

Managing Resource-Based Conflicts in Nigeria: Climate Change and Farmer–Herder Relations in Plateau State

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Abstract

This study examined strategies to manage resource-based conflicts and promote peaceful coexistence between farmers and herders in the Central Zone of Plateau State, Nigeria. Persistent farmer–herder conflicts have disrupted livelihoods, agricultural production, and community relations, while climate variability has intensified pressure on land, water, and pasture. The conceptual analysis examined resource-based conflict, climate change, farmer–herder relations, the climate–conflict relationship and conflict-management strategies, highlighting how environmental pressures interact with resource competition, governance and institutional conditions. Political Ecology Theory provided the theoretical framework for explaining how environmental changes, resource access, power relations and institutional arrangements shape conflict dynamics. A descriptive survey design was adopted across Bokkos, Mangu, Pankshin, Kanke and Kanam Local Government Areas. From 384 targeted respondents, 351 valid questionnaires were analysed, representing a 91.4% response rate. Data were collected using a structured questionnaire and analysed using descriptive statistics and one-way Analysis of Variance (ANOVA). Findings showed strong support for community dialogue ($M = 3.62$), alternative grazing reserves ($M = 3.59$), law enforcement ($M = 3.58$), joint farmer–herder resource-management committees ($M = 3.57$), and peace education ($M = 3.56$), with an overall mean of 3.58. The ANOVA revealed a significant difference across length-of-residency categories, $F(2, 348) = 5.012$, $p = .007$. The study recommends integrated land-use planning, joint farmer–herder resource-management committees, regular community dialogue, climate-adaptation and livelihood programmes, peace education, and community-based early-warning systems to address both immediate conflicts and underlying resource pressures.

Keywords: climate change; conflict management; farmer–herder relations; peaceful coexistence; resource-based conflict

Introduction

Resource-based conflicts have become a major concern in development, environmental governance, and human security because changes in the availability and accessibility of land, water, pasture, and other livelihood resources can intensify competition among groups whose livelihoods depend on them. Madu and Nwankwo (2020) caution against reducing such conflicts to environmental scarcity alone. Instead, resource pressures interact with governance arrangements, land-use decisions, livelihood vulnerability, political interests, and perceptions of fairness in determining whether competition becomes violent.

In Nigeria, competition over land and other natural resources has evolved from a localised livelihood challenge into one of the country's most pressing security and development issues. In recent decades, farmer–herder conflicts have intensified in both frequency and severity, resulting in widespread displacement, destruction of livelihoods, food insecurity, and loss of lives (Okoli & Atelhe, 2020). While these conflicts have often been interpreted through ethnic, religious, or political lenses, increasing evidence suggests that climate change can intensify underlying environmental pressures by exacerbating competition over increasingly scarce natural resources (Ikhuoso et al., 2020; Madu & Nwankwo, 2020). As environmental pressures continue to reshape traditional patterns of land use and migration, understanding the climate–conflict relationship has become essential for developing sustainable peacebuilding and resource management strategies.

Climate change matters for understanding resource-based conflicts because changes in rainfall, temperature, drought, desertification, flooding, and land degradation can reduce pasture and water availability, affect agricultural productivity, and alter the areas where farmers and pastoralists can sustain their livelihoods. Declining pasture and water can push pastoralists to move in search of resources, while farmers facing reduced yields may expand cultivation, increasing competition over land, water, grazing areas, and livestock corridors.

In Nigeria, Ikhuoso et al. (2020) identify competition over limited natural resources as a central factor linking climate change, agricultural production, and farmer–herder conflict. Madu and Nwankwo (2020) similarly show spatial relationships between climate-change vulnerability and farmer–herder conflict, while Adebajo and Iseoluwa (2020) link drought and resource scarcity to pastoral migration and increased competition. Nwangwu et al. (2020) further show that land competition, pastoral mobility, population pressure, insecurity, and institutional conditions shape these conflicts. Ele (2020) links climate-related changes in northern Nigeria to southward pastoral movement and increased competition in the Middle Belt. Thus, climate change does not automatically cause conflict; rather, it intensifies existing environmental, socio-economic, and institutional pressures, particularly where resource-governance institutions have limited capacity to regulate access and resolve disputes.

