

## Resource Scarcity and Insecurity: Barriers to Livestock Productivity and Trade Efficiency in Pastoral Regions

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**Abstract:** Resource scarcity and insecurity in most pastoral and arid regions is a reality. The lack of strategies, particularly those that leverage community relations and intergovernmental commitments to regional peace, stability, economic development, and diplomacy, forces herders and traders to incur substantial costs to access production and market resources and maintain harmonious coexistence. The research conducted in the border regions of Turkana, Kenya, adjacent to Uganda, South Sudan, and Ethiopia, was founded on three strategic objectives: (i) to identify the triggers of resource-based conflicts and insecurity among local and cross-border pastoralist communities, (ii) to analyse the impact of these triggers on livestock production and the performance of livestock markets, and (iii) to ascertain critical strategies for managing livestock production and trade in conflict-affected and insecure areas of the eastern African region. Of the 180 sampled study participants, 167 responded to the study, comprising 30 percent women and 43 percent youths. The study prioritised low cash economy, poverty, cattle rustling, retaliatory practices, and marginalisation as the primary triggers of resource scarcity and insecurity in the study area. Nevertheless, the analysis identified market cartels, corruption, and territorial protection as minor triggers. This outcome is ascribed to the vigorous involvement of governments in cross-border livestock production and marketing activities through rules designed to safeguard herders and traders, while imposing penalties and sanctions on exploiters. The predominant impacts of resource scarcity and insecurity on pastoral economies and markets encompass competitive rivalry, livestock losses due to mortality and theft, exploitation of the principally illiterate herders and traders, market dysfunction, restricted equity, and intimidation in livestock production zones and markets. The primary solutions to alleviate the impacts of these triggers are unconditional access to livestock production resources, timely recovery of stolen animals, market functionality, competitiveness and profitability, as well as equitable trade in both domestic and cross-border livestock and commodity markets. Future study areas encompass the management of cross-border trade dynamics, climate resilience for pastoralists in arid regions, and the digitalisation of banking in rural areas.

**Keywords:** Production resources, Scarcity, Productivity, Competition, Trade-offs, Cross-border trade, Insecurity, Market access, Economic development.

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## Introduction

For decades, the arid regions of Eastern Africa have been profoundly impacted by limited livestock production resources, leading to heightened mobility among pastoralists both internally and across international borders. This situation has also diminished livestock productivity, resulting in significant income and nutritional insecurity, as well as hindering development for pastoralists, entrepreneurs in pastoral areas, and pastoral regions. Restricted livestock production resources result in lessened market competitiveness, as the quality and quantity of animals and livestock products intended for markets are inadequate to provide sustainable competition and supply consistency.

Persistent insecurity has been intrinsically linked to resource shortage. In dry seasons, pastoralist groups face numerous hazards as relocating to regions with sufficient grazing and water for livestock becomes imperative. Notwithstanding various internal and cross-border protocols designed to assist pastoralists and their livestock in mitigating the impacts of resource shortages and insecurity, these factors obstinately exert a significant influence on

livestock production and trade operations. The expansion of the livestock industry in numerous pastorals and agro-pastoral areas of Eastern Africa is hindered by ongoing conflicts and the entrenched practices of livestock farming communities, which exhibit limited adaptability to the inevitable changes brought about by evolving production, climate, and urbanisation dynamics.

Addressing challenges in livestock production and market access will enhance the security of livestock resources, actualize the transition towards the transformation of pastoral farming systems and practices, delineate the role of pastoral regions as livestock production centers, and fortify economic connections among local and cross-border stakeholders essential for promoting livestock trade and stability, thereby facilitating the growth of the livestock industry and regional integration initiatives. The investigation aims to enhance understanding of scarcity and insecurity affecting livestock productivity and trade efficiency in pastoral environments. It will lead to strategies that empower pastoralists' resilience and relational capacities to manage

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production and market dynamics, making their economies competitive and sustainable.

## Literature Review

### Overview of Livestock Economy and Predicaments in Pastoral Areas

The research conducted by Anno and Pjero (2021) on competitive rivalry in livestock markets in arid regions, along with studies by Togarepi et al. (2016) and Abay et al. (2019), indicates that livestock accounts for approximately 40 percent of global agricultural output value, making it crucial for food and economic security, particularly in countries dependent on livestock industries. Livestock farming is essential for agricultural advancement in the Eastern Africa region, benefiting millions of individuals and households. Anno and Pjero (2021) further demonstrate that the livestock industry in Kenya directly supports and employs approximately 16 million people. It makes up 12 percent of the country's GDP and 42 percent of the agricultural GDP.

The study by Addis (2017) on problems of livestock production and marketing in Ethiopia and the Horn of Africa at large depicts a multiplicity of factors contributing to the loss of animal populations, which include climate change, conflicts (both internal and cross-border), and heightened food and economic instability impacting those dependent on livestock. These challenges impede the economic advancement of pastoral and agro-pastoral regions. The study by Bedelian and Ogutu (2016) shows scarcity of production resources and persistent insecurity in livestock production zones remain the overriding cause of resource-based conflicts that persistently continue yielding significant social, economic, political, and environmental repercussions, undermining connections among pastoral communities and possible markets to accrue their livestock economic returns.

