



Drivers of Resource Based Conflicts among Agro-Pastoral Communities Living along Kerio Valley, Kenya

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Abstract: For decades, resource-based conflicts continue to disrupt livelihoods in the Kerio Valley, yet existing studies often attribute them to cattle rustling alone and offer limited evidence on how competing claims over land, water, and pasture interact with climate stress and weak governance. This study determined the drivers of resource-based conflicts among agro-pastoralist communities along the Kerio Valley. A descriptive survey design using mixed-methods approach was employed. Using Krejcie and Morgan's (1970) sample size formula a sample of 382 household heads were selected from a target of 49,500, complemented by 30 purposively selected key informants and four focus group discussions, giving 412 respondents. Data were collected using structured questionnaires, key informant interviews, focus group discussions, and observation checklists. Quantitative data were analyzed using descriptive and inferential statistics in SPSS version 26, and qualitative data were analyzed thematically. Ethical approval, informed consent, confidentiality, and voluntary participation were observed. Pearson correlation showed that all drivers had significant negative relationships with conflict management outcomes: cattle rustling ($r = -.548, p < .01$), cultural and ethnic rivalries ($r = -.502, p < .01$), scarcity of pasture and water ($r = -.457, p < .01$), and climate and environmental stress ($r = -.421, p < .01$). The study concluded that conflict arises from interacting drivers, with raiding and rivalries most damaging to peace outcomes. It recommended strengthening community-led peace mechanisms, equitable management of water and grazing, consistent enforcement of land-use regulations, and climate adaptation with livelihood diversification.

Keywords: Resource-based conflict, agro-pastoralists, conflict transformation, cattle rustling, Kerio Valley, Kenya

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1. Introduction

Resource-based conflict is competition, often violent, between groups over access to, control of, or benefit from natural resources such as land, water, and pasture. It arises when scarcity, weak governance, and competing claims interact (Mach et al., 2019). Agro-pastoralists are communities that combine livestock herding with crop cultivation, relying on mobility and flexible access to shared resources to manage risk in variable environments (Catley et al., 2013). Their livelihoods depend on resources that are increasingly contested. Globally, the relationship between environmental stress and organised violence is well documented but complex. An expert assessment found that climate variability influences conflict risk, though less than factors such as low socio-economic development and weak state capacity (Mach et al., 2019). Evidence from multiple

regions also suggests that climate-related disasters raise conflict risk mainly where ethnic exclusion and political marginalisation already exist (Ide et al., 2020). In developed nations, competition over rangeland and water is generally mediated through formal land tenure, courts, and regulatory institutions, so disputes seldom escalate into armed confrontation. This contrast shows that institutional capacity, rather than scarcity alone, shapes whether competition becomes violent.

In Africa, where pastoralism sustains millions of people across the drylands, such institutional buffers are often weak. Research in the Sahel shows that herders' grievances over land access, state neglect, and perceived injustice can drive participation in armed groups, which challenges simplistic explanations that blame climate change alone (Benjaminsen & Ba, 2019). Population growth, expanding cultivation, privatisation of communal grazing lands, and

the proliferation of small arms have further eroded traditional mechanisms for negotiating access. Kenya mirrors these continental dynamics. Arid and semi-arid lands, which cover most of the country, host pastoral and agro-pastoral communities who face recurrent droughts that strain livestock-based livelihoods and coping strategies (Opiyo et al., 2015). Competition for dwindling pasture and water during such periods has been linked to livestock raiding and retaliatory attacks in northern Kenya (Schilling et al., 2012). Conflict in these areas is also shaped by politics, as the use of land, guns, and electoral competition have all influenced how boundaries are drawn and contested (Greiner, 2013).

The Kerio Valley, which spans parts of Elgeyo-Marakwet, Baringo, West Pokot, and Turkana counties, is among the most affected regions. The Marakwet, Pokot, Tugen, and Turkana share a landscape of irrigated valley floor, escarpment farmland, and open rangeland. Greiner (2013) shows that cattle rustling and the contested drawing of administrative boundaries in this wider borderland have been entangled with local politics and the struggle for territorial control. Recurrent raids, displacement, school closures, and disrupted farming and trade have followed, despite repeated government disarmament and security operations. Even so, existing studies on Kenya's pastoral conflicts often treat cattle rustling as the main explanation, or focus on northern Kenya, leaving limited empirical evidence on how competing claims over land, water, and pasture interact with climate stress, governance weaknesses, and changing livelihoods among agro-pastoralist communities in the Kerio Valley. This gap limits the design of locally appropriate peacebuilding and resource management interventions, and it justifies a study of the drivers of resource-based conflict in the area.

1.1 Research objective

To examine the drivers of resource-based conflicts among agro-pastoralist communities living along the Kerio Valley, Kenya

1.2 Research Question

What are the drivers of resource-based conflicts among agro-pastoralist communities living along the Kerio Valley, Kenya?

2. Literature Review

Conflict between farmers and livestock herders in Africa has attracted growing attention in media, academic, and policy circles, alongside concern that it is intensifying (Nassef et al., 2023). A systematic scoping review found that nearly all reviewed studies (98%) reported that this conflict was increasing in frequency, intensity, or both (Nassef et al., 2023). Every case study reviewed linked the

conflict directly to land or natural resources, although most treated this link as a general statement about competition over land or water (Nassef et al., 2023). No study attributed conflict to a single cause, which suggests that one-factor explanations such as scarcity alone are inadequate (Nassef et al., 2023). The review also found few primary studies and recommended deeper investigation of land tenure and conflict, which points to the need for locally grounded evidence (Nassef et al., 2023).

