

Gendered Impacts of Climate-Driven Farmer–Herder Conflicts: Examining the Impacts of Risk Communication, Grassroots Livelihoods, and Food Security in Nigeria’s Middle Belt and Southeast Regions

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ABSTRACT:

The increasing rate of climate uncertainty, including irregular rainfall, desertification and land degradation has exacerbated farmers-herders conflicts in some regions in Nigeria. This study investigates how climate-induced conflicts intersects with unequal access to communication infrastructure and gender inequality to shape everyday life in a selected hot zones in the Nigeria’s Middle Belt (Plateau and Benue States) and Southeast (Ebonyi and Enugu States). The study adopted comparative mixed approach to integrate gender-disaggregated focus group discussion and household survey, oral interviews and secondary literature on climate and conflict. Findings show that inasmuch as climate variability stand as structural determinant of resource conflict, outcomes of such conflicts are majorly framed by unequal communication infrastructure and weak institutions. For instance, the study established that women face unequal disruptions like increased vulnerability to violence and displacement, heightened unpaid care burdens, limited market access, and reduced agricultural productivity, resulting from their exclusion from risk communication infrastructure. It argues that timely access to reliable information significantly improves adaptive strength of grassroots communities and food security. Comparative analysis reveals more severe vulnerability in the Middle Belt than in the Southeast, reflecting differences in conflict intensity and communication infrastructure. The study concludes that effective interventions must integrate gender-sensitive risk communication with governance and livelihood reforms.

Keywords: Risk communication; Farmer–herder conflict; Climate variability; Gender inequality; Food security.

1. Introduction

Climate change is widely described as a “threat multiplier,” one that tends to intensify already existing socio-economic and political tensions, especially in grassroots communities that rely heavily on climate-sensitive resources for farming (Barnett and Adger 2007). In this sense, Hsiang, Burke, and Miguel (2013), as well as Koubi (2019), argue that across sub-Saharan Africa, shifting rainfall patterns, rising temperatures, and ongoing desertification have increased competition over land and water. This, in many cases, has contributed to the escalation of communal conflicts. These patterns are particularly visible in the long-standing conflicts between farming communities and pastoralist groups in Nigeria,

where environmental pressures combine with population growth and weak governance structures to sustain recurring violence (Benjaminsen and Ba 2019; Ide et al. 2021).

Over time, farmer–herder conflicts in Nigeria have moved beyond localized disputes—such as crop damage or access to grazing land—into broader crises with serious implications for human security, rural livelihoods, and even national food systems. For instance, Eberle, Rohner, and Thoenig (2020) show that these conflicts can reduce agricultural productivity, disrupt access to markets, and weaken food security at the household level, particularly among subsistence farmers. The Middle Belt region—especially Plateau and Benue States—has consistently recorded high levels of

violence, while parts of the Southeast, including Ebonyi and Enugu, have more recently begun to experience similar tensions. This suggests that the conflict is gradually spreading beyond its earlier core areas (Okoli and Atelhe 2014). Taken together, these developments make it necessary to look beyond just environmental and security explanations and consider how different social groups are affected in different ways.

Recent studies (Rao et al. 2020; Djoudi et al. 2016) point out that the impacts of climate-related conflicts are not socially neutral. Rather, they are shaped by existing inequalities—particularly in access to power, decision-making, and resources. In rural settings, gender plays an important role in shaping both vulnerability and the ability to cope. As noted by Doss (2018) and Peterman, Quisumbing, and Behrman (2014), women across sub-Saharan Africa often face structural barriers, including limited access to land, restricted participation in markets, mobility constraints, and reduced access to agricultural inputs. These factors, taken together, make it harder for them to respond effectively to environmental stress and conflict situations. In conflict settings, these challenges tend to become even more pronounced. Justino (2012) and Nordås and Cohen (2021) argue that women often carry increased burdens of unpaid care work, face higher risks of displacement and gender-based violence, and are frequently excluded from community-level decision-making. Even so, much of the literature on farmer–herder conflicts still treats affected populations as if they are uniform, which ends up masking these gendered differences in experience and response.

At the same time, work on crisis and risk communication (Reynolds and Seeger 2005; Sellnow and Seeger 2013) suggests that the effects of conflicts and disasters are not determined only by material conditions. How information is shared—and who gets access to it—also matters. Access to timely and reliable information shapes how people understand risk, make decisions, and respond during crises. Lundgren and McMakin (2018), for example, highlight the role of communication systems such as radio, mobile

phones, informal networks, and formal media in spreading early warnings and coordinating responses in conflict-affected areas. However, access to these channels is uneven. It is influenced by factors like income, location, education, and gender. These same factors also affect how information is interpreted and whether people are even in a position to act on it (Hilhorst and Bankoff 2022).