Regional governments through national and local government collaborations have sought to resolve resource-based conflicts through different tactics such as encouraging cross-border resource sharing and trade; limiting cross-border movement during times of insecurity; supporting voluntary and forced disarmament for pastoralists holding illegal firearms; and promoting cross-border incentive programmes for peace, security and development of the cross-border livestock farming communities and trading groups through the creation of common and jointly shared natural, economic and social resources (Addis, 2017; Anno and Pjero, 2021). Additionally, these conflicts have resulted in loss of animals and human lives; economic downturn of communities, households and individuals due to livestock theft; instability in livestock markets; and the collapse of prospective markets. These practices have also jeopardized pastoralism, have socially, politically and economically marginalized the affected dryland areas, have worsened illiteracy and poverty, and have impeded land utilization and investment (Ng'asike, 2019; Hatab et al., 2019).

### Regional Perspective of Pastoral Resource-Based Conflicts

The study by Hatab et al. (2019) on urbanisation and livestock systems underscores the fact that resource-based conflicts in pastoral areas are fueled by resource scarcity, territorial protection, and customary access protocols, worsened by climate change which disrupts seasonal patterns, reduces forage diversity, and increases mobility and costs for herders. This scarcity, according to Basamba et al. (2016), triggers tensions among

communities and their governments, as pastoralist activities have had an impact on nature conservancies and other government-protected areas.

Research shows that integrating institutional and policy perspectives reveals and promotes the role of livestock in livelihoods and economic development, creating more opportunities in which livestock-keeping populations can utilize to diversify their livelihoods, thus reducing conflict occurrences (Elhadi et al., 2015). It is presented in Enahoro et al. (2019) that sustainable expansion of livestock production activities enhances the economic contributions of local traders in small ruminant value chains, which are key for community livelihoods and well-being. Kima et al.'s (2015) study on adapting to the impacts of climate change underscores the repercussions of resource disputes, which include loss of life, property and environmental harm.

To alleviate these challenges, it is pointed out in the Herrero et al. (2016) study on climate change and pastoralism that cross-border integration and awareness initiatives can mitigate the suffering and poverty caused by such conflicts. Additionally, blending formal and informal trading can reduce inter-ethnic competition; however, traditional cattle rustling has become more lethal (Egeru et al. 2015). Economic factors such as power struggles, corruption, and land grabs are driving changing pastoral conflicts, which calls for effective policies for livestock and resource management to support pastoral economies in the Horn of Africa (Bonfoh et al., 2016).

### Resource Based conflicts and Insecurity in Karamoja Cluster Region

The Turkana and Pokot regions of Kenya, the Karamoja sub-region of Uganda, Toposa land in South Sudan, and the South Omo Zone of the Federal Republic of Ethiopia in the Horn of Africa are recognised as the most impoverished pastoral regions impacted by resource scarcity and insecurity threats (Anno and Pjero, 2021). As it is known for long, most of these regions experience four categories of conflicts related to livestock resources: economic conflicts, clan and tribal conflicts, cross-border conflicts, and intra-clan conflicts (Watson and van Binsbergen, 2008). The growing urbanisation is adding another form of conflict that pastoralists are facing, where they are evicted from their usual domains for urban planning and projects (Hatab et al., 2019; Anno, 2025).

Multiple studies predict that future conflicts in pastoralist areas are probable due to the proliferation of small arms, the disintegration of conventional institutions, a feeble governmental presence, and insufficient infrastructure, which together foster an atmosphere conducive to insecurity and conflict escalation, which impedes economic development of the regions (Yiram et al., 2017; Staal et al., 2019). Managing these occurrences requires robust development plans that support pastoral regions' development agenda, socioeconomic transformation, early warning and disaster management and mitigation.

### Political and Economic Motivators of Resource-Based Conflicts

The research conducted by Nyariki and Amwata (2019), regarding the significance of pastoralism in Kenya, identifies the augmentation of political and economic influence and its effects on communal behaviours within the pastoral communities of Eastern Africa. Hatab et al. (2019) assert that escalating urbanisation in arid regions is displacing herders and their animals from traditional territories to hazardous peripheral zones. This scenario is

increasing mobility, even for pastoralists who have turned sedentary and are making links with trading and service centers.

The discovery of minerals, including gold, precious stones, petroleum among others, along with the expansion of nature conservancies, is displacing livestock-keeping communities, thereby exacerbating resource-based conflicts and insecurity. This situation is hindering pastoralists' land development due to unsustainable livestock practices in arid regions. It has resulted in underdevelopment and the incapacity of livestock keepers to enhance their economies and address the related difficulties such as limited access to markets, reduced grazing land, and increased competition for resources (Motta et al., 2017).

