

Economic Impacts of land-use Conflicts on Livelihoods. A case study of Pastoralists-farmer Conflicts in the Agogo Traditional Area of Ghana

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Abstract

Pastoralists-farmer conflicts are not new to farming communities in Ghana but in recent years the magnitude of these conflicts have increased in the Agogo traditional area. It is still not clear what impacts these conflicts have on livelihoods and how to ensure that the conflicts are reduced in Ghana. This study was undertaken to bridge this knowledge gap. Using a classical experimental design, data for the study was obtained from both primary and secondary sources. The data was analyzed using content analysis and inferential statistics; t-test. The study found out that reduction in farm produce, insecurity and increase loan default rates were among some of the major economic impacts of the conflicts on livelihoods. Interruption of education of children due to low income also featured prominently. For example, the average farm income of farmers in the conflict area (GHC 827.00) was significantly lower as compared to farmers in the non-conflict area (GHC 3600). Recommendation for reducing the conflicts includes; zoning areas for grazing and protecting communal grazing rights.

Keywords

Conflicts—Economic-Impacts—Farmer and Pastoralists

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1. INTRODUCTION

The literature on conflicts is very rich; this has resulted in also several definitions of the concept ([1]). Most of the definitions however seem to involve two independent groups ([12];[3]). [4] described conflicts as a struggle or contest between people with opposing needs, ideas, beliefs, values, or goals. According to [5], the scarcity theory see conflicts as being inevitable due to the increased

scarcity of natural resources. A second theory related to the ‘environmental framing model’ views conflict as perception driven ([6];[7]). However, it has often been argued that scarcity of natural resources is inextricably linked to environmental disputes and that conflicts are not always bad and could be valuable when managed properly ([8];[9];[10];[11]).

Studies by [12] observed that conflicts between pastoralist and food crop farmers are usually about property rights issues. [13] affirmed, the competition for land, water and vegetation by pastoralists and farmers coupled with scarcity of resources and adverse climatic changes as precipitant in pastoralist-farmer conflicts. However, [14] observed that pastoralists are the best custodians of dry lands environments even though their stewardship is undermined by inappropriate policies and strong competition over natural resources. Pastoralism in Africa is mainly attributed to the Fulani ethnic group. The Fulani pastoralists also known as Fula or Fulbe in English and Peul in French are an ethnic group that lives throughout West Africa, forming a minority in all countries they live in except Guinea. Their herdsmen are mostly nomadic, traditionally herding their cattle through the arid lands of the Sudano-Sahelian zone [15].

In Ghana land use conflicts between Fulani herdsmen and farmers are not new to our farming communities but in recent years the magnitude of these conflicts has increased in the Agogo traditional area of the Ashanti region of Ghana. To put Agogo’s situation in proper

perspective, it is important to understand the migratory history of the Fulani herdsmen and how the conflicts started. The Fulani pastoralists first moved into the Agogo traditional area of Ghana in the early 1990s when the Agogo Traditional Council leased land to them for 50 years and as more and more herdsmen migrated to the area it became a big problem. The number of cattle grazing the deforested hills around Agogo rose rapidly. As a consequence, the Fulani needed progressively more land and started to encroach on areas outside their leased territory. Since then the area has seen no peace. In the Ghanaian context however, the issue appear to have gone beyond a struggle over natural resources to criminality. As at February 2012, the Fulani herdsmen have either shot and killed or butchered not less than 12 people.

The people of Agogo have therefore waged relentless camping to flush out the herdsmen away from the area in order to resolve the conflicts but in the context of natural resource conflicts, there has been a call for conflict management rather than resolution since natural resource conflicts often involve complex issues that cannot be completely resolved ([16]). Previous studies by [17] pointed out that the conflicts in Agogo might affect livelihoods and that there is a need for further research into the issues. This study was therefore conducted to bridge this knowledge gap. The objectives were to assess the impacts of the conflicts on livelihoods and also assess how the conflicts can be reduced in the study area.

