Mitigating Herder-Farmer Conflict through Resource Governance in the Era of Climate Change

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ABSTRACT

Climate change-induced land resource scarcities have intensified the exploitation of land, escalating tensions between sedentary farmers and itinerant pastoralists. These tensions have degenerated into frequent and widespread clashes, resulting in significant casualties, mortalities, and morbidities in Nigeria. While existing literature identifies climate change and demographic pressures as primary drivers of these conflicts, policy responses have been limited to banning open grazing—an approach marked by weak enforcement and low compliance. This policy gap underscores the need for actionable solutions, which this paper seeks to address.This study examines the recurring herder-farmer crises within the context of climate change and its far-reaching implications. By analyzing secondary data and applying the resource partitioning model, the paper advocates for comprehensive policies focused on environmental remediation, effective resource governance, and regulated open grazing practices. Furthermore, it emphasizes the importance of building climate resilience through resource partitioning to foster complementarity and interdependence between herders and farmers.The approach aims to promote mutual coexistence by enabling the equitable and sustainable use of shared ecological resources, ultimately mitigating conflict and enhancing livelihoods.

Keywords: herding, farming, climate change, resource governance, resource partitioning model

INTRODUCTION

Land, as a critical means of production in the context of resource scarcity, has become a focal point for competition and conflict. This competition is especially pronounced between sedentary farmers and nomadic pastoralists, as both groups rely on land and water for their livelihoods. Farmers need arable land for crop cultivation, while pastoralists require grazing land and water for their cattle. Given the finite nature of these resources, tensions often escalate into armed conflict.Historically, the relationship between farmers and pastoralists was symbiotic, with mutual benefits derived from resource sharing. However, this dynamic has shifted dramatically, as evidenced by the increasing frequency and severity of violent clashes. For instance, between 2007 and 2011, 67 clashes occurred, escalating to 716 clashes between 2012 and 2018, resulting in over 1,300 fatalities (Ogayi, 2019). By 2021, at least 2,600 deaths were recorded in Nigeria's north-central and northwest regions, surpassing fatalities from Boko Haram insurgencies (TRT, 2024). The north-central state of Benue has been a particular hotspot for these conflicts. Previous studies on climate change as Onwe et al (2023); Yu et al (2022): Jahanger et al (2023a); Jahanger et al (2023b) and Jahanger et al (2023c) opines that climate change related issues are caused by global warming as a result of man and societal activities.

While factors such as demography, ethnicity, religion, and media have been implicated, climate change remains a significant, yet often overlooked, driver of these conflicts. As Odoh (2020) notes, climate variations—including desertification and unpredictable seasonal changes—exacerbate resource scarcity, displacement, and migration, ultimately fueling disputes. The north-south migration of pastoralists in search of fodder and water has intensified, placing them in direct competition with farmers who are expanding agricultural production to meet the needs of a growing population.The Nigerian government's failure to

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implement effective climate resilience strategies and resource governance policies has compounded the problem. Previous attempts to address these conflicts constitutionally or legislatively have been inadequate (Odoh, 2020). This study seeks to explore the following questions: How does climate change drive these conflicts? What are the national security implications? Can a resource governance policy, underpinned by a resource partitioning model, provide a sustainable solution? These questions aim to advance the discourse on political ecology in Nigeria.

Conceptual Framing of Transhumant Pastoralist Conflict and Literature Review

Transhumant pastoralists, or nomads, herd cattle across regions in search of grazing land and water, primarily relying on the practice of open grazing. This system, prevalent in West Africa, involves the seasonal movement of livestock to exploit available pastures (Morris, 2017). In Nigeria, this movement typically involves pastoralists migrating from the arid north to the humid south. Sedentary farmers, on the other hand, rely on rainfall-fed agriculture, primarily cultivating arable crops.

In recent decades, conflicts between these two groups have become more frequent and deadly. Factors such as population growth, climate change, and economic pressures have intensified competition for land and water. While historical interactions were relatively peaceful due to low population density and favorable climatic conditions, socio-ecological changes since the 1980s have disrupted this balance (Adisa, 2012). Rising human and livestock populations have placed immense strain on limited resources, leading to violent confrontations.

Literature highlights demographic and climatic factors as key drivers of these conflicts. Population growth without a corresponding increase in land resources creates competition and heightens tensions. Nyong (2010) observes that as farmers expand cultivation to meet food demands, they encroach on traditional grazing routes, intensifying disputes. Similarly, Blench (1998) notes that urbanization, industrialization, and increasing market demands exacerbate resource competition. The growth of Nigeria's cattle population, estimated at 22 million by 2016, further amplifies these pressures (Fabiyi&Otunuga, 2016).