### **Commercialization of Resource-based Conflict Activities**

The livestock production and trading in Eastern Africa are affected by supply-demand imbalances, particularly in consumer, terminal, and export markets, and resource disputes are significantly disrupting these markets (Anno and Pjero, 2021). Borana regions, both in Kenya and Ethiopia, are seeing improved access to livestock markets, necessitating a shift from domestication to trading herds for local and export markets. Climate change is influencing livestock production and trade systems where scarcity of production and financial resources disadvantage smallholder farmers and low-capital traders, especially in accessing markets (Roba et al., 2019; Anno and Ameripus, 2022). Furthermore, commercial cattle rustling linked to wealthy businesses has increased conflicts and huge losses to victims since livestock stolen in most cases are not recovered.

The study by Anno and Ameripus (2022) also indicates that ethnic group mobilisation is attributed to pastoral conflicts, especially in East Africa, where disagreements over pastoral resources become conflict triggers. The findings of Sala et al. (2020) underscore the necessity of pastoralist involvement in livestock-orientated industries, including trade and commercial fodder production. These advancements, however, necessitate sufficient land and resource mobilisation and allocation. The confiscation and decimation of pastoralists' lands obstructs the achievement of such business opportunities. Little et al. (2015) also document that both legal and criminal cross-border trading occurs in pastoral regions, particularly those adjacent to international boundaries.

Despite the advantages that politicians and business cartels derive from these trading systems, the study by Roba et al. (2019) indicates that conflicts rooted in pastoral resources impede the advancement of livestock production and trade initiatives. Furthermore, these conflicts are intensifying the armament of pastoral groups due to insufficient government intervention, leading to an increase in tribal, intercommunity, and cross-border disputes, and terror in potential business and trade areas and corridors.

### **Causes of Resource-Based Conflicts and Insecurity**

Research demonstrates that poverty in pastoral areas is influenced by multiple factors such as political marginalisation,

persistent droughts, inequitable access to water and grazing lands, extreme competition for land, alterations to land tenure, and diminished traditional governance (Addis, 2017; Egeru et al., 2015). Moreover, challenges such as insecurity, avarice, the proliferation of small arms, and monopolistic practices within the livestock sector hinder pastoral communities' capacity to foster and trade livestock efficiently. According to Anno and Ameripus (2022), the livestock trade in insecure regions is influenced by local corruption, exploitation of producers, market volatility, and violence in prospective livestock production areas.

The study underscores several factors exacerbating the adverse economic circumstances of households in pastoralist areas, including grazing limitations and restricted market access. Resource-based conflicts result in considerable human misery, fatalities, and stunted development, especially in rural and pastoral regions. An imbalance between livestock demand and supply adversely affects local traders and farmers, intensified by unfavourable market circumstances and a deficiency of competitive local markets, hence exacerbating poverty (Ng'asike, 2019; Anno and Pjero, 2021).

Restricted supply and cartel exploitation cause variability in livestock output quality and quantity, particularly in high-demand areas. The depletion of livestock supplies resulting from assaults in areas such as Turkana and military abuses in northern Uganda intensifies these problems (Bedelian and Ogutu, 2016). Economic pressures compel pastoral households to pursue urban employment, but obstacles such as limited market access, inadequate infrastructure, and reluctance to change impede economic development and stability, exacerbating persistent resource-based conflicts such as cattle rustling (Little et al., 2015).

## **Methodology**

### **Sampling, Study Instruments and Data Collection**

This study employed a mixed-methods research strategy to gather comprehensive qualitative and quantitative data on the primary variables: resource scarcity, insecurity, and livestock market performance. The research designs utilised were exploratory and descriptive. Six strategic livestock grazing zones and markets were purposively sampled. These areas comprise Lokirama, Lokichoggio, and Todonyang in Turkana, Kenya, and the adjacent Moroto in Uganda, Narus in South Sudan, and Omo Rate in Ethiopia, respectively.

In each region, 30 herders engaged in livestock trading were randomly selected as study participants, totalling 180 people. The study achieved a response rate of 93 percent, i.e., 167 study participants. A semi-structured questionnaire was administered to 58 percent (99 respondents) who were capable of completing it, while a study schedule was administered to illiterate groups through focus group discussions (FGDs). The high study participants' response rate shows the authenticity of data acquired from the study population. Below is the map showing the study area across four countries of eastern Africa.



Figure 1: Map of the study area

**Data Analysis and Presentation Techniques**

The quantitative data was calculated, evaluated, and presented as frequencies, percentages, and mean averages. The average  $\bar{x}$  was deemed low when below 2.5, whereas values beyond 2.5 but below 2.7 were classified as medium in intensity. An elevated rating was attributed to the mean  $\bar{x}$  exceeding 2.7. The utilisation of patterns, codes, and themes facilitated the categorisation of qualitative data into comprehensible titles and subtitles. This was conducted for the purpose of qualitative data analysis to correlate the findings of the quantitative inquiry with the literature about the scarcity of livestock production resources, resource-based conflicts, insecurity, and the efficacy of internal and cross-border commerce.