According to Nextier's 2025 Annual Violent Conflict Report, Nigeria recorded 467 casualties in 61 farmer–herder conflict incidents in 2024, of which 416 casualties (89.1%) occurred in the North-Central region. Plateau State alone accounted for 307 casualties, representing 65.7% of all farmer–herder conflict casualties recorded nationally in 2024 (Nextier, 2025). These figures show that Plateau State is a central site for understanding the intensity and consequences of resource-related violence. The humanitarian and agricultural consequences are also substantial. In its assessment of a communal conflict that began on 23 March 2024 and affected 16 communities in Mikang and Langtang North Local Government Areas, the National Emergency Management Agency (NEMA, 2024) recorded 47 deaths, 82 injuries, the displacement of 2,808 people, the destruction of 122 houses, and damage to approximately 200 hectares of farmland. The severity of the crisis is further illustrated by the World Health Organisation (WHO, 2024), which reported that attacks across 160 villages in Bokkos, Barkin Ladi, and Mangu Local Government Areas had resulted in 335 deaths, 171 injuries, more than 409 houses destroyed, and an estimated 18,275 people displaced, with 16 internally displaced persons camps active in the affected areas.

The scale of these impacts has increasingly drawn attention to the environmental, livelihood, governance, and peacebuilding dimensions of farmer–herder conflict in Plateau State. Ishola and Luginaah (2025) found that climate variability, food insecurity, and violent conflict are interconnected, suggesting that environmental and livelihood pressures can reinforce existing vulnerabilities within affected communities. Similarly, Babatunde and Ibnouf (2024) demonstrate that the actions of state officials, traditional authorities, and security actors can either mitigate or intensify farmer–herder conflict, depending on how land, resources, and peacebuilding processes are governed. Other studies have contributed to the understanding of specific dimensions of the problem, including spatial vulnerability (Madu & Nwankwo, 2020), food insecurity (Nnaji et al., 2022), and security responses to farmer–herder violence (Nwozor et al., 2021).

Despite these contributions, a gap remains in integrating climate-related resource pressures with locally relevant, practical strategies for managing resource-based conflicts in Plateau State. Against this background, the present study examines strategies for managing resource-based conflicts in Nigeria, with particular emphasis on the relationship between climate change and farmer–herder relations in Plateau State. Statement of the Problem

Farmer–herder conflict in Plateau State represents a persistent challenge to rural livelihoods, agricultural production, community relations, and human security. Disputes associated with land access, crop damage, grazing, water use, and livestock movement can escalate when local mechanisms for negotiating access to shared resources are weak or when parties distrust formal institutions. The problem is therefore not simply competition over resources; it is the difficulty of governing that competition in a manner perceived as legitimate and fair.

Climate variability adds another layer to this problem. As rainfall becomes less predictable and pasture or water availability changes, pastoral mobility and farming practices may shift. Madu and Nwankwo (2020) identify spatial variation in climate-related vulnerability to farmer–herder conflict in Nigeria, while Nwangwu et al. (2020) link pastoral mobility and competition over land to broader human-security concerns. These findings suggest that environmental pressures can increase exposure to conflict.

The persistence of conflict also raises questions about the adequacy of existing responses. Nwozor et al. (2021) show that weaknesses in formal security responses can contribute to the growth of alternative security arrangements. Babatunde and Ibnouf (2024), focusing directly on Plateau State, further demonstrate that state and local actors involved in resource management and peacebuilding may unintentionally reproduce inequitable resource relations. Similarly, Gukas (2025) found that distrust and differences in willingness to participate in reconciliation remain important challenges in Plateau State.

Despite interventions such as military deployments, peace committees, anti-open grazing policies, and community dialogue initiatives, the conflicts persist because responses have focused mainly on security rather than addressing structural issues such as climate change, land governance, and resource management (International Crisis Group, 2022). As Benjaminsen and Ba (2019) argue, sustainable peace requires integrated approaches that combine climate adaptation, effective resource governance, and conflict management strategies.