Despite this, the role of information remains relatively underexplored in studies of farmer–herder conflicts in Nigeria. Much of the existing work has focused on environmental causes, security concerns, and economic impacts, with less attention given to how information actually circulates within affected communities, or how communication systems function in practice. This gap is important, especially in contexts where misinformation, rumours, and low trust in public institutions are common. These issues can deepen tensions and make conflict resolution more difficult. At the same time, the link between gendered vulnerability and unequal access to communication systems has not been fully developed, even though there are clear indications that women are often excluded from formal information channels and early warning mechanisms.

This study attempts to address these gaps by examining the gendered impacts of climate-driven farmer–herder conflicts on grassroots livelihoods and food security in Nigeria’s Middle Belt and Southeast regions, paying particular attention to the role of risk communication. It adopts a comparative mixed-methods approach to explore how differences in access to information interact with social inequalities and environmental pressures. The aim is to better understand how these factors shape vulnerability, coping strategies, and resilience in different settings. By comparing regions with varying levels of conflict intensity, the study also sheds light on how communication systems operate under different conditions and how they influence the social outcomes of conflict.

The study makes three main contributions. First, it brings communication infrastructure into discussions of climate-induced conflict, moving

beyond approaches that focus mainly on environmental factors. Second, it highlights the role of gender and rural livelihoods in showing how unequal access to information can create different layers of vulnerability. Third, it draws attention to how communication inequalities can contribute to the persistence and escalation of conflicts in rural areas of the Global South—an issue that has not received enough attention in existing research.

In the end, the paper argues that climate-driven farmer–herder conflicts are not only environmental or security issues but are also shaped by communication breakdowns. Conflicts are more likely to escalate in situations where communication systems are weak, inaccessible, or exclude certain groups, especially those already marginalized. Based on this, the study suggests the need for more inclusive media strategies, gender-sensitive approaches to risk communication, and context-specific interventions aimed at strengthening resilience in conflict-affected communities.

2. Literature Review and Theoretical Framework

2.1 Climate Change, Resource Competition, and Farmer–Herder Conflict

A substantial body of literature links climate variability to the rise of resource-based conflicts, particularly in regions where livelihoods depend heavily on rain-fed agriculture and pastoralism. However, rather than acting as a direct cause of conflict, climate change is generally understood to interact with pre-existing socio-political and economic vulnerabilities, increasing the likelihood of violence. For instance, Barnett and Adger (2007) and Koubi (2019) argue that irregular rainfall, rising temperatures, and related environmental shifts influence herders' migration patterns across sub-Saharan Africa. These movements, in turn, often bring pastoralists into closer—and sometimes tense—contact with sedentary farming communities (Benjaminsen and Ba 2019; Ide et al. 2021).

This line of argument is reflected in the Nigerian context. Okoli and Atelhe (2014), for example,

point to a steady southward movement of herders from the northern parts of the country, which has intensified competition over land and water resources in the Middle Belt and parts of the Southeast. Environmental pressures of this kind do not act in isolation. They intersect with factors such as population growth, land tenure arrangements, and weak institutional responses, all of which contribute to recurring clashes between farmers and herders. Even so, scholars like Ide et al. (2021) caution against overly deterministic explanations, noting that conflict outcomes are shaped as much by local institutions, political economy, and social relations as by climate-related factors.

2.2 Gender, Rural Livelihoods, and Food Security in Conflict Contexts

Gender remains a central, though sometimes underemphasized, dimension of inequality in climate-related conflicts. In many rural settings, women's access to land, credit, extension services, and markets is limited, which affects their ability to cope with both environmental stress and violent disruptions (Doss 2018; Peterman, Quisumbing, and Behrman 2014). These structural constraints often translate into reduced adaptive capacity when crises occur.

Rao et al. (2020) further show that although women make up a significant proportion of the agricultural labour force at the grassroots level, they often have limited control over land and agricultural outputs. This makes them particularly vulnerable during periods of conflict in the agricultural sector. Evidence from Nigeria's Southeast and Middle Belt also points in this direction, where gendered vulnerabilities tend to deepen during episodes of violence. Conflicts frequently disrupt household labour arrangements, often increasing women's unpaid care responsibilities while at the same time restricting their access to income-generating activities (Justino 2012). Female-headed households, in particular, face higher risks of food insecurity due to asset loss, weaker social support systems, and constraints on mobility (Nordås and Cohen 2021).

Despite these insights, research on farmer–herder conflicts in Nigeria has only partially engaged with gender as a core analytical category. Much of the existing literature focuses on broader security dynamics or aggregate economic outcomes, which tends to obscure intra-household inequalities and the gendered nature of conflict experiences. This gap is especially important when considering food security, since access to resources and decision-making within households is often shaped along gender lines, with direct implications for nutrition and resilience.

