REVIEWED JOURNAL of INTERNATIONAL SOCIAL SCIENCE & HUMANITIES
[ISSN 2663-127X]

Vol. 7, Iss. 1 (2026), pp 724 - 739, November 2, 2026. www.reviewedjournals.com, ©Reviewed Journals

DISTRIBUTION OF WATER RESOURCE CAN BE A CONFLICT MANAGEMENT TOOL AMONG PASTORALIST COMMUNITIES IN TURKANA COUNTY

Ismail Ali Omar [1] & Benjamin Kimolo, PhD [2]

[1] *Department of Public Policy and Administration, Kenyatta University, Nairobi, Kenya*
[2] *Lecturer, Department of Public Policy and Administration, Kenyatta University, Nairobi, Kenya*

Accepted: October 15, 2026

ABSTRACT

Water scarcity and frequent conflicts over limited water sources remain a major challenge to pastoralist populations in the Turkana County in Kenya, threatening their livelihoods, social unity and harmonious coexistence. This study sought to assess how the water resource is apportioned and how the conflicts between pastoralist groups in Turkana County, Kenya are managed. The objectives of the study were to assess the effect of water availability and accessibility on conflict management in pastoralist communities, examine how water resource distribution affects conflict management among pastoralist communities and the impact of water-related conflicts on the conflict management systems in Turkana County. Common-pool resource theory and conflict-resolution theory was used to inform the research. The study was based on a descriptive and inferential design. The target population comprised of 6,721 pastoralists residence and 35 department of water officials in Turkana County. By use of Yamane method of determining sample size resulted in a sample population of 370 people and 8 key interview informants to participate in the research. The selected respondents' views were captured to gather data through the use of questionnaires and key informant interviews. The quantitative data was analysed through the use of descriptive statistics, frequencies, percentages, mean and standard deviation, which was presented in tables. The qualitative data was thematically analysed and was subsequently organized into major themes, such as water scarcity, allocation practices, and conflict management mechanisms, supported by direct narratives of County water officals. The findings demonstrated that unfair water allocation is a factor in conflicts, and that inclusive and community-based approaches to managing conflicts lead to peaceful sharing of resources.

Key Words: *Water Availability and Accessibility, Water Resource Distribution, Water-Related Conflicts*

CITATION: Omar, I. A., & Kimolo, B. (2026). Distribution of water resource can be a conflict management tool among pastoralist communities in Turkana County, Kenya. *Reviewed Journal International of Social Science and Humanities*, 7 (1), 724 – 739.

INTRODUCTION

Water resources are a vital foundation of livelihood, social stability, and security among pastoralist communities in dry and semi-arid regions (Safari, 2024). In Turkana County, the issue of water scarcity due to climatic variability, frequent droughts and degradation of the environment has increased the level of competition in the common water sources. Wambua (2022) this state of affairs puts water resource allocation, conflict management, water governance and sustainability measures in the center of pastoralist survival and inter-communal relations.

Water shortage in the world has been a major source of livelihood insecurity and conflict particularly among populations who depend on natural resources (Berger, 2023). Research articles published in Water Resources Research (2022) and Environmental Science and Policy (2021-2024) demonstrate that the inclusion of stakeholders, explicit water entitlement regimes, and adaptive allocation models are important to enhance compliance and lessen contestation between users in common river basins. These observations are supported by recent basin-wide analyses that emphasize that fragmented governance systems are likely to enhance competition especially in a situation of scarcity.

Water scarcity and competition are salient in Australia, where the frequency of droughts and climatic variability, especially in pastoral and agricultural areas, has been observed (Murray, 2020). Modern evaluations of the Murray-Darling Basin show that even with the long-term reforms, water sharing problems still exist, especially at the times when the drought and climate stress are prolonged. According to the OECD (2023) and the Australian National Water Commission updates (2022), the most effective way to reduce water allocation conflicts is to have a transparent governance system that is legally enforceable and responsive to climatic variability.

In Europe, water conflicts are not as violent, but they are becoming more of an allocation, environmental protection, and transboundary governance conflict, especially due to the mounting climate pressure. According to the latest data, competition between agricultural, industrial, and domestic users increases during drought seasons, particularly in the Southern European river basins, where a lack of water increases the pressure on the existing allocation systems (European Environment Agency, 2023; OECD, 2022). In this framework, the Water Framework Directive of the European Union is a prominent model of governance of the integrated management of water resources that focuses on ecological sustainability and participatory decision-making and equity in cross-sector allocation (European Commission, 2021). The modern literature also adds that effective institutional settings enhance cooperation and decrease conflict through the definition of water rights, the enforcement of compliance, and the increase in coordination between sectors in common basins (UNESCO WWAP, 2023; World Bank, 2022). Even though Europe is vastly different to the pastoralist systems like in Turkana County, its experience highlights that strong and flexible systems of governance are at the center of arbitrating conflicting water needs and avoiding their deterioration into conflict.

Recent studies in Africa have revealed that water scarcity is closely related to pastoralism, climate change, and power politics particularly in dry and semi-arid areas. Recent analyses by the African Development Bank (2022) and the World Bank (2023) suggest that the increasing competition over water and pasture due to climate shocks, especially long-term droughts, is increasing the risk of inter-communal conflict. In many pastoral regions, like the Horn of Africa, the struggle over scarce water resources remains one of the main triggers of local violence, particularly when migration trends are accompanied by a decline in the resource base.