This study therefore addresses the need to identify conflict-management strategies to manage resource-based conflicts and promote peaceful coexistence among affected communities.

Objective of the Study

The study examined strategies for managing resource-based conflicts and promoting peaceful coexistence between farmers and herders in the Central Zone of Plateau State, Nigeria.

Research Question

What strategies can be used to manage resource-based conflicts and promote peaceful coexistence between farmers and herders in the Central Zone of Plateau State, Nigeria?

Research Hypothesis

H₀: There is no statistically significant difference in respondents' mean ratings of strategies for managing resource-based conflicts and promoting peaceful coexistence between farmers and herders in the Central Zone of Plateau State based on length of residency.

Conceptual Review

Resource-Based Conflict

Resource-based conflict refers to disagreements or violent confrontations arising from the ownership, access, control, or utilisation of natural resources such as land, water, forests, minerals, and grazing fields. As natural resources become scarce due to population growth, environmental degradation, climate change, and increasing livelihood demands, competition among resource users intensifies, often resulting in conflict (United Nations Environment Programme [UNEP], 2019).

According to the United Nations Development Programme (UNDP, 2021), resource-based conflict emerges from competition over natural resources where governance systems are weak, access is unequal, and institutions responsible for resource management are ineffective. Similarly, the Food and Agriculture Organisation (FAO, 2023) defines it as disputes arising when different groups compete for limited natural resources essential to sustaining their livelihoods. Ide (2021) further describes resource-based conflict as social and political conflict driven by environmental scarcity, resource degradation, and unequal access to natural resources.

In Nigeria, resource-based conflicts have become one of the country's major security and development challenges. Competition between crop farmers and pastoral herders over fertile land, grazing routes, and water resources has intensified because of rapid population growth, expanding agricultural activities, desertification, climate-induced migration, and weak land administration systems (International Crisis Group, 2022). According to the National Bureau of Statistics (2023), agriculture remains the primary source of livelihood for millions of Nigerians, making access to productive land essential for economic survival.

Historically, farmers and herders maintained cooperative relationships through negotiated access to grazing lands and exchanging livestock manure for crop residues (Blench, 2018). However, shrinking grazing lands, unpredictable rainfall, environmental degradation, and the decline of traditional conflict-resolution mechanisms have turned these interactions into recurrent violent confrontations (Okoli & Atelhe, 2016). The resulting conflicts have caused widespread loss of life, displacement, destruction of farms, reduced agricultural production, and weakened rural economies (Amnesty International, 2025).

Climate change has further intensified resource scarcity by reducing pasture and water availability, forcing pastoralists to migrate into farming communities (IPCC, 2023). Consequently, managing resource-based conflicts in Plateau State requires addressing the interconnected challenges of climate change, environmental degradation, weak governance, and unequal access to natural resources through sustainable conflict management strategies.

Climate Change

Climate change refers to long-term changes in the Earth's climate, driven primarily by human activities that increase greenhouse gas concentrations in the atmosphere. These changes manifest as rising temperatures, shifting rainfall patterns, prolonged droughts, flooding, desertification, and more frequent extreme weather events (Intergovernmental Panel on Climate Change [IPCC], 2023). According to the United Nations Framework Convention on Climate Change (UNFCCC, 2021), human activities alter the global atmosphere's composition beyond natural climate variability, causing climate change. Similarly, the United Nations Environment Programme (UNEP, 2022) describes climate change as a major threat to sustainable development because of its impacts on ecosystems, food production, water resources, and socio-economic stability. Ide (2021) further characterises climate change as a "threat multiplier" that intensifies existing social, economic, and political vulnerabilities.

The major causes of climate change are largely anthropogenic, including fossil fuel combustion, industrial emissions, deforestation, urbanisation, unsustainable agricultural practices, bush burning, and poor land-use management (IPCC, 2023). According to NASA (2023), energy production, transportation, manufacturing, and agriculture remain the leading contributors to greenhouse gas emissions. In Nigeria, deforestation, overgrazing, and land degradation have further increased environmental vulnerability (Ayanlade & Radeny, 2020).

