

Socio-Economic Activities and Forest Degradation in Ikom Education Zone of Cross River State, Nigeria

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Abstract This study is on the Socio-Economic Activities And Forest Degradation In Ikom Education Zone Of Cross River State, Nigeria. Deforestation in the Ikom Education Zone of Cross River State, Nigeria is in the increase. The area is witnessing severe erosion and loss of soil fertility such that crop growth is affected. There is also an observed extinction of some species of animals, the Elephant, Leopard, Buffalos, and the Bush Cows that were commonly seen in the Forest area of the Ikom Education Zone of Cross River State Nigeria has all disappeared. This situation is worrisome and one wonders what the Environmental situation will be in the near future because the economy of the inhabitants of the area mostly depend on Forest Resources. The study therefore examined socio-economic activities and forest degradation in Ikom education zone of Cross River State, Nigeria. The study adopted the ex-post facto research design, and the two thousand, eight hundred and eighty six (2,886) registered farmers in Ikom Education Zone constitute the study population out of which two hundred and eighty nine (289) was sampled for the study using the proportionate sampling technique. A twenty two item questionnaire was structured in four clusters, cropping, hunting, logging activities and forest degradation respectively using the four point Likert scale. To guide the study three research questions were formulated and answered using mean rating with a cutoff point of 2.50. The study found out that, forest degradation was as high as 3.13 while cropping, hunting and logging activities in the study area contributed 3.10, 2.41 and 2.70 respectively for forest degradation. It was therefore concluded that cropping and logging activities contributed greatly to forest degradation while hunting activity contributed less. The researcher therefore recommended among others that, cropping activity should be improved by adopting modern cropping methods such as crop rotation and organic farming that does not require the destruction of large area of vegetation, to help reduce the extent of forest degradation in the study area.

Keywords Socio-economic activities, Cropping, Hunting, Logging, Forest degradation

1. Introduction

The Nigerian Rain Forest is facing serious degradation. Though White and Martin (2012) maintained that, in recent years the inability of the State to control degradation of Forest has been recognized in many countries of the world, the Rain Forest in Nigeria is so highly deforested such that, most parts of it have lost the worth of being described as a Secondary Forest. The increasing demand for agricultural land and forest products such as bush meat, timber and fire-wood(for protein, building of structures, and energy supply) occasioned by increase in population, is a severe problem and might be a serious contributing factors to the disappearance of the Rain Forest. There is severe degradation of the Rain Forest at the Ikom Education Zone of Cross River State, Nigeria. More especially the deforestation

of the Forest through the encroachment of the Forest for cropping, hunting and logging, including the severe removal of vegetative cover and the extinction of some animal species. This is so because Weil (2012) observed that Forest Resources form the basis for economic development among rural farmers in the tropics and rural farmers are often involved in the exploitation of these Forest Resources for several purposes at an unsustainable manner thereby leading to deforestation. Adie and Ben (2016) also observed that agriculture is one of the economic sectors that depends mostly on Natural Resources especially Forest Resources. The Forest is so badly degraded that most Forest products are hardly seen and one wonders whether the area may still survive the effects of carbon dioxide and other green- house gases emission, since plants particularly trees as carbon sinks are now scanty in the area as a result of deforestation. Deforestation according to Food and Agricultural Organization (2009) is clearing the Earth's Forest on a massive scale, often resulting in damage to the quality of the land. The National Research Council (2011) pointed out that

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deforestation exposes the soil to direct heat and rain consequently it reduces the fertility of the soil thereby reducing crop yield. Botkin and Keller (2012) also reported that, historically the most common reasons why people cut Forest are to clear land for agriculture and settlement and to use or sell Timber for Lumber, Paper Products or Fuel. That Logging by large timber companies and local cutting by villagers are both major causes of deforestation.

However, part of the remaining Rain Forest in Nigeria is found in Cross River State especially within the Ikom Education Zone, located at the Equatorial Rain Forest of Nigeria. The Cross River Rain Forest also extend to the Southern part of the State but Udumo, Uba and Etim (2018) reported that, despite the relevance of the Forest to the maintenance of a healthy environment, much harm has been done to the Forest Ecosystem in Southern Cross River.

