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Impact of Communal Violent Conflict on Farmer's Livelihood Activities in Two Agro-Ecological Zones of Nigeria

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Abstract

In Nigeria there is hardly a year where there are no major violent conflicts. However, much has not been published on the quantitative impact of the conflicts on farmers' livelihood the manager of crops, domesticated and wild life animals. Hence, this study tend to provide information for understanding how conflict handling styles employed by conflicting parties made most of the communal conflicts degenerate into destruction of farmers livelihood activities. Two violent communal conflicts ridden states one in rainforest and derive savannah region of Nigeria were purposively selected to reflect discrepancy in impact of the conflict on livelihood activities the means of generating livelihood in two main agro-ecological regions of Nigeria. Based on the conflict severity the two agro-ecological zones were stratified into core and outside conflict areas. Using farmers register as sampling frame work 60 and 67 farmers were randomly selected in core and outside violent conflict areas of rainforest and savannah zones respectively. Interview schedule instrument was used to collect data while frequency count, percentage t-test and ANOVA were statistical tools used for data analysis. The findings revealed that in Core Violent Conflict Area (CVCA) of rainforest and derived savannah areas 72.1% and 23.8% of the farmers were displaced from their farms respectively. Consequently tree (cocoa) crops production level were severely affected as reflected in lower ($\bar{x}$ 295) and higher mean ($\bar{x}$ 697) cocoa production level in tons recorded in CVCA and Outside Violent Conflict Areas (OVCA) respectively in rainforest areas. The severity of conflict impact was not reflected in derived savannah area because yam production level means gap in tons between CVCA ($\bar{x}$ 423.0) and OVCA ($\bar{x}$ 629) were very close. However, the savannah area felt the impact of the conflict on sheep and goat production because CVCA recorded lower mean ($\bar{x}$ 180) numbers of sheep and goats as against higher mean ($\bar{x}$ 2007) number of sheep and goat recorded in OVCA. The decline in production of sheep and goat could be attributed to conflict because majority (78.4%) of the farmers claimed that they have lost their productive land to conflict. Farmers' means of generating livelihood activities such as crops production level, sheep and goat number produced were statistically different across conflict zones at $P < 0.05$ in rainforest and savannah zones. The conflict had severe impact on crops, sheep and goat production hence, a sustainable capacity building program, as a post conflict coping strategies should be organised for conflict victims.

Keywords: communal conflict, impact, livelihood, agro-ecological zone and production level

1. Introduction

Nigeria is a tropical country that cut across all tropical ecological zones. These include: the southern zone of Mangrove Swamp, the Tropical Rainforest stretching from the South-west to the South-east, the Guinea Savannah belt, the Sudan Savannah belt and the Sahel Savannah as shown Figure 1.

