

Unraveling the Ripple Effects of Farmer-Herder Conflicts on the Cattle Value Chain in the Karaga District, Ghana

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Abstract

This study examines the effects and policy implications of farmer herder conflicts on the various players along the cattle value chain in the Karaga District. Five key categories of actors were chosen at random for the study. The research employed an explanatory sequential mixed-method technique. Data was obtained through questionnaires administration, interviews, focus group discussions and observations. The study found that conflicts have more direct effects on the farmers and the herders than other actors on the value chain; these include decreased crop yields, insecurity, fatalities, loss of lives and property destruction, and food insecurity. Consumers of cattle products were equally affected resulting in limited and high cost of cheese, milk, and beef. The paper proffers a number of policy issues including land use policy, conflict resolution and peacebuilding, improvement of livestock infrastructure and marketing services.

Keywords: *Farmers, Herders, Conflict, cattle value chain, actors*

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I. Introduction

Karaga District is located in the Northern Region of Ghana, an area that is predominantly agrarian and dependent on agriculture for both subsistence and commercial purposes. Cattle rearing is a major economic activity in the region, with a significant number of farmers and herders engaged in the cattle value chain.

The farmer-herder conflicts in the district have been a long-standing issue, causing significant disruptions to the livelihoods of both farmers and herders. These conflicts arise mainly due to competition for scarce resources, such as grazing land and water sources, as well as cultural and ethnic differences between the farmers, who are predominantly settled agriculturalists, and the herders, who are predominantly nomadic pastoralists (Tonah, 2005).

The conflicts have escalated in recent years due to various factors, including population growth, climate change, and changes in land use patterns. The increasing population has led to increased demand for agricultural land, leading to the encroachment and conversion of grazing lands into farmlands. Climate change has also resulted in the degradation of grazing lands, making it difficult for herders to find suitable grazing areas for their cattle (Buhaug, et al 2015). Additionally, changes in land use patterns have seen the expansion of settlements into traditional cattle routes, further exacerbating the conflicts.

These conflicts have far-reaching ripple effects on the cattle value chain in the district. They not only disrupt the productivity of both farmers and herders but also affect the wider community and economy. The conflicts lead to the loss of cattle, destruction of crops, and loss of livelihoods for both farmers and herders. They also create social tensions and divisions, as well as pose significant challenges to agricultural development and food security in the region (Olaniyan and Yahaya, 2013, Olaniyan et al, 2015).

Understanding the root causes and dynamics of these conflicts is crucial for developing effective strategies and interventions to mitigate them. This study aims to unravel the ripple effects of the farmer-herder conflicts on the cattle value chain in Karaga District by exploring the underlying causes, impacts, and potential solutions to address the conflicts. The findings of this study will provide valuable insights for policymakers, local communities, and development practitioners in formulating sustainable and inclusive approaches to managing conflicts and promoting harmonious coexistence between farmers and herders in the district.

An overview of the literature

Recent research suggests that disputes are largely a multi-societal occurrence that is connected to social distinction within communities (Benjaminsen et al., 2012; Okoro, 2018; Berry, 2017). When people disagree in a social environment about important issues or when emotional hostilities lead to friction between individuals or groups, conflict ensues (Okoro, 2018). Conflicts of all types underpin human organization formation, evolution, and administration in the modern era. Land rivalry was cited by Tamou et al. (2018) as a key factor in resource-use conflicts, primarily between herders and crop producers but also between herders and organizations dedicated to protecting the environment. Increased rivalry for limited resources has regularly led to deadly battles between ranchers and farmers in numerous African countries, including Ghana. As a result, Braukamper (2000) notes that because both farmers and herders depend on the same physical, political, and sociocultural circumstances for their survival, conflict between them is unavoidable. According to Berry (2017), resource shortages, environmental deterioration, and more recently climate change are the root causes of farmer and herder disputes.

Conflict between farmers and herders has existed in Ghana for a long time. According to Adomako (2019), this social blight existed as of the late 1990s and caused stress in many areas of the value chain, particularly with regard to income mobilization and sharing. Therefore, according to Ofuoku and Isefe (2009), the socio-economic repercussions of the conflicts cause relocation, deaths, destruction of properties, and loss of goods in storage in addition to a decline in crop output and farmer and nomad income. Additionally, Moritz (2012) claimed that it has an impact on the value chain for cattle since it limits herdsmen access to grazing areas, which results in undernourished animals. As a result, the quality of the meat produced declines, making it unappealing for both customers and retailers. As a result, a production stage error has a severe impact on the entire cattle value chain (Moritz, 2012). Since the majority of the players along the cattle value chain rely on these activities for their livelihoods, the predominance of F-H disputes poses a terrible danger to them. The livelihoods of actors and their families are impacted by the F-H conflicts because they make it challenging for actors to successfully engage in their social and economic activities (Babagana et al., 2019).