Modern literature emphasizes the fact that the limits of governance have a significant impact on these conflict dynamics. According to the research of the UNDP (2021) and IGAD (2023), insufficient formal water governance systems and uneven state presence in remote ASAL areas often force people to use customary and community-based institutions to resolve conflicts and allocate resources. Even though these informal

institutions can enhance resilience, their effectiveness varies depending on their legitimacy, inclusion, and compatibility with government structures.

In East Africa, current developments still indicate that pastoralist water wars are still rampant partly due to the frequent occurrence of droughts, population increase, and highly mobile trans-boundary livelihoods. As assessed by the Intergovernmental Authority on Development (IGAD, 2023) and the World Bank (2022) today, competition over common water resources is escalating in the Horn of Africa, especially in transboundary pastoral corridors due to climate-induced water stress. In Kenya, water-related tensions are most acute in regions with limited, uneven access to water points, and limited availability of these resources throughout the year, such as Turkana County (Wanjohi, 2020).

Recent literature reveals that this kind of competition tends to degenerate into violence when the systems of governance are disintegrated or weak. Research by the Conflict Research Program (London School of Economics, 2021) and UNDP (2022) indicates that disruption of traditional power structures, coupled with weak state capacity in remote ASAL areas, diminishes effective dispute mediation and enhances the risk of inter-communal conflict. The existing literature thus highlights the need to combine traditional systems of governance and formal state-based water management systems to enhance legitimacy, coordination, and adherence in resource sharing.

New studies in Kenya, particularly in dry areas such as Turkana, have shown that water wars are directly linked to competition of boreholes, rivers, and seasonal water pans in times of drought. According to the Kenya National Bureau of Statistics (2023) and NDMA (2024), drought cycles raise the pressure on scarce water resources, fueling inter-communal tensions in the pastoral regions. The current studies also reveal that a poor alignment between traditional institutions and formal systems of water governance is also one of the major factors that limit ability to manage conflicts. Nevertheless, recent policy-oriented research by World Bank (2023) and FAO (2022) show that community-based water management committees, borehole rehabilitation initiatives, and better water drought preparedness planning can significantly mitigate water-related conflicts when done in an inclusive and equitable way.

The Turkana County, located in the north-western part of Kenya is characterised by a semi-arid climate with minimal vegetation and a limited supply of water. Turkana County plays a crucial role in the pastoralist way of life, and a major point of conflict among the communities (Wambua, 2024). Repeated droughts, high climatic variability and few permanent water sources have increased competition over rivers, boreholes and seasonal water pans especially in the dry seasons. Research on northern Kenya has shown that unfair distribution of water resources tend to increase inter-clan and inter-community conflicts, particularly where access regulations lack clarity or are not strictly followed (Mkutu, 2021). In this regard, the water shortage directly combines with pastoral mobility, thereby risking the potential of conflicts over common water sources (Linder, 2022).

In the same way, the effectiveness of local institutions and sustainability measures greatly influence the outcomes of conflict in Turkana. Conventional systems, including councils of elders, are important to mediate access to water, as well as solve disputes, but their impact is more effective in the presence of formal governance systems (Lederach, 2022). Studies also indicate that conflict can be minimized through community-based water management committees, borehole rehabilitation, and drought preparedness programs that enhance access to and predictability of water supply (Ostrom, 2021). The researcher aims to examine the allocation of water resources and conflict management among pastoralist groups in Turkana County, Kenya, based on this context.

The problem of water scarcity is a constant world problem, particularly in arid and semi-arid regions where the changes in climate, population growth, and unsustainable use of resources are putting an increasing burden on the limited water resources (Adono, 2020). Climate change, long-term droughts, and unpredictable rain

patterns have also decreased the availability of surface and ground water and competing needs by agriculture, household consumption, and livestock have exacerbated scarcity. Poor water infrastructure and poor governance systems in most developing regions also contribute to the scarcity, thus hindering access to safe water. Consequently, water scarcity not only limits economic practices and food security, but it also increases susceptibility among communities whose means of livelihood rely directly on natural resources, and access to water is a paramount development and security issue.

Water scarcity characterizes the environmental and socio-economic conditions of Turkana County, where the arid climate, low and unpredictable rainfall, and extensive reliance on seasonal rivers and boreholes are the main factors (Lemayen, 2023). The livestock pastoralist livelihoods are dependent on water accessibility, thus scarcity is a major source of tension particularly during the extended dry seasons. Inadequate and unbalanced water infrastructure compels communities to share and compete on a limited number of water points and hence the probability of conflict and disagreement is high. Mutahi (2022) emphasizes that frequent droughts also put pressure on available water supplies, and the distance to water points has a disproportionately large impact on the vulnerable population. Therefore, water scarcity in Turkana defines trends of movement, resource struggles, and warfare amongst pastoralists.

Statement of the Problem.

Despite the high investments in the water infrastructure and legislative changes, pastoralist communities in Turkana County continue to face water resource conflict over and over again. Previous studies on resource based conflicts in arid and semi-arid areas in Kenya have largely attributed them to the recurring droughts, climatic uncertainties, and environmental degradation, which increase competition over rivers, boreholes and seasonal water pans, particularly during dry seasons. However, the existing literature has majorly focused on environmental and climatic aspects, and little empirical study has been done on the impact of systems of water resource distribution, governance systems and community participation on the outcomes of conflict management at the local level.

Additionally, studies on water allocation often deem it a technical or governmental issue, without delving into an in-depth study on how it interacts with traditional institutions, sustainability efforts, and conflict management mechanisms in pastoralist societies. This creates a big gap in understanding the role of allocation processes in the nature, intensity and management of water-related conflicts in Turkana County. This paper sought to fill this gap by thoroughly examining how the water resource allocation systems, governance frameworks, sustainability measures, and conflict management techniques relate and affect the outcome of conflicts between pastoralist groups in Turkana County.