Most part of the Rain Forest within the Ikom Education Zone is so highly degraded. The evidence of it's degradation is manifested in the high rate of encroachment, especially for cropping, deforestation and extinction of some animal species. This degradation may not be unconnected with the Socio-Economic activities practiced by the inhabitants of this area.

Socio-economic activities among the dwellers of Ikom education zone are many but those activities commonly practiced by farmers in this zone include but not limited to cropping, hunting and logging activities. The Zone is one of the three Education Zone in Cross River State. Ikom Education Zone consist of six Local Government Areas which include Abi, Boki, Etung, Ikom, Obubra and Yakurr Local Government Areas of Cross River State. These Local Government Areas and few others in the state house part of the remaining Rain Forest in Nigeria.

The inhabitants of this areas are mostly farmers, though many are civil servants, public servants, and business men and women. The farmers are mostly involved in cropping, hunting, and logging while most civil servants, public servants and business men and women in Ikom Education Zone are equally involved in part time cropping, hunting and logging. This has cause severe dependency on the forest and the extinction of some animal species. According to Offiong, Offiong and Ekpe (2014) the disappearance of plants and animals species of nutritional and economic values are reported, that much is on the Cross River Forest, where animal species such as Giant pangolin (*manisgiganta*), the Leopard (*Panther pardus*), the Elephants (*Loxondonta africana*), the Bush cow (*Trangelifus spp*), the Buffalo (*Syncerus caffer*) and the Giant porcuoine has disappeared.

This study is therefore focused on how these activities contributes to forest degradation in Ikom Education Zone because all mature ecosystem according to Bisong (2001) have the capacity to adjust to the impact of normal changes in the Environment from Human or Natural causes. The Forest Ecosystem like any other ecosystem has the resilience to overcome instances of severe stress or damages that affects it and bring itself back to the stage of balance in a relatively short period of time.

This capacity of a system to regulate itself according to Bisong (2001) is called homostasis, and all self-regulating systems including the Forest Ecosystem have homeostatic limits within which they can operate. This limits determine the condition within which a system may recover when subjected to stress or beyond which it breaks down (Bisong, 2001). The process of forest degradation may be explained within the exploitative utilization or abuse of the Forest Resources that exceeds it's natural capacity to recuperate in order to continue it's normal functions. The inability of the Forest to regenerate as expected means that the forest is degraded. Apart from natural factors that can cause stress and damages to the forest, the anthropogenic factors may include excessive cropping, hunting and logging. These activities are carried out especially by farmers in order to meet their Socio- Economic needs. This is in line with the observation of the Food and Agricultural Organization FAO (2005) that the Forest plays the central role in the economy of some rural communities and has to meet various demands (fuel wood collection, timber exploitation, soil protection etc). Majority of rural dwellers are farmers and also practice agriculture that is heavily dependent on the Forest. But are the farmers aware of the contribution of these activities to the degradation of the forest?

However, the Forest has over the years face stress and damages to the extent that Ajake & Anyadike (2012) observed that only a small though significant part of the forest in the Ikom Education Zone is still covered with high forest and it is apparent that most areas are undergoing severe degradation.

This study is therefore prompted by the increasing degradation of the Forest Ecosystem and the risk of Forest Resources Extinction.

Research questions:

The following research questions were therefore formulated to guide the study.

1. To what extent does cropping activities contributes to Forest Degradation?
2. To what extent does hunting activities contributes to Forest Degradation?
3. What is the level of contribution of logging activities to Forest Degradation?

Statement of the problem:

Deforestation in the Ikom Education Zone of Cross River State, Nigeria is in the increase. The area is witnessing severe erosion and loss of soil fertility such that crop growth is affected. There is also an observed extinction of some species of animals, the Elephant, Leopard, Buffalos, and the Bush Cows that were commonly seen in the Forest area of the Ikom Education Zone of Cross River State, Nigeria has all disappeared. This situation is worrisome and one wonders what the Environmental situation will be in the near future because the economy of the inhabitants of the area, mostly depend on Forest Resources. How then does the Socio-Economic Activities of the inhabitants of this Area affects the degradation of the Forest?

