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TURBULENT WATERS, TROUBLED SHORES:

THE TWIN THREATS OF CLIMATE CHANGE AND CONFLICT ON VULNERABLE COMMUNITIES AROUND LAKE TURKANA

About this report

This technical report is part of a UN World Food Programme (WFP)-commissioned research initiative under the "Sustainably Unlocking the Economic Potential of Lake Turkana" program. The overarching objective of this multi-year investment is to improve food security and the economic well-being of vulnerable populations living in the Lake Turkana region, who face significant challenges due to climate change. To support the program's research and learning agenda, the WFP commissioned International Alert to conduct an in-depth conflict analysis in Marsabit and Turkana counties, particularly the areas surrounding Lake Turkana, to inform the program's design. The purpose of this collaboration is to explore ways for WFP to gain a deeper understanding of the root causes and dynamics of conflicts, including but not limited to factors related to climate change, as well as social, political, environmental, and economic issues.

Taking a climate security lens, the study maps out existing and potential climate change-induced security challenges in the two counties, highlighting how climate change can act as a risk multiplier, intensifying the root causes of conflict and instability. Additionally, the analysis identifies the most affected groups within the community. It provides a strategic roadmap for WFP and its implementing partners to effectively incorporate peacebuilding, conflict resolution, and inclusiveness into the design and execution of conflict-sensitive program interventions.

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Cover photo credit: Achiba Gargule/International Alert

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Executive Summary

Overview

The Lake Turkana Basin continues to grapple with challenges stemming from climate change and resource-based conflicts, creating a complex context for humanitarian and development challenges. Primary livelihoods such as pastoralism and fishing remain fundamental to resilience in the region. However, significant transformations in these systems and the growing reliance on other non-livestock livelihood strategies highlight the need to support diverse and additional livelihoods. Climate-change-driven resource scarcity and inequalities in access to water, grazing land, and fishing grounds have fuelled tensions, escalated conflicts, and hindered the recovery of primary livelihoods.

As a result, many households are increasingly transitioning to adaptive livelihood strategies, leveraging emerging opportunities to build resilience. These livelihood transformations unfold within a broader context of polarized dynamics in the Lake Turkana Basin, shaped by historical socio-political marginalization. While restoring traditional livelihood systems remains a critical production strategy, fostering new, adaptive systems is equally important to support communities in navigating the challenges of climate change and achieving sustainable recovery.

This report adopts a climate security lens to analyse the links between climate change and conflict in the Lake Turkana Basin. The Basin provides a critical context for understanding how climate change impacts—drought, access to fishing resources, water scarcity, and competition for grazing and pasture lands—can drive conflicts, particularly among pastoralist, agro-pastoralist, and fisherfolk communities.

While climate change significantly influences conflict dynamics in this ecosystem, it is not the sole driver. Other critical factors include ethnopolitical tensions, cultural challenges, the erosion of customs and traditional institutions, and the impact of broader regional conflicts. Climate change functions as a “threat multiplier” intensifying security risks and conflicts by interacting with existing environmental, economic, social, and political stressors in the region. These interactions amplify persistent challenges such as weak resource management and conflict resolution institutions, historical mistrust between communities, and entrenched social divisions, thereby increasing the likelihood and severity of conflicts.

Key findings and messages

The key insights from this report relate to the intricate connections between climate change, livelihoods, and conflict, highlighting the challenges of climate impacts such as droughts, floods, and consequently, livelihood disruption and displacement.

- Climate impacts such as droughts and floods that drive livelihood transformation in the Lake Turkana region disproportionately affect marginalized groups such as women, children, and ethnic minorities and intensify competition for scarce water and grazing land.

- Systemic factors, including the historical marginalization and exclusion of minority groups from natural resources governance, influence the ongoing livelihood transformations in the region. These long-standing inequalities continue to shape present-day competition over scarce natural resources and contribute to conflict dynamics.

- The weakening of customary institutions and social support systems, along with the loss of traditional livelihoods, diminishes the protection and resilience of vulnerable groups, making them more susceptible to the adverse effects of conflict. At the same time, transboundary governance challenges along the Kenya-Ethiopia border, compounded by weak formal institutions and strict conservation enforcement practices, further escalate tensions and deepen mistrust among communities.