2.3 Risk Communication and Crisis Information Systems

While studies on climate conflict and gender offer important insights into vulnerability, they often pay less attention to the role of information in shaping conflict outcomes. Yet, risk communication scholars such as Reynolds and Seeger (2005) argue that crises—including violent conflicts—are also communicative processes, where the production, circulation, and interpretation of information influence how people respond.

Effective risk communication typically involves the timely provision of information that is not only accurate but also usable, enabling individuals and communities to anticipate and respond to threats (Lundgren and McMakin 2018). In practice, however, communication systems in grassroots and conflict-affected areas tend to be mixed or hybrid. As Sellnow and Seeger (2013) note, both formal channels (such as media and official announcements) and informal networks (including kinship ties, community leaders, and word of mouth) play roles in spreading information. These channels can support early warning, help de-escalate tensions, or coordinate local responses—but they do not always function smoothly.

Their effectiveness often depends on issues of access, inclusivity, and trust. Where trust in formal institutions is low, people may rely more on informal sources, which can sometimes circulate rumours or misinformation. In already fragile contexts, such misinformation can heighten fear,

reinforce group divisions, and even trigger retaliatory violence. At the same time, limited access to formal communication infrastructure—common in many rural areas—reduces the reach of official messages, making coordinated responses more difficult.

2.4 Communication Inequalities and Gendered Vulnerability

Access to communication infrastructure is uneven across both geographic and social lines. Factors such as education, gender, and socio-economic status shape not only who receives information but also how it is understood and acted upon (Hilhorst and Bankoff 2022). In rural communities, women are often at a disadvantage due to lower literacy levels, restricted mobility, and exclusion from formal decision-making spaces where important information is shared.

These limitations have practical consequences. Studies in disaster and development contexts, including Djoudi et al. (2016), suggest that when access to early warning systems is limited, women are less able to take timely protective measures, which increases their vulnerability during crises. At the same time, excluding women from communication networks can weaken broader community resilience, given the roles women play in household management, food provision, and maintaining social ties.

In the specific case of farmer–herder conflicts, the intersection between communication inequalities and gendered vulnerability has not been sufficiently explored. There is still limited understanding of how unequal access to information shapes patterns of exposure, adaptation, and recovery in conflict-affected communities. This remains a significant gap, particularly considering how central communication is to managing uncertainty and coordinating responses in volatile settings.

2.5 Conceptual Framework

Building on the literature reviewed above, this study conceptualizes climate-driven farmer–herder conflicts in Nigeria’s Southeast and Middle Belt as the outcome of interacting pressures rather than a single causal factor. It views these conflicts as

shaped by the combined effects of environmental stress, social inequalities, and weaknesses in communication systems.

Within this framework, climate variability contributes to resource competition and can trigger or intensify conflict situations. At the same time, gendered social structures and unequal access to resources influence how vulnerability and resilience are distributed across different groups. Communication systems occupy an important, though often overlooked, position in this relationship. They can act as a mediating factor—either reducing the impact of conflict through effective information sharing or worsening it when communication is weak, fragmented, or exclusionary.

Where communication systems are accessible and relatively reliable, communities may be better able to anticipate risks, coordinate responses, and adopt coping strategies. In contrast, where such systems are absent or ineffective, misinformation may spread, inequalities can deepen, and the overall impact of conflict may become more severe.

By bringing together insights from climate-conflict studies, gender analysis, and risk communication theory, this framework provides a way of examining how environmental pressures, social hierarchies, and information systems interact to shape rural livelihoods and food security in conflict-affected areas.

3. Methodology

3.1 Research Design

This study adopts a comparative mixed-methods approach to examine the intersections between climate-driven farmer–herder conflicts and their gendered impacts on grassroots livelihoods and food security, with particular attention to the role of risk communication. Creswell and Plano Clark (2018) note that this approach is especially useful for studying social phenomena, as it allows for the triangulation of quantitative and qualitative data in order to better understand both broader patterns and lived experiences.

Similarly, Ide et al. (2021) argue that mixed-method designs are well suited to climate-conflict

research, given their ability to capture the interaction between environmental stressors, social inequalities, and institutional dynamics. In this study, the approach made it possible to compare regional variations in conflict intensity, livelihood outcomes, and communication systems across the Southeast and Middle Belt regions of Nigeria. This aligns, to some extent, with Yin's (2018) view that comparative designs strengthen analysis by allowing for cross-contextual validation of findings.

3.2 Study Areas

The study focuses on selected states in both the Middle Belt and Southeast regions of Nigeria. In the Middle Belt, Benue and Plateau States were selected, while Enugu and Ebonyi States represent the Southeast. These areas were chosen due to their recurring experiences with farmer–herder conflicts.