Numerous studies have highlighted the terrible consequences of the F-H conflict (see Babagan et al., 2019; Mortiz, 2010; Bukari, 2017; Abubakar & Longi, 2014), but empirical research has not sufficiently examined how much each player along the cattle value chain is impacted. Therefore, the purpose of this research is to identify the many stakeholders along Ghana's cattle value chain and evaluate how the F-H conflict has an impact on each of them. The results of this study will quantify how much the F-H conflict has an impact on each of the parties. Knowing the players who would be most impacted will help policymakers, chiefs, and local authorities create compensation packages for the afflicted actors as well as identify a long-term cure for this social ailment. The remainder of the essay explores the relevant literature review, the research area and technique, as well as the presentation and analysis of the findings.

In West Africa, farmers and herders have coexisted for a very long time. This is so because the land, water, and vegetation satisfy a need that they both share. This cohabitation hasn't been easy, though; disagreements and lack of collaboration are common. (Tonah, 2002; Moritz, 2010). The majority of violent farmer-herder disputes in Ghana are caused by Fulani (or Fulbe) herders and established farming communities, like in many other regions of West Africa. Fulani make up the bulk of pastoralists in West Africa (Abbass, 2014). Beginning in the early 1920s and 1930s, Fulani nomadic herders from Niger, Burkina Faso, Mali, and other places began migrating into Ghana in search of pasture, water, and better economic opportunities. (Tonah, 2002). According to Stanley et al. (2013), conflicts between agricultural communities and these herders are becoming more frequent, killing many people and uprooting others since there are Fulani herdsmen in almost every agro-ecological zone in Ghana. The situation does not seem to be improving anytime soon, despite the fact that security personnel have regularly intervened to break the impasse in places like Gushegu, Karaga, Nangodi, Dumso Agogo, and other villages in the Atebubu/Amanteng and Pru districts that have experienced violent fights. The situation is sometimes referred to as the "Fulani menace" in media speak.

Effects of Farmer Herder Conflicts on the Cattle Value Chain

The farmer-herder conflict concerns have gotten a lot of attention in Africa's academic community. The varied repercussions of F-H conflict in Africa have been evaluated in Germane literature.

For instance, Paul's study from 2021 looked at how the conflict between farmers and herders affected food security in Benue State, in central Nigeria. Using the descriptive study approach, Eco-violence, Frustration Aggression, Relative Deprivation, Democratic Peace Building, and Defensive Structural Realism as theoretical frameworks. His research showed that the study region was plagued by crop loss, cattle rustling, agricultural encroachment, and a shortage of water for irrigated cultivation and grazing.

Terwase et al. (2020) also looked at the impact of the violence between herdsmen and farmers in Benue State, Nigeria, on the livelihood resources of agricultural communities. A random sample of 150 people from three rural areas was polled using the cross-sectional survey design. The PCA approach was used, and the

findings showed that the expulsion of farmers as a result of the F-H dispute had an impact on food supply as well as the farmers' financial, physical, natural, human, and social assets both immediately and over time. According to Dimelu et al. (2017), farmer-herder conflict in Nigeria's Kogi State impedes sustainable livelihoods, food security, and economic growth. Lawbreaking, cultural considerations, interference with one's way of life, and traditionalism are all elements that contribute to conflict. The study suggests collaborative efforts to look at community involvement in conflict resolution as well as strategic education on resource coexistence and legal compliance.

Alonge (2019), on his part, examined the Herdsmen-Farmers dispute and how it affected Nigeria's human resource management. The study employed secondary data for the investigation and discovered that F-H conflicts result in injuries and human problems.

In a similar vein, Okoro (2018) employed a qualitative method with the theoretical underpinnings of dialectical materialism and frustrated aggression in his analysis of the Herdsmen/Farmers conflict and its consequences on Socio-Economic Development in Nigeria. The findings of his investigation show that the F-H conflict has caused fatalities, displacement, distrust, and property destruction in Nigeria.

Theory of Value Chain

The theory of Value Chain was first suggested by Michael Porter in his book *Competitive Advantage* (1985). This theoretical framework focuses on understanding the various stages of a product or service from production to the final consumer. It examines the activities, actors, and relationships involved in the value creation process and how value is added at each stage. Porter's value chain was a concept in corporate management, and emphasizes the analysis and breakdown of the various systems and activities that create value in the company, their connections to customers, and their coordination through research and development.

In this context, the theory is applied to analyze the different stages of the cattle value chain, including breeding, rearing, selling, processing, and distribution. It is a network of interconnected actors that play various roles in the cattle subsector. However, because of the conflicts, farmers, are land owners are introduced into the framework, because they provide the land for grazing and the conflict is often between the herders and the farmers that affects the value chain.

By using this framework, the researchers have identified the key actors and stakeholders involved in each stage of the value chain, such as farmers, herders, traders, processors, retailers/butchers and consumers. The paper examines how each actor contributes to the value creation, what challenges they face, and how conflicts emerge or escalate and affect each actor within the value chain.

Furthermore, the value chain theory sheds light on power dynamics and resource distribution within the cattle value chain. It also identifies who holds power and control over resources and how this imbalance may contribute to conflicts. Additionally, it assess the impacts of the conflicts on the value chain, including disruptions in supply chains, reduced market access, or increased costs for actors involved.

Finally, the Value Chain Analysis is a suitable framework to explore the farmer-herder conflicts on the cattle value chain in the Karaga District because it provides a systematic way to analyze the interdependencies, relationships, and conflicts within the different stages of the value chain. It can help researchers understand the root causes of conflicts, identify potential solutions or interventions, and promote dialogue and collaboration among the actors involved.