**Results and Discussion**

**Demographic Characteristics of Study Participants**

Of the 168 participants who responded to the survey, 30 percent (50 people) were female and 43 percent (72 people) were young adults (under 35 years of age). Women's participation in Kenya reached a peak of 17 percent, whereas it was at a minimum of 5 percent in Narus, South Sudan. Women's engagement in cross-border livestock commerce in Moroto, Uganda, and Omo Rate, Ethiopia, is now stated to be increasing, at 8 percent and 6 percent, respectively. Narus, South Sudan, exhibited the most youth participation in cross-border livestock trade at 26 percent, whilst Omo Rate, Ethiopia, recorded the lowest at 12 percent. The demographics indicate a rising participation of youngsters and women in livestock and various forms of cross-border trade.

**Triggers of Resource Scarcity and Insecurity in the Study Area**

The study determined that a deficient cash economy was the primary factor contributing to insecurity, which restricted market options in local areas while enhancing trade mobility to more distant local and cross-border markets. The capacity of individuals to traverse borders without security assurances heightens insecurity, shown in phenomena such as cattle rustling and highway robberies. Consequently, animals and various market commodities have been seized through raids and assaults. The

severe shortage of capital and restricted mobile banking is perceived as a detrimental force in the livestock and commodity markets, undermining prospects for enhancing local market performance. Revenge and counter-revenge are prevalent practices throughout all study regions in Kenya, Uganda, South Sudan, and Ethiopia.

In the aftermath of cattle rustling or highway robberies, almost 90 percent of study participants indicated a strong likelihood of seeking retribution, which is linked to the distress experienced by victims who have suffered property loss. The study regions in all countries perceive significant marginalisation by their respective governments. This circumstance constrains governmental allocations for development, and the perception of pastoral regions as non-productive leads to governmental hesitance in attracting investments that could enhance the economy of these areas and elevate local communities' involvement in their own welfare matters.

The research indicates that territorial protection is the least significant trigger of resource-based conflicts and insecurity. This is ascribed to the continuous initiatives aimed at unifying the populace of the eastern Africa region to collaboratively utilise internal and cross-border livestock production resources, including grazing fields, watering points, and shared resources located along border areas. The East African Community (EAC) recognizes that the opening of borders for trade will enhance the economies of its member countries. Government regulations permit traders in the region to engage in cross-border trading. This development is significantly impeded by instances of political upheaval and thievery, which paralyses border activity due to insecurity.

Market cartels had the lowest ratings due to governmental rules aimed at mitigating competition and preventing exploitation in livestock trading. Despite persistent high illiteracy being a predisposing factor for exploitation by elite traders, the governments of Kenya and Uganda have instituted rigorous standard operating procedures that impose severe penalties and sanctions on individuals and business entities seeking to exploit, corrupt, or defraud others of their market opportunities. The figure below ranks the triggers in the order of priority.

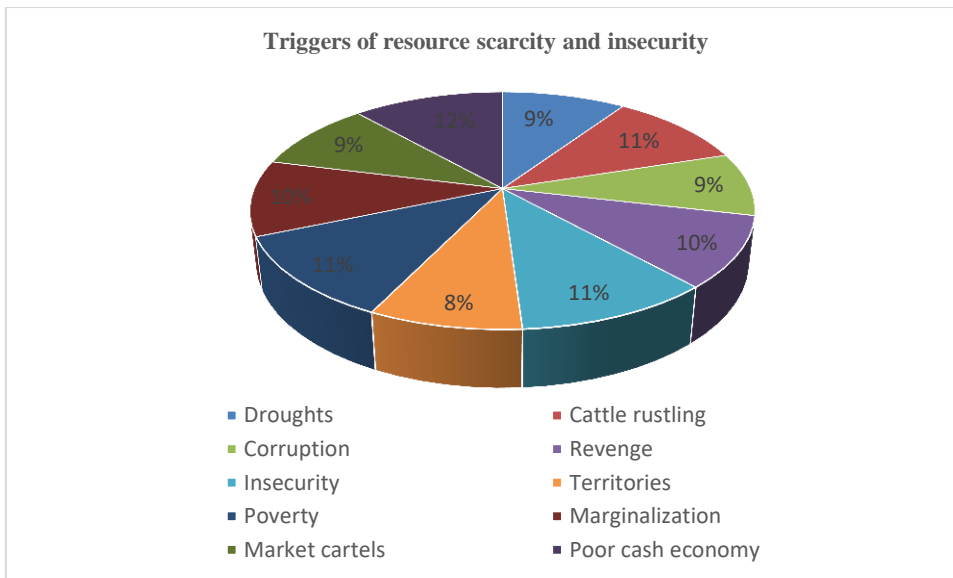


Figure 2: Resource scarcity and insecurity triggers in the order of priority

Todonyang was significantly impacted by resource constraint and insecurity, with a prevalence of 19 percent. This scenario is due to the isolation of the Todonyang region, persistent battles between the Turkana and Dassenach of Ethiopia concerning fishing rights in Lake Turkana, and the fact that security is only maintained by a police post, with no established border security and personnel. The region frequently encounters cattle rustling incidents, deterring corporate investors and resulting in a significant mismatch between supply and demand market dynamics. Lokichoggio is the least impacted location, with only 15 percent affected by the triggers. This is ascribed to enhanced border security resulting from coordination between the governments of Kenya and South Sudan, together with the regular influx of livestock from South Sudan into Kenya. This compels the government of South Sudan to commit to stabilising security to safeguard the cattle market in Kenya.

