FOREST MANAGEMENT STRATEGIES AND SUSTAINABILITY OF FOREST RESOURCES IN CALABAR EDUCATION ZONE OF CROSS RIVER STATE, NIGERIA

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Abstract

This study examined forest management strategies and forest resources in Calabar Education Zone of Cross River State, Nigeria. To achieved this study, two research question were posed and two null hypotheses were formulated to guide the study and tested at .05 level of significance. The study adopted correlational design. The population of the study comprised 312,149 regular household head in Calabar Education Zone of Cross River State. The sample comprised 1,230 household head from the four selected local government area that make up Calabar Education Zone. The instrument for data collection was 12 items questionnaires, title: Forest Management Strategies and Sustainability of Forest Resource Questionnaire (FMSSFRQ) was used to administrated questionnaire, data was organized and analyzed using simple linear regression analysis. The result of the analysis revealed that forest regulation strategy and participatory forest management strategy relatively and jointly contributed to sustainable forest resource management. Based on this result, it was concluded that to maintain sustainable forest ecosystem in the zone, pragmatic measure must be put in place to enhance the level of forest management in forest communities. It was recommended among others that adequate forest regulatory measures should be put in place and adequately enforced by forest agencies, community members should be involved in formulating and enforcing forest conservation policies. These will help to enhance sustainable use of forest resources in Calabar Education zone of Cross River State.

Keywords: Forest, management strategies, sustainability and forest resources.

1.0 Introduction

The importance of forest ecosystem to the survival of man and the environment has made sustainability of biodiversity of key development parameter that every developing country seeks to maximize. The global drive for sustainability forest resources tends to be based on the notion that forest resource provides sources of

livelihood to local communities and thus boost socio-economic development of local communities all over the world.

It is also a globally held ideology that sustainability of forest ecosystem does not only promote community-based development but also enhances the sustainability of world's biosphere, which reduces the tendency of global environmental problems such as global warming, climate change, depletion of the zone layers, acid rain and greenhouse effect. This implies that sustainability of forest r esources has implications on the social, economic, environmental and the cultural wellbeing of people and society, and thus an effort to ensure sustainability of forest ecosystem in Cross River State.

Forest management is an all-inclusive concept that involve all practices mean to preserve forest ecosystem and control the occurrence of destructive and degradable activities in the forest. Adekunle, Momoh and Agbaje (2008) noted that forest management is the practical application of the scientific, technical and economic principles of preserving forest ecosystem. These study stressed that forest management is the organization of a forest property for maintenance, by ordering in time and place the various operations necessary for the conservation, protection and improvement of the forest on the hand, and the controlled harvesting of the forest resources on the other hand.

Management of forest broadly involves three main task of controlling the composition and structure of the growing stock, harvesting and marketing of forest produce, and administration of forest property and personnel (Paul, 2011). It means that forest management is the process of ensuring that forest resources are conserved for socio-economic gains of society.

With the rate at which forest ecosystem is destroyed in Cross River State despite the fact that people are aware of the socio-economic, cultural, and environmental importance of forest management practices in the state and the need to devise feasible forest management strategies to enhance sustainability of forest resources in the state (Amuyou, Wang, Bisong & Antonarakis, 2021). Sustainability of forest resource is a phenomenon that cannot be downplayed in a quest to ensure effective community development in any society. This is because the survival of local communities largely depends on the sustainability of biodiversity and services provided by healthy ecosystems within the communities (Birdlife international, 2010). Researchers have also argued that forest resources meet the basic nutritional requirement of present and future generations, improve living standards for the rural people, reduce the vulnerability of the agricultural sector to adverse natural and socio-economic factors and other risk and above all strengthen self-reliance of local communities (Onwubuya, Ogbonna & Ezeobiora, 2014). The awareness of the social economic, environmental, cultural and ecological benefits of sustaining forest resources should naturally reduce the level of sustainability forest practices among communities in Nigeria.