II. Study Area and Methodology

Study Area

The study area for this research is the Karaga District in the Northern Region of Ghana. The Karaga District has been selected for this research on the justification that it is home to a large number of cattle herders and as well, a large number of farmers, as agriculture is the major economic activity that takes place in the district (GSS, 2014).

Karaga District is located in Ghana's Northern Region and is bordered by East Mamprusi, Savelugu/Nanton, Gushegu, and Mion. Its capital is 24 kilometers from Gushegu and 94 kilometers from Tamale. The district's vegetation consists of guinea savannah vegetation with tall grasses and drought-resistant trees, providing income for residents and utilizing tall grasses in roofing and artistic endeavors. Soils include savannah ochrosols, Voltain shales, and groundwater laterites, which are better suited for road and construction projects. The district's climate is tropical continental, with a rainy season in May, peaking in August and September, and dry seasons. Maximum temperatures reach 36°C in March and April, with low temperatures from November to February (GSS, 2014).

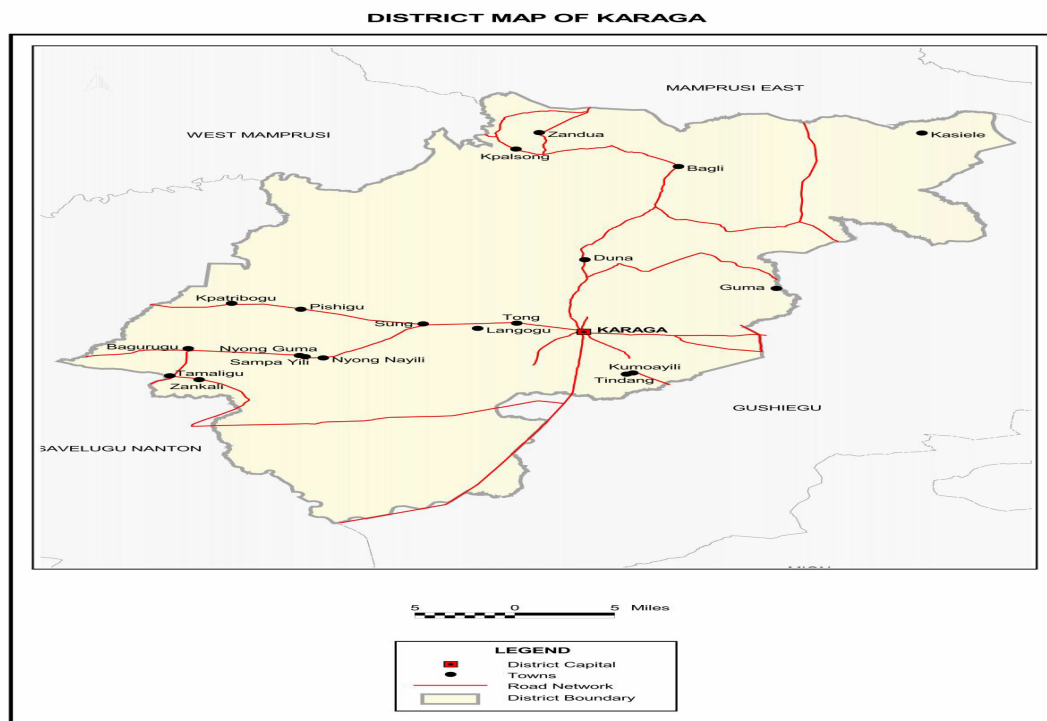


Figure 1: Map of the study area

3.2.1.1 Data collection and analysis

To get firsthand information from the many participants in the cattle value chain, a cross-sectional survey data collection technique was used. Both quantitative and qualitative data were present in the data. As a result, the data analysis was done using a mixed-method approach. Particularly, a mixed-methods explanatory design was used, in which the qualitative analysis came first and then the quantitative analysis. The study participants were given a questionnaire and a key informant interview guide in order to extract the data. With the use of SPSS, descriptive statistics (which include frequency, percentage, mean, and standard deviation) were used to examine the quantitative data, while Nvivo's thematic analysis (which involves coding, creating, and organizing themes) was used to analyze the qualitative data. A total of 357 questionnaires were collected despite the study having distributed a total of 480 questionnaires, an estimate based on the response rate of earlier research done in the subject region. A 74% response rate is shown by this. In contrast, 123 performers chose not to participate in the poll, yielding a 26% non-response rate. According to their neighborhoods and actor group memberships, respondents were divided into strata using the stratified sample approach (see Table 1). On the other hand, the qualitative data was acquired from 10 significant players and stakeholders in the agricultural communities. They consist of chiefs, assemblymen, customers, and certain actors' F-H conflict victims. Nine settlements in the Karaga District were surveyed as indicated in the stratum Table 1 to make sure that the study findings replicate the varied impacts each actor experiences in the distinct farming communities.

