

ALTERNATIVE FRAMEWORK FOR PEACEFUL CO-EXISTENCE BETWEEN FARMERS AND HERDERS: A STUDY OF THE MIDDLE RIMA VALLEY IRRIGATION SCHEME PROJECT OF GORONYO DAM

¹Ibrahim Yusuf, ²Muhammad Tasiu Dansabo, ¹Shamsudeen Umar and
¹Muhammad Buhari Nuhu

¹Department of Sociology, Sokoto State University, Sokoto

²Department of Sociology, Usmanu Danfodiyo University, Sokoto

Corresponding Author's email: Ibrahim.yusuf@ssu.edu.ng



Abstract

This paper is an outcome of an empirical research on alternative framework of peaceful coexistence between farmers and herders. The research examined the relationship that exists between farmers and herders whose livelihood rely on the Middle Rima Valley Irrigation Scheme Project at Goronyo Dam. The research was purely a survey; a total of 377 questionnaires were administered during the survey using multistage sampling technique, which was conducted in Goronyo and Gada Local Government Areas of Sokoto. A total of 19 village areas were selected from Goronyo LGA and 16 village areas were selected from Gada LGA where Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs) were conducted with farmers and cattle herders. More than three decades ago, scholars described how modern interferences in water resources (e.g. by the development of tube-wells or small dams) can be at the expense of the original farming communities or nomadic groups, sometimes giving rise to the fierce tribal/ethnic dispute, because the number of land users outweighs the available land. Common complaints from both herdsmen and farmers during the survey in Goronyo was that the actual size of their land measured during Land Tenure Survey before the construction of the scheme was not returned to them whereas other farms are nowhere to be found. The herdsmen also expressed similar grievances; their grazing areas, cattle route, and places for animals to drink water were submerged in the irrigation scheme. The study found among other things that, there are deep resentment and grievances on the Land Tenure Survey before the construction of the second phase of the irrigation scheme by Gilmor Construction Company. The study revealed that there is a communication gap between the farmers and the company that carried the Land Tenure Survey because a lot of farmers were not able to locate or identify their farmlands after the construction of the scheme during the sharing and allocation of farms by the Sokoto Rima River Development Authority. A lot of farmers were either omitted in the list of landowners or their farms were not measured during the Land Tenure Survey. Based on the findings from the survey, the paper recommends among others that careful consideration should be given to the relocation of settlements and to the provision of new agricultural and grazing resources for the displaced population like Rimawa who were forced to migrate from the present location of the Goronyo dam. There is also a need for creating awareness to the farmers when it comes to land allocation to avoid unnecessary complaints since as argued above the reduction in the farmland size of some farmers was informed as result using a portion of their land for developmental purposes.

Keywords: Alternative framework, Farmers, Goronyo dam, Herders, Peaceful coexistence,

Introduction

Protracted clashes between farmers and pastoralists are some of the manifestations of conflicts in Nigeria (Dansabo and Gada, 2017). History hitherto shows that farmers and herdsman are one of the oldest occupational neighbors sharing a common boundary. Both occupations demand land and water for the survival of crops and livestock. Water is arguably an essential thing that plants require for germination and growth, whose adequate supply is integral for the crop. When there is a shortage or insufficient water either due to drought or in the dry season, irrigation is used to supplement the insufficient rainfall and provide additional water to the plants. Findi (2012) summarized the main purpose of irrigation as irrigation water is applied to ensure that the water available in the soil is sufficient to meet crop water needs.

Related to the above, most countries in Africa are either facing the problem of insufficient rainfall or flood during raining season, this informed the decision of most governments and organizations to come with the initiative of constructing dams for the storage of water to control flood and on the other hand establish irrigation scheme to utilize the stored water in the dry season for agricultural and other industrial purposes. Irrigation, therefore, since the early 1960s has been recognized as a fundamental approach for improving and enhancing crop productivity, food security, transform subsistence farming to commercial agriculture in developing countries particularly of Africa. It is in this regard that Feeds the Future (2016) asserted that rain-fed production dominates the region, but governments and other stakeholders are increasing investments in irrigation.

In search of food and water for their livestock, herdsman often trespass into farmlands and destroy crops therein. This usually leads to the altercation and hence violence ensued. That is why competition-driven conflicts between arable crop farmers and cattle herdsman have become common occurrences in many parts of Nigeria (Ingawa, et al 1999). The competition between these two-agricultural land user-groups has often turned into serious overt and covert hostilities and social friction in many parts of Nigeria (Adisa, 2012). Cases of herders-farmers' conflicts are widespread in recent times. For instance, Nweze (2005) stated that many farmers and herders have lost their lives and herds while others have experienced dwindling productivity in their herds. In most of these encounters, citizens are regularly killed and the destruction or loss of property leaves an already endangered populace even poorer.

In addressing the cumulative effects of bad climatic temperature conditioned by global warming, hunger, conflict, poverty, food insecurity, and unemployment, several actions were taken and others are in place to curb that effect. As contained in Food and Agriculture Organization (FAO), (2011) irrigation is among the measures that can improve yields, reduce vulnerability to changing rainfall patterns, and enable multiple cropping practices. Although expanding, land area under irrigation nevertheless represents a marginal share of the total cultivated area, especially in sub-Saharan Africa, where only 5% of farmland is irrigated (International Water Management Institute (IWMI), 2010). Affordable, reliable, and environmentally sustainable energy is a vital input for delivering irrigation services.

It is in recognition of the importance of irrigation to the environment and socio-economic livelihoods of farmers in Nigeria that informed the rationale behind the formulation of strategic policy on irrigation. The policy inter alia states that:

A strategic balance between rain-fed and irrigated production has to be achieved in Nigeria. Rainfed production accounts for the bulk of Nigerian agricultural production. It

can be stabilized at a low cost per hectare but will always be vulnerable to drought. Irrigated production can buffer the impacts of drought where it can draw on groundwater or stored surface water or a mixture of both. It is important that the policy positions irrigated production within the broader context of rain-fed production and encourages a viable structure of public and private irrigation and with a balanced set of a small, medium, and large-scale irrigated production (National Irrigation Policy and Strategy for Nigeria, 2005:1).