REVIEW OF RELATED LITERATURE

Empirical Literature Review

Water Resource Allocation

Its centrality in resource-scarce settings in terms of conflict dynamics has been a consistent theme in water resource allocation. Thomas (2021) analyses the correlation between the environmental scarcity, resource distribution, and conflict through comparative case study of various regions under ecological stress. Using a qualitative approach, which integrates both secondary data analysis and comparative historical case studies, Homer-Dixon discovers that conflicts are more prone to occur when water resources are unfairly distributed and where institutions to manage access are weak. His results emphasize that the main causes of conflict are allocation failures and not the absolute scarcity. Nonetheless, the research is more macro-level in nature and it fails to empirically evaluate the impact of allocation systems on the conflict management practices at the community level. This paper sought to address this gap and focus on pastoralists in Turkana County and

empirically investigating the impacts of water resources distribution on local conflict management process including negotiation, mediation and traditional dispute resolution.

Jeremy (2022) offers empirical evidence of the distribution of water resources among pastoralists in northern Kenya. To explain that unequal allocation of water points, especially boreholes, heightens inter-clan conflicts during dry seasons, Lind uses a mixed-method approach, which includes household surveys, interviews with key informants, and focus groups discussions. The analysis reveals that communities who are near well-maintained water infrastructures have lower chances of conflict in comparison to those who are sidelined in allocation systems. Although this contribution provides useful empirical data to support the relationship between patterns of allocation and conflict presence, it fails to address how this interaction of allocation systems in conflict presence is related to formal and informal institutions of conflict management. The present study sought to addresses this gap by directly looking at the connection between water resource allocation and the conflict management outcomes and hence gives a more holistic picture of how allocation systems may either enhance or alleviate conflict among pastoralist communities in Turkana County.

Conflict Management

In pastoralist contexts, conflict management has been a well-known phenomenon in terms of ensuring social cohesion and resource-sharing. Lederach (2019) study examines traditional and community-based conflict management systems in pastoralist communities in East Africa. Analyzing the data through a qualitative method including the in-depth interviews with elders, discussions in focus groups, and participant observation, Lederach arrives at a conclusion that the customary mechanisms of customary water, including councils of elders and negotiated water-sharing agreements, are at the core of the conflicts over the shared resources. Nevertheless, his work mainly records the mechanisms and cultural practices of conflict management without subjecting them to systematic analysis about the role of the mechanisms in The prevalence and severity of water-related disputes. The present research closed this gap by empirically associating the traditional systems of conflict management with the empirical results of such systems in water resource-based conflicts observed in the Turkana County, thus giving quantifiable results concerning the success of these systems.

In a mixed methods study, Mkutu (2023) examined the pastoralist conflict management in northern Kenya, based on the household survey, map of conflict incidents, and interviews with key informants. His results show that the formal and informal conflict management systems are running concurrently where minor conflicts are mediated by the elders and government security forces in severe cases. Although Mkutu shows the relevance of these mechanisms, his article fails to adequately analyze the interplay between conflict management practices and water resource allocation and governance systems. The present analysis bridged this gap by incorporating both allocation and management value and exploring the role of access to water, patterns of distribution and governance in the effectiveness of conflict mediation strategies among pastoralist communities in Turkana County.

Distribution of water resources and conflict management

The Global Environmental Change study (2022) uses a quantitative cross-country analysis based on conflict event data sets and hydrological indicators to examine the relationship between resource allocation and conflict. The study concludes that if water resources are not equally spread across space, it is likely to lead to localized conflicts, especially in areas of low governance. The study does not, however, reflect at the community level how inequalities in distribution influence the process of conflict management.

A comparative case study design is used in a study in Journal of Modern African Studies (2021) in Sahelian and East African pastoral areas, involving both field interviews and policy analysis. The results show that unequal access to water infrastructure like boreholes and wells is a common symptom of political and economic marginalization thereby increasing inter-communal tensions. The research also indicates that the sense of inequity in the distribution of resources is a significant precipitating factor in conflict escalation.

However, the research is mostly descriptive and not quantitative in the measurement of the impact of such inequalities on the effectiveness of institutions of conflict management.

A mixed-methods study published in Regional Environmental Change (2024) in East Africa involves a mix of spatial analysis, climate data, and mapping conflict incidence to study the patterns of pastoral conflicts. The authors find that regions where water resources are not distributed equally are more prone to conflict especially when there is a drought which increases the mobility. Although the research offers valuable spatial information, it fails to effectively investigate how the local governance systems can mediate distribution-related conflicts.

In Kenya, A recent study in African Security Review (2023) employs a qualitative case study methodology employing key informant interviews and focus group talks in ASAL counties, including Turkana. The findings show that inequitable distribution of water points especially boreholes and water pans forces pastoralists to converge in limited areas, thereby increasing competition and weakening traditional conflict management mechanisms. The study also highlights that politicization of water infrastructure development further exacerbates tensions. However, the study does not provide detailed quantitative analysis linking distribution patterns to specific conflict management outcomes.

Obiero et al. (2023) investigates the hydrological fluctuations of Lake Turkana, and how the institutionally-arranged sharing framework of the lake's waters is affected by these fluctuations; however, they state that the fluctuation in distribution of the water caused by changes in inflow to the lake particularly from the Omo river, seasonality of inflows, and the development of upstream land results in localized scarcity among fishing and agro-pastoralist communities. The authors ‘further note that both the focal nature of these water points generates conflict between local communities due to unequal access to these resources, weak governance structures, and inadequate monitoring practices. Obiero et al. suggest that the best approach to mitigate this increased risk of conflict is through inclusive, transboundary, and community-managed approaches to manage the lake's resources; specifically, standardized monitoring systems, enhanced co-management of lake-related infrastructure and equitable allocations of water rights. Mixed methods approach was used in this study. However, detailed analysis of water distribution patterns in Turkana County is lacking.