Table 1: Strata of Study Sample

Communities	Farmers	Herdsmen	Cattle Traders	Butchers	Consumers	Total
Bagurugu	25	15	4	7	2	53
Tamalgu	15	10	3	6	2	36
Sung	16	9	2	2	1	30
Namburugu	19	14	4	4	3	44
Nangun	20	16	5	5	5	51
Guunayili	16	8	3	3	3	33
Jamaha	15	9	3	5	2	34
Karaga Town	26	10	14	22	4	76

Total	152	91	38	54	22	357
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Author's construct (2023)

Table 1, shows the details of the research respondents. It is clear that, a total of 357 respondents were selected from the various actors on the cattle value chain and the farmers. The respondents were selected from eight randomly selected communities in the Karaga District, Northern Region.

III. Results

Effects of Farmer-Herder Conflict on the Cattle Value Chain

Demographic Characteristics of the Respondents

The demographic characteristics of the participants were examined. The results indicate that the majority of the actors are in the Islamic religion 134(88.2%), 88(96.7%), 52(96.2%), 34(89.5%) and 18(81.8%) respectively among the farmers, herders, cattle traders, butcher and cattle consumers. Likewise, the age brackets of the participants showed that the majority of the respondent are within the youthful age brackets, 20-35 years. Thus, 101(66.4%) represented farmers, 53(58.2%) were herdsmen, Butchers were found to be 30(55.5%), while the traders and consumers were 32(84.2%) and 14(64%). The implication this has on the F-H conflict is that a situation where the conflict is not managed properly and fairly, there is high probability that the youth will employ harmful means to seek justice for themselves, hence escalating the crisis.

Table 2: Demographic Characteristics

	FARMERS		HERDER		BUTCHERS		TRADERS		CONSUMERS	
	Freq.	(%)	Freq.	(%)	Freq.	(%)	Freq.	(%)	Freq.	(%)
Religion										
Christianity	10	6.5	-	-	1	1.9	1	2.6	4	18.2
Islam	134	88.2	88	96.7	52	96.2	34	89.5	18	81.8
ATR	8	5.3	3	3.3	1	1.9	3	7.9	-	-
Age										
18-19	33	21.7	30	33	8	14.8	4	10.5	-	-
20-35	101	66.4	53	58.2	30	55.5	32	84.2	14	64
36-59	17	11.2	8	8.8	12	22.2	2	5.3	8	36
60+	1	0.7	-	-	4	7.4	-	-	-	-
Education Level										
Basic Level	32	21.1	2	2.2	15	27.9	15	39.5	-	-
Tertiary	11	7.2	-	-	-	-	-	-	8	36
None	109	71.7	89	97.8	39	72.2	23	60.5	14	64
Total	152	100%	91	100%	54	100%	38	100%	22	100%

Source: Field Survey (2023)

The education level statistics shows that the majority of all actors are illiterates. This represents farmers, 109(71.7%), 89(97.8%) herdsmen, 39(72.2%) butchers, traders and consumers were found to be 23(60.5%) and 14(64%) respectively.

Effects of Farmer-Herder Conflict on the Farmers

Crop destruction and loss of productivity: Farmer-herder conflicts often result in the destruction of crops. Herders may allow their cattle to graze on farmlands, leading to trampling, eating, or damaging the crops. This can result in substantial financial losses for farmers, as their primary source of income is compromised. Additionally, repeated crop destruction can reduce the productivity of the land, affecting the long-term sustainability of farming in the area.

Livelihood insecurity: Farmer-herder conflicts can lead to livelihood insecurity for farmers. When crops are destroyed, farmers lose their source of income, making it challenging to support their families and meet basic needs. The inability to generate sufficient income can result in poverty and food insecurity. The conflicts can also cause displacement, forcing farmers to abandon their lands and livelihoods, further exacerbating their economic vulnerability.

Increased production costs: Farmer-herder conflicts can result in increased production costs for farmers. To protect their crops from grazing cattle, farmers may have to invest in physical barriers such as fences or hire guards to monitor their fields. These additional expenses can put a strain on the financial resources of small-scale farmers who may already be operating on limited budgets.

Impaired peace of mind and mental well-being: Living in constant fear and uncertainty due to farmer-herder conflicts can have detrimental effects on farmers' mental well-being. The fear of losing their crops and livelihoods, as well as the potential for confrontation and violence, can increase stress levels and anxiety among the farming community. This can negatively impact farmers' overall quality of life and emotional well-being.

Social tensions and strained community relationships: Farmer-herder conflicts can create social tensions and strained relationships within the community. As these conflicts often stem from cultural or ethnic differences, they can deepen existing divisions and prejudices. This can lead to hostility, mistrust, and discriminatory attitudes between farmers and herders. Such social tensions can further hamper community cohesion and undermine efforts for collective problem-solving and cooperation.

Limited access to resources: Farmer-herder conflicts often arise due to competition for scarce resources, such as grazing land and water sources. As conflicts escalate, farmers may be restricted from accessing resources they rely on for their agricultural activities. This can disproportionately affect farmers who rely on communal resources or lack the means to secure alternative resources, further hindering their farming operations and well-being.