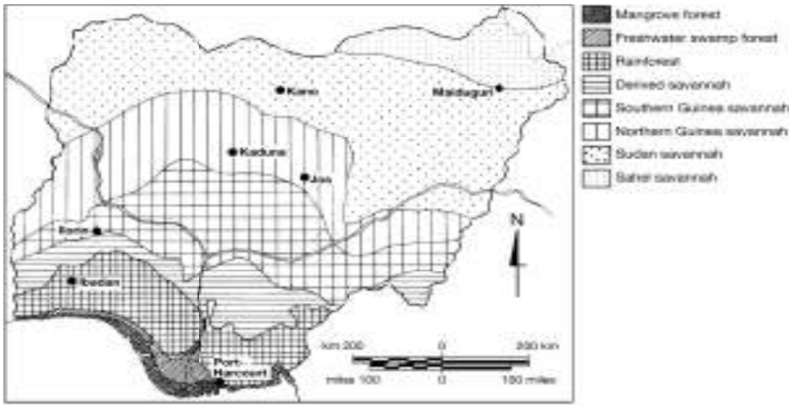

Figure 1. Agro-Ecological zones in Nigeria

These environmental regions greatly affect the cultures of the people who live there. The dry, open grasslands of the savannah make cereal farming and herding a way of life for the Hausa- Fulani (Fabusoro et al., 2007). The wet tropical forests in the south provide opportunities of planting different tree and arable crops and income generation for the Yoruba, Igbo, and other ethnic groups. Rainfall controls the livestock and crops production activities in Nigeria. Decrease in rainfall with increase in surface temperature over the years resulted to pressure on land in the Guinea Savannah zone and the rainforest belt. Most of these pressure resulted from the long range trans-humans of the Fulani cattle rearers from Sahel and Sudan savannah to the Guinea savannah and now the rainforest belt. Many cattle Fulanis with their herds are found permanently settled or roaming within the Guinea savannah and the rainforest belt. This is in contrast to what obtained in the 1960s and 1970s where they only moved down-south when grasses are no longer "green" in the Sudan and Sahel, and make the return migration with the onset of rainy season in the north. The natural result of this pressure on land is conflict, especially between the cattle Fulanis and the crop growing natives of the guinea savannah over the right to the land which in most cases result in destruction of their farmlands by the cattle (Mayowa et al., 2005). Other clashes over land include inter-community struggle for dominance and control of land resources which is common in the densely people of south east of Nigeria, and of course the case of the Niger Delta area which combines the struggle for control of land, environment and oil activities. The result of past newspaper clippings that were reviewed to generate a list of some critical communal clashes that were reported between 1991 and 2005 as shown in Table 1 indicated that 19 of the 37 cases representing about 51% were basically crisis/clashes triggered by land resources . Clashes on oil and environment were basically localized in the Niger Delta area (Mayowa et al., 2005).

Table 1. Summary of some crisis in Nigeria 1991-February 2005

S/n	Crisis/Clashes Group	No	Percent
1	Land - Agric	13	35.1
2	Land -Oil/environment	4	10.8
3	land-urban	2	5.4
4	Religious	5	13.5
5	Political	5	13.5
6	Ethnic	7	9
7	Others	1	2.7
		37	100.0

These conflicts explain noticeable distortions in farmers' livelihoods since they live and earn their living from rural areas. Livelihood is a process by which people make a living through specific capabilities, assets, and activities (Ellis, 2000). The context of farmers' livelihood comprises farming activities, natural resources, economic, cultural, social equitability, and political environment, shocks and stress maintenance. In coping with livelihood sustainability farmers' compete for resources that exist in limited quantities and scarce. Competition

creates a situation where people struggle for possession of these scarce resources, which often generate conflict. Conflict situation threaten livelihood outcomes and termination of farmers' sustainable livelihood income. Conflict within the two communities became a menance when farmer employed negative or aggressive conflict handling style. It is evident from diverse sources that negative conflict handling style employed in the affected communities in Taraba and Osun states which represent savannah and rainforest zones led to destruction of lives and properties, diversion of resources meant for development to conflict mitigation (Bolarinwa, 2007). It further imposed hardship on the citizens, worsening their social conditions and led to mass migration of farm families. In view of anecdotal account of the conflicts effect on farmers' livelihood in the conflict ridden areas and unavailability of empirical records to established the discrepancy in severity of conflict on farmers' livelihood activities in the two agro-ecological areas that this research on impact of communal violent conflict on farmer's livelihood activities in two agro-ecological zones was conducted.

2. Purpose of the Study

The purpose of the study is to establish conflict severity across tow agricultural zones in Nigeria. In order to accomplish this aim the following specific objectives were set: describe personal characteristics of farmers in the 2 agro-ecological zones, determine farmers' access to their productive activities after the conflict , ascertaining the impact of the conflict on the farmers' productive land, examining the impact of the violent conflict on livelihood activities (crops and live stocks production). The hypotheses tested were: There is no significant difference between farmers' crops production level in core conflict area and outside conflict areas. There is no significant difference between sheep and goat numbers produced in core conflict area and outside conflict area of the 2 agro-ecological zones.