2. Materials and methods

2.1 Study area

The study was undertaken in five communities in the Agogo traditional area in the Asante Akim North Municipal Assembly. The Municipality is located in the eastern part of Ashanti Region and lies between latitude 6° 30' North and 7° 30' North and longitude 0° 15' West and 1° 20' West. It covers a land area of 1,160 sq. km with an estimated population of 169,976 in 2010 (projection from 2000 Population Census). The topography of the area is generally undulating with gentle slopes making it conducive for food crop farming. The study area lies within the semiequatorial belt characterised by double rainfall maxima. Temperature is found to be uniformly high all year round with a mean annual temperature of 26 Degrees Celsius.

Two major types of soil are found in the study area i.e. Forest Ochrosol and Savanna Ochrosol. The latter is well leached and richly supplied with organic matter while the former is very fertile. The two soil types support food crops such as cereals, oil palm, cassava, plantain, cocoa, vegetables, yam, maize, cassava, groundnut and vegetables. The district lies within the moist semi-deciduous forest belt with closed forest and wooded savannah forming a major portion of the land. The area is very conducive for grazing.

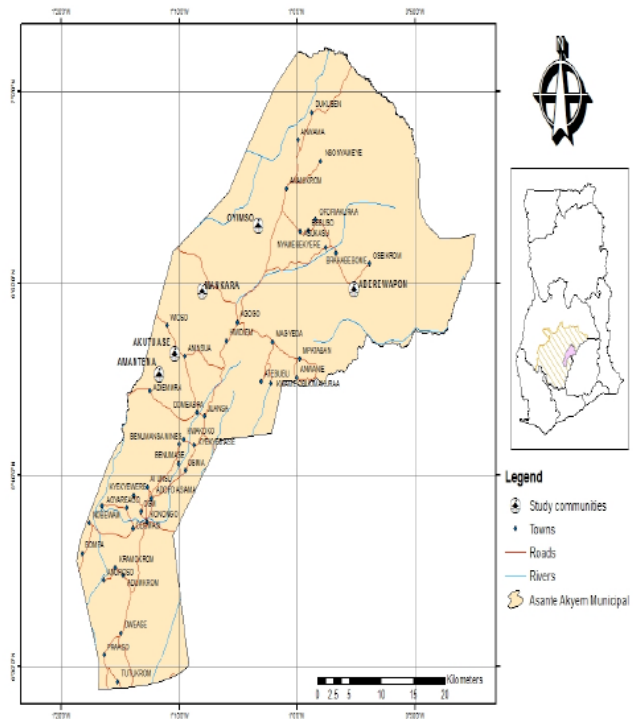


Figure 1. Map of the study area showing the study communities

2.2 Research design

In the objectives both quantitative and qualitative data were needed, therefore the study combined a mixed method approach (i.e. a combination of quantitative and qualitative methods). Under the quantitative method, the study adopted the classical experimental design (with” and “without” scientific inquiry approach) to assess the impacts of the conflicts on livelihoods. The variables of interest that were measured include income and levels of food crop production.

Under the experimental design, there were two comparable research situations. One was considered as the “experimental” situation (conflict community) whereas the other was called the “control” (non conflict community). The experimental situation was exposed to an independent variable (in this case conflict) and the impact was then studied.

2.3 Data collection

Both primary and secondary data were collected. Five days were spent carrying out a reconnaissance survey in the study area. The purpose of the survey was to pre-test questionnaires to be used for the data collection and also have first hand information about the communities. Visits were also paid to some decentralized departments for desk study.

The actual survey lasted for ten (10) days. A sample

of 150 farmers was selected for the interview using questionnaires. In addition to the 150 farmers, the Municipal Director of Agriculture, two cattle owners, the Secretary of the Municipal Security Council (MUSEC), the Planning Officer of the district and some Assemblymen were interviewed. After the interviews a focus group discussion was held to validate the responses.

2.4 Data Analysis

Qualitative data in the questionnaire were analysed using content analysis. For the quantitative data a tabulation of the variables were done to establish the relationships. Two stages of analysis were used to assess the effects of the conflicts on income from farming. These were:

- A descriptive presentation of the averages of variables selected in the experimental (conflict) and control (non- conflict) communities; and
- Inferential statistical tests (t-test) of selected means of the variables used to measure the impacts.