Farmer–herder conflict is used here to describe violent clashes and disputes between crop cultivators and livestock keepers, which Adams et al. (2023) identify as a significant threat to security and stability in dryland regions. Resource-based conflict, in this literature, is conflict rooted in competition over land and natural resources, which Adams et al. (2023) identify as a main driver alongside climate-induced environmental change. Land tenure insecurity, meaning unclear or contested rights to land, was also identified as a central driver across the empirical studies reviewed (Adams et al., 2023). Intergroup conflicts and prejudices emerged as further drivers, showing that resource conflict has social and political roots as well as environmental ones (Adams et al., 2023). Because the reviewed studies were concentrated in Nigeria, Ghana, Tanzania, and Mali, these definitions and drivers may need adaptation to the agro-pastoral setting of East Africa (Adams et al., 2023).

At the global scale, the first spatially explicit assessment of the economic burden of human–wildlife conflict focused on the loss of livestock to wildlife (Braczkowski et al., 2023). The study found that the costs of such conflict weigh most heavily in the developing world, where losing cattle can erase a family's entire livelihood (Braczkowski et al., 2023). Income losses for livestock keepers in developing countries were estimated to be roughly eight times higher than in industrialised countries (Braczkowski et al., 2023). The most threatened predators also overlap substantially with the most economically vulnerable communities (Braczkowski et al., 2023). This indicates that vulnerability, rather than the mere presence of competing claims, shapes how severe the consequences of conflict become, and it supports policies that combine conservation with poverty reduction (Braczkowski et al., 2023).

In the developed-world context of the U.S. Mountain West, livestock production depends largely on grazing access to public lands that also serve as habitat for iconic wildlife (Taylor & Wilmer, 2023). Livestock producers have shown a capacity to coexist with wildlife on these shared landscapes (Taylor & Wilmer, 2023). Nonetheless, some wildlife-focused approaches seek to exclude livestock from all public lands, arguing that livestock–wildlife conflict undermines conservation (Taylor & Wilmer, 2023). The authors argue that this debate overlooks climate change, a pressure common to both sides (Taylor & Wilmer, 2023). Their conclusion is that opposing groups should jointly develop agroecological solutions that sustain resilient,

multi-use rangelands, which shows that even in high-capacity states, conflict centres on competing land-use priorities (Taylor & Wilmer, 2023).

A second developed-country study, set in the Intermountain West, examined how public lands managed under a multiple-use mandate must balance competing values, including livestock grazing, water supply, and wildlife (Hedin, 2024). It investigated the coexistence of wildlife and livestock on public and private land and the conflict arising between those interests (Hedin, 2024). Using a phenomenological approach, it documented the perspectives of wildlife managers, agricultural producers, and boundary spanners who link the two groups (Hedin, 2024). It also assessed the ecological, social, and economic effects of a decades-long megadrought on wildlife, managers, and livestock producers (Hedin, 2024). Taken together, these findings suggest that competition for limited forage intensifies under drought, and that intermediaries can help manage conflict where formal mandates alone leave tensions unresolved (Hedin, 2024).

Among middle-income countries, a study in Selenge province, Mongolia, examined land conflict between farmers and herders after the province was designated an agricultural region (Munkhbat, 2023). The study reported that rising livestock numbers had reduced pasture availability and generated disputes over land and natural resources (Munkhbat, 2023). Using a survey of farmers conducted in 2023, it assessed how far the Law of Crop Production had been implemented to reduce these disputes (Munkhbat, 2023). The causes and effects of conflict were organised through a driving forces–pressures–state–impact–response framework, which links livestock growth and land-use change to conflict outcomes (Munkhbat, 2023). The discussion proposes alternative solutions to reduce conflict, implying that legal designation of land use without effective enforcement leaves herder–farmer disputes unresolved (Munkhbat, 2023).

In Inner Mongolia, China, high levels of grassland degradation have been linked partly to government policies that sedentarise nomadic pastoralists and privatise collective grasslands (Conte, 2015). Earlier research suggested that these policies reduced pastoralists' ability to manage grasslands and cope with adverse climatic events (Conte, 2015). Using a political ecology approach, the study surveyed 50 herders in New Barag Right Banner, comparing sedentary and mobile livestock management strategies (Conte, 2015). It examined herders' attitudes toward the effectiveness of their grassland management and the future of pastoralism (Conte, 2015). The implications drawn for grassland policy and sustainable livestock production suggest that restricting mobility and communal access can heighten resource pressure, a concern relevant to agro-pastoral valleys where mobility has traditionally buffered risk (Conte, 2015).

In the Kerio Valley itself, a household survey across Pokot, Elgeyo-Marakwet, and Baringo locations found that respondents were mainly married, middle-aged men engaged in pastoralism and farming (Chirchir, 2019). Conflict in the valley was found to take inter-clan and inter-ethnic forms and to occur fairly frequently (Chirchir, 2019). The main causes identified were cattle theft and access to and control of pasture and water (Chirchir, 2019). The study concluded that recurrent conflict had negatively affected households' pursuit of their livelihoods (Chirchir, 2019). It also noted that interventions had contained conflict to some extent, especially where stakeholders were engaged, which suggests that participatory approaches deserve further study alongside the resource drivers (Chirchir, 2019).

A study of the Tugen and Pokot communities in Baringo County found that each group regards the other as a traditional enemy, and that this perception shapes resource conflicts over pasture, water, land, territory, and boundaries (Chelang'a, 2020). It reported that since 2000 these conflicts have become more violent because of the spread of small arms and the commercialisation of livestock raids (Chelang'a, 2020). Resource scarcity was cited as a significant cause by about 64% of Tugen respondents, whereas political issues were the leading driver among Pokot respondents at about 26% (Chelang'a, 2020). Livestock theft and the retaliatory raids that follow were identified as triggers of repeated violence, compounded by the cultural and economic importance of livestock (Chelang'a, 2020). Interestingly, most livestock-related conflicts occurred in the rainy season, when water and pasture are plentiful, rather than in drought, which challenges the assumption that scarcity alone explains conflict (Chelang'a, 2020).