The recent designation of Lokichoggio as a Sub County has enhanced the accessibility of government institutions and security resources, thereby markedly improving safety. The official status

of Lokichoggio, along with the newly completed A1 Road between Turkana, Kenya, and Eastern Equatoria, South Sudan, has augmented traffic and stimulated trade, specifically the interchange of commodities and services between the two nations. The study determined that the inaugural peace memorial at the Kenya-South Sudan border undertaken in 2025 has fostered confidence in peace, security, and trade.

While Moroto and Lokiriama are not significantly impacted, the burgeoning armoury of the Karimojong herders is perceived as a danger to long-standing stability. While the Ugandan government prohibits civilian possession of firearms, the Kenyan government is augmenting the number of police reservists trained to collaborate with state security forces to ensure local safety. These initiatives will eradicate insecurity issues, hence facilitating greater chances for livestock herds to access internal and cross-border resources and engage in commerce. The figure below shows the distribution of average means of resource scarcity and insecurity triggers in all study areas.

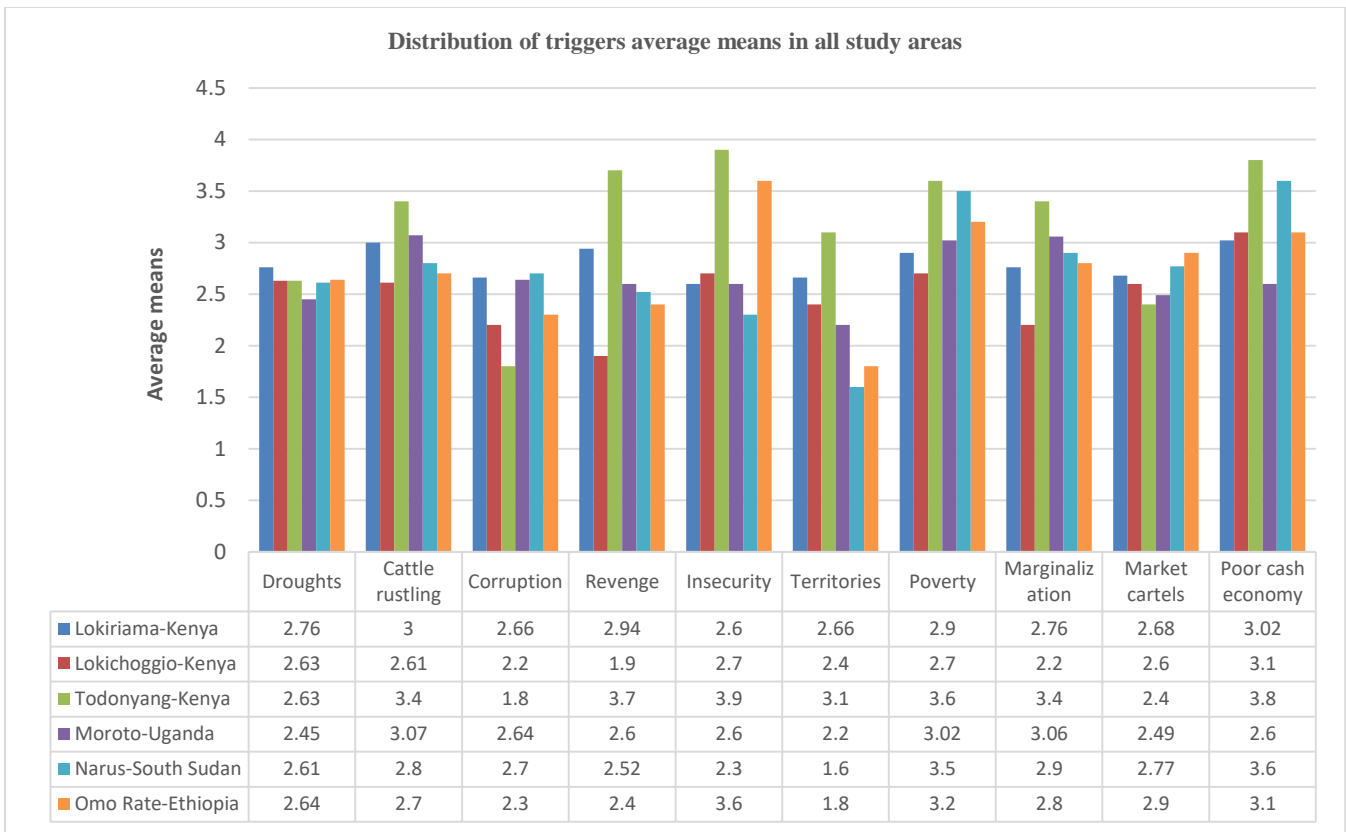


Figure 3: The distribution of triggers scores in all project sites

**Effects of Resource Scarcity and Insecurity Triggers on pastoral Economy and Markets**

The research determined that competitive rivalry is the primary consequence of resource scarcity and insecurity in the study area. This is more severe in livestock markets near Todonyang and in cross-border markets in Omo Rate, Ethiopia. Terror in markets and the dysfunction of potential markets rank second in impact. Todonyang and Omo-Rate regions continue to