In comparative terms, Benue and Plateau can be described as long-standing hotspots of violent conflict, whereas Ebonyi and Enugu reflect more recent or emerging patterns. Looking at these regions side by side made it easier to observe differences in vulnerability, livelihood disruptions, and the functioning of communication systems across varying conflict settings.

3.3 Data Collection

Household Surveys

Structured questionnaires were used to generate quantitative data on livelihoods, food security, and access to communication channels. Survey methods remain common in conflict and development research, particularly for capturing variation at the household level.

Focus Group Discussions (FGDs)

Gender-disaggregated FGDs were conducted to explore shared experiences and community perceptions. This approach is useful for understanding local dynamics and communication patterns, especially in settings where collective experiences shape responses to conflict (Morgan 1997).

Key Informant Interviews (KIIs)

Key informant interviews were carried out with community leaders, media actors, and local officials. Drawing on Lundgren and McMakin (2018), these interviews provided insights into how risk communication systems operate in practice, including early warning mechanisms and the role of formal and informal media.

Secondary Data

Secondary sources, including datasets on climate variability and conflict incidents, were used to complement primary data. As noted by Creswell and Plano Clark (2018), such triangulation helps improve the overall reliability of mixed-methods research.

3.4 Measurement of Key Variables

Key variables such as livelihoods, food security, and communication access were operationalized using indicators commonly applied in development and risk communication studies (FAO 2011; Lundgren and McMakin 2018). Gender was treated as a cross-cutting variable throughout the analysis, in line with feminist approaches that emphasize differentiated access to resources and decision-making (Doss 2018).

3.5 Data Analysis

Quantitative data were analyzed using descriptive and comparative techniques to highlight patterns across regions. Qualitative data, on the other hand, were analyzed thematically, following the approach outlined by Braun and Clarke (2006). This method allows for the identification of recurring themes while still leaving room for context-specific interpretations.

A convergent mixed-methods strategy was then used to integrate both strands of data. While this does not always produce perfectly aligned results, it helps in drawing out broader insights by placing statistical patterns alongside lived experiences (Creswell and Plano Clark 2018).

3.6 Ethical Considerations

The study adhered to standard ethical guidelines for research in conflict-affected settings. This included obtaining informed consent from

participants, ensuring confidentiality, and being mindful of the sensitivities involved when working with vulnerable populations (Wood 2006). Attention was also given to gender dynamics during data collection, particularly in the conduct of interviews and group discussions.

3.7 Limitations

Like many studies conducted in conflict environments, this research faced a number of limitations. Access to some high-risk areas was restricted, and in several cases, displaced individuals had relocated across both rural and urban locations, making them difficult to reach. There were also instances of recall bias during interviews and surveys.

Even so, efforts were made to minimize these challenges through careful data handling and adherence to ethical standards. These kinds of limitations are not unusual in conflict research and are widely acknowledged in similar studies (Yin 2018).

4. Findings and Analysis

4.1 Climate Variability, Migration, and Conflict Dynamics

The findings suggest that while climate variability plays an important role in shaping conflict dynamics, its effects are often indirect when compared to factors such as social inequalities and patterns of risk communication. In several instances, the southward movement of herders appears to intensify already existing social and identity tensions, including ethnic profiling and gendered perceptions, which in turn help sustain conflict in these regions. This generally supports arguments by scholars such as Koubi (2019) and Ide et al. (2021), who describe climate change as a “threat multiplier” rather than a direct driver of violence.

At the same time, the data indicate that environmental stress alone does not produce violent conflict. Rather, conflict tends to emerge within contexts marked by weak institutions, poor implementation of grazing regulations, and the gradual weakening of traditional dispute-resolution mechanisms. Across both regions, a recurring

issue is the breakdown of trust between local communities and state institutions, which increases the likelihood of escalation. This aligns with the position of Benjaminsen and Ba (2019), who argue against environmental determinism and instead emphasize the political and social context of conflict.

It is also worth noting that migration patterns are not purely ecological responses. They are shaped by local narratives, perceptions, and flows of information. In some cases, herder mobility is interpreted as a normal livelihood strategy; in others, it is seen as a direct threat. These differing interpretations often influence how communities respond, sometimes in ways that heighten tension.

4.2 Communication Ecologies in Conflict-Affected Communities

One of the clearer findings from the study is that farmer–herder conflicts unfold within complex and somewhat uneven communication environments. These communication ecologies play a significant role in shaping risk awareness, preparedness, and, at times, the escalation of violence.

Across all study locations, respondents pointed to multiple channels through which information circulates. These include mobile phone communication, local radio broadcasts, religious institutions, community meetings, and informal kinship networks. Despite this range of channels, access to timely and reliable information remains inconsistent.