The effects of climate change are evident across environmental, economic, and social dimensions. It has contributed to rising temperatures, drought, flooding, biodiversity loss, declining agricultural productivity, food insecurity, poverty, displacement, and increased competition over scarce natural

resources (World Bank, 2021). In Nigeria's northern and Middle Belt regions, shrinking grazing lands and declining water resources have forced pastoralists to migrate southward, increasing competition with farming communities over land and water (Ayanlade & Radeny, 2020). According to Okoli and Atelhe (2016), this climate-induced environmental scarcity has transformed previously manageable disputes into recurring farmer–herder conflicts. In Plateau State, climate variability has intensified pressure on productive land and water resources, making climate adaptation and sustainable resource management essential for preventing resource-based conflicts (FAO, 2023).

Farmer–Herder Relations

Farmer–herder relations refer to the social, economic, environmental, and institutional interactions between sedentary crop farmers and nomadic or semi-nomadic pastoralists who depend on shared natural resources such as land, water, and vegetation for their livelihoods. According to Blench (2018), these relations encompass both cooperative and conflictual interactions arising from the coexistence of farming and pastoral systems. Similarly, the International Crisis Group (2018) defines farmer–herder relations as patterns of engagement between farming communities and livestock herders over access to productive resources, while Okoli and Atelhe (2016) describe them as an interdependent relationship rooted in the shared use of land and water. The Food and Agriculture Organisation (FAO, 2023) further views farmer–herder relations as interactions that can either enhance food security and rural development or generate violent conflict, depending on how natural resources are governed.

Historically, farmer–herder relations in Nigeria were characterised by cooperation and mutual dependence. Farmers benefited from livestock manure that improved soil fertility, while herders grazed their animals on harvested farmlands and crop residues. Traditional rulers and customary institutions regulated access to grazing routes and water sources, using indigenous conflict resolution mechanisms to maintain peaceful coexistence (Blench, 2018).

Over the past two decades, however, these relationships have deteriorated because of rapid population growth, farmland expansion into traditional grazing areas, climate change, desertification, cattle rustling, and weak land governance (International Crisis Group, 2022). Ayanlade and Radeny (2020) note that climate-induced migration has increased contact between pastoralists and farming communities, intensifying disputes over land and water resources. Similarly, Benjaminsen and Ba (2019) argue that shrinking environmental resources have transformed local disagreements into recurring violent conflicts.

The consequences have been severe, particularly in Plateau State, where farmer–herder conflicts have resulted in deaths, displacement, destruction of farms and homes, food insecurity, and declining agricultural productivity (Amnesty International, 2025). According to Ide (2021), rebuilding positive farmer–herder relations requires addressing climate change, strengthening land governance, promoting equitable resource management, and enhancing community dialogue and conflict resolution mechanisms. Such integrated approaches are essential for fostering peaceful coexistence and sustainable rural development in Plateau State and Nigeria at large.

The Relationship Between Climate Change and Farmer–Herder Relations

The relationship between climate change and farmer–herder relations is significant, though not exclusively or automatically causal. Climate change alters environmental conditions through rising temperatures, drought, changing rainfall patterns, and declining water and pasture availability, increasing pressure on resources important to both farmers and pastoralists (Intergovernmental Panel on Climate Change [IPCC], 2022). In Nigeria, rising heat, drought, and rainfall variability have added pressure on agricultural and grazing resources, contributing to shifts in pastoral migration patterns and increasing competition over land and water (International Crisis Group, 2021). As grazing resources become less reliable, some pastoralists move towards areas with relatively greater pasture and water

availability, bringing them into closer contact with farming communities and increasing the potential for disputes over land use, crop damage, livestock grazing and access to water.