Addressing these effects requires comprehensive strategies that focus on conflict resolution, resource management, and community engagement. Efforts to promote dialogue, mediation, and conflict resolution mechanisms can help foster peaceful coexistence between farmers and herders. Strengthening land and resource management practices, such as the allocation of grazing areas and the construction of water infrastructure, can also help minimize resource-based conflicts. Additionally, interventions aimed at supporting farmers' resilience, such as providing financial assistance, access to credit, and training on alternative livelihood options, can help mitigate the detrimental effects of farmer-herder conflicts on their well-being and economic stability.

Farmers are one of the highly victimized actors whenever there is a breakout of F-H conflict. The study survey identified seven broad effects of the conflict on farmers, and the frequency and mean score of each effect were used to rank them from highly severe to the least severe. The results in Table 3 shows that “food insecurity”, “loss of farm produce”, “decrease in farmer’s output and income”, and “injury/assault” have their mean scores greater than the overall mean, hence they are ranked as the top four severest effects farmers are mostly victimized with from any clash with herdsmen.

Table 3: Results of the Effects of the F-H Conflicts on Farmers

Effects	Total Score	Mean	Rank
1. Loss of lives	101	0.66	7 th minor effect
2. Loss of house or property	335	2.20	5 th minor effect
3. Loss of farm produce	721	4.74	2 nd major effect
4. Decrease in farmers’ output and income	691	4.55	3 rd major effect
5. Social insecurity	150	0.99	6 th minor effect
6. Injury/Assault	520	3.42	4 th major effect
7. Food insecurity	760	4.97	1 st major effect
Overall Mean		3.08	

Source: Field Survey (2023)

n =152 Cut off

mean score: if mean score ≥ 3.08=Major effect, and if mean score ≤ 3.08=Minor effects

The issues of food insecurity and the loss of farm produce at farms is an imminent challenge to farmers in the Karaga district. There have been worries and concerns expressed by farmers with regards to the effects of the conflict on their yield. A farmer commented during FGD:

“From what my neighbours have gone through, tomorrow it could be any of us present here, our farms are now feeding grounds for the Fulani cattle. Anytime you are going to the field, you have anxiety about your produce until you get to the field and be certain nothing bad happens to your produce. As we speak, you dare not cultivate cowpea in this jurisdiction again, with that crop, you are 100% certain it will not reach the harvesting period.” (A 64years old farmer).

Effects of Farmer-Herder Conflict on the Herders

The study found farmer herder conflicts have several effects on the herders. Respondents were presented with a four-point Likert scale of questions; (1= Not severe, 2= severe, 3= very severe, and 4= highly severe).

Diminished access to grazing land: The study found that farmer-herder conflicts often arise due to competition over land resources. As a result, the farmers who are often the indigenes and land owners often

restrict the herders from accessing grazing lands, which reduces the areas available for their cattle to graze. This limited access to grazing land leads to malnourishment and poor health conditions of the cattle, affecting their growth, productivity, and overall well-being.

Loss of cattle through cattle rustling and death resulting from the conflicts. The respondents, mostly the herders, frequently mentioned that they lost cattle through stealing, killing, or mutilating by angered farmers. Bandits and cattle rustlers also took advantage of the situation to steal their cattle. This results in significant financial losses for the herders, as cattle often represent their primary source of income and wealth. The herders complained that the loss of cattle pushed some of the herders into poverty and have long-term socio-economic implications for them and their families.

Veterinary services are often disrupted due to farmer-herder conflicts, over 78% of the herders indicated that veterinary services are disrupted due to insecurity. In areas affected by the conflict, veterinary professionals refused to pay regular visit to treat and vaccinate the cattle, leading to increased vulnerability to diseases. The farmer intimated that this situation not only affects the individual animals but also their own health. This could have wider implications on public health if zoonotic diseases, which can be transmitted between animals and humans, are not controlled.

The herders also reported displacement, loss of lives and loss of settlements through physical attacks (Olaniyan, Uzodike, and Francis, 2015). Farmer-herder conflicts often result in the displacement of herders and their families. The herders frequently mentioned that they are forced to abandon their homes, traditional settlements, and established herding practices. They indicated that due to the incessant nature of the conflict, some herders have abandoned herding and reported to sedentary lives in the urban centres. This has the potential to disrupt their social ties, cultural identity, and livelihood strategies.

Food insecurity: The herders reported that the conflicts have disrupted their food production systems leading to food insecurity for both herders and the farming community. They indicated that they are unable to farm in addition to herding. They are also unable to graze their cattle properly or sustain their livelihood. The conflicts also adversely affect the production of milk, meat, and other livestock products, leading to reduced availability and increased prices.

Over 65% of the herders also claimed that the conflicts have affected their mental and physical health. One of the herdsmen at Bagurugu reported losing his son to the conflict and this has made them living in constant fear and insecurity and has taken a toll on their mental and physical health. The stress, anxiety, and trauma experienced can have long-lasting effects on their well-being. Additionally, the recurrent violence and displacement can lead to physical injuries and casualties for both herders and their cattle.

Finally, one of the serious effects of the conflict is disrupted social cohesion and social insecurity. The study found that 69% of the respondents stated that farmer-herder conflicts strain intercommunity relationships, leading to deep societal divisions and decreased social cohesion. The conflicts breed animosity, mistrust, and prejudices between the herders and the farmers, making cooperative efforts for conflict resolution and sustainable development challenging. See details on Table 4.