2.1 Theoretical Underpinning

Conflict Transformation Theory, advanced by Lederach (1995), holds that conflict is a normal part of social life and should be engaged as an opportunity for constructive change, not just contained or settled. Lederach (1995) rejects the view that justice and peace compete as priorities, arguing instead for pursuing justice in ways that respect people while restoring relationships through recognising and correcting injustice. The theory stresses that process matters at least as much as outcome, so lasting peace depends on how the parties are engaged over time (Lederach, 1995). It also insists that transformation should draw on the knowledge, culture, and resources of the people in conflict rather than on imported techniques, which is why it is framed as an approach for working across cultures (Lederach, 1995). Lederach (1997) later extended these ideas into a framework of structure, process, reconciliation, resources, and coordination, arguing that middle-range leaders are well placed to lay the foundations of long-term transformation.

In this study, the theory shifts the analysis from asking whether land, water, and pasture are scarce to asking how

relationships among Marakwet, Pokot, Tugen, and Turkana agro-pastoralists have been shaped around those resources (Lederach, 1995). Because the theory treats peace as the restoration of relationships damaged by injustice, drivers such as contested boundaries, unequal access to water and grazing, and unaddressed grievances over raids will be examined as relational and structural injustices as well as ecological pressures (Lederach, 1995). Its emphasis on process directs attention to how earlier interventions, such as disarmament and security operations, were designed and whether the affected communities took part in them (Lederach, 1995). Its emphasis on local knowledge guides the study to document the customary grazing arrangements, elders' roles, and peace committees that communities themselves regard as legitimate (Lederach, 1995). Lederach's (1997) attention to middle-range leaders will also inform the identification of elders, county officials, and civil society actors who can link grassroots and national levels, so that findings translate into transformation-oriented recommendations.

Other researchers studying pastoralist and agro-pastoralist conflict in East Africa have used Lederach's ideas as a theoretical lens, often through his 1997 elaboration. Alemneh and Alemu (2023) applied Lederach's view of peacebuilding as a long-term transformation of a conflict system, with personal, relational, structural, and cultural dimensions, to resource-based conflicts among the Nyangatom, Hamar, and Dassanech in southern Ethiopia. They found grievances over land claims, raiding, and competition for water and pasture, and concluded that actors concentrate on conflict management, prevention, and resolution with little attention to transformation, so the underlying structures, actors, and issues remain largely untransformed (Alemneh & Alemu, 2023). In north-western Kenya, Wanyonyi (n.d.) guided a study of 400 respondents on Turkana–Pokot conflict by Lederach's theory, and found that firearms, inadequate security services, political manipulation, and cultural endorsement of violence sustain it, while the communities' confidence in their own problem-solving capacity offers scope for bottom-up peacebuilding. Taken together, these studies show the theory's usefulness in pastoralist settings and indicate the value of testing it in the agro-pastoral setting of the Kerio Valley (Alemneh & Alemu, 2023).

3. Methodology

The study adopted a descriptive survey design using a mixed-methods approach to investigate the study variables across Elgeyo Marakwet, Baringo and West Pokot counties. The target population comprised approximately 49,650 households across the three counties. A sample of 382 household heads was determined using Krejcie and Morgan's (1970) sample size determination table. In addition, 30 key informants were purposively selected based on their knowledge and involvement in the issues under investigation, while four focus group discussions were conducted with selected participants. This resulted in a total

planned sample of 412 respondents, comprising 382 household heads and 30 key informants, alongside participants in the four focus group discussions. The household heads were selected using an appropriate probability sampling technique to ensure fair representation across the three counties, while purposive sampling was used to identify key informants and focus group participants with relevant experience and knowledge.

Data were collected using structured questionnaires, key informant interview guides, focus group discussion guides and observation checklists. The questionnaires generated quantitative data from household heads, while interviews and focus group discussions provided qualitative information on participants' experiences, perceptions and explanations of the issues under investigation. Observation checklists were used to record relevant conditions and practices in the study areas. Before the main data collection exercise, the research instruments were reviewed by experts to establish content validity and pilot-tested among respondents with characteristics similar to those of the target population but who were not included in the main study. Reliability of the questionnaire constructs was assessed using Cronbach's alpha, with all constructs recording coefficients above the recommended threshold of 0.70.

Data collection involved obtaining the necessary research authorization and local administrative permissions, explaining the purpose of the study to prospective participants, obtaining informed consent and administering the relevant research instruments. Questionnaires were distributed to the selected household heads, while key informant interviews and focus group discussions were conducted using the respective guides. Observations were recorded using the observation checklists. Completed questionnaires were checked for completeness and consistency, coded and entered into the Statistical Package for the Social Sciences (SPSS), version 26, for analysis. Quantitative data were analyzed using descriptive statistics, including frequencies and percentages, and inferential statistics, including Pearson's product-moment correlation and multiple regression analysis. These techniques were used to establish the patterns, relationships and predictive associations among the study variables. Qualitative data from interviews and focus group discussions were transcribed, organized and analyzed thematically through coding, categorization and the identification of recurring themes. Findings from the quantitative and qualitative analyses were compared and integrated to provide a more comprehensive understanding of the study problem.