A 2022 report by International Alert Water, Peace & Security project indicates. Conflicts pertaining to water resources in Turkana County: examination of stakeholder interests and apprehensions, the geographical layout, infrastructure (i.e., pipes) and the influence of actors in the area contribute significantly to the political struggle for water. Boreholes, shallow wells and seasonal riverbeds are the most common source of water; however, the way they are dispersed throughout the land is extremely uneven. Boreholes, shallow wells and seasonal riverbeds are typically located in or near trading centres and administrative hubs (e.g., police stations, schools, government offices), which leaves the rural pastoral areas without adequate access to clean drinking water. This lack of evenness in the distribution of water creates high risk of conflict between the various groups of people who depend on these water sources such as various clan members, livestock proprietors, and urban residents who purchase their water from boreholes/wells. These conflicts become more intense and widespread when there are droughts, because many of the people rely on the same few water sources and the pathways used by the herds move along a limited number of routes.

Governance in Turkana is weak and lacks transparency, and there are overlapping authorities in the governance structure that have further exacerbated issues , primarily over who owns/controls the boreholes/wells, who is responsible for maintaining them and what rules govern access to them. The report suggests that while some mechanisms exist to resolve conflict related to water such as peace committees and customary negotiations, they are generally reactive, lack funding and are often not integrated into the planning of the water system for the county. The authors of the report recommend the development of a mechanism that allows for the inclusion of all stakeholders involved in water use and development in the governance of water

in Turkana County, that equitable investments be made in the water system and that there be better regulations put into place to prevent an increase in water-related tensions. Mixed-methods: interviews, stakeholder mapping, document analysis, and field observations were used in this study. It however provides limited examination of how formal allocation frameworks interact with customary systems and how implementation affects long-term conflict transformation in pastoral contexts.

According to Ngonge, D.N. (2025) policy paper Drivers and resolutions of water-resource disputes in the Lake Turkana Basin, the central issue in Lake Turkana Basin's water dispute is the uneven distribution of water resources such as boreholes, shallow wells and seasonal rivers. This leads to a hierarchical system of accessing water, based on decision-making of authority over allocation of water between pastoralists, agro-pastoral farmers and commercial users of the lake basin. These inequities increase with the severity of drought events, which increases both territorial claims and conflict over movement through the territory and creates increased tension within communities of interest. Based on Ngonge (2025) this is due to the fact that conflict resolution mechanisms currently employed in the Basin are mostly reactive and rely heavily on customary negotiation systems that do not link to county level formal water allocation planning.

This research identifies that successful, sustainable conflict management may require hybrid governance systems using local customary systems, county level regulatory frameworks and all stakeholders. Additionally, the research suggests that strengthening shared use of resources agreements, increasing equity in water infrastructure development, and creating clear allocation frameworks for water use may be critical to reduce repeated disputes and provide long-term water security in the Turkana region. This research employed a mixed-methods approach, incorporating both qualitative and quantitative data collection techniques. Limited empirical evaluation of formal governance effectiveness in managing resource distribution is one of the gaps of this study.

Asokan (2025) examines how the drought in Turkana from 2020-2022 had an impact on both the availability of limited water resources and the governing framework of those resources at the county level. It was found that there was an increasing disparity in the way the resources were distributed as the drought worsened, where some borehole locations close to administrative centres or NGOs received higher priority for their usage than other borehole locations in rural pastoralist zones which had very limited supplies. In addition, this inequitable distribution of the water resources created increased competition for the available resources, and therefore, livestock migrations toward these boreholes and riverbeds increased. It further shows that the mechanisms for managing the conflicts associated with the competition of these water resources were primarily reactive, using security deployments rather than strengthening the structures and mechanisms of negotiation and customary sharing of the water resources.

According to Asokan (2025), sustainable peace may be achieved through establishing transparent procedures in the distribution and fair sharing of water, investing in adaptive water resources management infrastructure, and inclusion of traditional leaders in the official system of local government. The research was based on mixed-methods research involving household surveys and interviews. This study however does not have empirical evaluation of formal systems of conflict resolution and neither does it cover long term structural adjustments to offer equal water supply to pastoralist areas.

Theoretical Review

This research is premised on common-pool resource (CPR) theory and conflict resolution theory.

Common Pool Resource Theory

Common-Pool Resources (CPR) was an idea developed in the late 20th century by Elinor Ostrom. In 1990, her book Governing the Commons was published, which had a great impact in disseminating the concept. The hypothesis came to light in response to the prevailing idea that natural resources are inevitably overused without being privatised or regulated by the government. According to Ostrom, communities can manage common-pool resources such as water, pasture, and fisheries efficiently through the development of community-invented laws and institutions and through collective action. Shared access, well-defined boundaries, collective decision making, supervision and equitable consequences are all emphasized by the theory. The water resources in Turkana County are shared among the pastoralist communities, hence the use of the Common Pool Resource Theory in this research.