In Nigeria, there are currently twelve River Basin Development Authorities (RBDAs) that are responsible for implementing the irrigation development policies of the Federal government. The initial mandate of the RBDAs was rather broad and has since been modified to reflect changing economic realities (Federal Ministry of Water Resources, Nigeria, 2004).

In this study, the emphasis is on one of the Middle River Valley Irrigation Project under the Sokoto Rima River Basin Development which the Federal Ministry of Water Resources in 2004 on the status of Goronyo dam stated that the rehabilitation works to the dam has been completed and the dam is classified as being in good condition. The development of irrigation areas is a step in the right direction as this large reservoir of 940 million cubic meters of water has not been used for over 20 years due to ill-conceived and counterproductive government policies on irrigation and agriculture in most of the developing countries of Africa. In Nigeria it is evident in the amended decree 35 of 1987 which removed the involvement of the RBDAs in direct agricultural production but restricted their functions to water resource development only which adversely affected the performance of most of the RBDAs on irrigated agriculture which led to drastic decline in the actual area cropped from about 52,000ha during the 1990/91 season to about 29,000ha in the 2003/04 season (Federal Ministry of Water Resources, Nigeria, 2004).

The scarcity of land for farmers and grazing reserves for herders has the possibility of causing a clash between them. Against this backdrop, this study examined the pattern of relationships that exist between users of Goronyo dam with particular reference to farmers and herders.

The increasing desertification in the Northeast and some States in Northwestern Nigeria have been forcing farmers and pastoralists to migrate to places where there is constant availability of water and arable land for farming. The contraption of arable land and water has forced water users to concentrate on the irrigation areas where the land is arable and water is readily available. Therefore, high demand for scarce and insufficient arable land and insufficient for herding and farming often produce stiff competition and violent conflict. Because irrigation scheme mostly focuses on farmers and neglect the pastoralist. It is generally accepted that where there are competing uses for a resource, some amount of conflict may be imminent and is even more so when the resource in question is land which can be put into different productive uses. The Environmental and Social Impact Assessment ESIA survey (2017) conducted in Goronyo revealed that the common complaints narrated by both herdsmen and farmers during the ESIA survey in Goronyo is the issue of land ownership. Most farmers in the three sectors (Mai-Iyali, Takakume, and Falaliya) of the Middle Rima River Irrigation Scheme averred that the actual size of their land measured during Land Tenure Survey before the construction of the scheme were not returned to them whereas other farms are nowhere to be found. The herdsmen also expressed similar grievances; their grazing areas, cattle route, and places for animals to drink water were submerged in the irrigation scheme.

Objectives of the study

The broad aim of the study was to explore an alternative framework for peaceful coexistence between farmers and herders that use the Goronyo Dam. Specifically, the objectives of the study are to:

- i. examine the pattern of relationships that exist between the farmers and herders.
- ii. know whether there exists conflict(s) between the farmers.
- iii. explore the causes of the conflicts between the farmers and herders.
- iv. know the magnitude of the conflicts between the farmers and herders.
- v. examine future possibilities of dialogue between the farmers and herders.
- vi. explore the grievance redress mechanisms employed to resolve differences between farmers and herders.
- vii. suggest ways for the attainment of peaceful coexistence be achieved between the farmers and herders

Methodology

Noting the place of first-hand information in ascertaining the degree of relationships between variables and coupled with the nature of the problem to be studied, the research design adopted for the study was a household survey in villages of Goronyo and Gada Local Government Areas. This involved information generated from a portion of the population that would serve as a representative of the entire population. Also, it involved the methodological triangulation of both qualitative and quantitative alternatives. This is with a view of providing a more holistic perspective concerning the variables to be studied.

Both qualitative and quantitative surveys were carried out in a representative sampling of study area (villages) and elicited with regards to land ownership which is the constrain farmers and herders face in carrying out irrigation with the Goronyo Dam. Similarly, Focus Group Discussions (FGDs) were conducted with leaders of farmers and herders to obtain their views and suggestions regarding the pattern of relationship that exist between and among their people; whether there are clashes between them; causes and magnitude of the clashes; possibilities of dialogue between them; grievance redress mechanisms employed by the leaders and on the whole, exploring an alternative framework for peaceful co-existence between the farmers and herders in the area. Also, additional information was sought from heads of communities and other members of the communities of villages around the project area. In sum, some Key Informant Interviews (KIIs) were conducted during the survey to complement the quantitative data.

The study concentrated on 19 village areas of Goronyo LGA and 16 village areas of Gada LGA making a total of 35 communities. These village areas are the areas that are directly affected by the scheme. The National Population Commission (2006) puts the population of Goronyo LGA at 182, 296, and that of Gada at 248, 267. However, using the Geometric growth rate approach at 3% annual growth rate, the projected population of Goronyo LGA as of 2016 stood at 244,991 and that of Gada LGA stands at 333,650. The projected population of the two LGAs stood at 578,641 while the sample size of the study was 377 using multistage sampling technique because of the peculiarity of the study area. The target population include two different categories of farmers

and herders namely: the youth and the adult who were the target of the administration of the questionnaires.

Table 1: Communities around Goronyo Dam/Project Host Communities identified during the 2017 ESIA Survey

GORONYO	GADA
Takure	Kaddi
Katsira	GidanHashimu
Dantudu	Tsitse
Birjingo	Karangiya
Warankai	GidanBakuso
Shinaka	GidanAdua
Mai Iyali	Dagindi
Takakume	Kara Zube
G/Alwali	GidanGulbi
Gorau	GidanZomo
Keta	Tsingale
Falaliya	GidanHako
Dangarko	Karnawa
Kumuniya	Basana
GidanTudu	Balakozo
SabonGari	GidanHankurau
Gidan Dodo	
Sakkarawa	
Tsolawo	
TOTAL 19	TOTAL 16

Source: Author's Fieldwork, 2019

Results

This section dwells on the analysis and discussions of the findings. To do that the section is thematically divided based on the research objectives. The sample size reduced as some respondents could not be reached due to security challenges at the time of the visit of the team to the areas. Initially, the sample size was projected at 377 but researchers were only able to reach 328; hence, the sample size used for the analysis stood at 328.