Justification:

This work is justified on the bases of the fact that it adopts the Ex-post factor research method as a research design, employs the mean rating approach for data analysis and used 10% of the total number of registered farmers in Ikom Education Zone as study sample. To the best of the researcher's knowledge, previous studies concerning this subject matter do not use these approaches.

2. Methodology

The Ex-post factor research design was adopted in this study. This research design was used because the researcher had no intention of manipulating the independent variables of this study. This design also permit the generalization of the findings to the entire population of the study using a given small sample size and also the subject matter has already taken place in the area of study.

The population of the study is the total number of registered farmers in Ikom Education Zone which was given as two thousand, eight hundred and eighty six (2,886) farmers. (Cross River State Ministry of Agriculture, 2018).

Sampling Technique

Using a proportionate sampling technique, 289 farmers from the different subgroups (local government areas) representing 10% of the entire registered farmers in the study area were selected and issued with structured questionnaire as shown in Table 1.

Table 1. Distribution of registered farmers in Ikom education zone

s/n	Location	No. of registered farmers	Sample (10%)
1	Abi	1,095	110
2	Boki	171	17
3	Etung	54	5
4	Ikom	125	13
5	Obubra	973	97
6	Yakurr	468	47
	Total	2,886	289

Table 2. Distribution of mean rating scores on the contribution of cropping activities to forest degradation

S/N	ITEMS		4	3	2	1	Total	M	Decision
	Cropping activities		SA	A	D	SD			
1	I clear the forest bush before planting my crops	N	170	75	9	35	289		
		NX	680	225	18	35	985	3.32	Agreed
2	When the forest is too thick	N	180	80	10	19	289		
	I set fire before and after clearing	NX	720	240	20	19	999	3.46	Agreed
3	I make heaps before	N	100	70	28	91	289		
	Planting crops	NX	400	210	56	91	757	2.62	Agreed
4	I plant crops on the	N	111	90	28	60	289		
	Forest land every year	NX	444	270	56	60	830	2.87	Agreed
5	I do apply inorganic fertilizer	N	160	65	31	33	289		
	to my crop farm yearly	NX	640	195	62	33	930	3.22	Agreed
	Pooled mean							3.10	Agreed

A sample of 289 was therefore used for the study.

Instrumentation

A twenty two item questionnaire was structured, using the Likert scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) to elicit responses from the respondents about cropping, hunting, logging activities and forest degradation. Data collected from respondents were analysed using mean rating to answer the three research question with a mean cut off point of 2.50 for positive responses.

3. Results / Findings

The result and findings of the study are presented according to the research questions

Research question I

To what extent does cropping activities contribute to forest degradation?

From the analysis of data presented in Table 2, the distribution of scores shows that, the five items of cropping activities, taken one by one indicated observed mean of 3.32, 3.46, 2.62, 2.87 and 3.22 respectively and a pooled mean of 3.10 greater than the stated mean of 2.50, while the pooled mean for forest degradation (Table 5) was 3.13 also greater than the stated mean of 2.50. This shows that cropping activity contributes greatly to forest degradation.

Research question II

To what extent does hunting activities contribute to forest degradation? This result is presented in Table 3.

From the analysis of data presented in Table 3, the distribution of scores shows that, the five items of hunting activity, taken one by one indicated observed mean of 3.15, 2.10, 2.28, 2.28 and 2.22 respectively and a pooled mean of 2.41 less than the stated mean 2.50, while the pooled mean for forest degradation (Table 5) was 3.13 greater than the stated mean of 2.50. this shows that hunting activity does not contribute greatly to forest degradation, except for those hunting animals with guns, with a mean of 3.15.