Furthermore, the relationship is structurally reinforcing, as climate change interacts with existing socio-economic and political vulnerabilities to escalate conflicts. Climate change acts as a “threat multiplier”, intensifying pre-existing issues such as weak governance, insecure land tenure systems, poverty, population pressure, and inadequate resource management (Ide, 2021). These structural weaknesses reduce institutions' capacity to manage disputes effectively, transforming resource competition into violent conflict. Additionally, climate-induced disruptions to traditional transhumance routes have increased direct contact between herders and farmers, further escalating tensions (Ayanlade & Radeny, 2020).

In Plateau State, the declining environmental resources have led to increased pastoral migration and intensified farmer–herder interactions. The lack of effective land-use planning, weak natural resource governance, and limited conflict-management mechanisms have further exacerbated these tensions (International Crisis Group, 2022). Therefore, the relationship between climate change and farmer–herder relations is interactive and potentially mutually reinforcing, with effects mediated by governance, institutional capacity, livelihood conditions, and resource-access arrangements, requiring integrated interventions.

Conflict Management for Resource-Based Conflicts

Conflict management refers to the deliberate processes, strategies, and institutional mechanisms employed to prevent, regulate, reduce, and transform conflicts while minimising their destructive consequences. Unlike conflict resolution, which seeks to eliminate conflict, conflict management recognises conflict as an inevitable aspect of human interaction. It focuses on preventing its escalation into violence while promoting dialogue and cooperation. According to Ramsbotham, Woodhouse, and Miall (2016), conflict management involves negotiation, mediation, arbitration, reconciliation, and peacebuilding initiatives that foster sustainable relationships among conflicting parties. Similarly, UNDP (2021) defines conflict management as the coordinated use of institutional, legal, and community-based mechanisms to address both the immediate manifestations and underlying causes of conflict. Best (2019) further argues that effective conflict management requires identifying the root causes of disputes and creating inclusive platforms that encourage communication, trust, and mutual understanding.

Within the context of farmer–herder conflicts in Nigeria, conflict management extends beyond military intervention or law enforcement to include targeted strategies for managing resource-based conflicts. These strategies include establishing clearly defined grazing routes and reserves, equitable land-use planning, joint resource management committees, and negotiated agreements on access to land and water resources. Other key approaches include mediation between farmers and herders, community dialogue platforms, early warning and early response systems, and the strengthening of traditional institutions for dispute resolution (International Crisis Group, 2022).

Additionally, promoting climate-smart agriculture, water resource development, and livelihood diversification helps reduce pressure on scarce resources. According to FAO (2023), sustainable management of resource-based conflicts also requires addressing structural drivers such as environmental degradation, poverty, weak governance, unequal resource distribution, and climate change. In Plateau State, integrating government policies with local peacebuilding initiatives and inclusive natural resource governance is essential to prevent recurrent violence and foster lasting peace among farming and pastoral communities.

Resource-Based Conflict Management Strategies for the Promotion of Peaceful Coexistence Between Farmers and Herders

The growing incidence of farmer–herder conflicts in Nigeria has highlighted the need for sustainable resource-based conflict management strategies that address the root causes of disputes while fostering peaceful coexistence. Scholars and development agencies increasingly argue that security measures alone cannot resolve these conflicts without addressing competition over land, water, and other natural resources. The following strategies have been identified as effective for promoting lasting peace between farmers and herders: Integrated Land-Use Planning: Establishing clear land-use policies, grazing reserves, stock routes, and farming zones helps minimise disputes arising from overlapping land claims. Transparent land administration also reduces uncertainty and promotes equitable access to natural resources (International Crisis Group, 2022). Community Dialogue and Mediation: Regular dialogue platforms involving farmers, herders, traditional rulers, religious leaders, and local government officials encourage communication, build trust, and resolve disputes peacefully before they escalate into violence (Lederach, 2017). Climate Change Adaptation Measures: Promoting climate-smart agriculture, afforestation, irrigation development, water conservation, and sustainable grazing practices reduces environmental stress and minimises competition over scarce resources. Strengthening Traditional and Formal Institutions: Empowering traditional institutions alongside formal judicial and administrative structures enhances local dispute resolution, improves compliance with agreements, and strengthens confidence in conflict management processes (Best, 2019). Early Warning and Early Response Systems: Establishing community-based surveillance and conflict monitoring mechanisms enables authorities and stakeholders to detect emerging tensions and intervene promptly before conflicts become violent. Livelihood Diversification and Economic Empowerment: Providing alternative income-generating opportunities, vocational training, and financial support reduces overreliance on land and water resources, lowering competition between farmers and pastoralists (World Bank, 2022). Inclusive Governance and Policy Implementation: Governments should ensure the active participation of farmers, herders, civil society organisations, women, and youth in natural resource governance and policy formulation. Inclusive decision-making promotes transparency, equity, and shared ownership of conflict management initiatives.