- While community-level adaptation strategies help manage droughts and resource conflicts, their long-term sustainability is uncertain due to intensifying climate-conflict risks, weakening customary institutions, and the proliferation of various actors driving competition for resources and conflict in the region. Efforts to regulate water, grazing lands, and fishing resources show some success but remain insufficient to address these escalating challenges fully.

Finally, the report outlines the four key pathways that link climate change to conflict in the Lake Turkana Basin:

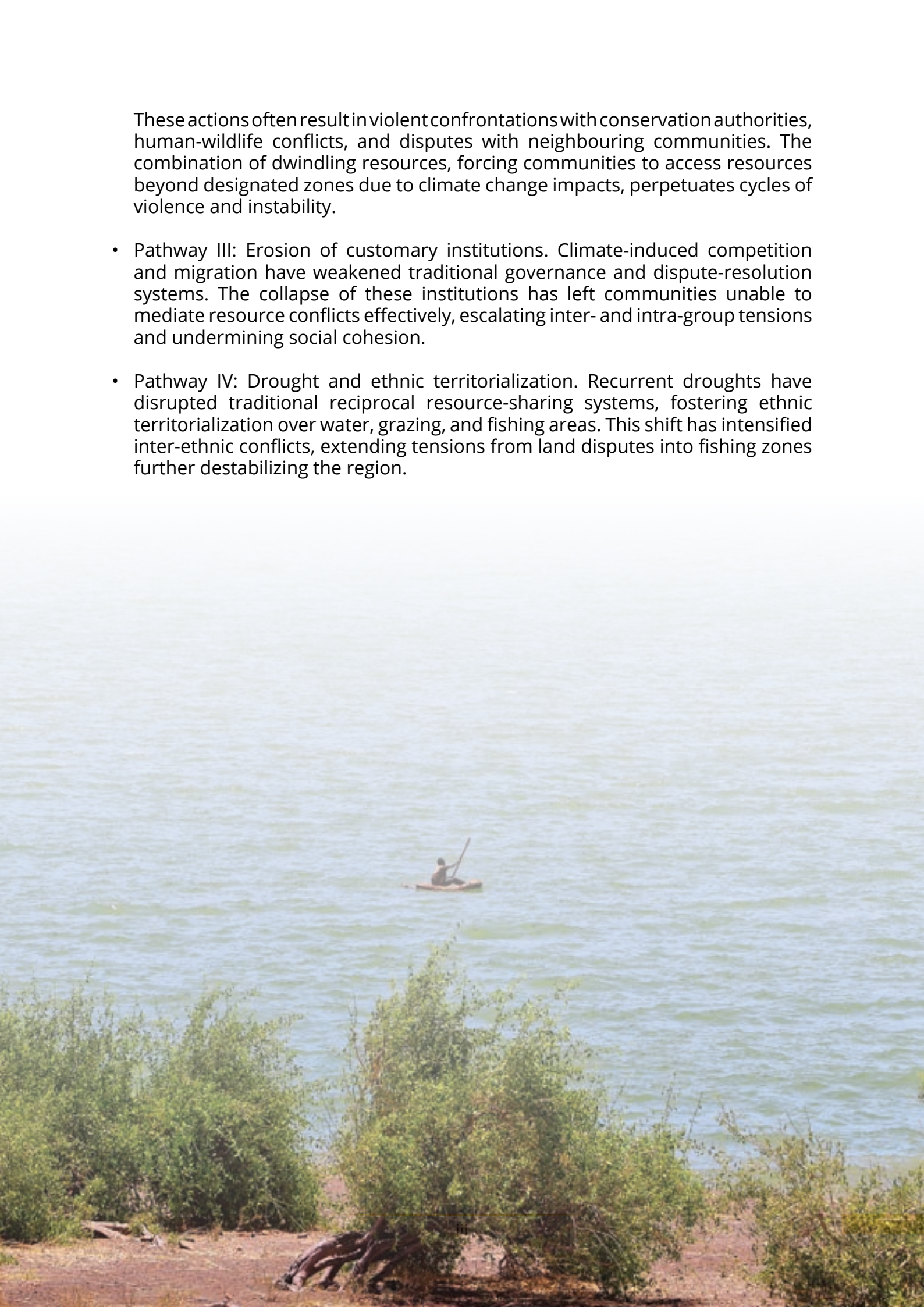
- Pathway I: Competition over scarce natural resources. Climate change exacerbates resource scarcity, intensifying competition over water, grazing land, and fishing grounds. Prolonged droughts and unpredictable rains force pastoralists and fishers into conflicts over dwindling resources, while conservation regulations and in-migration compound tensions. The result is frequent violence, destabilized livelihoods, and increased poverty.