Table 4: Results of the Effects of the Conflict on Herders

Effects	Total Score	Mean Score	Rank
1. Loss of lives	215	2.34	7 th minor effect
2. Loss of houses and property	410	4.46	4 th major effect
3. Cattle rustling	495	5.38	2 nd major effect
4. Unsafe grazing fields	371	4.03	6 th minor effect
5. Poor Veterinary services	378	4.11	5 th minor effect
6. Displacement	486	5.28	3 rd major effect
7. Social Insecurity	498	5.41	1 st major effect
Overall Mean		4.43	

Source: Field Survey (2023)

n =91

Cut off mean score: if mean score ≥ 4.43 =Major effect, and if mean score ≤ 4.43 =Minor effects

The mean scores of the seven items were computed, and based on the overall mean ranking “social insecurity of the herdsmen” was the severest effect of the conflict, followed by “cattle rustling”, and “displacement of herders” as well as “loss of house or property” as the 3rd and 4th repercussion of the conflict on herdsmen. However, the incidence of life loss is minimal in the study area.

Generally, the farmer-herder conflict has multifaceted effects on herders and their cattle, ranging from loss of access to grazing land and water scarcity to loss of cattle, displacement, and disrupted livelihoods. These

effects not only jeopardize the well-being of herders and their communities but also have wider implications for food security, environmental sustainability, and social cohesion in affected areas.

Effects of Farmer-Herder Conflict on the Cattle Traders

Cattle traders play a crucial role in the agricultural economy, as they facilitate the movement of livestock between different regions and markets. They buy cattle from herders and sell them to consumers in the urban communities, farmers, providing a vital link in the cattle value chain. However, the farmer-herder conflict has had a significant impact on the operations of these cattle traders, with far-reaching consequences.

One of the major effects of the conflict on cattle traders is the disruption of trade routes and markets as claimed by almost all the cattle traders. They indicated that as tensions between farmers and herders escalate, areas once considered safe for cattle traders have become risky and dangerous and thus, negatively affected their businesses. They further intimated that the conflict compelled them to abandon some traditional trade routes and markets, forcing them to seek alternative routes or relocate altogether. This situation of closure or blockage of roads, makes it difficult for traders to transport cattle to markets or potential buyers. The disruption in cattle trade routes also hindered the flow of cattle from areas with surplus to areas with demand, negatively impacting the cattle business. This does not only increase the cost and time required for cattle trading but also limits the availability of livestock for consumers who rely on these traders.

Another effect of the conflict on the cattle traders is increased transportation costs: Again, almost all the cattle traders claimed that, due to the conflict, most of the herders moved deep into the forest where farming activities are limited. In order to access them to buy cattle, traders have to take longer or alternate routes to transport cattle. This results in increased transportation costs, as traders have to bypass conflict-prone areas or pay bribes to pass through checkpoints or blockades. The additional costs reduce profit margins for cattle traders and make the business less economically viable.

Insecurity and theft. The insecure environment occasioned by the conflict also increased cattle rustling, banditry and killing of cattle by criminals. This claim was corroborated by the police, the herders and the cattle owners. In such situations, cattle theft becomes more prevalent, and cattle traders sometimes become targets. Thieves take advantage of the chaos and lack of security to steal or fraudulently acquire cattle from traders. The traders frequently indicate that this increases the risk of financial losses and discourages them from continuing or expanding their businesses.

Another effect of the farmer-herder conflicts frequently mentioned by cattle traders was difficulty in market access. They indicated that local cattle markets were closed down and the only way to access cattle to buy is to go from kraal to kraal to buy cattle in smaller numbers. The local cattle markets were suspended or relocated due to security concerns. This restricts the trading opportunities for cattle businesses, as traders struggle to find reliable and stable markets to buy cattle. Limited market access reduces profitability and slows down the growth of cattle businesses.

Furthermore, the study found that there was a considerable decline in cattle supply. The conflicts create an atmosphere of fear and insecurity, banditry, the killing of cattle, suspension of veterinary services, increase in diseases and death of cattle. The combined effects of these led to a shortage of supply and discouraged potential buyers from investing in the cattle business. The situation also leads to an increase in prices and financial losses for cattle traders. It also hinders the growth and expansion of cattle businesses.

Cattle traders and cattle owners as well as the herders indicated that conflict cost them heavy losses of investment and assets. As indicated by Fuseini Seidu a cattle trader from Tamale *"I lost seven (7) of the cattle I bought from the Fulani in one of the attacks on their kraals"* The cattle traders also mentioned the destruction of infrastructure, such as market facilities, holding pens, and loading docks, which are essential for cattle trading. The destruction of these assets not only hampers the immediate operations of cattle businesses but also creates long-term setbacks by increasing the cost of rebuilding or replacing the infrastructure. This loss of investment and assets further impacts the profitability and sustainability of cattle businesses.

Almost all the cattle traders interviewed claimed that they recorded heavy financial instability and credit challenges resulting from the conflict. The disruptions in trade, loss of cattle, increased transportation costs, and limited market access dealt a serious blow to their financial conditions and increased their debt burdens. Cattle traders were unanimous in their response that they face challenges in accessing credit or loans to sustain or expand their businesses due to the perceived high-risk nature of operating in conflict-affected areas.