Theoretical Framework

Political Ecology Theory (Piers Blaikie & Harold Brookfield, 1987).

This study is anchored in Political Ecology Theory, developed by Piers Blaikie and Harold Brookfield (1987). Political ecology combines ecological analysis with political economy to explain how environmental resources, human activities, power relations, and institutional arrangements interact. The theory argues that environmental problems cannot be understood simply as consequences of physical scarcity; attention must also be given to who controls resources, how access is distributed, whose interests are prioritised, and how institutions regulate competing claims.

The theory is relevant to this study because climate change can reduce the availability of land, water, and pasture, thereby increasing competition between farmers and herders. However, environmental pressure alone does not necessarily produce violent conflict. Outcomes depend on land-use arrangements, resource governance, power relations, institutional capacity, and communities' ability to negotiate competing interests. In Plateau State, where farmers and herders depend on overlapping land and water resources, Political Ecology provides a framework for examining how climate-related environmental changes interact with governance and resource-access arrangements to influence farmer–herder relations.

Methodology: Research Design and Study Area

The study adopted a descriptive survey research design. It covered five Local Government Areas in the Central Zone of Plateau State: Bokkos, Mangu, Pankshin, Kanke, and Kanam. Adult residents constituted the study population because they are directly exposed to, and participate in, livelihood and community processes relevant to farmer–herder relations.

Population, Sample and Sampling Procedure

The study population comprised 800,000 adults aged 18 years and above residing in the Central Zone of Plateau State, which consists of five Local Government Areas (LGAs): Bokkos, Mangu, Pankshin, Kanke, and Kanam. The population figure was obtained from the Independent National Electoral Commission (INEC, 2023).

The study sample comprised 384 respondents, determined using the Krejcie and Morgan (1970) sample-size determination table. A three-stage sampling procedure was adopted. First, stratified sampling categorised respondents by their Local Government Area of residence. Second, proportional allocation determined the number of respondents selected from each of the five LGAs based on their share of the total population. Third, we used simple random sampling within each stratum to select individual respondents, giving eligible adults an equal chance of selection. Table 1 presents the detailed sample allocation across Bokkos, Mangu, Pankshin, Kanke, and Kanam.

Instrument and Data Collection

We collected data using a structured questionnaire divided into two sections. Section A captured respondents' demographic information, including length of residency, categorised as less than 5 years, 5–10 years, and above 10 years. Section B contained five items aligned with the research question. Responses were measured on a four-point Likert scale: Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1), with a criterion mean of 2.50.

Data collection took place over nine fieldwork days between 23 May and 15 June 2024. The researcher obtained the necessary administrative approval from the Plateau State Ministry of Agriculture and Rural Development and relevant LGA offices. Five trained research assistants helped administer and retrieve questionnaires. Respondents were informed of the study's purpose, provided informed consent, participated voluntarily, and were assured that their responses would be kept confidential. Of the 384 questionnaires administered, 351 were validly returned and analysed, representing a 91.4% response rate.

Validity and Reliability of the Instrument

The questionnaire's content and face validity were established through expert review. Two experts in conflict management assessed the instrument for clarity, relevance, and alignment with the research objectives, and the researchers incorporated their recommendations. The researchers also conducted a pilot test with 20 adults who were not part of the main study. The reliability analysis yielded a Cronbach's Alpha coefficient of .805, indicating a high level of internal consistency.