3. Methodology

The study was conducted in two agro-ecological regions of rain forest and derived savannah states of middle-belt and south-western Nigeria that are agrarian states in Nigeria. Multi stage sampling procedure was used to select farmers for the study. At first stage rainforest and savannah in the 2 agro-ecological zones respectively were purposively selected based on record of incessant occurrence of violent conflicts in the zones. At the second stage, zones were stratified into core, and outside conflict areas based on conflict severity or anecdotal account of conflict in each zone. At the third stage 7 villages were randomly selected from core and outside conflicts areas of savannah and rainforest zones respectively to give 14 villages both for the rainforest and the derived savannah agro ecological zones respectively. At the last stage, 10 farmers from the list of the extension agents covering each of the selected villages in core and outside conflict areas were randomly selected to give 140 farmers for each of the zones respectively. In all, 256 farmers were interviewed for the study. Selected personal characteristics of farmers like age, years of formal education, household size, and farm size in hectare were measured by their absolute values. Furthermore, farmers were asked to supply information on their access to farm land, number of productivities land lost to conflict, crop production was measured in tons, farmers' six crops standardized mean yield weight for conflict strata was computed, while numbering was used to measure livestock production level. Data were analyzed using frequency, percentage and standard deviation and a two-sample t-test was used to compare the impact of conflict on crops and livestock production level in core and outside conflict areas of the 2 agro-ecological zones.

4. Result and Discussion

4.1 Personal Characteristics of Farmers in Rainforest and Savannah Zones

Entries in Table 2 show the personal characteristics of farmers from, conflict and non-conflict areas of rainforest and savannah. The Table indicates that in core conflict area 85. 4% and 90.2% of farmers in rainfall and savannah zones respectively fell within the age range 25-63 years. Also 95.0% and 80.4% of the farmers in outside conflict areas of rainforest and savannah respectively were in age range of 25-63 years. According to Ekong (2003) any age range between 0-14 years, is classified as children and 16-64 years is classified as adult and 65 years and above as aged person. In line with the classification the sampled farmers belong to adulthood. Adolescences is an adventurous age when young people explore new horizons for green pastures of which attempt to block this ambition may result into personal and inter-group conflict in the society, which may have negative effect on framers' livelihood. Table 2 also indicates that in core conflict areas 83.3% and 86.8% of farmers in rainforest and savannah zones respectively were males while 87.0% and 69.0% of farmers in outside conflict areas rainforest and savannah respectively were males. Table 2 further shows that in core conflict areas majority (69.0%) of farmers in rainforest zone are Christian, while 44.3% of the farmers in the core conflict area of savannah zone are Christian. However, in outside conflict area of rainforest zone majority (60.9%) of farmers are Muslims while 12.7% are Muslims in savannah zone. Table 2 shows that in core conflicts 27.9% and 24.6% of farmers in rainforest and

savannah zones respectively have no formal education. Also, in outside conflict areas 27.5% and 28.6% of farmers in rainforest and savannah zones respectively did not have formal education. The implication of these findings is that many of the farmers across the 2 conflict strata in each agro-ecological zone were educated and would be able to adopt new agricultural technologies, have access to credit facilities, which will leads to improvement in farmers' livelihood. Entries in Table 2 revealed that in core 29.5% and 50.8% of the farmers from rainforest and savannah zones respectively inherited their pieces of land. The implication of this finding is that the most common land sources to farmers in rainforest zone's core conflict area are least, purchase and gift while inheritance and purchase of land were the most common land sources for savannah. Table 2 further indicates that in core conflict area of rainforest, 57.4% of farmers had 1-5ha farmland as against 27.8% farmers in savannah. Those that had 6-10ha in rainforest and savannah accounted for 42.0% and 92.2% respectively. Those that had farm holding greater than 20 ha, accounted for 9.8% and 39.5% in core conflict area of rainforest and savannah respectively. The implication of this finding is that farmers' farm holdings are still small. This justifies the reason for combination of farming with other work in order to sustain their livelihood. This finding is in line with the submission of Okunmadewa (2002) that small scale farming largely dominates the agricultural sector in Nigeria. Also Table 2, indicates distribution of farmers by type of farming systems which provides the primary means of livelihood to farmers. The findings revealed that 60.0% of the farmers derived livelihood needs from mixed planting of permanent crops with arable crops as against majority (63.0%) of the farmers who derived their livelihood need from mixed farming of combining livestock keeping with arable crops planting activities. This finding is in line with Olawoye (2000) who postulated that with several sources of income or produce, farmers' household food security could be guaranteed, as they are likely to suffer in the event that one activity fails.

