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Effect of Forestry on Sustainable Rural Development in Forestry Department of Cross River State Nigeria

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ABSTRACT

These work on Forestry and Sustainable Rural Development in Nigeria a Case Study of Forestry Department in Cross River State. The general aim of this research work is to examine "Forestry and Sustainable Rural Development in Nigeria, Case Study of Forestry Department in Cross River State". The objectives of this research work include: To determine the effectiveness of the administration, monitoring and control system of forest reserves and forestlands in Cross River State. To ascertain the extent forestry has contributed to sustainable rural development in Cross River State.The researcher made use of both primary and secondary methods of data collection for information gathering. The population of the study was 88 while the sample size of the study is 72 which was determined using Taro Yamani formula. The data collected were presented in tables and analyzed with simple percentages while the hypotheses stated were tested with chi square. The findings of the study include: the administration, monitoring and control system of forest reserves and forestlands in Cross River State is very effective. Forestry contributed to sustainable rural development in Cross River State to a very great extent.The roles of forestry for sustainable rural development in Cross River State are the provision of raw materials for industries and employment, medicine, timber and game and wildlife. The study recommends that adequate awareness campaigns by the state forestry commission in communities where forest resources exist in order to educate the people on innovative and sustainable forestry management measures.Encouragement of mass participation in tree planting by public enlightenment campaigns.

Keyword: Forestry, Sustainable, Rural Development

INTRODUCTION

Incontrovertibly, one of the nagging problems facing Nigeria, like most other developing countries is how to adequately overcome the worrisome issue of rural-urban migration. The condition (rural-urban migration) is known for its deleterious effects on developmental efforts of Third World Countries. In a bid to effectively combat the socioeconomic malady, Nigeria has adopted two principal strategies [1]. First, is the creation and expansion of job opportunities for rural dwellers especially through agricultural modernization and rural industrialization. This is aimed at enhancing their income-generation capabilities. Next is massive provision of socioeconomic infrastructural facilities that make life worth living particularly electricity, good drinking water, modern health centers, banks, recreational centers and schools in the rural areas. This measure which acts as counterpoise between the urban and rural areas discourages rural-urban flight of youths.

The underlying assumption in the words of [2] is that the agricultural sector possesses the capacity to absorb abundant labour in the rural areas.

The infrastructural facilities on the other hand, are expected to perform the dual roles of providing services for the agricultural sector and creating an attractive environment where the youths can live and work. The expectation is that

agriculture will act as a catalyst for establishment of agro-allied industries.

As the industries derive their raw materials from agriculture, they serve as vents for the surplus agricultural labour [3]. By so doing, agriculture becomes the ultimate lender of labour to the industrial sector under the two sector model.

But unfortunately, in Nigeria, agriculture is yet to develop to an appreciable level to enhance this inter-sector labour mobility and transfer. In an attempt to reverse the ugly trend, government has through aggressive and effective public enlightenment programmes appealed to Nigerians to embrace agriculture. This is in addition to taking certain radical measures aimed at encouraging optimal food production. It is against this backdrop that forestry plays a pivotal role by making land available for meaningful agricultural production.

Apart from making fertile and productive land available for agricultural production, forestry via its multiplicity of products and benefits has made and is expected to continue to make significant contributions towards rural transformation in Nigeria.

This is particularly with regard to provision of food, fodder, medicine, fuelwood, shelter, game and wild life, raw materials for industries and employment for rural dwellers in Nigeria.

This study, therefore, highlights the overall role and importance of forestry in rural development and the strategies to enhance such role.

Statement of the Problem

Active forest management in Nigeria dates back to 1937 with the establishment of regional forestry authorities whose main function was the constitution of forest reserves that are managed primarily for the production of timber and non-timber forest products. The Federal government through the Department of Forestry has monitoring but no executive authority in the management of forest reserves and forestlands. A lot of the forest reserves have since been deforested due to poor management by the states upon whom this function falls. Even though under state control, most forestland in Nigeria are open access in nature and property rights are poorly established while monitoring is poor.

In Nigeria huge sums of potential revenue are being lost annually due to poor administration, monitoring and control system.

Population pressures combined with poverty and in some cases land shortages. These factors force people and government to harvest forest resources and convert forest areas to agricultural uses to meet increasing food demand of the population. It is believed that 60% of all deforestation worldwide is due to expansion of agricultural settlements.

Inefficiency of administrative and regulatory divisions/institutions related to forest management such as the Forest Department and subsequent poor enforcement capacity.