- Pathway II: Risk-taking and resource encroachment. Reduced livelihood productivity due to environmental pressures incentivizes high-risk behaviours, such as pastoralists encroaching on protected areas and grazing on neighbouring communities' lands, as well as fishers operating in protected breeding areas and beyond their designated fishing zones.

These actions often result in violent confrontations with conservation authorities, human-wildlife conflicts, and disputes with neighbouring communities. The combination of dwindling resources, forcing communities to access resources beyond designated zones due to climate change impacts, perpetuates cycles of violence and instability.

- Pathway III: Erosion of customary institutions. Climate-induced competition and migration have weakened traditional governance and dispute-resolution systems. The collapse of these institutions has left communities unable to mediate resource conflicts effectively, escalating inter- and intra-group tensions and undermining social cohesion.

- Pathway IV: Drought and ethnic territorialization. Recurrent droughts have disrupted traditional reciprocal resource-sharing systems, fostering ethnic territorialization over water, grazing, and fishing areas. This shift has intensified inter-ethnic conflicts, extending tensions from land disputes into fishing zones further destabilizing the region.



Implications for programming and future research

While climate change and conflict are deeply interconnected in the Lake Turkana Basin, identifying the key drivers and interactions is essential for developing effective intervention strategies. Community-level adaptation measures may appear successful in addressing specific climate stresses in the short term, such as seasonal droughts and related resource conflicts among herders. However, when considered within the broader context of climate risks increasing in frequency and intensity and their role in intensifying conflicts, their long-term sustainability becomes less certain. Effective climate resilience strategies must balance immediate responses to acute climate-induced conflicts with building long-term adaptive capacity for households and communities. This requires a systematic approach to supporting livelihoods in transition through research and evidence-based policymaking.

Findings from this study highlight the need for targeted, context-specific resilience-building interventions that address the unique challenges faced by vulnerable communities. WFP and its partners must account for the livelihood transformations in the region, where traditional practices such as pastoralism and fishing are diminishing, and resource competition is intensifying. A shifting landscape of risks and conflict motives requires that resilience programming—spanning livelihoods, climate adaptation, and peacebuilding—be integrated from the design phase to monitoring and evaluation. Tracking the impact of new and potentially transformative approaches is essential to ensure effective learning and knowledge-sharing across development and humanitarian actors.

An approach that only considers traditional livelihoods' role in conflict and climate adaptation or alternative and emerging livelihood options would fail to capture the broader dynamics shaping resilience in the region. Instead, WFP and its partners should integrate immediate, medium-term, and long-term strategies to address livelihood and climate challenges. Immediate interventions should focus on responding to the acute needs of communities affected by climate change-driven conflict through climate-adaptive livelihood programs, strengthened social protection, and targeted measures to safeguard vulnerable populations.

In the medium term, interventions should support traditional and diversified livelihoods, ensuring that pastoralism and fishing remain viable while facilitating the transition to non-livestock-based economic activities. In the long term, strengthening governance, disaster preparedness, and climate-sensitive natural resource management will be critical to ensuring sustainable livelihoods and reducing conflict risks. Ultimately, a coordinated, evidence-driven approach that combines humanitarian and development efforts will be essential for protecting livelihoods and fostering stability in the Lake Turkana Basin.