Ethical approval was obtained from a recognized institutional review board, and the necessary research permits and administrative authorizations were secured before fieldwork commenced. Informed consent was obtained from all participants after explaining the study's purpose, procedures, potential risks and benefits, and their right to decline participation or withdraw without penalty. Confidentiality and anonymity were maintained by

protecting participants' identities and reporting findings in aggregate form. Research data were securely stored and accessed only by authorized persons, and participation remained voluntary throughout the study. The researcher observed cultural sensitivity, protected vulnerable participants, minimized potential harm and discomfort, avoided unnecessary collection of sensitive information, and used the data solely for the stated academic purposes. Transparency, honesty and academic integrity were upheld throughout the research process, potential conflicts of interest were disclosed, and the findings were intended to be shared with relevant communities and stakeholders.

4. Results and Discussions

The purpose of the study was to determine the drivers of resource-based conflicts among communities living along Kerio Valley, Kenya. Respondents were requested to rate their level of agreement with various statements on a five-point Likert scale. The constructs measured included the extent to which competition over water points, scarcity of pasture, climate variability, population pressure, cattle rustling, weak enforcement of grazing regulations, political interference and farmer-pastoralist land-use competition contribute to resource-based conflicts in the study area. The findings were as summarized in Table 1.

Table 1: Drivers of Resource-Based Conflicts

Statement	SD		D		U		A		SA	
	f	%	f	%	f	%	f	%	f	%
Competition over water points contributes to resource-based conflicts in my community.	23	6.2%	29	7.9%	7	1.9%	187	50.7%	123	33.3%
Scarcity of pasture leads to frequent conflicts among agro-pastoralists.	31	8.4%	19	5.1%	9	2.4%	151	40.9%	159	43.1%
Climate variability has intensified competition over natural resources in Kerio Valley.	17	4.6%	47	12.7%	13	3.5%	199	53.9%	93	25.2%
Population pressure has increased demand for land and grazing areas.	39	10.6%	71	19.2%	15	4.1%	143	38.8%	101	27.4%
Cattle rustling contributes significantly to resource-based conflicts.	9	2.4%	15	4.1%	5	1.4%	127	34.4%	213	57.7%
Weak enforcement of land and grazing regulations worsens resource conflicts.	25	6.8%	63	17.1%	19	5.1%	167	45.3%	95	25.7%
Political influence and external interference escalate resource disputes.	47	12.7%	89	24.1%	21	5.7%	131	35.5%	81	22.0%
Competition between farmers and pastoralists over land use leads to conflicts.	29	7.9%	53	14.4%	11	3.0%	139	37.7%	137	37.1%

The findings in Table 1 showed that a majority of the respondents, 187 (50.7%) agreed that competition over water points contributes to resource-based conflicts in their community, 123 (33.3%) strongly agreed, 29 (7.9%) disagreed, 23 (6.2%) strongly disagreed while 7 (1.9%) were undecided and this implies that an overwhelming majority (84.0%) of respondents perceive water-point competition as a significant driver of conflict, underscoring the centrality of water access in the resource dynamics of the study area. Kerio Valley has been historically characterized by competition over scarce natural resources particularly water and pasture which are essential to the predominantly pastoral and agro-pastoral livelihoods of the communities residing in the area. The valley experiences

recurrent dry seasons and uneven distribution of water resources resulting in increased pressure on the available water points, especially during periods of prolonged drought.

As livestock herds converge around the few reliable water sources, competition among communities tends to intensify, creating opportunities for disputes over access, timing and control of water resources. The situation is further aggravated by the seasonal movement of pastoralists across community and administrative boundaries which may lead to disagreements between communities regarding the use and management of shared resources and in this situation, competition over water points represents not only a struggle

for a vital natural resource but also a broader manifestation of resource scarcity and livelihood insecurity that can contribute to the escalation of inter-community tensions in Kerio Valley and this finding is consistent with a study research by Nassef et al. (2023) which established that access to water points remains one of the most consistently cited triggers of farmer-herder and inter-pastoralist conflict across drought-prone regions of Africa.

Similarly a majority of the respondents, 159 (43.1%), strongly agreed that scarcity of pasture leads to frequent conflicts among agro-pastoralists, followed by 151 (40.9%) who agreed, 19 (5.1%) who disagreed, 31 (8.4%) who strongly disagreed and 9 (2.4%) who were undecided and this implies that a substantial majority (84.0%) of respondents attribute conflict to pasture scarcity reflecting the persistent pressure on grazing resources within the region. The nature in which pasture scarcity contributes to resource-based conflicts is closely associated with the seasonal and uneven availability of grazing land across Kerio Valley and during prolonged dry periods, pasture becomes increasingly limited, forcing agro-pastoralists to move their livestock over longer distances in search of suitable grazing areas. Such movements may result in livestock entering areas traditionally controlled or occupied by other communities thereby creating disputes over grazing rights, livestock routes and access to remaining pasture. The concentration of livestock in areas with relatively better pasture also increases pressure on vegetation and accelerates the depletion of available grazing resources further intensifying competition among communities.

In addition repeated encroachment into communal or privately utilized grazing areas may generate grievances that can escalate into confrontations particularly where mechanisms for negotiating access to shared grazing resources are weak or ineffective. Thus, pasture scarcity not only directly increases competition for grazing resources but also amplifies existing tensions associated with mobility, territorial boundaries and livelihood insecurity in Kerio Valley and this finding aligns with the work of Djohy et al. (2024) who found that diminishing pasture availability, intensified by land-use change and shrinking transhumance corridors, remains a principal driver of agro-pastoral conflict in West African rangelands.