dominate in market-related terror and the dysfunctionality of numerous markets.

Despite the abundance of fertile pastoral agroecology in these regions, insecurity continues to be the primary factor contributing to resource scarcity and suboptimal market performance. Revenue and profitability are contingent upon the dynamism of market operations and the seasonal selling of livestock and commodities cross-border. The figure below ranks the effects of triggers on pastoral economy and markets in the order of priority.

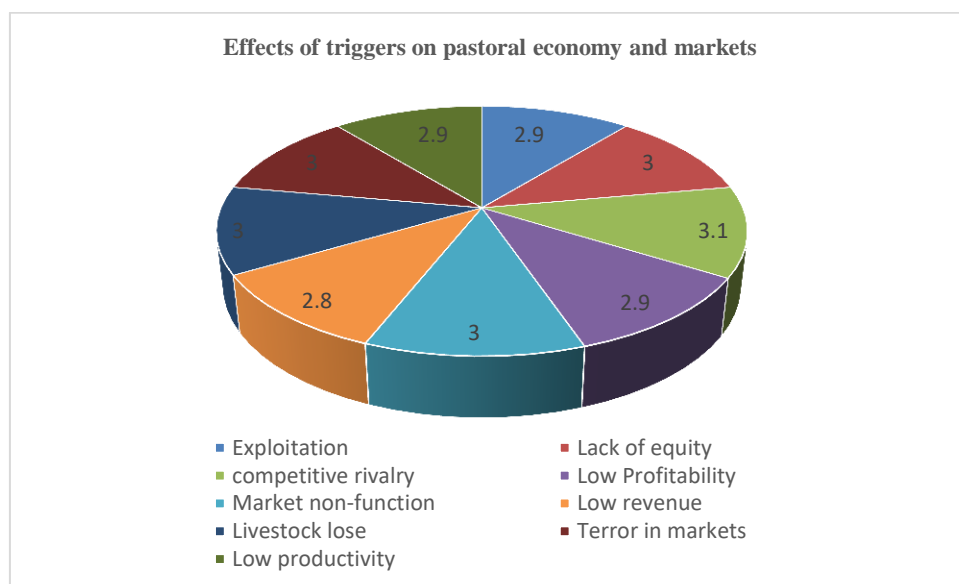


Figure 4: The effects of triggers ranked in the order of priority

The Omo Rate region in South Omo, Ethiopia, is the most significantly impacted by resource shortages and insecurity triggers at 31.42 percent, followed closely by the Todonyang region of Kenya at 31.16 percent. The places least impacted include Lokiriama and Lokichoggio in Kenya, both at 15 percent. The interpretation of these results is that regions with diminished governmental presence, inadequate security measures, and isolation are more susceptible to the triggers of resource scarcity and insecurity.

Lokiriama and Lokichoggio are less impacted due to recent upgrades to sub-county administrative units and the initiatives by governments and civil society to stabilize border points and enhance trade activities, which mitigate the risks undermining developmental efforts in those regions. The figure below shows the distribution of average means of triggers effects on pastoral economy and markets in all study areas.