Corruption and uncontrolled profiteering, Politicians, forestry officials, timber merchants and land owners tend to overexploit forest resource as regulatory and legal requirement can easily be bypassed.

METHODOLOGY

Research Design

A research design is a systematic plan to study a scientific problem. The design of a study defines the study type (descriptive, correlational, semi-experimental, experimental, review, meta-analytic) and sub-type (e.g., descriptive-longitudinal case study), research question, hypotheses, independent and dependent variables, experimental design, and, if applicable, data collection methods and a statistical analysis plan [4]. The researcher therefore used sample survey for this study.

Population of Study

The population of this study is the Forestry Department in Cross River State which is a section of the State Ministry of Environment. The various sections in the forestry department include;

- Forest Management;

- Forest Resources Assessment;
- Forest Product Utilization;
- Agro - Forestry & Extension
- Forest Conservation;
- Wildlife Management.

Table 1: Population Distribution Table

Respondents	No of members
Forest Management;	12
Forest Resources Assessment;	15
Forest Product Utilization;	24
Agro - Forestry & Extension	10
Forest Conservation;	7
Wildlife Management.	20
Total	**88**

Source: Field Survey 2021

Determination of Sample Size

In order to get a representation of the entire population, the Taro Yamani statistical formula was employed. According to Taro Yamene (1964) the formula is stated as follows

$$n = \frac{N}{1+N(e)^2}$$

Where n = represents the sample size
N = represents the population
e = represents the margin of error
I = constant

For the purpose of this study, N will be equal to 88, e will be assumed to be 5%
Therefore the sample size for this research work will be

$$n = \frac{88}{1+88(0.05)^2}$$

$$= \frac{88}{1+ 88(0.0025)}$$

$$= \frac{88}{1 + 0.22}$$

$$= \frac{88}{1.22}$$

$$n = 72$$

The sample size for this study is 72.

Instruments for Data Collection

The research instrument that was used by the researcher in collecting useful information on this topic is questionnaire.

A questionnaire by definition is a list of questions or statement to which individuals are asked to respond in writing. It is used when factual information is desired.

In this study, the questionnaire used by the researcher was highly structured and it contains close ended questions to elicit relevant reactions from their respondents.

It was also carefully designed to accommodate two sections. The first section is personnel data which will generate proper data regarding to the respondents characteristics like; sex, age, educational level while the other deals on relevant aspects of the topic under study.

Sampling Techniques

In order to get a good representation of the population, the researcher used the stratified random sampling techniques. To make a sample a true representation of the parent population, she first divided the entire population into homogenous groups called strata. By applying the systematic sampling, she selected items from each stratum into the sampling. Using this method, she selected items out of a population of respondents..

Method of Data Analysis

In treating and analyzing of data collected extensive use of tabular and percentage will be paramount. The data collected will be presented in table and analyzed with percentage. The hypotheses will be analyzed by the use of Chi – Square

formular.

The formular is shown below:

$$X^2 = (O - E)^2 / E$$

Where: X^2 = Chi – Square

O = Observed frequency

E = Expected frequency

Data Analysis

The presentation of data collected means the way of arranging the different forms of data obtained through various data collecting techniques to enable the researcher perform analysis and exact new meaning from it. The data collected will be presented in simple table. The data analyses were based on the answer to the key questions received from the various departments. The key questions in the questionnaires will be analyzed by the use of simple percentage.

TABLE 2: Distribution table showing the returned and unreturned sets of questionnaire:

OPTIONS	Sets of quest. Distributed	Sets of quest. Returned	Sets of quest. not returned	Percentage (%)
Accounting dept	12	11	1	**16**
Productions dept	37	34	3	**51**
Purchase dept	24	22	2	**33**
Total	**73**	**67**	**6**	**100**

SOURCE: Field Survey, 2021

The above table shows that a total of 12 sets of questionnaire were distributed to the accounting department and only 1 set of the questionnaire was lost while 11 sets were returned representing 16% return rate. Out of the 37 sets of questionnaire distributed to the production department, 3 sets of questionnaire were not returned while 34 sets of questionnaire were returned representing a return rate of 51%. Out of the 24 sets of questionnaire distributed to the purchase department, 2 sets of questionnaire were not returned while 22 sets of questionnaire were returned representing a return rate of 33%.

Presentation of Demographic Characteristics

TABLE 3: Distribution of Respondents According To Gender

GENDER	NUMBER OF RESPONDENTS	PERCENTAGE
Male	40	**60**
Female	27	**40**
Total	**67**	**100**

SOURCE: Field Survey, 2021

The above table shows that 60% of the respondents are male while 40% of them are females.

