environmental benefits were derived from the forest conservation by ways of harvesting the Non-Timber Forest Products (NTFPs) for sales, soil fertility retention, erosion control and other ecosystem services. This affirmed by the result Adedayo and Akindele [16] and Ambrose-Oji [17] in their earlier findings. There are different shrubs, herbs and creepers used for different purposes as confirmed by Barrow et al. [18]. Pathak and Kothari [19] reported that the people and communities within and around forest conservation areas benefitted more from the resources sharing within the area. Culturally herbs, fruits are collected for medical purposes, food and animal folders are benefits obtain from the forest estate as reported by Bhatt [20].
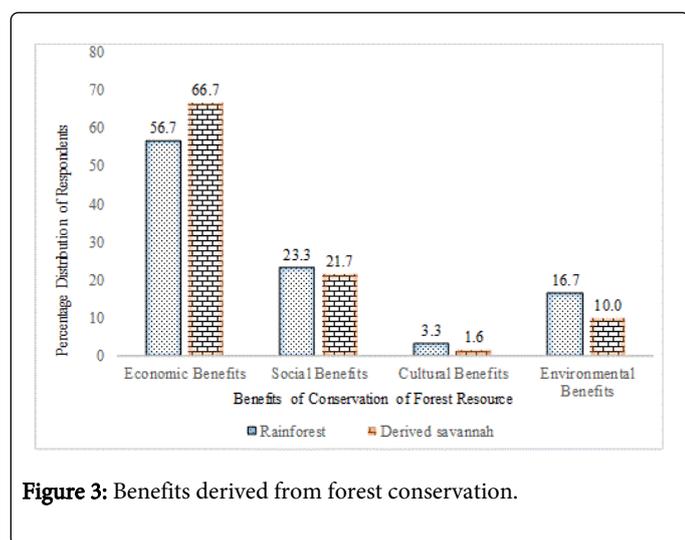

Figure 3: Benefits derived from forest conservation.

Impact of Incentive on Forest Conservation and Sustainability

The personal factors (age, gender, marital status, religion and educational status) will not jointly and independently influence the impact of incentive on forest sustainability and conservation in the two ecological zones. In testing this hypothesis, multiple regression statistics was employed at 0.05 alpha levels. The details of the output are as summarized in the Table 2.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
(constant)		1.651	0.147	0.089	11.226	0.000
Age		0.035	0.037		0.952	0.043
Gender		0.002	0.044	0.004	0.041	0.968
Marital Status		0.057	0.060	0.089	0.948	0.345
Religion	0.007	0.178	0.005	0.799	0.344
Education Status	0.070	0.041	0.095	0.096	0.657
Incentive Allocation	0.157	0.097	0.167	1.172	0.000

Table 2: Standard regression coefficients comparison for the measure of incentives allocation.

The result in Table 2 showed the relative contribution of personal factors to level of impact of incentives on forest conservation and sustainability within the two ecological zones. When the independent variables were entered, the beta coefficient of 8.9% (p>0.05) for age, 0.04% (p<0.05) for gender, 8.9% (p>0.05) for marital status, 0.05% (p>0.05) and 9.5% (p>0.05) for educational status. According to hypothesis one, personal factor (Age, gender, marital status, religion, educational status and incentive allocation) will not jointly and independently influenced the impact of incentives on forest conservation and sustainability in the vegetation zones. Therefore hypothesis one was accepted because all the variables will not jointly influence the level of impact of incentives on forest conservation and sustainability within the two ecological zones. Furthermore, the result showed that there was no significant difference between the incentive allocated in rainforest and incentive allocated in derived savannah for forest conservation and sustainability (t-Cal = 1.279; df = 238; p<0.05). It was equally found that there was no significant difference between the distribution channel of incentive in the rainforest and derived savannah for the sustainability of forest conservation (t-Cal = 0.178; df = 238; p>0.05), this is in agreement with (Bhatt) [20] that reported that involvement of communities in monitoring conservation programs has been a rare occurrence, but is increasing with lot of awareness and distribution of tools to enhanced forest conservation.

Conclusion and Recommendations

The result of this study revealed that for greater involvement, production, conservation and sustainability of forest resources there must be incentive to the populace living within and around forest reserves in Ekiti State. The use of incentive as motivation is crucial dimension to the sustainability of forest resources and this will enable diversified livelihood base of the rural populace. Thus, incentives can act as safety measure for forest conservation and sustainability in the two vegetation zones of the state. The old age people were more involve in forest biodiversity conservation because they derived more benefits from it for their livelihood. The younger people play fewer roles in the forest development, conservation and establishments because they belief is the work of the elderly people. Therefore, it is recommend that, government and non-governmental organization should shift attention into the area of incentive allocation to the people for forest conservation and sustainable biodiversity. Whenever incentive will be disbursed it should be targeted towards the people, communities involved in forest conservation and sustainability and the right channel should be followed. Government should formulate laws and policies that will enhance forest conservation and sustainability for the people to be actively involved in conservation activities.

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