Research Question One: What is the pattern of relationship that exists between the farmers and herders in Goronyo and Gada Local Government areas?

This section addresses the first research question as well as the first objective of this research

Table 2: Pattern of Relationship between the Farmers and the Herders

Item	Frequency	Percentage
Very Cordial	21	6.4
Cordial	111	33.8
Conflictual	149	45.4
Very Conflictual	9	2.7
No response	38	12.6
Total	328	100.0

Source: Author's Fieldwork, 2019

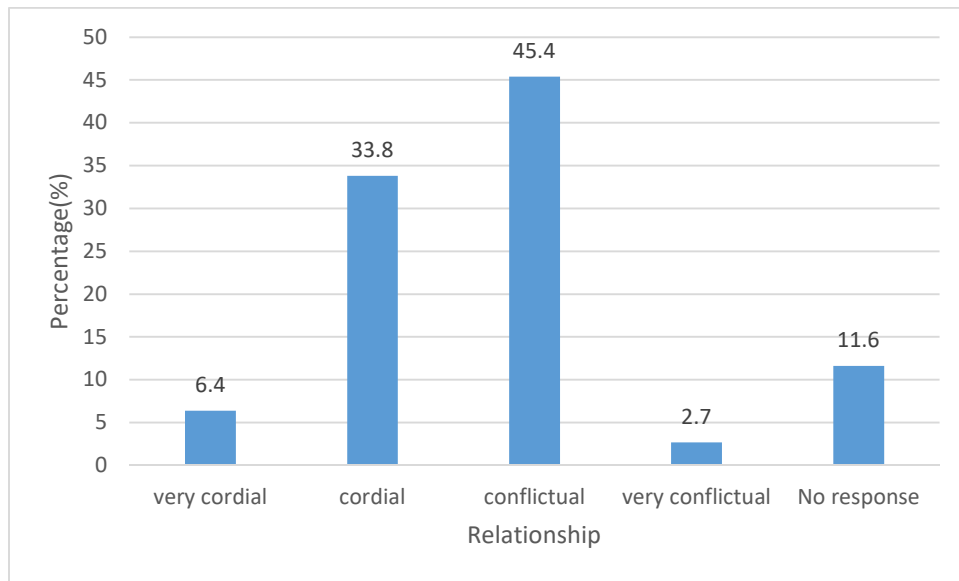


Figure 1: Pattern of Relationship between the Farmers and the Herders

Source: Author's Fieldwork, 2019

Table 2 and Figure 1 show the pattern of relationship existing between farmers and herders in Goronyo and Gada LGA. Twenty one 21(6.4%) of the respondents indicated that the relationship was very cordial, 111(33.8%) of respondents indicated that the relationship was cordial 149(45.4%) of respondents indicated that the relationship was conflictual while 9(2.7%) of the respondents indicated that the relationship was a mixture of cordiality and pockets of conflicts. This implies that the pattern of relationship that existed between the farmers and the herders in Goronyo and Gada LGA is mixed.

A community leader during a Key Informant Interview (KII) submitted that:

We rarely witness clashes between the farmers and the herders because, daily, we enjoin the people to desist from trespassing into what does not belong to them. The major benefits of this measure are that; we have not encountered or had any report of conflict between the farmers and the pastoralists. We had not heard any case where Fulani killed Hausa or vice versa (KII with Male Traditional leader, 28th December 2019).

Reacting further on the issue of farmer-herders clash in the area, a religious leader narrated that:

You know it is the herdsmen that came and enter farm not farm that goes to meet the cattle. The farmers used to insist on their right, as a result of this altercation, conflict ensued. But the clashes are minimal in our area. There is peace in this area because farmers realized that, they are the

ones that need peace because they are the ones that owned the farms. We are more patient than the herdsmen. I do not usually call on the Fulani but I usually call the attention of farmers, that everybody should be law-abiding; farmers should not attack the Fulani because of minor destruction of crops. If you have a farm beside the cattle route (*Burtali*), you should not plant close to the route (KII with religious leader).

Furthermore, another religious leader expressed that:

The source of the clashes is when the herdsmen enter the farm of farmers and when farmers asked them to go out, the clashes ensued. The measures to curtail such clashes are within the spheres of authority of our traditional rulers. They are the ones who took such decisions (KII with religious leader).

However, on the cordial relationship between herders and farmers in the areas surveyed, a community leader recounted measures taken that led to the lasting peace in his domain. He stated that:

We used to meet with herdsmen on the issue of peace, everybody should not interfere with the property of each other. For herdsmen to guard their livestock and farmers to protect their farms. If the herders did not touch the crops of farmers, there would never be conflict or clash, yes, we use to enjoin our people to imbibe the spirit of peaceful coexistence. We use to meet with herdsmen and farmers at the beginning of each farming season to forestall clashes. If the time of irrigation farming comes, I do urge the herdsmen to catch their cattle and sheep, for peace to reign, it is once in a year. We used to discuss issues bothering many subjects during the meeting, anything that concerns them, they should tell us during the meeting and what is disturbing herdsmen, they should explain. Then we would know the decision to take, if it is what would be taken to Rima, then we would take to them. There is an association for farmers different, part of herders is different and fishermen are also different. Everybody belongs to his side, and we rarely witness problems in the irrigation scheme. The secret behind the peace in my domain is that I use to summoned the Head of Fulani (Sarkin

Fulani) if farmers brought about his people to call his people to order. This makes every herdsman protect his livestock from destroying crops (KII with Traditional Ruler).