TABLE 4: Distribution of Respondents According to Marital Status

MARITAL STATUS	NUMBER OF RESPONDENTS	PERCENTAGE
Married	51	**76**
Single	16	**24**
Total	**67**	**100**

SOURCE: Field Survey, 2021

The above table shows that 76% of the respondents are married while 24% of them are single.

TABLE 5: Distribution of Respondents According to Academic Qualification

ACADEMIC QUALIFICATION	NUMBER OF RESPONDENTS	PERCENTAGE
GCE/WAEC	-	-
OND/NCE	17	**25**
HND/BSC/BA	35	**52**
MSC/MBA	10	**15**
PHD and others	5	**8**
Total	**67**	**100**

SOURCE: Field Survey, 2021

The above table shows that none of the respondents have only GCE/WAEC, 25% of them have up to OND/NCE, 52% of them have up to HND/BSC/BA, 15% of them have up to MSC/MBA while 8% of them have up to PHD and other qualifications.

TABLE 6: Distribution of Respondents According To Age

AGE	NUMBER OF RESPONDENTS	PERCENTAGE
20 – 30	19	**28**
31 – 40	25	**37**
41 – 50	15	**22**
51 and above	8	**13**
Total	**67**	**100**

SOURCE: Field Survey, 2021

The above table shows that 28% of the respondents are between the ages of 20 – 30 years, 37% of them are between the ages of 31 – 40 years, 22% of them are between the ages of 41 – 50 while 13% of them are from 51 years and above.

TABLE 7: Distribution of Respondents According To Working of Experience

WORKINF EXPERIENCE	NUMBER OF RESPONDENTS	PERCENTAGE
1 – 5	40	**60**
6 – 10	20	**30**
11 and above	7	**10**
Total	**67**	**100**

SOURCE: Field Survey, 2021

The above table shows that 60% of the respondents have worked in the organization between 1 – 5 years, 30% of them have in the organization between 6 – 10 years while 10% of them have worked there from 11 years and above.

ANALYSIS OF KEY RESEARCH QUESTIONS

The analysis of data is based on the returned questions.

TABLE 8: Effectiveness of The Administration, Monitoring And Control System of Forest Reserves and Forestlands in Cross River State

OPTIONS	NUMBER OF RESPONDENTS	PERCENTAGE
Strongly agree	28	**42**
Agree	19	**28**
Disagree	13	**19**
Strongly disagree	7	**11**
Total	**67**	**100**

SOURCE: Field Survey, 2021.

The above table shows that 42% of the respondents strongly agree thatthe administration, monitoring and control system of forest reserves and forestlands in Cross River State is effective, 28% agree, 19% disagree while 11% strongly disagree.

TABLE 9: Contribution of forestry to sustainable rural development in Cross River State

OPTIONS	NUMBER OF RESPONDENTS	PERCENTAGE
Strongly agree	28	**42**
Agree	16	**24**
Disagree	13	**19**
Strongly disagree	10	**15**
Total	**67**	**100**

SOURCE: Field Survey, 2021.

The above table shows that 42% of the respondents strongly agree that forestry contributes to sustainable rural development in Cross River State, 24% agree, 19% disagree while 15% strongly disagree.

TABLE 10: Roles of forestry for sustainable rural development in Cross River State include; provision of raw materials for industries and employment, medicine, timber and game and wildlife.

OPTIONS	NUMBER OF RESPONDENTS	PERCENTAGE
Strongly agree	35	**52**
Agree	15	**22**
Disagree	11	**16**
Strongly disagree	6	**10**
Total	**67**	**100**

SOURCE: Field Survey, 2021.

The above table shows that 52% of the respondents strongly agree that roles of forestry for sustainable rural development in Cross River State include; provision of raw materials for industries and employment, medicine, timber and game and wildlife,16% agree, 10% disagree while 10% strongly disagree.

TABLE 11: The challenges militating against the role of forestry in maintaining sustainable rural development are; Illegal/Indiscriminate tree felling, Intensive logging, Funding forestry programmes and projects is capital intensive and corruption.

OPTIONS	NUMBER OF RESPONDENTS	PERCENTAGE
Strongly agree	28	**42**
Agree	17	**25**
Disagree	12	**18**
Strongly disagree	10	**15**
Total	**67**	**100**

SOURCE: Field Survey, 2021.

The above table shows that 42% of the respondents are of the opinion that the challenges militating against the role of forestry in maintaining sustainable rural development are; Illegal/Indiscriminate tree felling, Intensive logging, Funding forestry programmes and projects is capital intensive and corruption, 25% agree, 18% disagree while 15% said corruption.