In the Middle Belt, where conflict is more entrenched, communities rely heavily on fast-moving informal channels such as mobile phones and social networks. While these channels allow for quick dissemination of warnings—for example, about attacks or herd movements—they also create space for misinformation. Several respondents described situations where rumours of impending attacks triggered preemptive displacement or even retaliatory action, thereby worsening insecurity. This reflects broader insights in risk communication literature about how uncertainty can amplify perceived threats through

informal information flows (Reynolds and Seeger 2005; Sellnow and Seeger 2013).

In contrast, respondents in the Southeast highlighted weak integration into structured communication systems and limited access to early warning information. The absence of well-established communication networks often results in delayed awareness and more reactive responses to conflict situations. In both regions, however, trust remains a central issue. Where formal institutions are not trusted, people tend to rely more on interpersonal networks—even when those networks are not always reliable. This suggests that communication systems are not simply technical arrangements but are deeply shaped by questions of credibility and legitimacy.

4.3 Gendered Access to Information and Risk Communication

The study also reveals a noticeable level of gender-based inequality in access to communication infrastructure and risk-related information. Testimonies from women across the study areas—including participants such as Kaneng (Plateau), Nanret (Plateau), Ebo (Benue), Dooshima (Benue), Ijeoma (Enugu), and Lydia (Ebonyi)—consistently point to lower ownership and control of mobile phones, reduced exposure to radio information, and limited participation in community forums where security issues are discussed.

These patterns are closely tied to broader gender norms that shape women's mobility, control over resources, and involvement in public life. As a result, many women depend on indirect or mediated channels to access information, which are often less reliable. This kind of access tends to produce delays, partial information, or, in some cases, filtered versions of events.

Several respondents noted that important updates—such as warnings about attacks or changes in herder movement—were received only after incidents had already occurred. This significantly reduced their ability to take preventive action. These observations support findings from Djoudi et al. (2016) and Hilhorst and Bankoff (2022), which show that unequal access to

information plays a major role in shaping adaptive capacity during crises.

More broadly, the findings suggest that communication inequality is not just about lack of information; it is part of a wider structural vulnerability that increases exposure to both physical and economic risks. The exclusion of women from key communication networks—formal and informal—therefore remains a critical, though often overlooked, dimension of conflict vulnerability.

4.4 Impacts on Rural Livelihoods

Farmer–herder conflicts have had significant effects on rural livelihoods across both study regions. One of the most immediate impacts is the destruction of crops and farmland. In the Middle Belt, repeated episodes of violence have forced many farmers to abandon high-risk areas, leading to sustained declines in agricultural output.

Respondents described a gradual shift away from established farming systems toward more uncertain and less stable livelihood strategies. These changes have also affected household labour arrangements. Women, in particular, reported taking on additional roles in subsistence farming, petty trade, and other informal activities in order to compensate for lost income.

At the same time, these coping strategies are constrained by ongoing insecurity, limited access to markets, and increasing domestic responsibilities, especially those related to caregiving in displacement situations. Men, on the other hand, more often adopt mobility-based strategies, such as temporary migration to urban centres or safer rural areas in search of wage labour. While this may provide short-term income, it also shifts the burden of household labour onto women, reinforcing existing gender inequalities and increasing time pressure on them. These patterns are broadly consistent with findings in the literature on conflict and rural livelihoods (Justino 2012).

4.5 Food Security Outcomes

The combined effects of conflict have had serious implications for household food security in both

regions. Many respondents reported reduced food availability, increased reliance on less nutritious food options, and the use of coping strategies such as meal rationing, skipping meals, and reducing dietary diversity.

These patterns reflect not only immediate shortages but also deeper disruptions in local food systems. Female-headed households were particularly affected, often experiencing more prolonged and severe food insecurity due to limited access to land, labour, and financial resources.

Beyond production losses, insecurity also disrupts markets and restricts mobility, making it harder for households to access food. An interesting pattern that emerged from the data is the role of information. Households with better access to timely and reliable information were more able to adjust their farming decisions, avoid high-risk areas, and prepare for potential disruptions. In contrast, those with limited access to information were often slower to respond and experienced greater losses.

This highlights the importance of communication systems in shaping resilience within food systems, supporting arguments in risk communication literature (Lundgren and McMakin 2018).

4.6 Comparative Regional Analysis

A comparison between the Middle Belt and the Southeast reveals some notable differences. In the Middle Belt, where conflict has been ongoing for a longer period, communities have developed informal but relatively fast ways of sharing information, including the rapid spread of rumours and heightened local awareness. While these systems can be useful, they are also prone to distortion and can contribute to further tension during periods of uncertainty.