Data Analysis

Data were analysed using descriptive and inferential statistics. Frequency, percentage, mean, and standard deviation were used to summarise respondents' characteristics and questionnaire responses, with a criterion mean of 2.50 for determining agreement. A one-way ANOVA tested the hypothesis at the 0.05 significance level, comparing mean strategy ratings across three length-of-residency categories: less than 5 years, 5–10 years, and above 10 years. We rejected the null hypothesis when $p < .05$.

Table 1

Sample Size Allocation Based on Proportional Sampling

Local Government Area	Proportion of Population (%)	Sample Size (n = 384)
Bokkos	20.0	77
Mangu	18.8	72
Pankshin	21.3	82
Kanke	20.0	77
Kanam	20.0	76
Total	100.0	384

Data Presentation and Analysis

Research Question: What strategies can be used to manage resource-based conflicts and promote peaceful coexistence between farmers and herders in the Central Zone of Plateau State, Nigeria?

Strategies for Managing Resource-Based Conflicts and Promoting Peaceful Coexistence

Items	SA 4	A 3	D 2	SD 1	Sum	Mean	S.D.	Decision
Promoting community dialogue can help reduce farmer–herder conflicts.	259	61	21	10	1271	3.62	.726	Agreed
Establishing joint farmer–herder resource management committees would improve cooperation.	224	109	11	7	1252	3.57	.655	Agreed
Government should provide alternative grazing reserves to reduce pressure on farmland.	264	46	27	14	1262	3.59	.797	Agreed
Implement training and awareness programmes on peaceful coexistence regularly.	223	108	12	8	1248	3.56	.673	Agreed
Strengthening law enforcement against acts of violence will enhance peace between farmers and herders.	256	46	31	18	1242	3.58	.857	Agreed
Average mean						3.58	.742	Agreed

Note. n = 351. SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree. Criterion mean = 2.50. Source: Field Survey, 2024.

The descriptive results show strong agreement across all five proposed strategies. Community dialogue recorded the highest mean ($M = 3.62$), followed by alternative grazing reserves ($M = 3.59$), law enforcement ($M = 3.58$), joint resource-management committees ($M = 3.57$), and peace education/training ($M = 3.56$). The overall mean of 3.58 indicates strong support for a multidimensional approach to managing resource-based conflict.

Test of Hypothesis

H_0 : There is no statistically significant difference in respondents' mean ratings of strategies for managing resource-based conflicts and promoting peaceful coexistence between farmers and herders in the Central Zone of Plateau State based on length of residency.

One-Way ANOVA of Mean Strategy Ratings by Length of Residency

Source	Sum of Squares	df	Mean Square	F	Sig.	Decision
Between Groups	5.169	2	2.584	5.012	.007	Rejected
Within Groups	179.435	348	.516			
Total	184.604	350				

Note. $\alpha = .05$. Source: Field Survey, 2024.

The one-way ANOVA produced $F(2, 348) = 5.012$, $p = .007$. Because $p < .05$, the null hypothesis is rejected. Respondents' mean ratings of the conflict-management strategies therefore differed significantly across length-of-residency categories. The omnibus ANOVA does not identify which groups differ; a post-hoc test is required for pairwise comparisons.

Discussion of Findings

The study found strong overall support for an integrated set of conflict-management strategies. The overall mean of 3.58 indicates that respondents do not view any single intervention as sufficient. This finding aligns with the broader literature, which increasingly treats farmer–herder conflict as multi-causal and institutionally mediated rather than a simple struggle between two occupational groups (Nwankwo, 2024; Nwozor et al., 2021).

Community dialogue recorded the highest mean score ($M = 3.62$), indicating strong support for dialogue as a mechanism for communicating grievances, negotiating access to resources, and preventing disputes from escalating. Gukas (2025) similarly identifies collaboration, reconciliation, and trust-building as important elements of sustainable peacebuilding in Plateau State. The finding reinforces the need for conflict-management approaches that actively involve affected communities rather than relying exclusively on external security actors.