TABLE 12: The measures to address the challenges militating against the role of forestry in maintaining sustainable rural development; Restricting the harvest of forest resources, Prohibition of setting forests on fire, Restricting farming in forest area

OPTIONS	NUMBER OF RESPONDENTS	PERCENTAGE
Strongly agree	30	**45**
Agree	19	**28**
Disagree	10	**15**
Strongly disagree	8	**12**
Total	**67**	**100**

SOURCE: Field Survey, 2021.

The above table shows that 45% of the respondents strongly agree that the measures to address the challenges militating against the role of forestry in maintaining sustainable rural development;restricting the harvest of forest resources, Prohibition of setting forests on fire, Restricting, 28% agree, 15% disagree while 12% strongly disagree.

Test of Hypotheses

The hypotheses will be tested using the chi-square formula stated below:

$$X^2 = \frac{\Sigma (0 - e)^2}{e}$$

Where:

X^2 = calculated chi-square
0 = observed frequency
E = expected frequency
Σ = summation

The expected frequency (E) is calculated by adding all the observed frequency (0) and dividing by the number of observations.

Decision Rule:

If the calculated chi-square value (X^2) is greater than or equal to the table value at 0.05 level of significance, the alternate hypothesis (H_1) is accepted, but if the calculated chi-square value is less than the table value, the null hypothesis (H_0) is accepted.

Test of Hypothesis One:

H_0: The administration, monitoring and control system of forest reserves and forestlands in Rivers State are not effective.

H_1: The administration, monitoring and control system of forest reserves and forestlands in Rivers State are effective.

Data from table 4.1.6 was used to test the hypothesis

Variables	O	E	0 – E	(O – E)²	(0 – E)² / E
Strongly agree	28	16.75	11.25	126.56	**7.56**
Agree	19	16.75	2.25	5.06	**0.30**
Disagree	13	16.75	-3.75	14.06	**0.84**
Strongly disagree	7	16.75	-9.75	95.06	**5.68**
Total	**67**	**67**			**14.38**

The calculated chi-square value = 14.38
Df = (K – 1) (4 – 1) = 3
Table value at 0.05 of significance and 4 degree of freedom (Df) = 7.3777
Decision: Since the calculated chi-square (X^2) value (13.45) is greater than table value (7.3777), we reject the null hypothesis (Ho) and accept the alternate hypothesis (H_1) which states that the administration, monitoring and control system of forest reserves and forestlands in Rivers State are effective.

Test of Hypothesis two:

H_o: Forestry does not play significant role in sustainable rural development of Cross River State.
H_I: Forestry plays significant role in sustainable rural development of Cross River State.

Data from table 4.1.6 was used to test the hypothesis

Variables	O	E	0 – E	(O – E)²	(0 – E)² / E
Strongly agree	35	16.75	18.25	333.06	19.88
Agree	15	16.75	- 1.75	3.06	0.18
Disagree	11	16.75	-5.75	33.06	1.97
Strongly disagree	6	16.75	-10.75	115.56	6.70
Total	**67**	**67**			**28.73**

The calculated chi-square value = 28.73
Df = (K – 1) (4 – 1) = 3
Table value at 0.05 of significance and 4 degree of freedom (Df) = 7.3777

Decision:

Since the calculated chi-square (X^2) value (28.73) is greater than table value (7.3777), we reject the null hypothesis (Ho) and accept the alternate hypothesis (H_1) which states that forestry plays significant role in sustainable rural development of Cross River State.

Test of Hypothesis three:

H_o: There are no significant challenges militating against the role of forestry in maintaining sustainable rural development.
H_I: There are significant challenges militating against the role of forestry in maintaining sustainable rural development.

Data from table 4.1.6 was used to test the hypothesis

Variables	O	E	0 – E	(O – E)²	(0 – E)² / E
Strongly agree	28	16.75	11.25	126.56	**7.56**
Agree	17	16.75	0.25	0.063	**0.004**
Disagree	12	16.75	-4.75	22.56	**1.35**
Strongly disagree	10	16.75	-6.75	45.56	**2.72**
Total	**67**	**67**			**11.63**

The calculated chi-square value = 11.63
Df = (K – 1) (4 – 1) = 3
Table value at 0.05 of significance and 4 degree of freedom (Df) = 7.3777
Decision: Since the calculated chi-square (X^2) value (11.63) is greater than table value (7.3777), we reject the null hypothesis (Ho) and accept the alternate hypothesis (H_1) which states that there are significant challenges militating against the role of forestry in maintaining sustainable rural development.