Climate change has drastically altered Nigeria's ecological landscape. Desertification and reduced rainfall in the north have forced pastoralists to migrate southward permanently, rather than seasonally (Egwu, 2016). This migration disrupts traditional grazing patterns and fuels conflicts over land and water. Additionally, the proliferation of small arms, mercenaries, and dangerous drugs has escalated the violence, creating a humanitarian crisis in a nation already grappling with terrorism and kidnapping.

Proposed solutions in the literature include multi-layered dialogue mechanisms, stricter regulation of open grazing, and the establishment of ranches (ICRG, 2018; Nyong &Fiki, 2005). However, these measures often fail to address the root causes of the conflict. For example, ranching policies in Benue State were met with resistance from pastoralists, who argued that the laws violated their cultural and constitutional rights (ICRG, 2018). A more holistic approach, incorporating actionable resource governance policies, is necessary to address these challenges sustainably.

Theoretical Framework

This study adopts the eco-violence theory to analyze the causal dynamics of the herder-farmer conflict, while the resource partitioning model provides a framework for potential solutions.

Eco-Violence Theory

Developed by Homer-Dixon (1999), the eco-violence theory posits that resource scarcity, exacerbated by climate change and demographic pressures, leads to violent conflicts. According to Okoli and Ogayi (2018), climate-induced environmental changes interact with population growth to create resource-based struggles. This framework is particularly relevant for understanding the violent clashes over land and water between farmers and pastoralists in Nigeria.

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Resource Partitioning Model

Originally proposed by Grinnell (1917) and later expanded by Dubois et al. (2021), the resource partitioning model explains how competing groups can coexist by dividing resources to minimize conflict. Applied to the Nigerian context, this model suggests that structured land-use agreements between farmers and pastoralists can foster mutual benefits. For instance, farmers could lease post-harvest land to pastoralists for grazing, while benefiting from the manure produced by cattle. Such arrangements would promote symbiosis and reduce tensions.

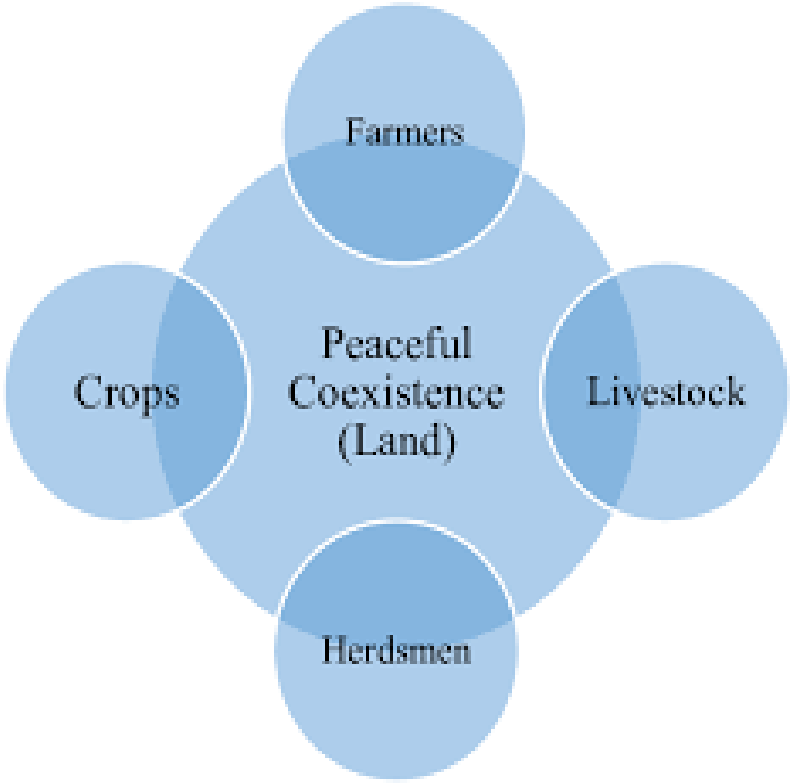

Figure 1:Resource partitioning model

Source: Abdulahi (2021)

As depicted in figure 1, the intersecting between the nomads and farmers is land. Sources of livelihood are crops and livestock while ground for mutual coexistence lies on resource partitioning.