The seems to be an increasing trend of destructive forest practices in Nigeria society. These unsustainable practices observable among community dwellers in Nigeria seems to range from unauthorized logging, indiscriminate hunting,

indiscriminate bush burning, using explosive as fishing strategies and so on. Onwubuya et al (2014) note that the type of natural environment that was obtained in Nigeria some years ago are no longer available because of anthropogenic factors such as farming, bush burning, over grazing by animals, animal hunting, timber logging, over exploitation of forest and other deforestation practices. Iheke and Eziuche (2016) argue that despite the immense value of forest resources, forest is being cleared as demand for timber and agricultural activities increases in Nigeria, and that the extreme exploitation of forest resources in all parts of the country has reduced their range and abundance compared with what was obtainable in the past.

The extent of exploitation of forest resource seems to be on the increase in Cross River State specifically in Calabar Education Zone. Iheke and Eziuche (2016) noted that forest products play important roles in supporting rural livelihoods and food security in many local communities and that forest provides critical source of food; medicine, shelter, building materials fuels and cash income for local people. This implies that there are chances of untold hardship and adverse environmental conditions in communities in Calabar Education Zone in the future, if urgent measures are not put in place to ensure sustainable forest practices in the zone. The sustainability of natural biodiversity is a scientific approach and carefully planned actions for utilization and conservation of land, water bodies, soil system, plant and animals to enable the people to fulfill the requirement so that along with the present

generation the future generation would also benefit (Babu & Nautiyal, 2015) sustainability of forest resources is stewardship and use of forests and forest lands in a way, and at a rate that maintains their biodiversity, productivity; regeneration capacity, vitality and their potential to full, now and in the future, relevant ecological, economic and social functions, at local, national, and global level sand that does not cause damage to other ecosystem. Martin Garcia & Diez, 2014) Hamid, Usman, Elaigwu and Zabair (2010) submitted that uncontrolled mechanization, overexploitation of natural resources, deforestation and extensive use of chemical fertilizer and pesticides for extraction of biodiversity are unsustainable forest practices that have brought about many changes in different components of the environment and the natural ecosystem all over the world.

This implies that ensuring sustainability of forest resources may involve minimizing bush burning, timber logging, indiscriminate hunting of animal species, indiscriminate firewood extraction, destructive fishing practices, and uncontrolled farming practices.

Also the controlled of unsustainable fishing practices ensures the preservative and sustainability of aquatic lives which is also part of the forest resources. Camara and Santero Sanchez (2019) submitted that there is a need to apply regulations to repopulate fish stock, reduce overfishing, eliminate destructive fishing practices, and promote access to resources for sustainable fishing. It is quite obvious that forest management strategies such as forest regulation strategy

and participatory forest management strategy can reduce unsustainable forest resources practices in the society. Given the fact that sustainability of forest resource may be achieved when appropriate forest management strategies are applied in forest communities, it becomes necessary to examine whether forest management strategies and sustainability of forest resource in Calabar Education Zone have any association with the forest management strategies applied in communities.

2.0 Methodology

The designed employed on this study was the correlational design. Correlational research design is a research approach that attempts to find the nature of the non-causal relationship existing between a set of variables; of which cannot be determined by the researcher or manipulated but present within a group or sample. The study design was also adopted to investigate the relationship between forest management strategies and sustainability of forest resources in Calabar Educational zone.

The study population consist of 312,149 regular household heads in Calabar Education Zone. The sample consist of 1,230 household head from the four selected local government area, and multi stage sampling, techniques was adopted for the study.

Two research question was raise to guide the study:

i. What is the extent to which forest regulation strategy contributes to sustainability of forest resources?

ii. In what ways does participatory forest management strategy contribute to sustainability of forest resources?

The research hypothesis was formulated to guide the study.

i. Forest regulation does not contribute significantly to sustainability of forest resource.

ii. There is no significant contribution of participatory forest management strategy to sustainability of forest resources.

Structure questionnaire was used as instrument for data collection for the area. The questionnaire was title: forest management strategies and sustainability of forest resource questionnaire (FMSSFRQ). The respondents were advising to be honest in their responses in the item as information obtained will be treated with amount of confidentiality in analysis of date.

Hypothesis was tested by the statistical tool employed. Data was analyzed using simple linear regression and multiple linear regression analysis.

3.0 Result

Forest regulation strategy does not contribute significantly to sustainability of forest resources in Calabar Education zone of Cross River State.

Summary of simple regression analysis for the regulation between forest regulation strategy and sustainability of forest resource in Calabar Education Zone.