Table 2. Farmers personal characteristics across the conflict location in the two ecological zone

Personal characteristics	Rainforest		Savannah	
	Core N = 61	Outside N=69	Core = 61	Outside =71
	%	%	%	%
Age				
12-24	6.5	2.9	0.0	8.9
25-37	26.6	13.4	21.3	30.4
38-50	19.6	39.1	39.3	42.9
51-63	39.3	43.3	29.5	7.1
>64	8.0	1.5	9.8	10.7
Sex				
Male	83.6	87.0	86.5	69.6
Female	16.4	13.0	13.2	30.4
Religion				
Christianity	69.0	27.5	44.3	57.1
Islam	29.5	60.9	33.7	12.7
Traditional	1.6	11.6	2.3	25.0
Educational Status				
None	27.9	27.5	24.6	28.6
Adult Literacy	9.8	5.8	32.8	23.2
Primary	32,2	21.7	29.5	23.2
Secondary	16.4	17.4	29.5	23.2
Tertiary	13.1	27.5	6.6	8.9
Sources of Land				
Inheritance	29.5	50.7	50.8	58.9
Lease	31.1	11.6	16.3	7.1
Purchase	24.6	14.5	26.2	16.0
Gift	14.8	23.2	6.6	15.5
Agricultural Holding				
1-5	57.4	26.1	27.8	75.0
6-10	18.0	20.3	9.8	16.1
11-15	11.5	10.1	13.1	3.6
16-20	3.3	20.3	9.8	0.0
>20	9.8	23.3	39.3	5.4
Type of Farming				
Arable Cropping	10,0	11.0	12.0	13.0
Permanent Cropping	11.0	15.0	1.0	1.0
Arable +Permanent	60.0	55.0	8.0	7.0
Livestock only	6	4.0	16.0	20.0
Livestock +Arable	10.0	13.0	63.0	58.0
Livestock + Arable +Permanent Crops	6.0	7.0	0.0	0.0

4.2 Farmers' Accessibility to Their Farm when Violent Conflict De-Escalated in Rainforest and Savannah Zones

Table 3 indicates that a very low percentage 24.0% of farmers in core conflict area of rainforest zone had access to their farms when conflict de-escalated compared to 96.5% of the farmers in outside conflict areas that had access to their farms. Similarly, in savannah zone, majority (78.0%) of farmers in core conflict area, 100.0% in the outside conflict areas had access to their farms land. The implication of this finding is that in core conflict area of rainforest areas 76.0% of farmers were displaced from their farm while 22.8% of farmers were displaced from their farm in savannah zone when conflict de-escalated.

Table 3. Farmers having access to their farms after the conflict in the two agro-ecological zone

Access to Land	Rainforest				Savannah			
	Core		Outside		Core		Outside	
	Freq	%	Freq	%	Freq	%	Freq	%
Yes	15	24.0	68	98.5	47	77.0	56	100
No	46	75.5	2	1.5	14	23.0	-	-

4.3 Farmers' Farm Land Lost to the Violent Conflict in Rainforest and Savannah Zone

Conflict situation in any community often reduces productive activities of the conflicting parties. This often results into diversion of time, energy, material and human resources to fighting in conflict situations (Ugwuegbu, 1999). This assertion is confirmed in rainforest core conflict area as shown in Table 4 where only few farmers (27.9%) did not lose any of their farm land to the conflict compared to majority (98.6%) of farmers that did not lose greater proportion of their productive land to conflict in outside conflict areas. Also, in savannah zone majority (78.4%) of farmers in the core conflict area lost a greater proportion of their farm land to the conflict compared to fewer (15.8%) of farmers that did lose their productive farm land to conflict in outside conflict area. Consequently, the conflict had resulted in adverse effects on the farmers' productive activities since land meant for performance of productive activities was lost to conflict.