Transhumant Conflicts: Incidences and Implications

Evolving trajectories and dynamics of herdsmen-farmers conflicts in Nigeria over the recent years have been curiously alarming. In recent years, particularly from 2014 to date, the deadly attacks by nomadic pastoralists voyaging for pastures have become more sophisticated, organised and complex. To say the least, the "phenomenon has progressively metamorphosed from rudimentary communal skirmishes to organized armed confrontation in its apparent dynamics of degeneration" (Okoli, 2016). In its latest manifestation, the phenomenon depicts a genre of violence characterized by immense arms bearing and brutal sophistication (Okoli &Atelhe, 2014).

The incidences of conflict generally are high as no state in Nigeria has not witnessed this albeit, in varying degrees of destruction. The World Bank report (2018) highlighted the severity of conflict in Nigeria across the three geo-political zones in Nigeria. This report explains the prevalence of conflict and violence, and how these affect Nigerian households, between 2010 and 2017. The report takes into account conflict- and violence-related events of all types, independent of the cause or perpetrator of the event with the aim to present a holistic understanding of consequences there from. Table 1 below summarizes this report:

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Table 1: Proportion of households affected by conflict, by type of event, zone, and person affected, Nigeria 2010-2017

	North East		**North Central**		**South South**	
	Households (%)	Community members (%)	Households (%)	Community members (%)	Households (%)	Community members (%)
Percent experiencing any conflict event	49%	72%	25%	47%	22%	49%
Type of Event (Household/Community member … since 2010)						
Killed	7.0%	34.0%	2.5%	15.0%	4.8%	24.0%
Physically attacked	5.0%	18.0%	2.8%	12.0%	3.5%	13.0%
Injured	5.4%	19.0%	1.5%	14.0%	3.0%	12.0%
Suffered sexual violence	0.0%	6.0%	0.0%	3.0%	0.0%	3.6%
Forced to work	0.9%	1.2%	0.0%	0.2%	0.0%	0.0%
Abducted	0.0%	7.2%	0.6%	8.0%	1.1%	13.0%
Robbed	12.0%	30.0%	6.0%	17.0%	2.4%	13.0%
Displaced	27.0%	30.0%	8.1%	7.0%	5.7%	11.0%
Dwelling robbed	22.0%	32.0%	5.5%	14.0%	6.4%	25.0%
Dwelling damaged	5.6%	20.0%	6.2%	9.7%	4.6%	11.0%
Land occupied	5.6%	9.7%	4.8%	9.1%	1.6%	6.3%
Asset destroyed	3.6%	11.0%	7.9%	10.0%	4.2%	7.0%
School access blocked	21.0%	26.0%	6.0%	7.2%	6.0%	8.4%
Health service access blocked	6.6%	11.0%	0.9%	1.4%	0.0%	1.1%

Source: The World Bank (2018). Conflict and Violence in Nigeria: Results from the North East, North Central, and South South zones

Data presented in table 1 above indicates that conflict and crises of several dimensions have increased between 2010 and 2017. In the North East, terrorism; North central, land resource access; and in the South south personal disputes and other violent criminality are reported source of major conflict (World Bank, 2018). In North East Nigeria, 73% of the most recent events were attributed to terrorism – generally understood to be Boko Haram activity – whereas no acts of terrorism were reported in the South South. In North Central Nigeria, more than half (55%) of the reported events were attributed to land or resource access (World Bank, 2018). The consequences of these conflicts as indicated in the table include death, physical injury, abduction, forceful occupation of land and population displacement.

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Agreeably, widespread conflict of many variants enjoys regional-geographical spread in Nigeria. But, the north-central states of Benue, Plateau, Kogi and Nasarawa have been the hotspot (Ogayi, 2019). In Benue state alone, between 2013 and 2018, the state recorded 53 violent herdsmen attacks. Fifteen of the 23 local government areas in the state were affected: 2,438 people were killed while over 1 million populations were displaced (Aan, 2019). An updated report indicates that 'over 414 people were killed, and more than 100 others were wounded, raped or kidnapped in 119 attacks on settlements and farming communities in just one Nigerian state, Benue in 2023 alone' (ACN, 2024).