TABLE 1

R .632	R square .399	Adjusted R square .399	Std Error of the estimate 5.161		
Model	Sum of squares	df	Mean	f-ratio	Sig.
Regression	21223.108	1	21223.108	796.877	.000
Residual	31906.142	1198	26.633		
Variable	B	Std Error	Beta	+	Sig.
(Constant)	34.239	.856		40.014	.000
Forest regulation strategy	1.217	.043	.632	28.229	.000

a. Criterion: Sustainability of forest resources in Calabar Education Zone of Cross River State
b. Predictors: (Constant), forest regulatory strategy

The result of the Table 1 revealed that forest regulation strategy contributed significantly to sustainability of forest resources. This implies that the extent forest regulation practice is used as strategies to manage forest in Calabar Education Zone of Cross River State determine the extent to which forest resource are sustained in Calabar Education zone. This result suggests that the level of sustainability of forest resource in Calabar Education zone is directly related to the extent to which forest exploitation activities are being regulated in forest community in the zone. This result is in line with Cubbage, Harou and Sills (2007) who stated that government regulation of forest use is often instituted to protect the long-term external values that are not provided well markets and may be required to prevent resource exhaustion or to prevent externalities and market failures from leading to damage to other resources.

The result of this analysis further reveal that forest regulation strategy significantly contributed to the variance in sustainability of forest resource across communities in the zone. With a t-value of 28.229 (P<.05). The results also revealed an unstandardized beta (B) of 1.217. This implies that there is a significant high direct relationship existing between forest regulation strategy and sustainability of forest resource in Calabar Education Zone.

This result is supported by the finding of McDermott, Cashore and Kanowski (2010) who established that forest regulation has implication on how forest activities are carried out across countries in the world, and upheld that forest regulation as a strategy for sustainable forest practices.

TABLE 2: Summary of simple regression analysis for the relationship between participatory forest management strategy and sustainability of forest resources in Calabar Education Zone of Cross River State.

Model	Sum of squares	df	Mean square	f-ratio	Sign.	R	R²
Regression	20674.815	1	20.674.815	763.175.000	.000	.624	.389
Residual	32454.435	1198	27.091				
Total	53129.250	1199					

a. Criterion: Sustainability of forest resources in Calabar Education Zone of Cross River State

b. Predictors: (Constant), forest regulatory strategy

The result is table 2 shows that the analysis of variance in the regression output produced in f-ratio of 763.175 (P<.05), which is statistically significant at .05 probability level with critical f-ratio of 3.85 and 1:1198 degrees of freedom. This means that the data participatory forest management strategy was not addressed to the model, which means that participatory forest management strategy contributed significantly to the observed variance in sustainability of forest resource in Calabar Education zone. The result also shows a regression coefficient (R) of .624 and a coefficient of determination (R²) of .389. This implies that participatory forest management strategy relates significantly to sustainability of forest resource in Calabar Education zone of Cross River State and that 38.9% of the variation ins sustainability of forest resource in Calabar Education Zone of Cross River State is accounted for, by the variation in participatory forest management strategy in forest communities across Calabar Education zone of the state.

Similarly, the result of the regression weights of the predictor variable (participatory) forest management strategy) in Table 2 show positive unstandardized and standardized beta coefficients (B and Beta) of 1.141 and .624 respectfully. This means participatory forest management strategy has a positive relationship within sustainability of forest resource in Calabar Education zone. The study is in line with Omari, Omoogun and Effiom (2019) on the conducted study on the influence of community participatory mobilization on attitude of farmers toward deforestation in Cross River rainforest zone Nigeria. The results of the analysis revealed that there was significant influence of community participatory mobilization on attitude of farmers towards deforestation in rainforest zone in the study area.

4.0 Conclusion

Based on the result of the study, it is concluded that forest regulation strategy and participatory forest manage strategy significantly contribute to sustainability of forest resources in Calabar Education zone

of Cross River State, pragmatic measures must be put in place to enhance the level of forest management in communities within the zone.

Recommendation

Based on the result study obtained from the analysis of data; the following recommendation were made;

1. Adequate forest regulatory measures should be put in place and adequate enforced by forest agencies.
2. Forest management agencies should ensure adequate involvement of community members in formulating and enforcing forest conservation political in forest communities in the zone, as this will motivate community members to maintain the policies which will lead to sustainable forest practices in the communities.

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