Conflict Resolution Theory

In the mid-20th century scholars like Johan Galtung, John Burton and Kenneth Boulding came up with the Theory of Conflict Resolution as a way to address the need to understand and resolve societal issues without the use of coercion or force. The focus is on the importance of tackling the underlying drivers of conflict, such as needs unmet, limited access to resources, and systemic inequalities, rather than just putting a stop to violence. It encourages sustained approaches to conflict resolution, including negotiation, mediation, dialogue and reconciliation. The relevance of conflict resolution theory to our study is that in some instances water disputes occur between pastoralist communities in Turkana County as a result of the competition of limited water sources. It explains how traditional conflict resolution methods, elder mediation and government-sponsored programs can help defuse conflicts, foster cooperation and facilitate the peaceful management of communal water resources.

METHODOLOGY

Research Design

Research methodology used was a mixed methods research. The study was a mixed method research design with descriptive and inferential approach. The primary goal of this design is to provide a "correct" and "full" understanding of the characteristics, context and interrelationships within the research population. According to Creswell (2018), descriptive research is appropriate for research that seeks to understand the current state of phenomena and to document the patterns in authentic settings. The study adopted descriptive approach to examine the issue of water resource allocation and conflict management among pastoralist groups in the County of Turkana using water availability, access, distribution and water related conflict as factors to consider.

The inferential aspect also allowed this study to move beyond description and to examine relationships among key variables and to make inferences about the larger population. Specifically, Inferential statistics was used to determine the extent to which factors of water resource allocation like availability, access and distribution affect the outcomes of conflict management.

The mixed research design allows for integration of quantitative and qualitative data-collection techniques, namely structured questionnaires and Key Informant Interviews, which further enhances the validity of the findings by means of triangulation. The descriptive approach systematically recorded the level of water access, distribution patterns and water related conflicts, while the inferential approach tested the relationships between variables to test evidence-based conclusions. In conclusion, this integrated design offered a comprehensive and academic approach to understanding water related conflicts and to policy and practice in Turkana County.

Target Population.

The study's target population was sourced from Lobo Kat ward, Turkana South Sub-County, Turkana County, which has an estimated adult population of 6721. Additionally, the study's population included; County government officials working within the Ministry of water and members of water management committees.

Table 1: Target Population

Category of Respondents	Population
Residence of Turkana South	6721
Ministry of water officials in Turkana County	35

Sampling Methods and Sample Size

Sampling Method

This study employed stratified sampling and simple random sampling to generate an impartial sample of the population and enhance the study's representational precision. In the initial phase, the researcher employed stratified sampling to establish population strata based on characteristics that are likely to yield homogeneous groups, including sub-county, stakeholder type, and their participation in water distribution management and conflict resolution. The strata were established using a stratified sampling method and then specific individuals were selected from each stratum using simple random sampling. The simple random sampling method gives all the members of each stratum an equal chance of being selected, which increases the representativeness of the sample and the validity of the results of the study, and decreases the risk of selection bias. Respondents for key informant interviews were chosen using purposive sampling. Purposive sampling is suitable as key informants are chosen based on their expertise, experience, or status pertinent to the research subject. This guarantees that the information gathered is precise, comprehensive, and immediately pertinent to comprehending the issues being examined.

Sample Size

The Yamane (1967) formula was used in order to determine the sample size, which should be large enough to give statistical significance and to represent the population. The sample size is detailed below.

$$n=\frac{N}{1+Ne^2}=\frac{6721}{1+6721*0.05^2}=377.53\cong 378$$

n = Sample size (?) N = Population size (6721) e = margin of error (5%)

Table 2: Sample Distribution

Category	Population	Sample
Residence of Turkana South	6721	378
Ministry of water officials in Turkana County	35	8
Totals	**6756**	**386**

Research Instruments

Two main data collection instruments were used in the study: structured questionnaires and key informant interviews. Structured Questionnaires was administered to residence of Turkana south. Structured questionnaires were designed to produce quantitative data about access and distribution of water resources, perceptions of the effectiveness of existing water governance structures and the effectiveness of mechanisms

designed to manage conflicts related to water. They allow for the systematic collection of standardized data which can be compared across different respondent groups; and support an objective assessment of the results of the study.

The key informant interview was conducted with the officials from the Ministry of water in Turkana County. The interviews provided detailed information on institutional roles and responsibilities, implementation of the policies, and issues arising from water access and conflict resolution. This approach captures detailed contextual data that would not be captured by standardised questionnaires, especially when trying to understand governance challenges. Besides, secondary data was gathered from county records which complemented the findings of this study from the two research tools. Together, these two methods of data collection provided a comprehensive and reliable set of objective data that is relevant to this project's research objectives.

Data Analysis and Presentation

Quantitative data from the questionnaires was analysed using descriptive and inferential statistical techniques such as frequency distribution, mean and standard deviation using SPSS Version 27. The quantitative data was presented using tables, charts, and graphs to clarify the data. Qualitative interview data was analysed using thematic analysis, identifying commonalities and themes across data such as water shortages, water allocation, water governance and managing water-related conflicts. The study results were presented using tables, figures and narratives to give a comprehensive understanding of the study subject.

FINDINGS

Questionnaire and Interview Return Rate

Questionnaire Return Rate

According to Kombo and Tromp (2006), the response rate refers to the extent to which the collected data includes all the sampled members. The response rate is determined by calculating the number of questionnaires collected from the respondents. 378 questionnaires were issued in total to the respondents; 362 questionnaires were returned making the questionnaire return rate to be 96% percent.

Table 2: Questionnaire Return Rate

Respondents	Questionnaires Issued	Questionnaires returned	Response Rate
Residence	378	362	96%

Source: Field Data (2026)

Mugenda and Mugenda (2003), asserts that a 60 percent response rate is good whereas 70 percent or more is better for social sciences. Orodho (2004) adds that a response rate of 50 percent and above is sufficient for data analysis. The data from the other surveys were not included in the findings since they were not returned.