Table 4. Farmers productive activities (farm land) lost to conflict in the two agro-ecological zone

Farm land (ha)	Rainforest Core Conflict	Savannah Core Conflict
1-5	31.4	20.3
6-10	52.2	42.4
7-15	-	15.7
> 16	-	-

4.4 Farmers' Crops Production in the Two Conflict Strata in Rainforest and Savannah Zones

The crops mean production index in rainforest as shown in Table 2 reveals that farmers in core conflict area have lower crops mean yield weight for cocoa 295.0, kolanut, 266.5, maize 250.2 yam 227.0, cassava 238.0 compared to higher crops mean yield weight for cocoa 697, kolanut, 466.0 maize 683/0, sorghum 273.0, yam 374.2, cassava 715.5 in outside conflict area The violent conflict accounted for the low crop production in core conflict area, since 76.0% of the farmers were displaced (Table 3). Furthermore, data on Table 4 shows that 83.6% of them lost their productive farm land to conflict. Paradoxically, when crops mean production in core and outside conflict areas was compared in savannah zone; the result indicated that conflict impact was not severe on crops production. Farmers in the core conflict locations have higher mean yield because 77.0% of the farmers were not displaced by the conflict (Table 3). Also, harvesting period for arable crops require short duration and permanent tree crops require longer time may have accounted for the variation in conflict impact on crops production index in core conflict area of rainforest and savannah.

Table 5. Farmers crops production across conflict location after the conflict

Variables	Rainforest		Derived Savannah	
	Core	Outside	Core	Outside
	Mean No	Mean No	Mean No	Mean No
Cocoa	295.0	697.3	29.7	12.9
Kola-nut	266.5	466.6	26.0	0.0
Maize	250.0	683.5	697.0	792.0
Sorghum	-	273.2	575.0	742.0
Yam	227.0	745.6	423.0	629.0
Cassava	238.0	715.5	423.0	321.6

4.5 Livestock Production after the Conflict Across the Two Conflict Strata in Rainforest and Savannah Zones

The result presented in table 6 indicates that farmers in core conflict area of savannah recorded lower mean number of x = 29 for cattle, x = 180 for sheep and goat x = 547 for birds. However, outside the conflict area, farmers recorded higher mean number of 41 for cattle, higher mean number of x = 2007 for sheep and goat and x = 2179 mean number for birds. The observed decline in livestock production in core conflict area of savannah is attributed to the violent conflict since, 78.4% of the farmers had earlier expressed that they have lost their productive land to the conflict as shown in (Table 4). However, it is observed that farmers did not recover quickly from the impact of the conflict on their livestock enterprises because livestock maturity requires longer time unlike the arable crops in the same zone. The rainforest zone felt impact of the conflict on livestock production but it was not as severe as that of savannah zone as shown in Table 6.

Table 6. Farmers livestock production across conflict locations after the violent conflict

Variables	Rainforest		Derived Savannah	
	Core	Outside	Core	Outside
	Mean No	Mean No	Mean No	Mean No
Cattle	6.5	5.2	29.0	40.7
Sheep and goat	14.2	62.2	180.2	2007.0
Birds	29.5	90.1	547.0	2179.0

4.6 Hypothesis 1

There is no significant difference between farmers' production level in core conflict areas and outside conflict areas after the conflict in Rainforest and savannah zone.

Six crops standardized mean yield weight for conflict strata were computed in order to test hypothesis which established that there is a significant difference between the farm output yield of farmers in core conflict area and outside conflict areas of rainforest and savannah zones. The difference is statistically significant in rainforest zone (t cal = 8.87; > 1.96). The higher mean index of 3,208 kg recorded in the outside conflict zone confirms the impact of the violent conflict on crop production in core conflict zone where lower crops mean yield index of 1,276 kg was recorded while it is assumed that other factors remain constant. Data from savannah zone indicates that there was no significant difference between farmers' standardized six crops mean yield index in core conflict area and outside conflict areas after the conflict (t cal = 0.27, < 1.96). This is further corroborated by mean yield of farmers, where core conflict area recorded higher (2,706.3 kg) yield index than mean yield index in outside conflict area (2,613.4 kg).

Table 7. Test of difference between crops production means in core and outside conflict areas of the two ecological zones

Zones	Location	Mean	Calculated T-Value	Tabulated T- Value	Decision
Savannah zone	Core	92.9	0.27	1.96	*NS
	Outside				
	Core	1932.2	8.97	1.96	* S
Rainforest	Outside				

*NS= Not Significant.

*S= Significant.