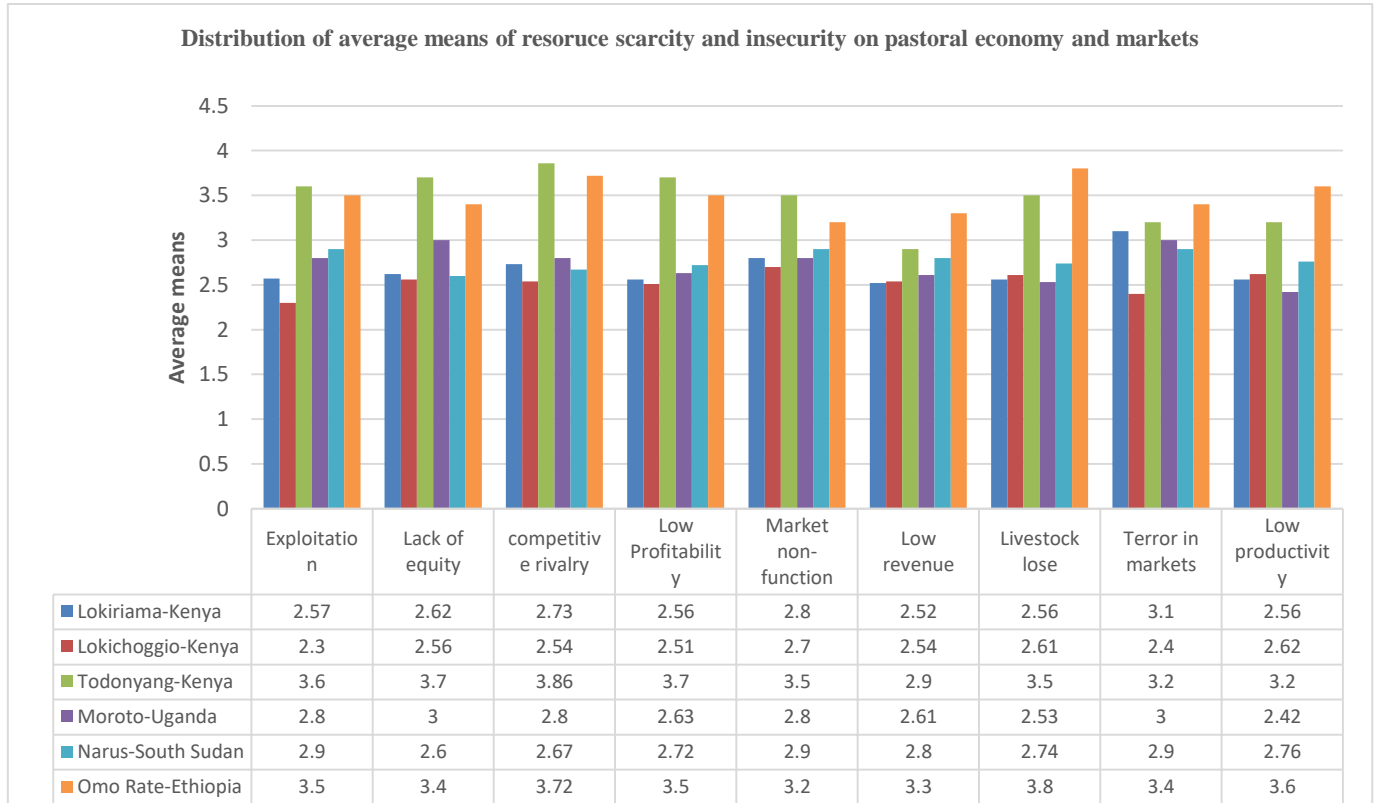


Figure 5: Distribution of triggers scores in the order of priority

**Strategies for Mitigating Resource Scarcity and Insecurity in the Study Area**

Access to livestock production resources was deemed the paramount option to mitigate the causes of resource scarcity and insecurity in the study area. Over 80 percent of communities rely on livestock farming for their livelihoods, indicating that access to high-quality pastures and water, both domestically and across borders, will enhance animal health and productivity, thereby increasing economic returns from local and international markets. Market functionality, competitiveness, and profitability were assessed as the second most effective tactics.

The integration of livestock production and market accessibility will enhance the competitiveness of local marketplaces and traders, rendering livestock trading a lucrative investment opportunity. The establishment of equity will augment prospects for local marketplaces and traders to acquire the necessary capital resources aimed at improving livestock production and marketing. The competitiveness and sustainability of livestock trading in each surveyed country will be improved. Lokichoggio and Todonyang in Kenya, along with Narus in South Sudan, exhibited a significant demand for solutions to mitigate resource scarcity and insecurity triggers. The figure below ranks the mitigation strategies for resource scarcity and insecurity in the study area in the order of priority.



Figure 6: Strategies to mitigate resource scarcity and insecurity in the order of priority

The distribution of average means indicates that each strategy received scores above average, underscoring their significance in mitigating resource scarcity and insecurity triggers. Fair trading received a high ranking in Omo-Rate, equity building was prominent in Narus, and market competitiveness was notable in Lokichoggio and Todonyang. Narus and Moroto excelled in market functionality, although Todonyang was the foremost in revenue responsibility and the recovery of stolen animals. Narus and Moroto excelled in peace and stability scores, but all study sites demonstrated good ratings in access to production resources.

The study emphasizes the strategic approach to enhancing livestock production and trade in the border regions of Turkana with Uganda, South Sudan, and Ethiopia. Achieving the impact of these strategies necessitates the combined responsibility of all parties. The significance of customary institutions in governing livestock movements, access to communal resources, and trade is crucial, particularly in the implementation of customary regulations to mitigate instability and ensure regional stability. The figure below shows the distribution of triggers mitigation strategies average means in all study areas.