Transparency of Water Distribution

Respondents were asked to indicate how transparent the process of distributing water resources was in their area.

Table 3: Transparency of Water Distribution

Level of transparency	Frequency (f)	Percentage (%)
Very transparent	54	14.9
Transparent	93	25.7
Moderately transparent	112	30.9
Not transparent	103	28.5
Total	**362**	**100.0**

Source: field data, 2026.

The results indicated that the distribution of water had been moderately transparent, with 30.9% of the respondents categorizing it as such. Another 25.7% considered it to be transparent and 14.9% to be very transparent. On the other hand, 28.5% felt the process was not transparent. Thus, although 71.5% perceived the process to be at least moderately transparent, only 40.6% considered it either transparent or very transparent. The results show that transparency of water distribution is still a matter of governance concern. If the community members are not clearly aware of how the decisions about water allocation are made, the perception of unfairness could arise. For water projects in Turkana County, Njaya and Muna (2022) found that transparency practices were not fully implemented, indicating poor transparency and accountability in water-project governance.

Likewise, Kilaka and Schubiger (2023) show that institutional context for water provision in Turkana may be complex, especially when the responsibility for water provision is shared between external actors, county government and local communities. This institutional complexity can complicate the identification of the responsible parties for water provision and the process of making water allocation decisions. The finding also corroborates with Sabala (2013) who called on pastoralists in Turkana to pay attention to governance and institutional structures in environmental-resource conflicts.

Perception of Equitable Water Distribution

Respondents were also asked whether they considered water to be equitably distributed among users in their area.

Table 4: Perceived Equity in Water Distribution

Response	Frequency (f)	Percentage (%)
Yes	177	48.9
No	143	39.5
Not sure	42	11.6
Total	**362**	**100.0**

Source: field data, 2026.

48.9% of the respondents said water was fairly distributed according to user demand, while 39.5% disagreed and 11.6% were unsure. The results thus suggest a relatively polarized perception of an equitable distribution. Nearly half of the respondents felt that the distribution of water was fair, but significant numbers felt there were inequities in access.

The finding is significant as pastoralists rely heavily on common water resources, and inequalities in access can lead to grievances among users. Besides physical scarcity, institutional arrangements for access and control influence conflicts over water in pastoral areas, as found by Agade et al. (2022). They highlight the importance of the weaknesses in the present governance framework in destroying the capacity of institutions to manage conflicting interests in water resources. Likewise, Kramm et al. (2025) suggest that water conflicts can not be attributed to water scarcity. Their results show that equitable resource sharing is possible both inside and outside of formal institutions; however, when access to water is politicized and commodified, it can create a challenge for institutions ensuring equitable water sharing.

Established Mechanisms for Water Distribution

The respondents were further presented with statements concerning the existence and functioning of mechanisms for water distribution.

Table 5: Respondents' Views on Established Water Distribution Mechanisms

Statement	SD%	D%	N%	A%	SA%	Mean	Std.Dev.
There is an established system for distributing water in this community.	12.4	17.4	13.3	35.6	21.3	3.36	1.32
The water distribution system is clearly defined and structured.	13.5	19.3	14.4	33.1	19.6	3.26	1.33
The water distribution mechanism is formally recognized by community members.	11.6	18.0	15.2	34.8	20.4	3.34	1.30
The same water distribution procedures are applied consistently to all users.	15.7	19.9	16.0	30.7	17.7	3.15	1.35
Average	**13.3**	**18.7**	**14.7**	**33.6**	**19.8**	**3.28**	**1.33**

Source: field data, 2026.

The results show that 56.9% agreed or strongly agreed that their community had a system established to distribute water. Likewise, 52.7% stated that they agreed or strongly agreed the system was well defined and structured. In terms of recognition by community members, 55.2% agreed or strongly agreed. This was, however, a relatively low 48.4% who felt the same distribution method was used for everyone. This indicates that there might be mechanisms in place to distribute water, but their implementation might not be felt as even. The results are consistent with those of Nori and Gemini (2021) who highlighted that customary institutions and negotiated arrangements that govern access to common resources are often the basis of pastoral resource governance. Collective institutions are also crucial in managing common pool resources as was found in Kenya by Mwangi and Mburu (2018).

Specifically, in pastoral areas where modern governance institutions have been implemented, indigenous water access governance institutions still remain as a mechanism of regulating water access and mitigating water resource conflicts, as found by Mkutu et al. (2022). Sabala (2023) also showed that governance institutions and norms play a critical role in preventing, managing and resolving conflicts among pastoralists for Turkana.

Transparency in Water Distribution

Table 6: Respondents' Views on Transparency in Water Distribution

The manner water is distributed to users is clearly explained to everyone in the community.	14.1	20.2	15.2	32.0	18.5	3.21	1.34
Community members can easily observe or verify how water is being distributed.	15.2	20.7	16.3	29.8	18.0	3.15	1.35
There is openness in how water distribution priorities are determined on a daily or weekly basis.	16.3	21.3	17.1	28.7	16.6	3.08	1.35
Average	**14.7**	**20.3**	**15.7**	**31.3**	**18.2**	**3.18**	**1.34**

Source: field data, 2026.