3. Results

Some demographic characteristics of the respondents are discussed here. Farmers were the main unit of enquiry for the study. In terms of their age range, majority (about 95%) of the respondents fall within the age of 25 and 65 years. Out of the total of 150 respondents interviewed in the five communities, 86 people representing 57% were males, whilst 64 people representing 43% were females. The overall mean age of the respondents was 51.84 years (Table 1). This forms a formidable labour force for agricultural production in the selected rural communities. It was revealed that most of the respondents were old enough to recall events about the conflicts over the years. It must, however, be emphasized that since the mean age differences of the control and experimental communities are not too wide, the data provide appropriate bases for comparing output and income levels in the selected study communities.

Table 1. Communities and age distribution of respondents

	Age Cohort						Total	Mean	
	15-24	25-34	35-44	45-54	55-64	65-74			75-84
Amantena	1	5	4	10	4	5	1	30	49.5
Akutuase	2	4	5	6	7	6	-	30	49.5
Abrewapong	-	1	8	7	4	8	2	30	54.8
Onyinso	1	3	6	4	4	10	-	30	53.2
Mankara	-	3	4	10	8	5	-	30	52.2
Total	4	16	27	37	29	34	3	150	51.8

4. Economic impacts of the conflicts on livelihoods

The economic impacts of the conflicts on livelihoods were assessed. Here, the economic impact of pastoralist-farmer

conflicts from the results in (Table 2) shows that the percentage of respondents who have abandoned their farms during the conflict period was significantly high (49%) in the experimental communities than the control communities (5%) suggesting that the conflict situation have discouraged cultivation of crops negatively impacting on food security of the communities. It was to this end that for example ([10]) suggest that when conflicts of this nature occur people abandon their farms due to insecurity. People desert areas of conflict or areas believed to be too dangerous. This has a number of effects on short and long-term production, which usually lead to food shortage ([18])

Table 2. Economic impacts of the conflicts on livelihood

	Control		Experimental	
	No	%	No	%
Decreased income	2	3	89	98
Abandoned farms	3	5	44	49
Social insecurity	17	28	78	87
Reduction in farm produce	10	17	82	91
Inability to pay back loans	3	5	67	74
Inadequate food for the family	12	20	70	78
Inability to pay school fees	9	15	88	98
Total respondents	60		90	

The result also indicated that farmer’s inability to pay children’s school fees was significantly high (98%) in the experimental communities than the control communities (15%). This was attributed to loss of breadwinner and reduction in income of the farming families during the conflict situation. The inability to pay school fees would invariably draw back educational status which is supposed to actually assist in reducing poverty in the area. In addition, the study also found out that schools which served Behome, Abrewapong, Oseikrom and Mankala communities in the Agogo traditional area have all been closed down due to the fear and presence of the Fulani herdsmen and their cattle and the menace posed to the teachers and the pupils of the schools. As a result of the activities of the Fulani herdsmen, teachers were withdrawing their services from the affected communities because they cannot farm to supplement their income.

The study found out that the Behome clinic that served the farming communities has collapsed because of the maltreatment to the staff of the clinic by the herdsmen. In addition, the presence of security men in Agogo due to the conflicts put financial burden on the District Assembly. Money meant for development projects were being used to cater for the security men. On the other hand, the cattle owners mentioned transportation cost and payment of compensations as the major impact of the conflicts on their livelihoods. In the study area also farmers complained of reduction in food as a major impact. According to ([19]) one of the most devastating effects of conflicts of this nature is scarcity of food item that often led to poverty and diseases. People develop fear of being attacked unnecessarily, which also negatively

affect their ability to carry out their economic activities ([13]).

5. Food crop production and productivity

The study assessed the impacts of the conflicts on food crop production. The food crops mainly produced in all the study communities were largely the same. The average land size under cultivation for the various crops, scale of production and the proportion of the produce consumed were largely the same (see Table 3). In terms of output levels of food crops, the study found out that the non-conflict communities had higher outputs levels than the conflict communities even though farmers in both groups of communities had largely the same sizes of land under cultivation.

The results (in Table 3) showed lower farmer productivity along the conflict communities. The farmers attributed the low productivity to the inability to go to farm due to the fear of being killed and destruction of food crops by the herdsmen. The Fulani herdsmen have in several ways inflicted damage on food crops. They have repeatedly cut watermelon fruits for their cattle to drink with their cutlasses and sometimes damaged food crops by trampling on them or piercing them with sticks. In the conflict communities the cattle move in large numbers. Their movement in large numbers in the farms also cause soil compaction, which affects food crop production.