4.7 Hypothesis 2

There is no significant difference in livestock production mean number between core and outside conflict areas in rainforest and savannah zones

Pertaining to livestock production level in the two ecological zones as shown in Table 8, there is a significant difference between average number of sheep and goat as well as bird, kept by farmers in core and outside conflict areas. The test result indicates that the difference is statistically significant for sheep and goat in rainforest ($t = 2.32$; > 1.96) and savannah (t cal $= 10.98$, > 1.96). Also, average number of birds is significantly different in savannah ($t = 10.91$; $t > 1.96$) and rainforest ($t = 2.62$; $t > 1.96$) as shown in Table 8. These findings reveal that in core conflict area the violent conflict wiped out livestock holdings of farmers, which is a major source of animal protein to rural farm families. Consequently, many farmers are likely to suffer from malnutrition and other ailments. Meanwhile, one of the major effects of the violent conflict is the decline in the income farmers realize from the sale of extra livestock. Hence, food security in the village as a result of keeping small livestock has been distorted as well as reduction in the source of protein.

Table 8. Test of difference between sheep and goat production means in core and outside conflict areas of the two ecological zones

Zones	Location	Livestock	Mean	Calculated T-Value	Tabulated T- Value	Decision
Savannah zone	Core	Cattle	29.0	1.88	1.96	*NS
	Outside					
	Core	Sheep		10.98	1.96	* S
&goat 1826.8						
	Outside					
	Core	Birds	1692.0	8.91	1.96	*S
	Outside					
Rainforest	Core	Cattle	1.3	1.83	1.96	NS
	Outside					
	Core	Sheep &	47.7	2.32	1.96	S
	Outside	goat				
	Core	Birds	60.6	2.62	1.96	S
	Outside					

*NS= Not Significant.

*S= Significant.

5. Conclusion and Recommendation

Based on the findings of this study it can be concluded that farmers in the two agro-ecological zones were in the adventurous age. The age when young people explore new horizon for green pastures of which attempt to block their ambition may result into personal and inter-group conflict in the society. It was also found that majority of the farmers in rainforest zone acquired farm land through purchase, gift and least whereas majority of the farmers acquired farm land through inheritance in savannah zone. It was found that majority of farmers in core conflict areas did not have access to their farms when conflict de-escalated unlike in savannah area. In the 2 agro-ecological zone farmers lost their productive land to the conflict. Consequently crops production was lower in rainforest area while there is reduction in number of livestock produced in savannah areas. In order to prevent and minimised occurrences of violent conflict in the 2 agro-ecological zones, the following are recommended: Agricultural Inputs Supply Company (A.I.S.C) in the two states should endeavor to focus on supply of farm inputs to farmers at subsidized rates and prevent farmers from purchasing adulterated and very expensive farm inputs from the private input supply agencies in their areas. Capacity building for farmers should be encouraged through formation of rural cooperative societies or related associations to facilitate farmers' access to loan facilities with fewer burdens for collateral security requirements.

References

Bolarinwa, K. K. (2007). *Assessment of Farmers' Livelihood in Violent Conflict and Non Violent Areas of Osun and Taraba States Nigeria*. University of Ibadan. Ph.D Thesis of Department of Agricultural Extension and Rural Development.

Ekong, E. E. (2003). *Rural Sociology: An Introduction and Analysis of Rural Nigeria* (pp. 180-250). Jumak Publishers.

Ellis, F. (2000). *Rural Livelihoods and Diversity in Developing Countries.* Oxford University Press.

Fabusoro, E., Matsumoto, T., & Taeb, M. (2007). Land Rights Regimes in Southwest Nigeria: Implications for Land Access and Livelihoods Security of Settled Fulani and Pastoralists. *Land Degradation and Development, 19*(1), 91-103. http://dx.doi.org/10.1002/ldr.816

Mayowa, J. F., & Omojola, A. S. (2005). Climate Change, Human Security and Communal Clashes in Nigeria. An International Workshop. *Centre for the Study of Civil War, International Peace Research Institute, Oslo (PRIO) & Centre for International Environmental and Climate Research at the University of Oslo (CICERO) for the Global Environmental Change and Human Security Program (GECHS).*

Olawoye, J. E. (2000). Making Extension Relevant to Sustainable Livelihoods for Poverty Alleviation. *Paper in proceedings of the sixth annual national conference of the Agricultural Extension Society of Nigeria,* 10th – 12th April, 2000

Ugwnegbu, D. E. (1999). Psychological cases of war and violence in Africa. *African Journal for the Psychological Study of Social,* 2.