Similarly, a community leader submitted that:

It's hard to get that because we warned them not to go beyond their territory. The farmers and herders have a mutual understanding of each and the issues that oftentimes leads to clashes (KII with Traditional Ruler).

Research Question Two: Are there conflicts between farmers and herders in Goronyo and Gada Local Government Areas?

This research question is designed to examine whether a conflict exists between the farmers and herders in Goronyo and Gada Local Government areas.

Table 3: Experience of Farmers/Fulani Clash in their Area Recently

Item	Frequency	Percentage
Yes	90	27.4
No	184	56.1
No response	54	16.5
Total	328	100

Source: Author's Fieldwork, 2019

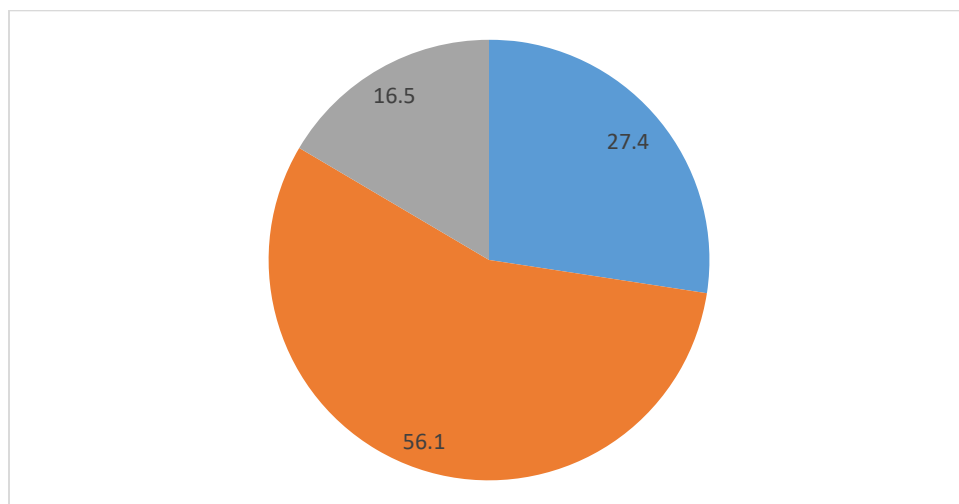


Figure 2: Experience of Farmers/Fulani Clash in their Area Recently

Source: Author's Fieldwork, 2019

Table 3 and Figure 2 shows that 90(27.4%) of the respondents indicated that they have experienced farmers/Fulani clash in their areas recently while 184(56.1%) of the respondents indicated that they have not experienced any farmers/Fulani clash in their areas recently and 54(16.5%) did not indicate their response. This shows that even though the majority of the people residing in the two LGA have not experienced the farmers/Fulani clash yet some people still experienced the clash in their village recently

Table 4: Matrix of voices of herders and farmers on the prevalence of clashes between them

Herders	Farmers
• Yes, there was a time when we had a conflict with farmers. You know there are some farmers that even if they harvest their farm produce, they won't allow you to use the place. • Some people come to the farm and catch cattle and take it to the authority, and the authority always warns that if you did not see the cattle in your crops don't catch it. But some did not listen, so we are encountering this problem. • There some people that are assigned to look after the place, because some people come for fishing without permission, and there are some grasses like rice that always grow at the bank of the dam, so we go with our cattle to graze, those people that are assigned to take care of intruders see us, they arrest us and collect money from us. They will say if you didn't give them money, they will take you to the district head or police, they used to collect money ranging from ₦5,000 to ₦30,000 from us. • Sometimes we report this act to the district head or the police. There was someone who did this to one of us, he was detained for 3 days before he was released. Up to now, there is this kind of people that cheat herdsman. • Yes, you know living together, you cannot rule that out, you know herder is someone that goes around everywhere in search of pasture for	• Yes, there is conflict. Where the conflict arises is, when our farm produce is ready for harvest, instead of them to let us pack it and take it home, they come and finish it overnight. When we call them to this our leader, some listen to him while some do not. we have a mutual understanding with some of them, but some are transgressors. • As he said, some will come at the time that you do not even expect someone to be awake that is in the mid-night and finish your farm. Some may come in the day time trying to harm your farm, if you warn them, they will leave the place, but they will surely come back and do what they want at night. • They do not go to where there is no farm; they come to our farms. As they know the value of their cattle so also, I value my farm. • It is your farm, you did everything possible to see that you got what you worked for, but a herdsman come overnight and eat it up. • There was a time I woke up in the mid-night, I came to my farm and met herdsman with his cattle on my farm, I chase them away.

his animals, who commits offense here and there. But we used to come in and intervened. We come in promptly before it escalates. We do receive complaints from Hausa people to tie our animals and you know herders have a problem, I do not need to tell, he always wants his cow to be satisfied. If someone did not enter farm others may enter, that is how life is. Some take more than five years without entering into farms.	
---	--

Research Question Three: What are the causes of conflicts between the farmers and herders in Goronyo and Gada Local Government areas?

This research question seeks to identify the major cause of the conflict between farmers and herders in Goronyo and Gada Local Government areas

Table 5: Causes of Farmers and Herders' Conflict

Item	Frequency	Percentage
A dispute over ownership of land	68	20.7
None available grazing reserve for herders	174	53.0
Unlawful invading of farmlands by herders	76	23.2
No response	10	3.1
Total	328	100.0