In the Southeast, where these conflicts are more recent, communication systems are less developed and often slower to respond. The absence of strong early warning structures and limited involvement of formal institutions tends to result in delayed information flow and lower levels of preparedness. While this may, in some cases, reduce immediate escalation, it also leaves

communities more exposed due to limited anticipation capacity.

Across both regions, however, gender inequalities in access to information remain consistent. These inequalities continue to shape vulnerability regardless of how long the conflict has persisted. Overall, the findings suggest that although communication systems may evolve in response to conflict, they remain deeply influenced by underlying social structures, particularly those related to gender and access to resources.

5. Discussion: Climate Stress, Communication Inequality, and the Gendered Political Ecology of Farmer–Herder Violence

5.1 Rethinking Climate–Conflict Causality: From Environmental Stress to Political Ecology

The findings of this study both support and, in some ways, extend the common argument that climate change operates as a “threat multiplier” in conflict situations. Earlier work—such as Hsiang, Burke, and Miguel (2013) and Burke, Hsiang, and Miguel (2015)—established statistical links between climate variability and violence. However, more recent scholarship has warned against linear explanations that treat climate shocks as direct triggers.

What emerges more clearly here is closer to a political ecology perspective. Environmental stress alone does not generate conflict; it becomes consequential when it interacts with power relations, historical inequalities, and weak or uneven institutions (Barnett & Adger, 2007; Benjaminsen & Ba, 2019; Ide et al., 2021). In the Nigerian case, climate variability—visible in erratic rainfall, ecological pressure, and shrinking grazing spaces—seems to heighten tensions mainly through already fragile land tenure systems, governance gaps, and the erosion of local dispute-resolution structures.

This pattern is not entirely unique. Similar dynamics have been observed across the Sahel, where conflict tends to arise less from scarcity itself and more from how access to resources is negotiated—or fails to be negotiated—between groups (Turner, 2004; Thébaud & Batterbury,

2001). Evidence from Sudan and Ethiopia also points in this direction. In Darfur, for example, uneven environmental pressures combined with institutional neglect and politicised land allocation contributed to large-scale violence (Kevane and Gray, 2008). Likewise, in Ethiopia’s Oromia region, migration linked to drought escalated into conflict mostly where negotiation mechanisms were weak or absent (Gebresenbet, 2014).

What this study adds, perhaps more explicitly, is the role of communication. It suggests that beyond climate, institutions, and social relations, the way information is produced and circulated matters. In that sense, the familiar climate–institution–conflict model might need a slight adjustment to include communication systems as part of how risk is interpreted and acted upon.

5.2 Farmer–Herder Conflict as a Communicative Crisis System

One of the clearer insights from the findings is that farmer–herder conflicts are not only ecological or economic processes; they also unfold as communication crises. During periods of uncertainty, people rely heavily on whatever information networks are available to them. Where those networks are weak, fragmented, or not trusted, they can actually deepen uncertainty rather than reduce it (Reynolds & Seeger, 2005; Sellnow & Seeger, 2013).

In both the Middle Belt and Southeast, information about attacks, herder movements, or security threats is often irregular and largely informal. This creates a situation that resembles what has been described as “information disorder”—where rumours, partial truths, and official messages circulate at the same time (Wardle & Derakhshan, 2017). In such contexts, it becomes difficult to separate credible warnings from speculation.

There are parallels elsewhere. In northern Cameroon, for instance, rumours about cattle theft or impending attacks have been shown to trigger pre-emptive violence (Moritz, 2010). In India, Varshney (2002) illustrates how rumours in low-trust environments can quickly escalate local tensions. Similar patterns were observed during

Kenya's post-election violence, where reliance on informal networks—partly due to distrust of official sources—contributed to confusion and escalation (Goldstein & Udry, 2008; Mueller, 2011).

The present findings broadly align with these studies but also suggest something more: communication breakdowns are not just background conditions. They shape when and how violence unfolds. Where information is uneven or unreliable, responses tend to be more anticipatory, sometimes even pre-emptive, and often retaliatory.

5.3 Gender, Communication Inequality, and the Production of Structural Vulnerability

A major contribution of this study lies in bringing gender more directly into discussions of communication and conflict. While gender has long been examined in relation to agriculture and vulnerability (Doss, 2018; Quisumbing et al., 2014), its role in shaping access to communication channels is still less developed in climate-conflict research.

The findings indicate that women's exclusion from communication systems is not incidental—it is structured. Limited access to mobile devices, restricted participation in public forums, and reliance on second-hand information create a form of communication disadvantage. This affects how quickly and accurately women can respond to threats.

There are comparable findings in disaster contexts. In Bangladesh, for example, early warning systems have often failed to reach women effectively due to mobility restrictions and social norms (Paul and Routray, 2010). In Nepal, women's exclusion from communication networks has been linked to lower participation in preparedness planning (Ariyabandu & Wickramasinghe, 2004).