It can be seen from the results that 54.1% agreed or strongly agreed that the water distribution was transparent. Likewise, 50.5% said that distribution processes were explained to community members. But, only 47.8% agreed or strongly agreed that it was easy to observe or check how water was distributed by community members. The smallest percentage of agreement (45.3%) was regarding transparency in establishing the daily or weekly priorities for water distribution, again indicating some level of transparency but perhaps not full transparency in water allocation decision making. This is important because transparency is not just about rules, it's also about making allocation decisions transparent and visible to users. The results of their study by NJaya and Muna (2022) revealed that transparency practices in the water projects of Turkana were not fully utilized, thus transparency is one of the areas that require improvement in water governance. Moreover, Kramm et al. (2025) contend that institutions tasked with managing water resources can be

weakened when water access is politicized or commodified, which can lead to unequal access. Additionally, Kramm et al. (2025) suggest that as water access becomes politicized or commercialized, institutions tasked with managing water resources can become weakened, leading to unequal access.

Equitable Distribution of Water

Table 7: Respondents' Views on Equitable Water Distribution

Statement	SD%	D%	N%	A%	SA%	Mean	Std. Dev.
All pastoralist households have equal opportunity to use water points without discrimination.	17.4	21.0	13.3	30.1	18.2	3.11	1.39
Rules governing water access are applied equally to all users.	16.0	19.6	15.2	31.2	18.0	3.16	1.36
Access to water is not influenced by social status, wealth, or influence in this area.	20.4	22.9	14.9	25.1	16.6	2.95	1.40
The current water distribution arrangements meet the needs of different user groups equally.	19.1	21.5	16.0	27.1	16.3	3.00	1.38
Average	**18.2**	**21.3**	**14.9**	**28.4**	**17.3**	**3.05**	**1.38**

Source: field data, 2026.

The findings indicate that 48.3% of respondents agreed or strongly agreed that pastoralist households had equal opportunities to use water points, while 38.4% disagreed or strongly disagreed. Similarly, 49.2% agreed or strongly agreed that rules governing water access were applied equally to all users. However, only 41.7% agreed or strongly agreed that access to water was not influenced by social status, wealth or influence. Likewise, 43.4% agreed or strongly agreed that existing distribution arrangements met the needs of different user groups equally.

These findings indicate that perceptions of equity were weaker than perceptions concerning the mere existence of distribution mechanisms. In other words, having a water distribution mechanism does not necessarily mean that all users perceive the outcomes as equitable. This observation is supported by Kramm et al. (2025), who found that equitable resource sharing is possible in northern Kenya through formal and informal institutions, but that politicization and commodification can undermine equitable access. Likewise, water institutional failures can create conflicts around access and control to water resources, and indigenous institutions can still serve as channels to resolve water conflicts (Mkutu et al., 2022). International Alert (2022) in the Turkana context concluded that water-related conflicts were influenced by the interplay between water availability, competing interests and institutional arrangements. Key informant interviews and stakeholder analysis were conducted in Turkana North and Turkana Central, highlighting the need to consider the institutional aspects of water-related conflicts.

CONCLUSIONS AND RECOMMENDATIONS

The study also found that water management and equitable distribution of water was significant in fostering peaceful co-existence and effective conflict management. The lack of equal distribution, the unequal treatment, and the unequal application of water access rules were mentioned by respondents as potential factors to dissatisfaction and disputes. The inferential statistical analysis showed that there was a statistically significant relationship between water resource distribution and conflict management, indicating that the distribution of water resources in a fair, transparent and equitable manner was associated with better conflict management results. The county officers also reported that water distribution was based on the needs of the community, infrastructure, population pressure, livestock demands, and the institutional context. They stressed the need for greater community involvement, clear allocation mechanisms, and better community-institution collaboration to enhance the efficiency and equity of water distribution.

The qualitative results corroborated the quantitative results, with county officers stating that local elders, community leaders, peace committees, water management committees and county institutions were all active and important in resolving water related conflicts. The officers also noted that conflict management is a process that needs to be done early and can be executed through dialogue, community involvement, water sharing, and coordination between relevant institutions. The overall study resulted that good water resource management and fair access to water resources were critical for peaceful coexistence among the pastoralist communities in Turkana County, along with equitable distribution and effective mechanisms for handling water conflicts.

The study findings show that water resource allocation has an impact on the management of conflict among pastoralist communities in Turkana County, Kenya. The results showed that water resources availability plays an important role in relation to conflict management. In areas where water was relatively accessible and dependable, competition between pastoralist groups was lowered and peaceful interactions increased. However, poor and unreliable water sources exacerbated the strain on the available water points, and led to conflicts among users.

The study further concluded that accessibility of water significantly influences conflict management among pastoralist communities in Turkana County. Long distances to water sources, institutional restrictions, delays, and difficulties in accessing water were found to increase competition and disagreements among community members. Therefore, improving physical and institutional access to water would contribute to reducing water-related disputes and strengthening peaceful coexistence.

In relation to water distribution, the study found that there is a need to have equitable, transparent and structured water distribution mechanisms to ensure effective conflict management. A fair distribution of water decreases the sense of being excluded, discriminated against, and treated differently by water users. On the other hand, ambiguous distribution process and unequal distribution can lead to dissatisfaction and result in conflicts within and between pastoral communities.

Lastly, the study found that water related conflicts have a significant impact on conflict management mechanisms in pastoralist communities of Turkana County. Clashes over scarce water sources, inequitable distribution, livestock grazing and higher demand in dry seasons were significant causes of conflict. While water conflicts were sometimes settled by discussion and by the traditional means, in the event of scarcity of resources, it could go beyond verbal disagreements. It therefore culminates the study that the enhancement of water availability, access and equitable distribution, effective conflict resolution mechanisms is important to achieve sustainable peace in pastoralist communities of Turkana County.