To say the least, most of Agrarian communities in Nigeria have experienced these deadly attacks. In almost every state in Nigeria, Fulani herdsmen graze where they like, destroy corps, block traffic, rape women, beat up hunters and occasionally unleash (wage) deadly attacks on villagers where there is slightest resistance to their depredations (Okeke, 2014, p. 73). The incidences of these conflicts and their human tolls are found in table 2 below:

Table 2: Incidences of Herder-Farmer Conflict in Nigeria, 2015-2023

Region	**Number of attacks**	**Deaths**	**No. of people Displaced**
North-East	460	891	901,000
North-Central	1,105	3,840	4.2 million
North-West	743	1,094	1.1 million
South-East	487	756	655,000
South-South	335	464	512,000
South-West	443	512	474,000
TOTAL	**3,573**	**7,557**	7,842,000

Source: Compilation with the aid of sundry media sources

As depicted in table 2 above, the North-central region recorded the highest incidences of conflict within the period with 743 attacks and 3,840 deaths. The North West ranked second with 743 attacks, 1,094 deaths and displacement of 1.1 million people. The South-South had 335 attacks, 464 deaths and 512,000 people displaced.

As noted in the foregoing, Benue state is the epicenter of spiraling attacks with Otukpo, Apa, Agatu, Gwer West, Makurdi, Guma, Logo, Ukum, Kwande, and Gwer East local government area as worst hit. In the North west, at least ten communities in the Chikun and Brinin Gwari local government areas (LGA) of Kaduna state have borne the brunt of hostilities in this conflict. In the South-East, Nimbo-Ukpabi community in Uzo-Uwani, Enugu State recorded highest incidents. In the south west, Ose, Ute, Mulenge and Arimogija communities in Ondo state; Communities in Okukun east, Koko and Ikire communities in Osun state recorded highest. In the south-south, Emuhu community in Ika South. LGA; Avwom, Agadama and Ohoror communities in Ughelli north LGA in Delta State ranked highest. In the north-east, communities in Kpashimbe, Sabon-Gida Kpashimbe, Manya and Flash communities in Taraba state have being attacked; The same in Lamurde, Bang, Bolk, Zumoso and Gon in Numan and Lamurde local councils of Adamawa State.

The common thing in these communities is that there are agrarian settlements highly populated by sedentary farmers. This feeds to the narrative that complexion the herders as offenders while farmers are the victims. Where farmers are seen as offenders, it is retaliatory. In any case, the implications are dire as deaths, casualties, damages of crops and animal as well as population displacements are the consequences.

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Accompanying the prevalence of conflict in the region is the upsurge in the number of casualties and especially, population displacement. According to the Internal Displacement Monitoring Centre (IDMC) report, "in 2023, Nigeria was among the countries in West Africa to record the highest number of conflict displacements, with 291,000, almost double the figure for 2022. Around 3.3 million people were living in internal displacement camps in 2023; a slight decrease from the 3.6 million reported in 2022 but, Nigeria was still among the ten countries with the largest number of IDPs globally" (IDMC, 2023).

The humanitarian consequences of herdsmen militancy point to the fact that it is a threat to human security and, by extension, to Nigeria's national security. Large population displacement of farmers that disengages them from their productive farming is a threat to food security (Ogayi, 2019). Displacing farmers into the IDP camps with no meaningful support to sustain them is equally a security threat that deepens humanitarian crisis.

Again, these episodic occurrences of herder-farmer conflict in Nigeria have also worsened rural insecurity and mutual co-existence and deadened hitherto symbiotic relationship. In an apparent search for remedy, hard-hit communities have often mobilized for self-defence through the instrumentality of self-help vigilantism in order to ward-off attacks. Unfortunately, with least training, inexperience and shear overzealousness of some of these vigilantes, crises have not been effectively prevented or managed. As remarked by Okoli "the activities of the vigilantes vis-à-vis the herdsmen have more often than not led to multiple reprisals in a manner that plunges the affected communities into a circle of mutual violence and vendetta" (Okoli & Ogayi, 2018). To say the least, transhumant pastoralist conflict has created an ambience of insecurity, humanitarian crisis, food insecurity, civil unrest and tension in the affected communities.

Rethinking Resource Governance: The Imperative of Partitioning Model

The recurring hostilities and crises stemming from nomadic pastoralist conflicts in Nigeria are closely tied to inadequate policy responses. From the perspective of the security-governance nexus, it has been posited that the persistent herdsmen-farmers conflicts result from failures in state security and governance mechanisms (Okoli & Ogayi, 2018). The inability of the state to effectively protect rural communities, apprehend and prosecute offenders, address widespread poverty, and regulate open grazing underscores these shortcomings. The state's tepid response, coupled with the characteristically slow intervention of security forces, often creates the impression of complicity.