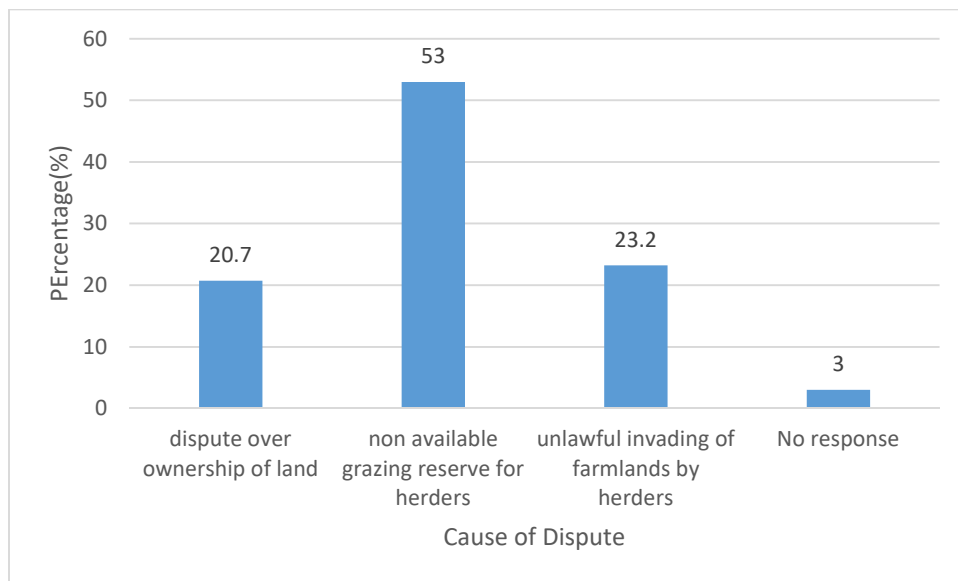


Figure 3: Causes of Farmers and Herders' conflict

Table 5 and Figure 3 shows the causes of the conflicts between the farmers and the herders. Sixty Eight 68(20.7%) of the respondents indicated that dispute over ownership of land is the cause of the dispute, 174(53.0%) of the respondents indicated none available grazing reserves for herders is the cause of the conflict, while 76(23.2%) of the respondents indicated that unlawful invading of farmlands by herders is the cause of the dispute. This result implies that the major cause of the conflict between herders and farmers in Goronyo and Gada LGA is none availability of grazing reserves for herders.

Research Question Four: What is the magnitude of the conflicts between farmers and herders in Goronyo and Gada Local Government areas?

The result in this section provides answers to the question of the magnitude of the conflict

Table 6: Magnitude of the Conflict between the Farmers and the Herders

Item	Frequency	Percentage
Mild, no life and property lost	53	16.2
Serious, property lost	104	31.7
Very serious, life lost	67	20.4
No response	104	31.7
Total	328	100

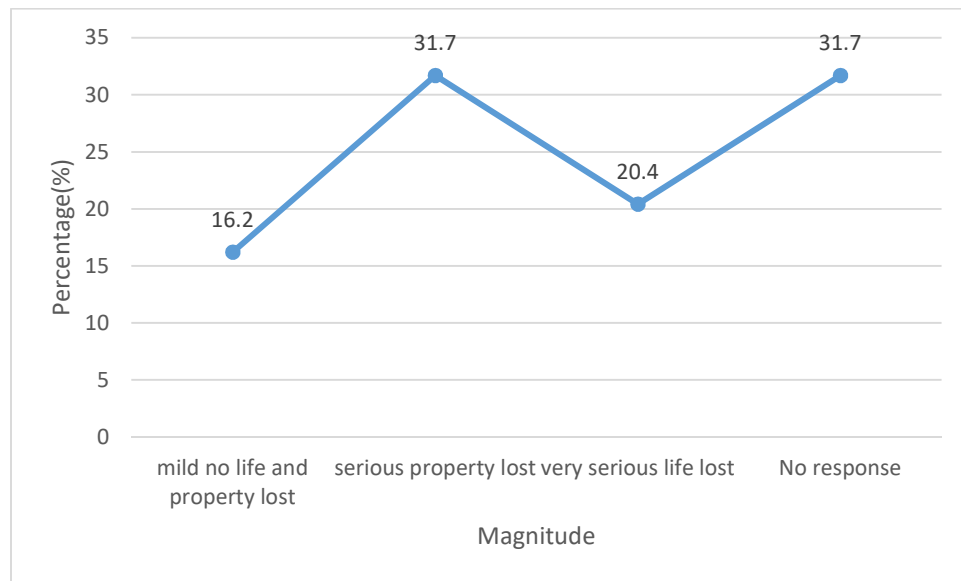


Figure 4: Magnitude of the Conflict between the Farmers and the Herders

Table 6 and Figure 4 show the magnitude of conflict between farmers and herders, 53(16.2%) of the respondents indicated the conflict was mild because no life and property lost, 104(31.7%) of the respondents indicated the conflict was serious because properties were lost while 67(20.4%) of the respondents indicated that the conflict was very serious because lives were lost and 104(31.7%) did not indicate their response. This implies that the level or the magnitude of the conflict was serious because there was loss of properties.

Research Question Five: Possibilities of dialogue between farmers and herders in Goronyo and Gada Local Government areas.

This research question examines the possibility of having a dialogue between the farmers and herders in Goronyo and Gada Local Government areas. It considers how this can be achieved.

Table 7: Possibilities of Dialogue between Farmers and Herders in these Areas

Item	Frequency	Percentage
Regular meetings of stakeholders	135	41.2
Sensitization campaign on the need for peace	56	17.1
Mediation by the opinion leaders	106	32.3
Others	11	3.4
No response	20	6.1
Total	328	100.0