Table 3. Major crops, average land under cultivation and output levels

Study Community	Major Crops Cultivated	Average Land under cultivation (acres)	Average Output Levels (mt/acre)	Proportion on consumed (%)	Proportion sold (%)	Proportion loss (%)
Amantena	Maize	5	0.6	20	78	2
	Plantain	3	0.5	25	73	2
	Cocoyam	4	0.4	20	80	-
	Cassava	5	0.6	23	75	2
	Yam	4	0.3	24	75	3
	Water M.	5	1.7	2	93	5
	Vegetables	3	0.3	20	73	7
Aktuase	Maize	5	0.8	25	73	2
	Plantain	5	0.7	20	76	4
	Cocoyam	4	0.6	30	69	1
	Cassava	3	0.4	30	68	2
	Yam	4	0.5	30	78	3
	Water M.	4	1.4	2	45	4
	Vegetables	3	0.5	30	64	6
Abrewapon	Maize	5	0.2	19	30	51
	Plantain	5	0.3	20	50	30
	Cocoyam	3	0.4	31	56	23
	Cassava	6	0.4	28	53	19
	Yam	4	0.2	40	50	10
	Water M.	4	0.5	5	30	65
	Vegetables	3	0.4	25	25	50
Oyimso	Maize	5	0.2	20	20	60
	Plantain	4	0.4	11	25	64
	Cocoyam	4	0.3	15	45	40
	Cassava	5	0.4	25	20	55
	Yam	4	0.6	20	26	54
	Water M.	5	0.9	15	10	75
	Vegetables	3	0.3	18	20	62
Mankara	Maize	5	0.7	10	30	60
	Plantain	4	0.5	20	10	70
	Cocoyam	3	0.4	20	30	50
	Cassava	3	0.5	25	20	55
	Yam	5	0.2	10	30	60
	Water M.	5	0.7	12	20	68
	Vegetables	3	0.4	12	18	70

6. Income of farmers from food crop production

A comparative analysis of the conflict areas and their neighbourhood where conflict did not occur shows that the average farm income of the farmers in the conflict area (GHC 827.00) was lower than that of the farmers in non conflict area (GHC, 3600) (see TABLE 4). This was directly attributable to the destruction of farms by pastoralist and abandonment of farms by farmers which affected productivity and income. It was to this end that for example ([20]) asserted that as conflict range, income tends to plummet and mortality rises.

Table 4. Average income from food crop production in the study communities

	Communities	(X)	(X - X _i)	(X - X) ²
Control communities	Amantena	4000	400	160000
	Akutuase	3200	-400	160000
	Mean	3600	$\sum(X - X)$	320000
Experimental communities	Abrewapong	1100	273	74529
	Onyinso	800	-27	729
	Mankara	580	-247	61009
	Mean	827	$\sum(X - X)$	136267

7. Testing of Means in Experimental and Control Communities

This investigative study is based on two main hypotheses.

- H1: There is no direct association between pastoralist-farmer conflicts and productivity of farmers in the study area.
- There is a direct association between pastoral-farmer conflicts and productivity of farmers in the study area.

To investigate the acceptance or otherwise of these hypotheses, the significance of the differences in the two sets of sample means indicated (in TABLE 4) must be tested. In testing the hypotheses between the set of means some statistical symbols have been used. These are explained below preceding calculations of the tests.

a) Range of symbols used and their meanings:

- n = Sample size
- df = Degree of freedom (n - 1)
- X = Mean
- X_i = Variables (Averages along various study communities)
- ss = Sum of squares = $\sum(X_i - X)^2$
- s² = Estimated Pooled variance
- sd² = Estimated variance of the difference of the means
- sd = Estimated standard deviation of the means
- t_i = Calculated distribution
- C.I = Confidence Level = 95%

- α = 5% (error factor) confidence limit
- two tailed, $\frac{1}{2} = \frac{5}{2}\% = 2.5\%$
- t_{0.025,3} = 3.182 (= table value of t)