Moreover, a majority of the respondents, 199 (53.9%) agreed that climate variability has intensified competition over natural resources in Kerio Valley, 93 (25.2%) strongly agreed, 47 (12.7%) disagreed, 17 (4.6%) strongly disagreed while 13 (3.5%) were undecided and this implies that a considerable majority (79.1%) of respondents recognize climate variability as a critical driver of resource-based conflict, highlighting the growing intersection between environmental change and social tension. Climate variability influences resource-based conflicts in Kerio Valley by altering the availability, distribution and reliability of critical natural resources such as water, pasture

and arable land. Recurrent droughts, unpredictable rainfall patterns and prolonged dry seasons reduce the availability of grazing resources and water thus compelling agro-pastoralist communities to move their livestock in search of more favourable conditions and these movements can increase competition over limited resources and create tensions when livestock cross community boundaries or enter areas perceived to belong to other groups.

Equally, periods of intense rainfall and flooding may also disrupt grazing patterns, damage agricultural land and displace households and livestock thereby increasing pressure on alternative resource areas. The cumulative effects of these environmental pressures weaken livelihood security and intensify competition among communities, making climate variability an important underlying factor in the emergence and escalation of resource-based conflicts in Kerio Valley and this finding is supported by the 2025 study on boundary-making and tenure insecurity in East Africa's pastoralist rangelands which found that shorter intervals between droughts and increasingly erratic rainfall patterns have measurably intensified competition and conflict over shared natural resources.

Furthermore a majority of the respondents, 143 (38.8%) agreed that population pressure has increased demand for land and grazing areas, 101 (27.4%) strongly agreed, 71 (19.2%) disagreed, 39 (10.6%) strongly disagreed and 15 (4.1%) were undecided and this implies that a notable majority (66.2%) of respondents link demographic growth to intensified resource competition though the comparatively larger disagreement cluster (29.8% combined) suggests population pressure is perceived as a somewhat less unanimous driver than water or pasture scarcity. Over the years, population growth and settlement expansion in Kerio Valley have increased demand for limited land resources particularly areas suitable for cultivation, settlement and livestock grazing and as more households depend on the same land and natural resources for their livelihoods, available grazing areas may become increasingly fragmented and converted to agricultural or residential use and this situation can reduce the mobility of agro-pastoralists and increase competition for the remaining communal grazing areas. Population pressure may also contribute to the expansion of settlements into traditionally used grazing corridors and resource-sharing areas, creating disagreements over land ownership, boundaries and access rights.

However the relatively substantial number of respondents who disagreed suggests that population growth alone may not necessarily generate conflict, but rather interacts with other factors such as resource scarcity, climate variability, weak land-use planning and inadequate mechanisms for resolving competing claims. Thus, demographic pressure appears to be an important contributing factor, although its influence is less uniformly perceived than direct resource-related pressures such as water and pasture scarcity and this finding resonates with the review by Nassef et al. (2023)

which identified population growth as a significant if often underemphasized, structural driver of farmer-herder and resource-based conflict across Sub-Saharan Africa.

Moreover, a majority of the respondents, 213 (57.7%), strongly agreed that cattle rustling contributes significantly to resource-based conflicts, 127 (34.4%) agreed, 15 (4.1%) disagreed, 9 (2.4%) strongly disagreed while 5 (1.4%) were undecided and this implies that an overwhelming majority (92.1%) of respondents identify cattle rustling as the most dominant driver of conflict among those tested reflecting its deeply entrenched role in the region's conflict dynamics. Kerio Valley has historically been a hotspot of cattle rustling and inter-community violence with livestock raids often extending beyond the immediate objective of acquiring animals to involve retaliation, territorial disputes and competition over access to pasture and water and Cattle rustling can generate cycles of revenge when affected communities respond to raids through counter-raids thereby deepening mistrust and hostility among neighbouring communities.

The loss of livestock also undermines household livelihoods and economic security particularly among agro-pastoralist communities that depend heavily on cattle as a source of food, income, social status and wealth. Furthermore the movement of raiders and livestock across community boundaries may trigger confrontations and heighten insecurity in grazing areas and along livestock migration routes and consequently cattle rustling can both emerge from existing resource pressures and reinforce them by depleting household assets, disrupting normal grazing patterns and creating conditions for recurring inter-community conflict in Kerio Valley and this finding is corroborated by the gender relations study on pastoral conflict in Uganda's Karamoja cluster which established that cattle raiding remains one of the most persistent and destabilizing forms of resource-based violence among pastoralist communities in the wider Horn of Africa region.

In addition a majority of the respondents, 167 (45.3%) agreed that weak enforcement of land and grazing regulations worsens resource conflicts, 95 (25.7%) strongly agreed, 63 (17.1%) disagreed, 25 (6.8%) strongly disagreed while 19 (5.1%) were undecided and this finding implies that a substantial majority of respondents (71.0%) perceive weak institutional enforcement as compounding resource-based conflict suggesting that regulatory gaps allow disputes to escalate unchecked. Land tenure and grazing management in Kerio Valley are closely linked to the occurrence and escalation of resource-based conflicts particularly where formal regulations coexist with customary systems of resource access and control. Weak enforcement of land-use and grazing regulations may create uncertainty regarding ownership, boundaries, grazing rights, livestock movement routes and access to communal resources.

In such circumstances, individuals and communities may exploit regulatory gaps to occupy, cultivate or graze areas that are contested or traditionally shared increasing the likelihood of disputes. The situation may be further complicated when responsible institutions lack adequate capacity, resources or coordination to enforce existing regulations consistently. Where communities perceive that rules are selectively applied or that violations are not addressed promptly, confidence in formal conflict-management mechanisms may decline encouraging affected groups to rely on informal or retaliatory approaches to resolve disputes and this finding concurs with the 2025 study on land tenure change in East Africa's pastoralist rangelands which found that inconsistent enforcement of grazing and land-use regulations across cross-border pastoralist zones significantly undermines conflict prevention efforts.