Table 3. Distribution of mean rating scores on the contribution of hunting activity to forest degradation

S/N	ITEMS		4	3	2	1	Total	M	Decision
	Hunting Activity		SA	A	D	SD			
6	I hunt animals with gun	N	130	101	30	28	289		
	In the forest	NX	520	303	60	28	911	3.15	Agreed
7	I set traps to catch animals	N	105	42	20	22	289		
	In the forest	NX	420	126	40	22	608	2.10	Disagreed
8	I use dogs to hunt for	N	50	90	40	109	289		
	animals in the forest	NX	200	270	80	109	659	2.28	Disagreed
9	I set fire on the bush in	N	51	82	54	102	289		
	order to catch animals	NX	204	246	108	102	660	2.28	Disagreed
10	I select animals to kill	N	25	35	207	22	289		
	(Selective hunting)	NX	100	105	414	22	641	2.22	Disagreed
	Pooled Mean							2.41	Disagreed

Table 4. Distribution of mean rating scores on the contribution of logging activity to forest degradation

S/N	ITEMS		4	3	2	1	Total	M	Decision
	Logging activity		SA	A	D	SD			
11	I cut forest trees for building	N	98	101	42	48	289		
	and settlement	NX	392	303	84	48	827	2.86	Agreed
12	I cut forest trees for	N	70	74	71	74	289		
	sale	NX	280	222	142	74	718	2.48	Disagree
13	I cut forest trees for	N	66	60	75	88	289		
	carving and other furnitures	NX	264	180	150	88	682	2.36	Disagree
14	I cut forest trees	N	230	25	14	30	289		
	for staking	NX	920	75	28	30	1053	3.64	Disagree
15	I select sizes of trees to	N	20	30	208	31	289		
	cut (selecting cutting)	NX	80	90	416	31	617	2.14	Disagree
	Pooled mean							2.70	Agreed

Table 5. Forest degradation

S/N	ITEMS		4	3	2	1	Total	M	Decision
	Forest degradation		SA	A	D	SD			
16	Clearing causes deforestation and destroy	N	108	150	16	15	289		
	widelife habitats	NX	432	450	32	15	929	3.32	Agreed
17	Bush burning destroys forest	N	260	21	6	2	289		
	resources and loss of biodiversity	NX	1040	63	12	1	1117	3.87	Agreed
18	Maximum tillage exposes forest land	N	190	18	20	61	289	3.17	
	to erosion and loss of nutrients	NX	760	54	40	61	915	3.17	Agreed
19	Continues cropping leads to loss of forest	N	140	68	31	50	289		
	vegetative cover and loss of biodiversity	NX	560	204	62	50	876	3.03	Agreed
20	Over application of fertilizer causes	N	70	72	74	73	289		
	eutrophication and loss of forest resources	NX	280	216	148	73	717	2.48	Disagreed
21	indiscriminate hunting of animals threatens	N	150	55	17	15	289		
	animals and lead to animal extinction	NX	600	165	34	15	814	2.82	Agreed
22	Indiscriminate cutting of forest trees leads	N	183	49	22	35	289		
	to forest degradation	NX	732	147	44	35	958	3.32	Agreed
	Pooled mean							3.13	Agreed

Research question III

What is the level of contribution of logging activities to forest degradation? The result is presented in Table 4.

From the analysis of data presented in Table 4, the distribution of scores shows that, the five items of logging activity, taken one by one indicated observed mean of 2.86,

2.48, 2.36, 3.64 and 2.14 respectively and a pooled mean of 2.70 greater than the stated mean of 2.50, while the pooled mean for forest degradation (Table 5) was 3.13. This shows that logging activity contributed greatly to forest degradation.

4. Discussion

The discussion is made on the bases of the research questions

Research question one:

To what extent does cropping activities contribute to forest degradation? The analysis in table two and 5 indicated a pooled mean of 3.10 for cropping activity and 3.13 for forest degradation respectively, with a stated mean cut off point of 2.50. This means that, the forest of Ikom education zone is degraded and cropping activity constitutes greatly to its degradation. This findings is in agreement with Bisong and Ogar (2001) that, in Cross River State thousands of hectares of both forests and farmlands are being converted to mono-cropping plantation and that it has impacted on the ecology and basically leads to biodiversity. The findings is in harmony with Botkin and Keller (2021) that farming changes ecosystem, it converts complex ecosystem of high structural and species diversity to a monoculture of uniform structure and greatly modifies the soil, adding that repeated planting of crops can reduce the soil content of certain essential elements reducing overall soil fertility. That plowing for agriculture exposes the soil to erosion and damages its physical structure, leading to a decline in organic matter and loss of chemical elements. The findings is also in agreement with Cunningham and Cunningham (2008) that in Africa, conversion of forest into small scale agriculture accounts for nearly two-third of all tropical forest soils frequently are worn out after a few years of cropping and that shifting cultivation (slash and burn) is often blamed for forest destruction, adding that cropping intensification can lead to permanent deforestation. The finding is also inline with Eruotor (2003) that peasant families follows carved road by logging companies into the jungle in a desperate search for land and livelihood, the clear the forest to grow subsistence crops cutting down all the trees and burning them and using the ashes as fertilizers. And that after just three or four harvest. Insects plagues, weeds and soil improvement force them to move on and repeat the cycle in undisturbed areas. This results in massive construction of forest resources leading to forest degradation. The findings is also in line with Debra (2019) that farmers clear the land for crops..... Often using slash and burn.