From a theoretical standpoint, this aligns with feminist political ecology, which argues that environmental vulnerability is shaped by unequal access to resources, knowledge, and institutions (Rocheleau, Thomas-Slayter, & Wangari, 1996; Nightingale, 2011). What this study adds is the idea that communication itself should be treated as a resource. Access to information—who gets it,

when, and how—becomes part of what defines adaptive capacity.

5.4 Livelihood Disruption and the Global Political Economy of Rural Insecurity

The disruptions observed in rural livelihoods reflect broader patterns seen in other conflict-affected agrarian regions. Across the Sahel and the Lake Chad Basin, for example, farmer–herder tensions have contributed to declining productivity, displacement, and shifts toward more unstable livelihood strategies (UNEP, 2011; FAO, 2018).

There are also echoes of this elsewhere. In Syria, prolonged drought contributed to rural livelihood collapse and migration, which interacted with governance failures to intensify crisis conditions (Kelley et al., 2015). In Afghanistan, climate stress combined with insecurity has fragmented rural economies and increased reliance on informal survival strategies (Adelman and Morris, 2019).

What stands out in this study is that these disruptions are not evenly experienced. They are clearly gendered. Women's increased involvement in subsistence farming and informal trade reflects resilience, but it also signals added pressure. This connects with the idea of “time poverty” (Elson, 2010), where economic roles expand without any real reduction in domestic responsibilities.

At the same time, male migration—often used as a coping strategy—does not remove vulnerability so much as redistribute it within households. Similar patterns have been observed in rural India, where male out-migration increases women's workload and, in some cases, reduces overall agricultural efficiency (Desai & Banerji, 2008).

5.5 Food Security, Information Access, and the Communication–Resilience Nexus

One of the more striking insights from the findings is the role of communication in shaping food security outcomes. While traditional approaches focus on availability, access, utilisation, and stability (FAO, 2011), this study suggests that information access should also be considered.

Households with better access to timely and reliable information were generally more able to

adjust their farming decisions, avoid risky areas, and plan ahead. This aligns with findings from Ethiopia, where early warning systems improved households' ability to cope with drought (Haile et al., 2017). Similar results have been reported in the Philippines, where effective communication reduced agricultural losses during crises.

By contrast, where communication systems are weak or mistrusted, responses tend to be delayed, and misinformation can worsen outcomes. In such contexts, food insecurity becomes not just a production issue but also an information problem. This suggests that resilience in food systems is partly dependent on how well communication systems function.

5.6 Toward an Integrated Model: Climate Stress, Communication Systems, and Gendered Vulnerability

Taken together, the findings point toward a more integrated way of understanding farmer–herder conflict. Rather than a single-cause explanation, the study suggests an interaction between three main elements: climate stress, institutional structures, and communication systems. Running through all of these is gender, which shapes access to resources, decision-making, and information.

This kind of framework resonates with recent calls for more multi-dimensional approaches in climate-security research (Mach et al., 2019). It also connects with communication-for-development perspectives that emphasise inclusive and participatory information systems (Wilkins et al., 2014).

A key takeaway here is that communication systems are not neutral. They reflect and reproduce existing inequalities. As a result, efforts to address farmer–herder conflict need to go beyond environmental and institutional reforms to also consider how information is shared—and who is excluded from it.

5.7 Global Implications

The implications of this study extend beyond Nigeria. Similar intersections between climate stress, fragile livelihoods, and uneven communication systems can be seen in other

regions, including the Sahel, the Horn of Africa, and parts of South Asia. In Somalia, for example, drought early warning systems have improved resilience but remain unevenly accessible across gender and social groups (World Bank, 2019). In Colombia, post-conflict reintegration efforts have been limited in part by communication barriers that restrict access to state services (Gutiérrez-Sanín & Wood, 2017).

These cases reinforce the broader point: climate-related conflict is not only about environmental change or weak governance. It is also shaped by how information circulates. Without addressing communication inequalities, especially those linked to gender, policy responses may fail to reach those most at risk—and in some cases may even reproduce existing vulnerabilities.

6. Conclusion and Policy Implications

6.1 Conclusion

This study set out to examine the gendered impacts of climate-driven farmer–herder violence in Nigeria's Southeast and Middle Belt, with particular attention to how risk communication shapes rural livelihoods and food security. By bringing together insights from climate-conflict studies, gender analysis, and crisis communication, the study shows that farmer–herder violence is better understood not simply as an environmental or security issue, but as a more layered socio-ecological and communicative crisis.