Further a majority of the respondents, 131 (35.5%) agreed that political influence and external interference escalate resource disputes, 89 (24.1%) disagreed, 81 (22.0%) strongly agreed, 47 (12.7%) strongly disagreed while 21 (5.7%) were undecided and this implies that while a majority (57.5%) of respondents perceive political and external actors as aggravating factors in resource-based conflict this driver attracted the highest level of disagreement (36.8% combined) among all eight statements tested suggesting more contested or context-dependent perceptions of political influence relative to more direct material drivers such as water and pasture. Political influence and external interference may escalate resource-based conflicts when political actors exploit existing ethnic, territorial and resource-related grievances to mobilize community support or advance political interests. Political incitement against one community can thus reinforce perceptions of threat, encourage exclusionary attitudes and legitimize retaliatory actions against perceived outsiders and in areas where access to land, grazing areas and water is already contested, politically motivated narratives may transform relatively local resource disputes into broader inter-community confrontations.

Political leaders have at times been accused of stoking divisions around contested boundaries and encouraging communities to displace neighbouring populations in pursuit of political influence. ACLED (2023) further notes that some political actors have been accused of inciting constituents in Baringo to drive out neighbouring communities in order to expand their sphere of influence while research on northern Kenya has identified the involvement of political elites in cattle-rustling networks and resource-related violence and this finding is consistent with the study on social cohesion models in North Benin which found that political and external interference distorts local resource-governance processes and undermines community-driven conflict management efforts though its perceived salience often varies by locality and proximity to political administration.

Furthermore a majority of the respondents 139 (37.7%) agreed that competition between farmers and pastoralists over land use leads to conflicts, 137 (37.1%) strongly agreed, 53 (14.4%) disagreed, 29 (7.9%) strongly disagreed while 11 (3.0%) were undecided and this implies that a considerable majority (74.8%) of respondents view farmer-pastoralist land-use competition as a key conflict driver reflecting the tension between competing livelihood systems in the study area. There has been an effort to encourage pastoralist communities in Kerio Valley to embrace crop farming as a complementary livelihood strategy aimed at reducing overdependence on livestock and, potentially, mitigating cattle rustling and resource-related conflicts.

However the transition from predominantly pastoral livelihoods to crop production can itself create new forms of competition over land particularly where agricultural expansion occurs in areas traditionally used as grazing fields, livestock corridors or dry-season grazing reserves. As farmers seek to expand cultivated land, pastoralists may experience reduced access to grazing areas and livestock movement routes while crop farmers may face crop destruction when livestock enter cultivated fields and these competing interests can generate disputes over land ownership, boundaries, grazing rights and livestock movements. The situation is particularly sensitive in areas where land is increasingly fragmented and where customary arrangements for sharing resources are not adequately integrated with formal land-use regulations and therefore although livelihood diversification through crop farming may contribute to household resilience and reduce dependence on livestock, its success in reducing conflict requires participatory land-use planning, clearly defined grazing corridors, negotiated resource-sharing arrangements and effective mechanisms for resolving farmer-pastoralist disputes and this finding aligns with the systematic scoping review by Nassef et al. (2023) which identified farmer-herder land-use competition as one of the most extensively documented and geographically widespread drivers of resource-based conflict across the African continent.

Respondents were further asked how resource-based conflicts affect their household's livelihood and food security, respondents described consequences that extended well beyond the immediate violence itself, touching on displacement, loss of income and chronic hunger. One respondent offered a comprehensive account of these cascading effects:

"These conflicts have significant effects on the livelihoods of the Marakwet community for instance loss of livestock, reducing household wealth and income. Families lose access to milk and meat, leading to hunger and malnutrition. When your cattle are taken in a raid, it is not just the animals you lose it is the milk your children drink every morning and the money you would

have gotten from selling one when school fees are due."

Other respondents echoed this pattern of economic and nutritional harm in more condensed terms:

"Displacement, food shortage there is a lack of livelihoods among communities. They also cause market shutdowns."

Another respondent similarly noted:

"Households lose their main source of income, leading to hunger and over-reliance on food aid. Before the conflict, we did not need anyone to bring us food. Now, some families wait for relief trucks."

These accounts of livestock loss, market disruption and reliance on food assistance are consistent with recent empirical evidence from Nigeria's farmer-pastoralist conflict zones which found a direct correlation between herder-related conflict incidents and household food insecurity with affected households significantly more likely to fall into moderate or severe food insecurity categories compared to unaffected households in the same region (Ogbinyi et al., 2024) and this reinforces the household-level accounts gathered in this study suggesting that the food and livelihood consequences of resource-based conflict described by Kerio Valley respondents mirror a broader pattern documented among agro-pastoral and farming communities elsewhere on the continent.

On interview, key informants were asked to identify the main causes of resource-based conflicts in their communities, responses converged strongly around competition for scarce natural resources particularly water, pasture and grazing land. One elder explained the matter in direct terms:

"Competition over scarce natural resources, green pastures, communal land ownership and boundaries and livestock theft that is cattle rustling these are the things that bring conflict among our people. When the rains fail and the pasture disappears, everyone is chasing the same small piece of green land and that is where the trouble begins."

On the influence of climate variability specifically informants were unequivocal that changing rainfall patterns had intensified the frequency and severity of disputes. As one respondent narrated:

"When climate changed over the years there is increased competition for water and greener pasture. Different pastoral communities are forced to migrate to search for greener pasture and water for their livestock and this leads to conflicts at grazing areas and water points. It was not always

like this and in the past, the rains were more predictable and each community knew when to move and where. Now the droughts come without warning and people are forced into places that do not belong to them."