The study recommended the strengthening of water distribution systems to give pastoralist communities transparency, consistency and equity in water distribution. Specifically, the County Government and community water management committees should have clear criteria and procedures for distributing water resources and communicate these procedures clearly to all water users. There's also the need to ensure equal application of water distribution rules and to avoid any discrimination based on social status, wealth, influence and community affiliation. Community involvement in setting water distribution priorities should also be increased to minimize water distribution inequity and exclusion.

REFERENCES

Adano, W. R., & Witsenburg, K. M. (2009). Of rain and raids: Violent livestock raiding in northern Kenya. Civil Wars, 11(4), 514–538. https://doi.org/10.1080/13698240903403915

Adono, L. (2020). Water scarcity and development challenges in arid regions.

African Union. (2023). Policy framework for pastoralism in Africa: Securing, protecting and improving the lives, livelihoods and rights of pastoralist communities. African Union Commission.

Asokan, S. M., Kweyu, R. M., Makokha, M., & Obando, J. A. (2025). Prolonged drought and governance challenges in Turkana County, Kenya – Access to water and livelihood changes. Environmental Development, 101, 101193.

Catley, A., Lind, J., & Scoones, I. (2020). Pastoralism and development in Africa: Dynamic change at the margins. Routledge.

Constitution of Kenya. (2010). The Constitution of Kenya. Government Printer.

Food and Agriculture Organization. (2022). Water governance and pastoral livelihoods in Africa. Food and Agriculture Organization of the United Nations.

Galaty, J. G. (2016). Boundary-making and pastoral conflict along the Kenyan–Ethiopian borderlands. African Studies Review, 59(1), 85–107.

Gleick, P. H. (2018). Water, conflict, and peace. Open Rivers: Rethinking Water, Place & Community, (11). https://doi.org/10.24926/2471190X.4697

Government of Kenya (GoK). (2018). Kenya population and housing census: Volume I – Population by county and sub-county. Kenya National Bureau of Statistics.

Government of Kenya. (2025). Kenya Vision 2030: A globally competitive and prosperous Kenya.

Government of Kenya. (2023). National Climate Change Response Strategy (NCCRS). Ministry of Environment and Mineral Resources.

Government of Kenya, County Government of Turkana. (2023). Turkana County Integrated Development Plan (CIDP) 2023–2027 [Development plan].

Greiner, C. (2023). Guns, land, and votes: Cattle rustling and the politics of boundary (re)making in Northern Kenya. African Affairs, 112(447), 216–237.

Hamro-Drotz, D. (2024). Livelihood security: Climate change, migration and conflict in the Sahel. In Conflict-sensitive adaptation to climate change in Africa (p. 195).

International Alert & Water, Peace and Security (WPS) Partnership. (2022). Water-related conflicts in Turkana County: Analysis of drivers and responses

International Livestock Research Institute. (2022). Pastoral livelihoods and resource competition in northern Kenya.

Intergovernmental Panel on Climate Change. (2022). Climate change 2022: Impacts, adaptation and vulnerability.

Kameno, J. (2023). Traditional conflict resolution mechanisms in arid and semi-arid lands of Kenya.

Kenya National Commission on Human Rights. (2024). Are we under siege? The state of security in Kenya: An occasional report (2010–2014). Kenya National Commission on Human Rights.

Lesorogol, C. K. (2020). Guns and governance in the Rift Valley: Pastoralist conflict and small arms by Kennedy Agade Mkutu (Review). The Journal of Modern African Studies, 48(1), 178–179.

Mugenda, O. M., & Mugenda, A. G. (2003). Research methods: Quantitative and qualitative approaches (2nd ed.). ACTS Press.

Ngonge, D., Nyukuri, E., & Muigua, K. (2023). Stakeholder involvement in water resource–related conflict management in the Lake Turkana Basin of Kenya. Kabarak Journal of Research & Innovation, 13, 26–36.

Njaya, T. K., & Muna, W. (2022). Transparency practices and sustainability of water projects in Turkana County, Kenya. Journal of Public Policy and Governance, 2(1), 26–34. https://doi.org/10.70619/vol2iss1pp26-34

Nori, M., & Davies, J. (2007). Change of wind or wind of change? Climate change, adaptation and pastoralism. World Initiative for Sustainable Pastoralism, IUCN.

Nori, S., & Gemini, M. (2011). The common agricultural policy vis-à-vis European pastoralists: Principles and practices. Pastoralism, 1(1), Article 27. https://doi.org/10.1186/2041-7136-1-27

Obiero, K., Wakjira, M., Gownaris, N., & Malala, J. (2023). Lake Turkana: Status, challenges, and opportunities for collaborative research. Journal of Great Lakes Research, 49(6), 102120.

Omolo, N. (2021). Gender and climate change-induced conflict in pastoral communities: Case study of Turkana in north-western Kenya. African Journal on Conflict Resolution, 10(2), 81–102.

Safari, S. N., & Wambua, P. P. (2024). Water scarcity role on violent conflicts amongst pastoralist communities in Tiaty Sub-County, Baringo County Kenya. *Rev. J. Soc. Sci. Humanit*, *5*, 137-163.

Schilling, J., Akuno, M., Scheffran, J., & Weinzierl, T. (2014). On raids and relations: Climate change, pastoral conflict and adaptation in north-western Kenya. In S. Bronkhorst & U. Bob (Eds.), Conflict-sensitive adaptation to climate change in Africa (pp. 241–268). Berliner Wissenschaftsverlag.

Scoones, I., & Nori, M. (2023). Living with and from uncertainty: Lessons from pastoralists for development. In Pastoralism, uncertainty and development (pp. 119–140).

Swain, A., & Öjendal, J. (Eds.). (2023). Routledge handbook of environmental conflict and peacebuilding. New York: Routledge.