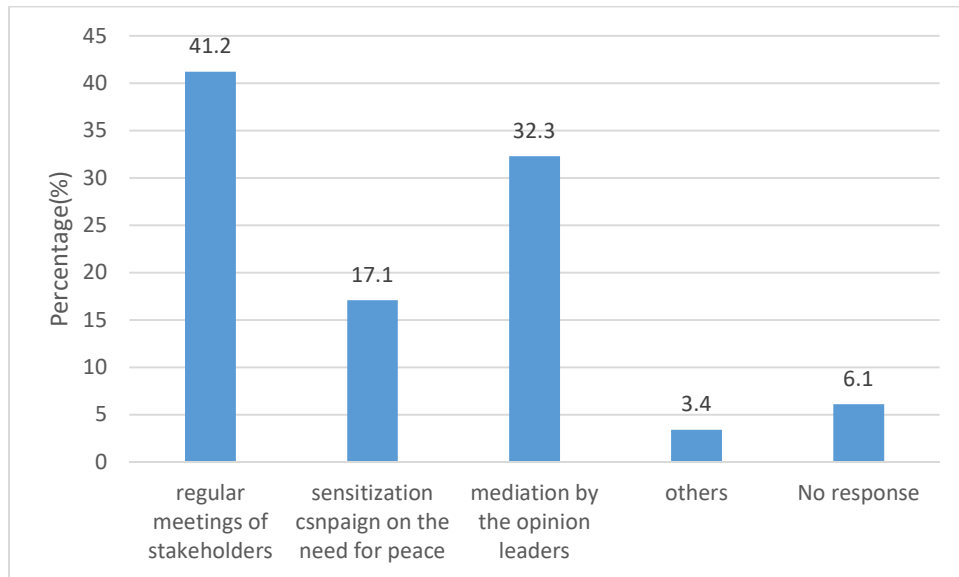


Figure 5: Possibilities of Dialogue between the Farmers and Herders in this Area

Table 7 and Figure 5 show the possibilities of achieving dialogue between farmers and herders in Goronyo and Gada Local Government areas, one hundred & thirty five 135(41.2%) of the respondents indicated that dialogue can be achieved through regular meetings among stakeholders, fifty six 56(17.1%) of the respondents indicated that dialogue can be achieved through sensitization campaign on the need for peace, one hundred & six 106(32.3%) of the respondents indicated that dialogue can be achieved through mediation by the opinion leaders while 11(3.4%) of the respondents mentioned other things such as asking religious leaders to intervene and 20(6.1%) did not indicate their response. This implies that dialogue can only be achieved between farmers and herders in Goronyo and Gada Local Government areas if regular meetings of stakeholders are held.

Research Question Six: What are the grievance redress mechanisms employed to resolve differences between farmers and herders in Goronyo and Gada Local Government areas?

This section examined the various mechanisms are being employed to resolve the differences between farmers and herders in Goronyo and Gada Local Government areas.

Table 8: Conflict Redress Mechanisms Employed to Resolved Differences between Farmers and Herders in this Area

Item	Frequency	Percentage
Mediation	125	38.1
Reconciliation	108	32.9
Court settlement	83	25.3
Others	2	.6
No response	10	3.1
Total	328	100.0

Source: Author's Fieldwork, 2019

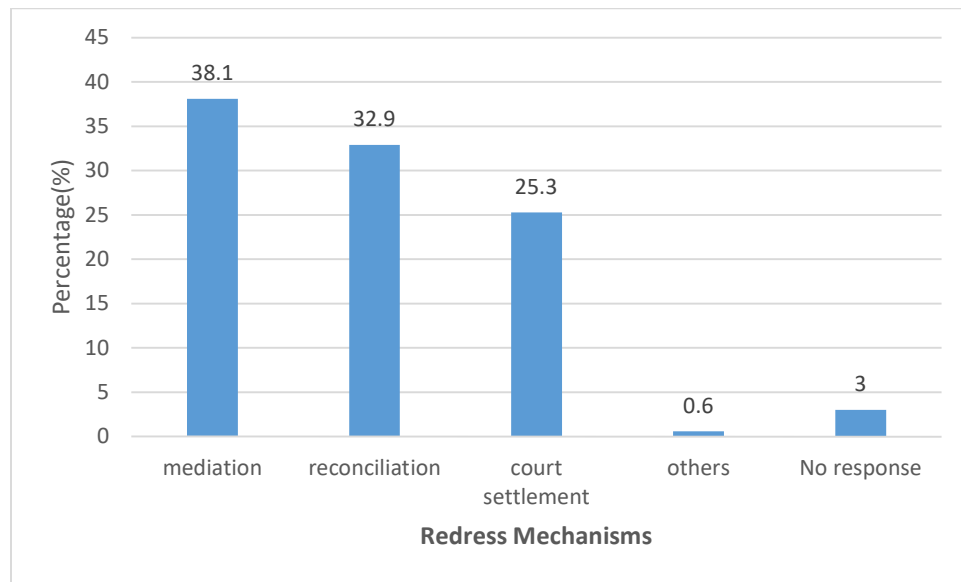


Figure 6: Conflict Redress Mechanisms

Author's Fieldwork, 2019

Table 8 and Figure 6 show the conflict redress mechanisms employed to resolve differences between farmers and herders in the area. One hundred & twenty five 125(38.1%) of the respondents indicated that the conflict redress mechanism employed to resolve the differences was mediation, one hundred & eight 108(32.9%) of the respondents indicated that the conflict redress mechanism employed was reconciliation, eighty three 83(25.3%) of the respondents indicated that the conflict redress mechanism employed by was court settlement while 2(0.6%) of the respondents indicated other mechanisms and 10(3.0%) did not indicate their response. This implies that three mechanisms which include mediation, reconciliation and court settlement have been adopted to resolve conflicts between farmers and herders in Goronyo and Gada Local

Government areas but among them all, mediation has been the most employed conflict redress mechanism.

Research Question Seven: How can peaceful coexistence be achieved between farmers and herders in Goronyo and Gada Local Government areas?

The result in this section mentioned three major areas in which peaceful coexistence can be achieved among farmers and herders in Goronyo and Gada Local Government area.