Another elder linked climate stress directly to territorial encroachment:

"Due to less water and pasture, herders have to move into areas they don't normally use or belong to other communities which may cause conflict."

On social and political drivers, respondents identified population pressure, weakened elder authority and unclear administrative boundaries as compounding factors. One informant offered a particularly detailed account:

"Due to population pressure, many people move livestock, so families need more land for dowry, food and settlement. There is a loss of elders' authority and the administrative boundaries are unclear. When the population of a particular community or clan increases there will be more people and livestock, leading to more demand for water, pasture and land, thus resources get depleted faster and this populated community will be forced to move into another community's land, leading to conflict."

A further respondent was sharply critical of the role of political actors in escalating rather than resolving these tensions:

"Politicians have involved themselves in resource-based conflicts in ways that increase conflicts instead of solving them and their messages have increased hostility and sometimes this leads to violence."

On the question of how livelihood patterns shape conflict dynamics, informants described a complex relationship in which pastoralism heightens exposure to conflict while farming and livelihood diversification tend to reduce it. One elder illustrated this with a concrete example:

"Some pastoral families have started growing crops such as maize, beans and sorghum along the Kerio River where irrigation is possible. Because these families can feed themselves through farming, they do not have to move their livestock long distances in search of pasture. As a result there will be fewer cases of livestock-caused conflicts. We see this now among some of our Marakwet and Pokot families who practice both livestock keeping and farming."

Another respondent however cautioned that the transition period between the two livelihood systems can itself generate friction:

"During severe drought periods, herders from one area may move with livestock into neighbouring locations in search of pasture and water. If livestock destroy crops or if communities suspect theft, conflict may arise."

These findings on livelihood diversification as a conflict-mitigating strategy are consistent with recent research from Ethiopia's pastoral regions which found that livelihood diversification into crop cultivation reduces pastoral households' dependence on long-distance herd mobility and, by extension their exposure to resource-based disputes over distant grazing and water resources (Tesfaye & Tekalegni, 2023) and this finding is further compared with panel-data research from Nigeria which established that households that diversify their livestock and livelihood portfolios are better able to mitigate the negative consequences of farmer-herder conflict on their food and income security suggesting that diversification functions both as a conflict-reduction strategy and as a resilience mechanism once conflict does occur (Nigeria livestock diversification study ScienceDirect, 2023).

During a focused group discussion, participants across all four FGDs converged on water and pasture as the resources most frequently at the centre of conflict with the Kerio River itself repeatedly identified as both a lifeline and a flashpoint. One participant from the Tot FGD explained:

"Here in Tot, the biggest disputes are over the river. When the upper Marakwet escarpment communities divert water for their farms during the dry months, those of us downstream near Chesongoch find the river reduced to almost nothing. That is when the arguments start sometimes between neighbours who have shared this water for generations."

A participant from the Sigor FGD, on the Pokot side, pointed to grazing corridors as the more decisive source of tension there:

"For us in Sigor and going up towards Chesegon, it is not the river it is the grazing routes. When the rains fail in the lowlands, our animals must move up towards the Cherangany foothills and that is where we meet other people's cattle on land that is not clearly whose."

On which resource creates the greatest disputes, participants from the Kollowa FGD were emphatic about pasture:

"Pasture. Water we can fetch and carry, even if it is far. But when there is no grass anywhere

between Kollowa and the Kerio Valley floor there is nowhere left to take the animals except into someone else's grazing land and that is when the fighting begins."

Participants also linked population pressure directly to worsening competition for these same resources. One elder in the mixed Endo FGD observed:

"When I was young, the land around Endo could feed the cattle of a few families without any problem. Now there are many more homesteads, many more children who have grown up and started their own herds and the land has not grown with us. Every year, more people are chasing the same water points along the Kerio."

On seasonality, participants were consistent in identifying the dry months roughly from January to March and again in July as the period of greatest risk. A participant from the Chesegeon FGD described this pattern vividly:

"It is always in the dry season, when the Kerio River is low and the pasture along the valley floor has been finished. That is when herders from Tiaty side push further into the escarpment areas looking for the last green patches and that is when we hear of raids."

Finally, on the influence of farming versus pastoral activities, participants from the Kapcherop FGD noted a generational and geographic divide in exposure to conflict:

"Those of us who have shifted more into farming along the river banks near Kapcherop experience fewer direct clashes now, because we depend less on moving animals long distances. It is our relatives who are still fully pastoral, moving with large herds toward Pokot grazing areas who face conflict most often they are the ones crossing into contested land."

These accounts of seasonal water and pasture scarcity driving conflict along the Kerio River corridor are consistent with recent hydrological and conflict-mapping research from other water-stressed African basins. A study of the Sahel and Lake Chad Basin found a clear statistical link between periods of physical water scarcity and the frequency of violent water-related conflict with disputes clustering predictably around the driest months of the annual cycle rather than being evenly distributed throughout the year (Nkiaka et al., 2024) and this seasonal clustering is further corroborated by recent global ecological threat analysis which identified the Karamoja Cluster the wider pastoralist zone spanning the Kenya-Uganda-South Sudan borderlands and adjoining the Kerio Valley as a clear illustration of how increasingly unpredictable rainfall timing, rather than a simple decline in total rainfall amplifies both drought and flood-related pressures and has coincided with a resurgence of pastoralist violence in the region (Institute for Economics and Peace, 2025).