Three main conclusions can be drawn from the findings. First, climate variability operates as an indirect but significant structural driver of conflict. It influences herders' mobility and increases pressure on land and water resources. However, in line with political ecology perspectives, environmental stress on its own does not produce violence. Conflict outcomes are mediated by weak institutions, contested land tenure systems, and the gradual erosion of customary mechanisms for negotiation and dispute resolution.

Second, gender remains a central axis through which the impacts of conflict are experienced and distributed. Women tend to face more severe livelihood disruptions, higher levels of food insecurity, and increased unpaid care

responsibilities, alongside exposure to displacement and gender-based violence. These patterns are rooted in unequal access to land, productive resources, and decision-making spaces. Beyond this, the study highlights an additional layer that is often overlooked: inequality in access to communication systems. Women's limited access to both formal and informal information channels constrains their ability to anticipate and respond to risks, which in turn deepens their overall vulnerability.

Third, the study identifies risk communication as a critical, though often underemphasized, factor in shaping conflict dynamics. Communication systems—ranging from local radio and mobile networks to community leadership structures and informal networks—can either support resilience or contribute to escalation. Where information is timely, trusted, and accessible, households are better able to prepare and adapt. Where it is fragmented or unreliable, it tends to fuel uncertainty, rumours, and reactive responses.

A comparison between the Middle Belt and the Southeast also reveals differences in how communication systems function. In the Middle Belt, prolonged exposure to conflict has led to faster but often unstable information flows, while in the Southeast, communication systems remain less developed and more reactive. Despite these differences, gendered inequalities in access to information persist across both regions, suggesting that structural exclusion cuts across geographic contexts.

Taken together, the findings support an integrated view in which climate stress, institutional fragility, and communication inequalities interact to produce uneven vulnerability. Within this, gender operates as a cross-cutting factor shaping how risks are experienced.

6.2 Policy Implications

The findings carry a number of implications for policy, particularly in the areas of climate adaptation, conflict prevention, food security, and communication governance. They suggest that responses to farmer–herder violence need to move beyond narrow security or environmental

approaches and pay closer attention to communication systems and gendered access.

6.2.1 Strengthening Gender-Sensitive Risk Communication Systems

There is a clear need to strengthen risk communication systems in ways that are more inclusive of women. In many rural areas, early warning systems remain limited in reach and do not adequately consider barriers such as mobility constraints or literacy levels. Expanding community-based communication structures, linking local radio with mobile platforms, and adapting messages to local realities could improve access. Evidence from disaster studies suggests that more inclusive communication tends to improve preparedness and reduce vulnerability (Reynolds & Seeger, 2005; Lundgren & McMakin, 2018).

6.2.2 Integrating Communication Infrastructure into Conflict Prevention

Communication should be treated as a central part of conflict prevention rather than a secondary support mechanism. Strengthening trusted information channels—such as community radio, multilingual messaging systems, and verified mobile platforms—can help reduce misinformation and improve collective responses. Given how often rumours contribute to escalation in farmer–herder conflicts, improving the credibility and verification of information becomes particularly important.

6.2.3 Enhancing Women's Participation in Decision-Making and Information Networks

Addressing communication inequality also requires increasing women's participation in decision-making processes. This includes involving women in early warning systems, community security arrangements, and agricultural extension services. Such inclusion can improve both the flow of information and the quality of local responses. Existing research suggests that greater participation by women often strengthens community resilience and governance outcomes (Rocheleau et al., 1996; Nightingale, 2011).

6.2.4 Linking Food Security Policy with Communication Access

Food security policies need to take communication access more seriously. Extension services, for instance, could incorporate real-time updates on climate risks, conflict hotspots, and market conditions. At the same time, digital and mobile-based advisory systems should be designed in ways that reach women and other marginalised groups who are often excluded from conventional systems. The findings here suggest that access to information plays a direct role in how households adapt to disruptions.

6.2.5 Addressing Structural Governance Challenges

Finally, there is a need to address broader governance issues, particularly around land tenure and conflict mediation. Weak enforcement of grazing regulations, unclear land rights, and the decline of traditional dispute-resolution systems continue to drive conflict. However, these reforms need to be supported by better communication

structures. Without clear and trusted channels for sharing information, even well-designed policies may be misunderstood or poorly implemented at the local level.

6.3 Final Reflection

In sum, this study argues that climate-driven farmer–herder violence in Nigeria should be seen as a combined crisis of environment, governance, and communication, shaped in important ways by gender inequalities. Efforts to build resilience therefore need to move beyond isolated interventions and instead adopt more integrated approaches that recognise communication systems as central to both vulnerability and adaptation.

By placing risk communication more firmly within the climate-conflict discussion, the study offers a slightly different way of thinking about how environmental stress translates into everyday insecurity—and how more inclusive communication systems might open up pathways toward resilience, stability, and sustainable rural development.

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