Table 9: Ways of Achieving Peaceful Coexistence between the Farmers and Herders in this Area

Item	Frequency	Percentage
Respect for constituted authority	96	29.3
Respect for individuals' right and privileges	66	20.1
Provision of grazing reserve for the herders	107	32.6
Others	8	2.4
No Response	51	15.1
Total	328	100

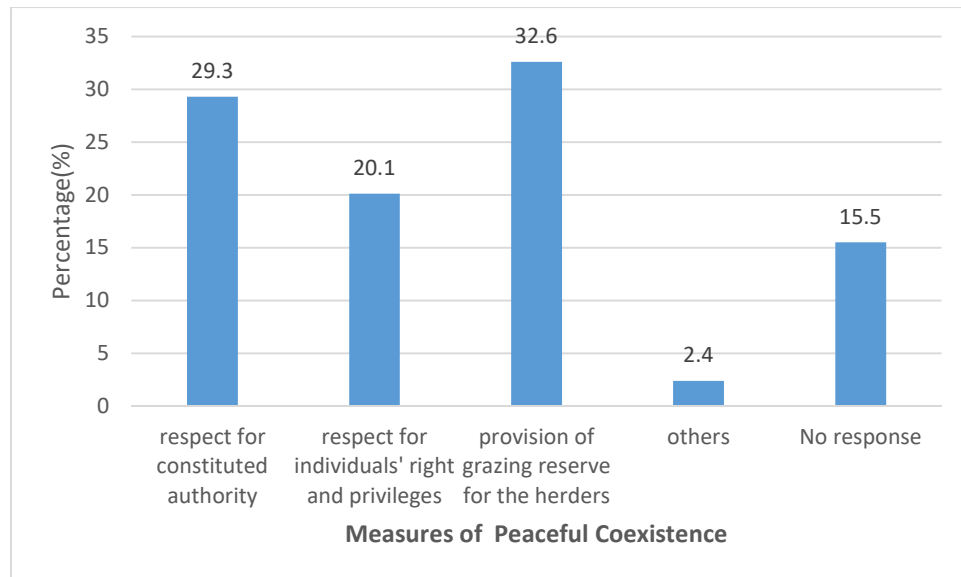


Figure 7: Ways of Achieving Peaceful Coexistence between the Farmers and Herders in this Area

Table 9 and Figure 7 show different measures employed in achieving peaceful coexistence between farmers and herders in this area and 96(29.3%) of the respondents indicated that one of the measures that can be employed is by having respect for constituted authority, sixty six 66(20.1%) of the respondents indicated one of the measures is by having respect for individuals' right and privileges, one hundred & seven 107(32.6%) of the respondents indicated that one of the measures is through the provision of grazing reserve for the herders while 8(2.4%) of the respondents indicated other ways to achieve peaceful coexistence between the farmers and the herders in their areas. This implies that respect for constituted authority, respect for individual's rights and privilege, and provision of a gazing reserve are three measures that can be used to

achieve peaceful coexistence between farmers and herders in Goronyo and Gada Local Government Area of Sokoto state. But among all these measures, the most important in ensuring that peaceful coexistence is achieved is by providing grazing reserves for the herders.

Discussion of findings

This section discusses the findings of the research. The study focuses on alternative framework for peaceful coexistence between farmers & herders. First, the research found that the pattern of relationship that existed between the farmers and the herders in Goronyo and Gada LGA is a mixed pattern of peaceful coexistence and conflictual. This finding corroborated the position of Msuya (2013) that in areas where crop farmers and traditional animal keepers, the pastoralists, interact, the rivalry has always been and in most cases, according to Mali the rivalry often escalates to conflict. This is in line with the finding of this research that although the majority of people residing in the two LGA have not experienced the farmers/Fulani clash yet some people still experienced their clash in their village recently which signifies that their clashes are still ongoing.

The research further found that the major cause of conflict between herders and farmers in Goronyo and Gada LGA is none availability of grazing reserve for herders. This corroborated the works of Jones-Casey and Knox (2011) that these conflicts stem from disputed access to and control over land and water resources as well as herder's violation of post-harvest grazing rules.

Furthermore, the study found out that the level or the magnitude of the conflict was serious because there was a loss of properties. Another finding of this research shows that dialogue can only be achieved between Farmers and Herders in Goronyo and Gada Local Government areas if regular meetings of stakeholders are held. Also, the research revealed that three mechanisms which included mediation, reconciliation, and court settlement have been adopted to resolve the conflict between farmers and herders in Goronyo and Gada Local Government areas but among them all, mediation has been the most employed conflict redress mechanism.

The study found among other things that, there are deep resentment and grievances on the Land Construction Company. The study revealed that there is a communication gap between farmers and the company that carried the Land Tenure Survey as a lot of farmers were not able to locate or identify their farmlands after the construction of the scheme during the sharing and allocation of farms by the Sokoto Rima River Development Authority. A lot of farmers were either omitted in the list of landowners or their farms were not measured during the Land Tenure Survey.

The survey also revealed that the construction of the irrigation scheme has predisposed some village areas to flood and air pollution (increase the moisture content of ambient air around) which were hitherto not exposed to those threats. The construction of dyke in the second phase by Gilmor has exposed villages like Basana, Gorau, Birjingo, GidanAdu'a to flood, worst of all, in Karnawa, the entire village is now surrounded by the irrigation areas and there is palpable fear, that irrigation farming would force the entire community to migrate because of the hazards they faced. Additionally, during the construction of the irrigation scheme, herdsman were not considered and ignored which has been the major cause of clashes between the farmers and the cattle herders in the area. It has been found that there was no provision for cattle routes, grazing areas, crossing bridges, and place for drinking water, particularly for animals. Moreover, the survey also discovered that the dam has no adequate security which paved the way for fishing with illegal equipment and the resultant effects, which has grounded the fishing activities with the Goronyo dam reservoir. Similarly, the survey found out that, the proposed project would have a tremendously positive effect on the social cohesion of the areas among other things, the

irrigation scheme has controlled rural-urban migration of youths in search of job during the dry season in major cities across Nigeria. However, there are some places where the proposed project posed a grave threat to the entire communities especially those close to the irrigation areas, which previous expansion of the scheme had disconnected from their farms with the construction of dykes Distribution, and Main Canals (DC and MC). Also, on the issue of inclusion, the irrigation scheme has been male-dominated enterprise, the overwhelming majority of the farmers are male whereas fishing and herding were exclusively for men, thus, there was unequal access to farm and utilization of the agricultural resources between male and females. The survey also found that displacement and flood were the major environmental threats in the area. The survey found out that, there was a low level of participation of farmers, herders, and fishermen in the Association, as the the level of participation was very low among the women even with the Water Users Association to incorporate women into the decision making in water management policies.