4.1 Correlation Analysis Results

In order, to establish the strength and direction of the relationship between the drivers of resource-based conflict and conflict management outcomes, Pearson's Product-Moment Correlation Coefficient was computed and this analysis examined the association between four independent variables climate change and environmental stress, scarcity of pasture and water, livestock raiding and cattle rustling and cultural and ethnic rivalries and the dependent variable, conflict management outcomes which was operationalized through indicators of reduction of violence, peace restoration, social cohesion and coexistence and sustainable conflict resolution. Pearson's correlation coefficient (r) was deemed appropriate as it measures both the strength and direction of a linear relationship between two continuous variables with values ranging from -1 to +1 where values closer to ± 1 indicate a stronger relationship and values closer to 0 indicate a weaker or negligible relationship (Schober et al., 2018). The results are presented in Table 2.

Table 2: Correlation Matrix between Drivers of Conflict and Conflict Management Outcomes

Variable	1	2	3	4	5
1. Climate Change and Environmental Stress	1				
2. Scarcity of Pasture and Water	.512**	1			
3. Livestock Raiding and Cattle Rustling	.347**	.489**	1		
4. Cultural and Ethnic Rivalries	.298**	.361**	.563**	1	
5. Conflict Management Outcomes	-.421**	-.457**	-.548**	-.502**	1

*Correlation is significant at the 0.01 level (2-tailed). ** $p < .01$.*

The correlation results presented in Table 2 indicate that all four drivers of resource-based conflict had statistically significant negative correlations with conflict management

outcomes suggesting that as these drivers intensify, the effectiveness of conflict management measured through reduced violence, peace restoration, social cohesion and

sustainable resolution correspondingly declines. Livestock raiding and cattle rustling recorded the strongest negative association with conflict management outcomes ($r = -.548$, $p < .01$), followed by cultural and ethnic rivalries ($r = -.502$, $p < .01$), scarcity of pasture and water ($r = -.457$, $p < .01$) and climate change and environmental stress ($r = -.421$, $p < .01$) and this pattern indicates that while all drivers meaningfully undermine conflict management effectiveness, direct and often violent manifestations of conflict such as raiding, exert a comparatively stronger disruptive influence on peace outcomes than more diffuse, slower-onset pressures such as climate stress.

These findings align with recent evidence on the commercialization and criminal-network dimensions of cattle raiding across pastoralist Africa which has been found to interact with and often override, the moderating effects of customary institutions on violence, making raiding-driven conflict comparatively more resistant to resolution than disputes arising primarily from resource scarcity alone (Benjaminsen, 2024) and this is corroborated by the causal-pathway analysis of drought and pastoralist violence in southwestern Madagascar which similarly found that political and social marginalization, together with the commercialization of raiding, were more consistently predictive of sustained violence than climatic variability in isolation, helping to explain why raiding-related conflict in the present study showed a stronger negative correlation with peace outcomes than environmental stress alone.

The comparatively weaker though still significant, correlation between climate change and environmental stress and conflict management outcomes is consistent with an emerging body of research cautioning against deterministic assumptions that resource scarcity automatically translates into violent conflict. Nwankwo's (2025) analysis of the geopolitical ecology of farmer-herder conflicts in West Africa found that climate change functions as a conflict multiplier that interacts with governance failures and political marginalization rather than as an independent, direct driver of violence, a pathway consistent with the relatively moderate correlation coefficient recorded for this variable in the present study. Similarly econometric evidence from transhumant pastoralist regions in Africa has demonstrated that temperature increases raise the likelihood of conflict substantially more in areas where farmer and herder livelihoods directly overlap than in areas without such overlap suggesting that the strength of the climate-conflict linkage is highly context-dependent rather than uniform (McGuirk & Nunn, 2024) and this body of evidence lends credibility to the present study's finding that environmental stress while significantly correlated with poorer conflict management outcomes, exerts a comparatively more moderate effect than the direct, materially grounded drivers of cattle raiding and ethnic rivalry in the Kerio Valley.

5. Conclusion and Recommendations

5.1 Conclusion

The study concludes that resource-based conflict among the agro-pastoralist communities of the Kerio Valley arises from several interacting drivers, not from any single cause. Cattle rustling was the most strongly endorsed driver, and the competing claims over water points and pasture were widely seen as central to the conflict. Climate variability, farmer-pastoralist competition over land use, and weak enforcement of land and grazing regulations were also widely recognised as contributing factors. Population pressure and political influence were perceived less uniformly, which suggests that their effect depends on local context and on how they combine with scarcity and weak institutions. The qualitative accounts supported this pattern. Dry seasons, unpredictable rainfall, disputed boundaries, and a weakened role for elders push herders into areas claimed by other communities, while raids and retaliation deepen mistrust and erode household income and food security. Livelihood diversification into crop farming appeared to reduce exposure to conflict for some households, although the transition itself can create new tensions over land. The correlation analysis showed that all the drivers examined were significantly associated with weaker conflict management outcomes. Raiding and cultural and ethnic rivalries had the strongest associations, and climate and environmental stress had the weakest.

5.2 Recommendations

1. There is a need for the national and county governments, working with community elders and security agencies, to strengthen community-led peace and security mechanisms that address cattle rustling and the commercialisation of raiding in the Kerio Valley.
2. There is a need for county governments and development partners to develop and equitably manage water points and agree on grazing corridors and seasonal pasture-sharing arrangements to reduce competition over scarce resources in the Kerio Valley.
3. There is a need for the county governments and land authorities to enforce land-use and grazing regulations consistently, and to integrate customary resource-sharing arrangements into participatory land-use planning, to reduce disputes between farmers and pastoralists in the Kerio Valley.
4. There is a need for government and non-state actors to promote climate adaptation, livelihood diversification into irrigated crop farming, and restraint from political incitement, to build household resilience and sustain peace among the agro-pastoralist communities of the Kerio Valley.

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