Their plight is exacerbated by their lack of insurance and risk management capacities. They all indicated that their businesses are not insured and they sometimes buy the cattle on credit from the cattle owners with the assurance that they will sell and make a profit and return their money. Due to the sporadic nature of the farmer-herder conflicts, it poses challenges in managing risks and obtaining insurance coverage for cattle businesses. They all claimed that Insurance companies are not willing to provide coverage due to the high-risk nature of the business, especially in conflict-prone areas, and those cattle traders who attempted to insure their businesses were slapped with prohibitively expensive premiums This leaves cattle traders vulnerable to financial losses in case of theft, destruction, or other conflict-related incidents.

Table 5 presents details of the phenomenon. The mean scores of 4.97, 4.92 and 4.26 are greater than the overall mean of 3.45. This corresponds to “increase in prices of cattle”, “low sales”, and “decrease in income of the traders”. Thus, increase in the price of cattle was the topmost negative effect of the conflict on cattle traders. This was followed by low sales at the market due to low supply of cattle and decrease in the income of the traders was the third most excruciating effect of the conflict on the traders.

Table 5: Results of the Effects of the Conflict on the Cattle Traders

Effects	Total Score	Mean Score	Remarks
1. Increase in income	109	2.87	1 st positive effect
2. Decrease in income	162	4.26	3 th major negative effect
3. Increase in prices of cattle	189	4.97	1 st major negative effect
4. Blockage of route to market	98	2.58	5 th minor negative effect
5. Insecurity at work	100	2.63	4 th minor negative effect
6. Social insecurity	72	1.89	6 th minor negative effect
7. Low sales	187	4.92	2 nd major negative effect
Overall Mean		3.45	

Source: Field Survey (2022)

n =38

Cut off mean score: if mean score ≥ 3.45 =Major effect, and if mean score ≤ 3.45 =Minor effects

The issues of instability in the activities of cattle traders due to the conflict continuous to be imminent in the Karaga district. There have been worries and concerns expressed by some traders with regard to the effects of the conflict on their activities. A cattle trader who doubles as a producer of cattle commented during an interview

“The Fulani have more cattle than the natives in this jurisdiction. Anytime there is a deadlock between Farmers and Herders, most Fulani default on coming to the terminal markets to market their cattle, and cattle traders capitalize on them to make good sales, we are both competing for sales at terminal markets and their cattle is far fatter than our cattle because they feed their cattle during the day and night and we only feed ours during the day only, and no reasonable buyer will see a Fulani cattle and still patronize ours.” (Mba Zakaria, a native cattle producer/trader).

In summary, farmer-herder conflicts have significant effects on cattle trading and cattle businesses. Disrupted trade routes, increased transportation costs, insecurity and theft, difficulty in market access, decline in cattle demand, loss of investment and assets, financial instability, and insurance challenges are some of the consequences. These effects can hinder the growth, profitability, and long-term sustainability of cattle businesses in conflict-affected areas

Effects of Farmer-Herder Conflict on the Butchers

Butchers in the study area also suffered the consequences of the conflict. They are affected because they rely on a stable supply of cattle to transact their business. They also constitute an important segment of the cattle value chain. They buy, slaughter and process the beef, hides, and hooves for sale to restaurants, hotels, and household consumers. The study revealed that the conflict has led to a shortage in the supply of cattle and thus an increase in the cost of cattle that affects the cost of beef to consumers. A butcher in Karaga, Alhassan Yussif stated that *“One kilogram of beef was sold at GHS 10 in January 2021. As of now (February 2022) the same kilogram of beef is sold at GHS 18.* He attributed the increment to the conflict.

Effects of the Conflicts on Consumers of Cattle Products

The effects of farmer-herder conflicts on consumers of cattle products such as beef, milk, cheese, hides, leather, butter, and yoghurt:

Reduced availability of these products: Restaurants, hotels, drinking sports, and household consumers interviewed indicated that the conflicts disrupted cattle production and supply, resulting in decreased availability of cattle products in the market. This reduced availability leads to limited supplies of beef, milk, cheese, butter, yoghurt, and other cattle products. As a result, consumers find it more challenging to access these products consistently, leading to potential shortages and higher prices.

Price increases: The decreased availability of cattle products due to the conflicts also result in increased prices for consumers. When the supply is limited and demand remains constant or increases, market forces can push prices upward. Higher prices for beef, milk, cheese, and other cattle products can strain the budgets of consumers, particularly those with limited incomes.

The study further found that, the local industries that depend on cattle products such as hides for leather, hooves and horns for ornaments, and women who produce cheese, yogurts, all suffered the disrupted supply of their products. They further stated that the disruption led to job losses, factory closures, and a decline

in the local production capacity of various cattle products. As a result, consumers of these products switched to imported or lower quality alternatives.

Restaurants, hotels and other food vendors who constitutes a bulk of the consumers of beef said they have switched to alternative protein sources, such as imported poultry, fish and plant-based protein due to high cost cattle products. This shift in dietary patterns wa be driven by necessity rather than choice and can impact traditional food consumption habits. Other effects frequently mentioned include economic impact on consumers. Higher prices lead to decreased affordability and potentially impact the nutritional quality of consumers' diets.