Surprisingly, the survey found out that there was no data, policy and program for the development and aiding the irrigation scheme for better performance especially in the area of infrastructural development and credit facilities to provide take off for poor farmers and excluded groups like women to boost women and youth participation in the irrigation scheme.

On social amenities, it was found out that, most of the villages lack potable drinking water, clean and healthy air for breathing because of the water and chemicals from the irrigation areas.

On the whole, the survey found out that, the construction of the irrigation scheme had greatly improved the level of income of farmers and fishermen. However, the improvement in the earnings from the irrigation is not commensurate with the living standard of the people in the areas surveyed; most of the villages were disconnected from the government at all levels. There was no active presence of Agricultural Extension Workers, Health Workers let alone teachers and social infrastructure. The rise in output of agricultural produce and the lack of access roads to convey the produce to homes and markets was the greatest challenge faced by the farmers' aside the total absence of fertilizer, pesticides, and herbicides, in this regard, farmers were left at the mercy of the forces of demand and supply to purchase fertilizers, herbicides, and pesticides. The survey however established that the cordial relationship between farmers and cattle herders was a result of regular and frequent interactions with the involvement of the traditional rulers and the staff of the Sokoto Rima River Basin Development Authority to nip the crisis in the bud whenever the need arises. Though, there were pockets of clashes between farmers and cattle herders in Falaliya and Mai-Iyali sectors of the irrigation scheme.

Conclusion

The research concludes that mixed patterns of relationship existed between farmers and herders in Goronyo and Gada LGA sometimes cordial and other times conflictual which is why clashes are still ongoing and have become so serious to the extent that people have lost their properties.

The basis of these clashes in Goronyo and Gada LGA is on the non-availability of grazing reserves for herders for which if the dialogue is introduced it can go a long way to control the conflict. However, mediation has been the most employed conflict redress mechanism dialogue can also be introduced. This can be achieved through regular meetings of stakeholders

Recommendations

This research among other things recommended that both farmers and herdsmen should have respect for constituted authority, respect for an individual's rights and privileges. Also, the research recommended that the government should ensure that they provide a grazing reserve because this is one of those measures that can be used to achieve peaceful coexistence between farmers and herders in Goronyo and Gada Local Government Areas of Sokoto state Nigeria.

Based on the findings from the survey, the paper recommends among others that careful consideration should be given to the relocation of settlements and to the provision of new agricultural and grazing resources for the displaced population like Rimawa who were forced to migrate from the present location of the Goronyo dam. There is also a need for creating awareness to the farmers when it comes to land allocation to avoid unnecessary complaints since as argued above the reduction in the farmland size of some farmers was informed as a result of using a portion of their land for developmental purposes.

References

- Adisa, R. S. (2012). Land Use Conflict between Farmers and Herdsmen – Implications for Agricultural and Rural Development, *Department of Agricultural Extension and Rural Development, University of Ilorin, Ilorin, Nigeria*.
- Dansabo, M.T (2017). Environmental and Social Impact Assessment for the Middle Rima Valley Irrigation Scheme Project with Goronyo Dam, A Draft Report of the Socio-Economic Surveysubmitted to Multiple Development Services Limited
- Dansabo, M.T, and Gada, M. A (2017). Farmers and Herders conflict as an impediment for Agricultural Development: A study of Rima Valley Scheme with Goronyo Dam, a text of a paper presented at the 6th National Conference of the Faculty of Social Sciences, UsmanuDanfodiyo University, Sokoto held between 4th-7th December, 2017
- FAO (Food and Agriculture Organization of the United Nations) (2011), Save and Grow: A Policy Maker's Guide to the Sustainable Intensification of Smallholder Crop Production, FAO, Rome. www.fao.org/docrep/014/i2215e/i2215e.pdf
- Federal Military Government of Nigeria Land Use Decree (1978) Part II, Section 5 (1), Land Use Decree, 1978.
- Federal Ministry of Water Resources (2004). Review of The Public Irrigation Sector In Nigeria: Draft Status Report. Abuja: Enplan Group.
- Findi, E. (2012). Introduction to Irrigation principles a guideline manual To Undergraduate students for Agriculture College Prepared by Soil and Water Science Dept. Faculty of Agriculture and Forestry - University of Duhok.
- Ingawa, S. A., Ega, L. A., and Erhabor, P. O. (1999). *Farmer-Pastoralist Conflict in Core-states of the National Fadama Project*. Abuja: FACU.
- IWMI (2010). Managing water for rainfed agriculture", Water Issue Brief No. 10, [www.iwmi.cgiar.org/ Publications/Water_Issue_Briefs/PDF/Water_Issue_Brief_10.pdf](http://www.iwmi.cgiar.org/Publications/Water_Issue_Briefs/PDF/Water_Issue_Brief_10.pdf)
- GIS Laboratory, Geography Department, Usmanu Danfodiyo University, Sokoto (2016). Map showing communities covered during ESIA Socio-economic survey
- Jones-Casey, K., and Knox, A. (2011). Farmer-Herder Conflicts in Mali. Land on Focus in Africa. *Brief*, 1-6.
- Msuya, D.G. (2013). Farming systems and crop-livestock land use consensus. Tanzanian perspectives. (3):7, 473-481. *Open Journal of Ecology*.
- Nweze, N. J. (2005). Minimizing Farmer-Herder Conflicts in Fadama Areas through Local Development Plans: Implications for Increased Crop/Livestock Productivity in Nigeria. *A Paper Presented at the 30th Annual Conference of the Nigerian Society for Animal Production, Held on 20th -24th March*