Support for joint farmer–herder resource-management committees ($M = 3.57$) highlights the importance of inclusive resource governance. Such committees can monitor shared resources, communicate access changes, and mediate disputes. This finding aligns with the political ecology perspective, which emphasises how institutional arrangements shape access to resources. Babatunde and Ibnouf (2024) similarly show how state and local actors influence resource distribution and peacebuilding in Plateau State.

Alternative grazing reserves also received strong support ($M = 3.59$), indicating a preference for clearer arrangements governing land use and livestock movement. However, grazing reserves alone may not resolve conflict; their effectiveness depends on accessibility, legitimacy, environmental sustainability, and community participation. Given climate variability, land-use planning should therefore be combined with climate adaptation and negotiated resource governance (Madu & Nwankwo, 2020).

Peace education ($M = 3.56$) was also strongly supported, reflecting recognition that conflict involves trust, perceptions, and narratives as well as physical resources. Nwankwo (2021) shows that farmer–pastoralist conflict is framed through competing ecological, ethnic, regional, and religious narratives. Peace education can therefore help reduce stereotyping and retaliatory attitudes.

Law enforcement received strong support ($M = 3.58$) and should complement, rather than replace, community-based approaches. Effective enforcement should protect communities, investigate violence, deter attacks, and ensure accountability while maintaining fairness. Finally, the significant ANOVA result indicates that perceptions differed by length of residency. Because the study did not conduct a post-hoc test, it cannot identify which residency groups differed. The appropriate conclusion is that residency is a significant grouping factor requiring further investigation.

Taken together, the findings support a non-deterministic understanding of the climate–conflict nexus. Climate change can increase pressure on land, pasture, and water, but governance, institutions, trust, and perceptions of justice mediate how resource pressure converts into violence. This interpretation is consistent with recent work on Plateau State showing that climate, food insecurity, and conflict interact (Ishola & Luginaah, 2025), while resource governance and peacebuilding actors shape how conflict develops and is managed (Babatunde & Ibnouf, 2024).

Conclusion

The study concludes that residents in the Central Zone of Plateau State strongly support integrated strategies for managing resource-based conflicts between farmers and herders. Community dialogue, joint resource-management committees, alternative grazing arrangements, peace education, and effective law enforcement all received mean ratings above the 2.50 decision threshold, with an overall mean of 3.58. The findings demonstrate that sustainable conflict management requires a combination of community, institutional, land-use, educational, and security measures.

The study also concludes that climate change should be understood as an important contextual pressure rather than a single or automatic cause of farmer–herder violence. Climate variability can intensify competition over land, pasture, and water. However, the extent to which such pressures generate conflict depends on governance arrangements, institutional capacity, livelihood vulnerability, and the legitimacy of resource-management processes. The significant ANOVA result further shows that perceptions of conflict-management strategies vary across length-of-residency groups, indicating the importance of local experience in designing interventions.

Recommendations

Plateau State and relevant federal authorities should strengthen integrated land-use planning that clearly identifies and regularly reviews farming areas, livestock corridors, water points, and other shared-resource spaces. Such planning should include affected farmers, herders, traditional institutions, women, youth, and local government actors. Local governments and traditional/community institutions should establish or strengthen standing farmer–herder dialogue and joint resource-management committees. These mechanisms should meet routinely, not only after violence occurs, and should maintain locally accessible records of agreements, grievances, and emerging resource pressures.

Grazing and livestock-management policies should be designed around local ecological conditions and climate variability. Where grazing reserves or livestock corridors are established, government should ensure water access, environmental sustainability, community consultation, and clear rules for use rather than relying on designation alone. Peace education and community awareness programmes should be institutionalised in conflict-prone communities. Programmes should address early warning, non-violent communication, misinformation, stereotypes, and practical procedures for reporting and resolving resource disputes. Climate adaptation and livelihood programmes should be integrated into conflict-prevention policy. Investment in water infrastructure, climate-smart agriculture, sustainable livestock production, livelihood diversification, and local early-warning systems can reduce the livelihood pressures that make resource competition more acute.

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