Test of Hypothesis four:

H_o: There are no significant measures to address the challenges militating against the role of forestry in maintaining sustainable rural development.

H_1: There are significant measures to address the challenges militating against the role of forestry in maintaining sustainable rural development.

Data from table 4.1.6 was used to test the hypothesis

Variables	O	E	0 – E	(O – E)²	(0 – E)² / E
Strongly agree	30	16.75	13.25	175.56	10.48
Agree	19	16.75	2.25	5.06	0.30
Disagree	10	16.75	-6.75	45.56	2.72
Strongly disagree	8	16.75	-8.75	76.56	4.57
Total	**67**	**67**			**18.07**

The calculated chi-square value = 18.07
Df = (K – 1) (4 – 1) = 3
Table value at 0.05 of significance and 4 degree of freedom (Df) = 7.3777
Decision: Since the calculated chi-square (X^2) value (18.07) is greater than table value (7.3777), we reject the null hypothesis (Ho) and accept the alternate hypothesis (H_1) which states that there are significant measures to address the challenges militating against the role of forestry in maintaining sustainable rural development.

Summary of Findings

The following findings are made for this study: The study found out that 42% of the respondents are of the opinion that the administration, monitoring and control system of forest reserves and forestlands in Cross River State is very effective, 28% said effective, 19% said ineffective while 11% said very ineffective. Therefore, the administration, monitoring and control system of forest reserves and forestlands in Cross River State is very effective.

The researcher found out that 42% of the respondents are of the opinion that

forestry contributed to sustainable rural development in Cross River State to a very great extent, 24% of them said to a great extent, 19% said to an extent while 15% of them said not at all. Therefore, forestry contributed to sustainable rural development in Cross River State to a very great extent.

The researcher discovered that 52% of the respondents are of the view that one of the roles of forestry for sustainable rural development in Cross River State is the provision of raw materials for industries and employment, 16% said medicine, 10% said timber while 10% said game and wildlife. Therefore, the roles of forestry for sustainable rural development in Cross River State are the provision of raw materials for industries and employment, medicine, timber and game and wildlife.

The study also discovered that 42% of the respondents are of the opinion that one of the challenges militating against the role of forestry in maintaining sustainable rural development is illegal/Indiscriminate tree felling, 25% said intensive logging, 18% said funding forestry programmes and projects is capital intensive while 15% said corruption. Therefore, the challenges militating against the role of forestry in maintaining sustainable rural development are illegal/Indiscriminate tree felling, intensive logging, funding forestry programmes and projects is capital intensive and corruption.

The study also discovered that 45% of the respondents are of the opinion that one of the measures to address the challenges militating against the role of forestry in maintaining sustainable rural development is restricting the harvest of forest resources, 28% said prohibition of setting forests on fire, 15% said restricting farming in forest area while 12% said seizure of products from offenders. Therefore, the measures to address the challenges militating against the role of forestry in maintaining sustainable rural development are restricting the harvest of forest resources, prohibition of setting forests on fire, restricting farming in forest area and seizure of products from offenders.

CONCLUSION

The administration, monitoring and control system of forest reserves and forestlands in Cross River State is very effective.

Forestry contributed to sustainable rural development in Cross River State to a great extent.

The roles of forestry for sustainable rural development in Cross River State are the provision of raw materials for industries and employment, medicine, timber and game and wildlife.

The challenges militating against the role of forestry in maintaining sustainable rural development are illegal/Indiscriminate tree felling, intensive logging, funding forestry programmes and projects is capital intensive and corruption.

The measures to address the challenges militating against the role of forestry in maintaining sustainable rural development are restricting the harvest of forest resources, prohibition of setting forests on fire, restricting farming in forest area and seizure of products from offenders.

RECOMMENDATIONS

The following recommendations are made for this study:

1. The study recommended adequate awareness campaigns by the state forestry commission in communities where forest resources exist in order to educate the people on innovative and sustainable forestry management measures.
2. Encouragement of mass participation in tree planting by public enlightenment campaigns.

3. The use of fast growing and quick-maturing species of trees should be encouraged. Apart from making regeneration proceed at a higher rate than that of exploitation, it also reduces to the barest minimum the problem of wood shortage in the country.
4. Improvement of funding of forestry projects and programmes by stepping up budgetary allocation.
5. Combating corruption via upward review and prompt payment of remuneration and allowances of forestry personnel.

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