Further interviews with the consumers are illustrated in the following statements:

"We face farmer-herder conflict in this district which sometimes is a result of the destruction of farmlands by the Fulani herders. When there is such kind of conflicts, I am heavily affected, milk is my favourite drink and I cannot even go 3days without taking some. When the environment is not conducive, I am not sure Fulani people can also sell their products. Sometimes the price becomes higher when there is conflict. I will somehow attribute the high cost to the conflict, but it is not general in this community. When you have a deadlock with a Fulani in this community, just prepare not to be in need of milk, because when you do, he will deny doing business with you. The excuse will just be the product; thus, milk is finished when you are very certain the product is available" (A 40-year-old trader, Nagun Community).

Another respondent had this to share:

"Yes, farmer-herder conflict exists and is mainly a result of the search for pasture or grass for animals to graze, herdsmen often drive their cattle to farmlands intentionally or unintentionally leading to the destruction of food crops. When that happened, herdsmen are charged exorbitantly for the cause of the destruction of farmlands, this compels some of them to relocate which makes them unavailable at the cattle market. Scarcity of the products at the cattle market leads to an increase in demand for the product hence affecting the consumers" (36-year-old teacher, Karaga S.H.S).

Lastly, a respondent shared similar views as follows:

"Yes, there is conflict. This happens as a result of the cattle disturbing the farmer's produce. During such incidents, the cattle herders fight with the community members and in effect they refuse to sell the product in the market, making it difficult to get the product to purchase. The Fulani herdsmen are the only producers of foods such as milk, so when there is insecurity between these groups thus farmers and herders, they feel insecure trading in the open market" (A 31-year-old trader).

In summary, the effects of farmer-herder conflicts on consumers of cattle products include reduced availability, price increases, quality and safety concerns, limited variety, disrupted local industries, dependence on alternative protein sources, and economic impact. Addressing and resolving these conflicts is essential to ensuring the sustained availability, affordability, and quality of cattle products for consumers.

Policy Implications

The study reveals a number of significant policy implications for the cattle value chain, not only in the Karaga District but also in Ghana as a whole. Here are some key policy considerations:

1. **Conflict resolution and peacebuilding:** Efforts should be made to promote dialogue, mediation, and reconciliation between farmers and herders in the Karaga District. Conflict resolution mechanisms can help reduce tensions, promote peaceful coexistence, and mitigate the impact of conflicts on the cattle value chain.
2. **Land and resource management:** The Ministry of Land and Natural Resources, traditional land owners should focus on promoting sustainable land and resource management practices that address the conflicts over grazing lands and water resources. Land-use planning, zoning, and the establishment of clear and enforceable land tenure systems can help define and protect grazing areas and water sources for both farmers and herders.
3. **Livestock and veterinary services:** Enhancing access to quality veterinary services and animal healthcare in conflict-affected areas is crucial. This includes improving the availability of veterinary infrastructure, training, and outreach programs to ensure the health and well-being of cattle. Strengthening livestock extension services can also assist farmers and herders in managing their herds effectively.
4. **Market access and infrastructure:** Policy measures should focus on improving market infrastructure, including the rehabilitation and construction of cattle markets, transportation routes, and logistics networks. This will facilitate the smooth movement of cattle and improve market access for farmers and herders. Additionally, efforts should be made to promote value addition and market linkages for cattle products, enabling farmers and herders to access higher value-added markets.
5. **Socioeconomic support and diversification:** The Government, through the Ministry of Food and Agriculture and the District Assemblies, should aim to provide socio-economic support and alternative livelihood options for herders and farmers affected by conflicts. This can include skills training, access to credit and financial services, and support for income diversification activities. Empowering these communities with alternative income sources can reduce dependency on the cattle value chain and alleviate some of the pressures contributing to conflicts.

6. Community engagement and awareness creation: Policies should focus on fostering community engagement and raising awareness about the importance of peaceful coexistence and mutually beneficial relationships between farmers and herders. This can be done through education campaigns, community dialogues, and the promotion of conflict-sensitive practices.

7. Data collection and monitoring: Developing robust data collection systems and monitoring mechanisms is vital for informed policy decision-making. This includes gathering accurate and up-to-date information on land use, livestock population, and available land for pasture. This information could help direct farmers and herders to safe places for their activities.

IV. Conclusion

In conclusion, exploring the farmer-herder conflicts on the cattle value chain in Karaga District reveals a series of interconnected ripple effects that permeate various aspects of the livestock industry. These conflicts have far-reaching consequences, impacting different stakeholders and components of the cattle value chain in the district.

The conflicts significantly disrupt cattle production and trade, leading to detrimental effects on both the herders and their cattle. The loss of livelihood, displacement, loss of cattle, and limited access to grazing lands and water sources experienced by herders hinder their ability to sustain their herds and maintain their traditional way of life. This, in turn, has socioeconomic implications for herding communities, leading to economic hardships, reduced purchasing power, and decreased overall well-being.

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Conflict of interest

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