Table 5. Testing average farm incomes/year at 95% confidence level

Sample	ni	df	X	(X _i - X) ² = ss
CONTROL(X ₁₃)	2	1	3600	320000
EXPERIMENTAL(X ₁₄)	3	2	827	136267
SUM	5	3		456267.0

$$d = X_{13} - X_{14} = 3600 - 827 = 2773.0$$

Estimated pooled variance of the difference between the means:

$$Sd^2 = S^2(1 + 1) = 924.3(1/2 + 2/3) = 770.3$$

Estimated standard deviation of the means

$$Sd = \sqrt{Sd^2} = \sqrt{770.3} = 278$$

Hypothesis $H_0: \mu_{13} \sim \mu_{14} = 0, H_1: \mu_{13} \sim \mu_{14} \neq 0$

At 95% confidence level

$$\text{Calculated } t, t \geq X_{13} - X_{14} = 2773.0 = 10.0$$

Sd 278

Tabular t, |t| ≥ t_{0.025,3} = 3.182.

Since the calculated t value is greater than the tabular value of t at 95% confidence level, the null hypothesis is rejected. It is thus concluded that at 95% confidence level there is a significant difference between the average farm income in the conflict communities and the non conflict communities. The results from the test also imply that given the current samples chosen for the study, there are significant differences between the average farm incomes in the experimental communities and control communities. This means that the conflicts did directly affect household incomes.

8. Measures to reduce pastoralists-farmer conflicts in the study area

The respondents were asked about what should be done to ensure that the conflicts do not occur again (TABLE 6). From the responses, many were of the view that government should flush out all herdsmen from the area. Some called for permanent security post in their communities. Few were of the view that government train herdsmen on

Table 6. Measures to reduce pastoralists-farmer conflicts in the study area

Cause	Responses*	
	No	%
Provision of security to communities	85	94
Train herdsmen on new technologies	10	11
Flush out all herdsmen from the area	88	97
Review traditional governance system	80	89
Licensing and certification	78	87
Zone areas for grazing purpose	67	74

*Multiple responses ($N = 90$)

improved technology. However majority (89%) were in favour of a review of the traditional governance system which has given power to traditional authorities to lease large areas of land to cattle owners. Seventy-four (74%) percent called for government to zone areas for grazing purposes alone. Eighty-seven (87%) were in favour of giving license to pastoralists in order to regulate their activities and also ensure that animals slaughtered in abattoirs around the country are those raised on farms with good practices and not those grazed in the wild.

9. CONCLUSION

Several lessons have emerged from the study. For example, the study has shown that farming provides an important contribution to household income. Many farmers continue to draw their income from farming activities. However, the conflicts in the study area have significantly affected incomes and food production. Since the conflicts started, farmers' average income has substantially reduced. This has resulted in their inability to pay children school fees and loans they took from the bank. Many farmers also abandoned their farms owing to the conflicts.

The study also observed that policies pursued by successive colonial and post-colonial governments in Ghana have tended to neglect the needs of pastoralists in Ghana. There is no detailed policy that seeks to regulate pastoral livelihoods in Ghana. This has exacerbated problems and insecurities of pastoralist communities, particularly in relation to access to scarce natural resources. Whilst some international policies (example the ECOWAS Protocol on Transhumance) exist that advocate for the protection of pastoralists' rights to land and water through clearly demarcated areas, these policies lack legal force and implementation, whilst competing activities, such as wildlife conservation and agriculture are given legal force. Developing economically and environmentally sound policies are not enough and attention must be given to providing laws to support such policies.

Laws enabling secure tenure and ownership of land in Ghana have been implemented with little regard for the needs of nomadic pastoralist. In the study area, nomadic communities have tended to rely on communal

grazing rights, which are not protected by law. Planners in Ghana over the years have also neglected pastoral livelihoods in their planning schemes. In addition to this, pastoralists are inadequately represented in national and local decision-making processes, allowing their interests and concerns to be unduly neglected in development. They are marginalized in many communities making them hostile and also limiting their scope for participating in structures for conflict prevention and dispute settlements. State structures must ensure that there is adequate representation of pastoral group at both local and national decision making and their groups well integrated into the local system.

Future studies should look at why government of Ghana has not been able to implement the ECOWAS Protocol on transhumance in the country. Although Ghana ratified the protocol, it has not lived up to its obligations, such as facilitating the integration of incoming migrants. The government has failed to create corridors for the Fulani to pass through, to designate grazing reserves, to install boreholes and to set up veterinary outposts. Consequently, the Fulani have to rely on themselves in obtaining access to land and other natural resources.

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