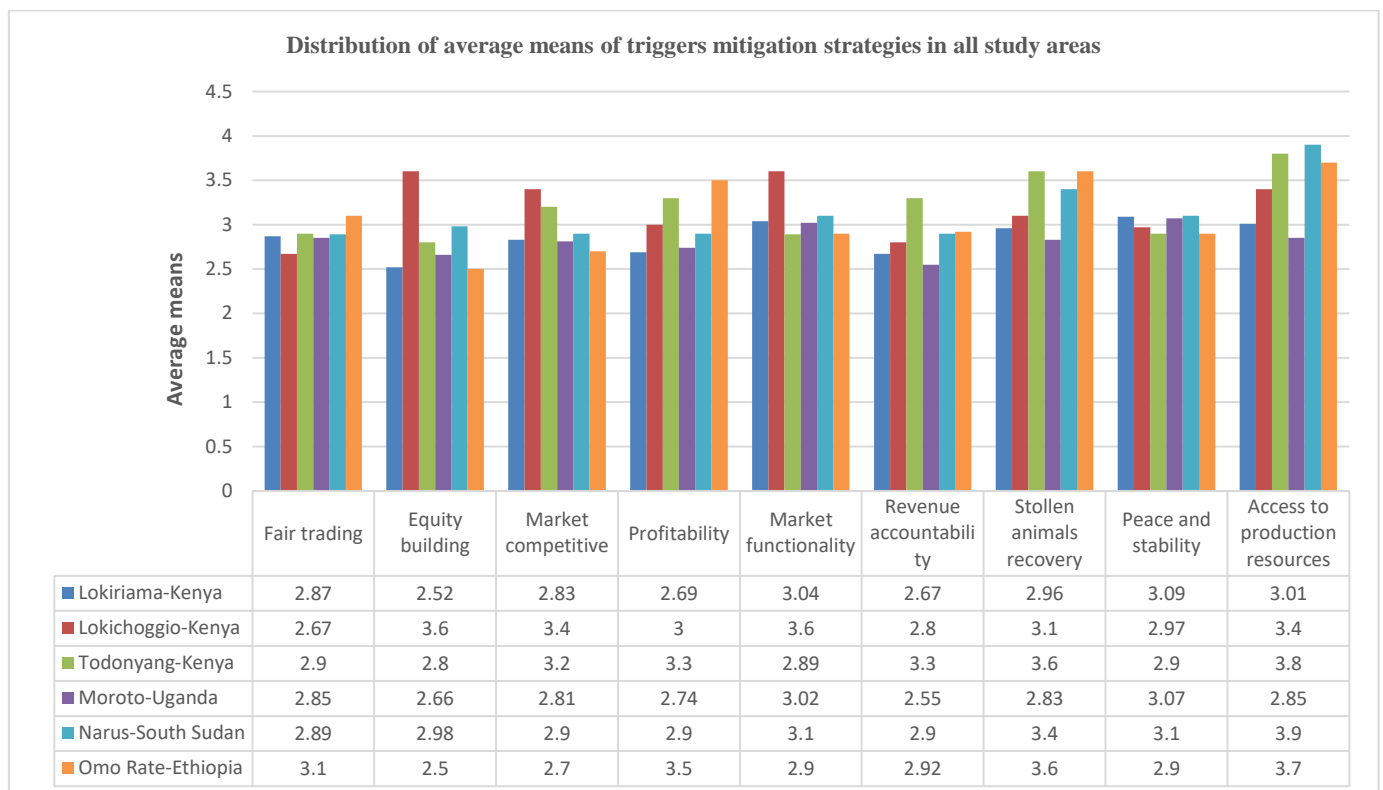


Figure 7: Distribution of mitigation strategy scores in all study areas

## Conclusion and Recommendations

The study concludes that key factors that contribute to resource scarcity and insecurity in the Karamoja cluster region of Kenya, Uganda, South Sudan and Ethiopia are a low cash economy, poverty, cattle rustling, retaliatory actions, and marginalisation. However, market cartels, corruption, and territorial protection were only minor factors attributable to active government participation in operations involving the production and trading of livestock internally and across international borders. The governments have enacted regulations aimed at safeguarding herders and traders, while also imposing penalties and punishments on those who exploit these initiatives.

Resource scarcity and insecurity significantly affect pastoral economies and markets through a number of factors, including competitive rivalry, livestock losses from mortality and theft, exploitation of predominantly illiterate herders and traders, market dysfunction, restricted equity, and terror in livestock production zones and markets. Digitization, continuous access to resources for livestock production, the recovery of animals that have been stolen, market functionality, competitiveness, profitability, and equitable trading in both domestic and international livestock and commodity markets are the major actions that can be implemented to mitigate the effects of these triggers.

### Areas for Future Research

The management of cross-border trade dynamics, climate resilience for pastoralists in arid locations, and the digitalisation of banking in rural areas are some of the areas for future studies.

### Disclaimer

- The views stated in this article are those of the author and do not necessarily represent those of any of the entities mentioned.

### Interest Conflicts

- The author declares no conflict of interest whatsoever in this publication.

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