Research question two

To what extent does hunting activity contributes to forest degradation?

The analysis in Table 3 and 5 indicated a pooled mean of 2.41 for hunting activity and 3.31 or forest degradation respectively with a stated mean cut off point of 2.50. this

means, that the forest in Ikom education zone is degraded and hunting activities constitute less to its degradation.

The findings is in agreement with Brained (2007) that hunters can contribute to the fulfillment of the aim of conservation through regulating game populations and caring for their habitats, assisting in monitoring and research and also raising public awareness for conservation issues. Adding that hunters and hunting play an important role in the conservation of biodiversity.

However, the findings is not in line with Magdalene (2014) that there is a concern, that hunting will be poorly controlled and therefore unsustainable, that indiscriminate hunting of large number of wildlife will have a negative impact on species population particularly if reproductive females or young males are targeted. Adding that social behavior of animals is widely observed in large mammals and will be altered if the population and gender profile in herbs are changes by hunting.

The finding is in line with Rimbach (2013) that increased hunting pressure is of major concern to the conservation of endangered species due to their role in population declines. It is also in harmony with Araujo (2016) that hunting is one of the main wildlife threats in Amazonia, affecting the ecosystem and dwellers that rely on game meat. Adding that, to avoid local depletion, indigenous people must review their subsistence hunting practices and whereas to achieve regional wildlife conservation and maintain indigenous societies in Amazonia, wild life habitat loss should be limited.

Research question three:

What is the level of contribution of logging activity to forest degradation?

The analysis in Table 4 and 5 indicated a pooled mean of 2.70 for logging activity and 3.13 for forest degradation respectively, with a stated mean of 2.50. This means that the Forest of Ikom Education Zone degraded and Logging activities contributes greatly to it's degradation. The findings is in line with Pinhero (2016) that unsustainable logging contributes to Forest degradation, adding that selective logging as a major aspect of degradation, affects a larger amount of Forest land than Forest fire. The finding is also in agreement with Mc Carthy (2019) that extra-legal logging generates revenue for local clientele networks and districts budget and offers impoverished villagers viable survival strategies but threatens the ecological future of Indonesia's once vast Forests. The finding is in harmony with Eruotor (2003) that the major causes of deforestation is logging activities second to shifting cultivation. Adding that tropical rain forest eradication is often a three stage process one of which is logging. Logging companies carve out concessions and bulldoze access roads into pristine rain forest to extract timber. The finding is also in agreement with Debra (2019) that logging or cutting down trees in a forest to harvest timber for wood products or fuel is a primary driver of deforestation, adding that even selective logging – where only the most valuable trees are felled, doesn't help matters

as one falling trees can bring down dozens of surrounding trees and thin the forest's protective canopy.

5. Conclusions

Cropping and logging activity contributes greatly to the degraded forest of Ikom education zone while hunting activity contributes less to forest degradation in the Ikom education zone.

6. Recommendations

Based on the findings, the researcher recommends that;

1. Cropping activity should be improved by adopting modern cropping methods such as crop rotation and organic farming that does not require the destruction of large area of vegetation, this will help to reduce the extent of forest degradation.
2. Hunting activity that involves setting forest fire should be discouraged while hunters should be trained by government and other appropriate authorities on conservation hunting to reduce forest degradation.
3. Indiscriminate logging should be banned, law against logging should be effectively implemented so that controlled and regulated selective logging be adopted to reduce forest degradation.

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