The government's failure to address agrarian relations through pragmatic resource governance policies and its structural neglect of the livestock sector have further exacerbated tensions. In the absence of a robust framework for resource security and governance, the agrarian sector has devolved into a state of anarchy and criminal impunity, as evidenced by the recurring herder-farmer conflicts. This reflects a governance deficit or outright 'state failure' in resource management. Against this backdrop, this study advocates for adopting a resource governance policy rooted in the resource partitioning model.

The resource partitioning model, first conceptualized by Roswell Hill Johnson in 1910 and later applied in ecological studies by Joseph Grinnell in 1917, gained prominence through the work of Steward and Levin (1973). This model explains how shared exploitation of common resources can occur symbiotically and mutually, minimizing competition while maximizing resource utilization. Steward and Levin (1973) highlighted three distinct ways resource partitioning enables coexistence between species:

1. Exclusive resources for each species.
2. An exclusive resource for one species.
3. Shared resources for both species.

They further emphasized that stable coexistence could be achieved through equable or seasonal resource exploitation, even for a single shared resource.

Applying this model to agrarian relations, the following principles emerge:

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1. A symbiotic relationship between nomads and farmers can develop when land resources are shared to reflect adaptive uses by both groups.

2. Coexistence is achievable if land and water resources are allocated to reflect the diversity of the two occupational groups.

3. A land-leasing arrangement, where farmers lend land to herders for grazing (typically three months) before returning to cultivate, promotes complementarity and reduces conflicts.

4. Such leasing arrangements foster interdependency, as herders rely on post-harvest crop residues for fodder, while farmers benefit from animal dung as manure.

5. The arrangement also reduces pressure on land and water resources, particularly when supplemented by irrigation facilities.

These insights underscore the limitations of rain-fed agriculture, especially under the threat of climate change, and highlight the necessity of irrigation facilities for sustainable resource partitioning. Reliable water supplies beyond the rainy season enable herders to graze cattle on pastures and farmers to cultivate crops, with mutual benefits such as manure for crops and regenerating pastures for cattle.

The federal government's prior forceful approaches, such as establishing cattle colonies, ranches, and Rural Grazing Areas (RUGA), have been criticized as land-grabbing initiatives. Sustainable coexistence through the resource partitioning model requires active engagement with traditional institutions, farmers, and herders. Additionally, the government must invest in irrigation infrastructure to support these arrangements and ensure equitable and sustainable resource use.

CONCLUSION

The exacerbation of resource-use conflicts, driven by the dual forces of climate change and population growth in the context of severe environmental injustices, is starkly evident in the devastating impacts of herder-farmer conflicts. These conflicts have led to significant human fatalities, population displacement, food insecurity, and widespread livelihood crises. The government's apparent inertia in addressing these challenges has not only deepened the crisis but also fueled divisive narratives centered on identity politics, religion, and ethnicity. This lack of decisive action has given rise to suspicions of governmental complicity or conspiracy in perpetuating the crisis.

This study highlights the urgent need for a proactive, pragmatic policy response to resource governance. A key recommendation is the adoption of the resource partitioning model to moderate relations between herders and farmers, fostering mutuality, complementarity, and interdependence. A blanket ban on open grazing, without viable alternatives for pastoralists, poses a direct threat to their livelihoods and risks escalating the conflict further. For sustainable solutions, it is essential to systematically and holistically address the complex socio-ecological factors—chiefly the challenges posed by climate change and demographic pressures—that drive and exacerbate these conflicts.

To mitigate these issues, the following recommendations are crucial:

Building Climate Resilience

Governments at all levels must prioritize better forestry management and sustainable agricultural practices to mitigate conflicts arising from resource scarcity. Strengthening forest surveillance and enhancing the capacity of the Nigerian National Park Service to protect ecosystems are essential measures.

Adopting Climate Change Adaptation Strategies

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Communities must be supported in becoming more resilient to climate change. This includes providing drought-resistant crop varieties, promoting irrigation farming, and offering training for alternative livelihoods to reduce the economic pressures fueling armed tensions between nomadic pastoralists and sedentary farmers.

Reevaluating the National Livestock Transformation Plan (NLTP)

The NLTP must be adapted to reflect Nigeria's diverse socio-political and cultural realities. Public and civic engagements are essential to educate stakeholders and ensure inclusive policy development.

Implementing Resource Partitioning

Instead of hastily banning open grazing without alternatives for herders, the resource partitioning model should be seriously considered. Achieving this will require exhaustive engagements with public institutions, faith-based organizations, and civil society to foster understanding and consensus.

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