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List of acronyms and abbreviations

ASALs	Arid and Semi-Arid Lands
AU	African Union
BMU	Beach Management Unit
FGD	Focus Group Discussion
FGM	Female Genital Mutilation
GBV	Gender-Based Violence
GoK	Government of Kenya
HSNP	Hunger Safety Net Programme
IA	International Alert
IGAD	Intergovernmental Authority on Development
IPCC	Intergovernmental Panel on Climate Change
KII	Key Informant Interview
KNBS	Kenya National Bureau of Statistics
KWS	Kenya Wildlife Service
NGO	Non-Governmental Organization
PCA	Peace and Conflict Analysis
PRA	Participatory Rural Appraisal
WFP	United Nations World Food Programme

Definition of key terms[1]

Adaptation: The process of adjustment to actual or expected climate change and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities.

Adaptive capacity: The ability of a system, institutions, region, community, humans and other organisms to adjust to the impacts of climate change take advantage of opportunities or respond to consequences. These can be categorized as knowledge and awareness, institutional capacities, infrastructure, economic (including food imports), and technological resources and equity.

Adaptation strategies: Measures designed to help human and natural systems adjust to changing conditions. These strategies may be programs, project interventions, or approaches developed to address anticipated climate change impacts in specific areas of concern.

Climate change conflict nexus: the complex and context-specific relationship in which climate change exacerbates existing vulnerabilities, potentially increasing the likelihood of instability and violent conflict. Climate change can intensify resource scarcity, disrupt livelihoods, and magnify socio-economic inequalities, creating conditions that heighten tensions and competition over limited resources such as water, grazing land, fishing grounds and arable farmland. Additionally, conflict makes states and populations more vulnerable to climate stress, compounding the challenges of managing resources, ensuring resilience, and addressing socio-economic disparities.

Coping strategies: short-term activities to which people resort to obtain food, income, and/or services when their normal means of livelihood have been disrupted, or other shocks/hazards decrease their access to basic needs.

Hazard: A dangerous phenomenon, threat, human activity, or condition that can cause or precipitate disaster. Hazards potentially threaten life, health, property, or the environment and can be natural or induced by human processes. Most hazards are dormant, with only a potential risk of harm. Once a hazard becomes "active," it is called a shock (or, in some cases, a hazard event).

Household: A group of people, each with different abilities and needs, who live together most of the time, contribute to a common economy, and share the food and other income from this.

Livelihoods: The means by which households obtain and maintain access to essential resources to ensure their immediate, medium-term, and long-term survival.

Livelihood activity: The condition in which things are happening (e.g. herding, farming, trading, the commercial making of handcrafts, charcoal and brick production, commercial collection of firewood, waged labour).

1 Summarized from FEWS NET Glossary, Policies Intergovernmental Panel on Climate Change (IPCC) Assessment Reports and "the language of livelihoods" (adapted from the BRiCS qualitative workbook

Livelihood assets: The resources and capacities that individuals, households or communities depend on to sustain their livelihoods and make decisions about livelihood strategies. These assets influence how households adapt, transition, or choose livelihood approaches.

Livelihood options: Practices, structured sets of practices (i.e. activities), and combinations of activities (i.e. strategies) effectively available to particular households, or groups of households, at a particular time.

Livelihood strategy: Particular combination of livelihood activities that are planned to achieve a short or long-term aim or livelihood goal. This level can also be seen as a system, i.e., hybrids with or without a predominant activity.

Livelihood system: A livelihood system refers to the overarching livelihood system that encompasses a wide array of interconnected livelihood strategies across a wide geographical domain that is influenced or mediated by processes, institutions, and policies operating at multiple administrative levels from the community to the national and even global level.

Maladaptation/Negative adaptation strategy: Actions or strategies that, while intended to address the impacts of climate change, inadvertently increase the risk of adverse outcomes or exacerbate vulnerabilities to climate change. These actions may also lead to reduced overall welfare or sustainability in the present or future. Maladaptation can occur when interventions fail to account for local contexts, reinforce existing inequalities, or create new dependencies, ultimately making individuals, communities, or ecosystems more susceptible to climate-related risks.

Reference period: A clearly defined reference period is essential for analysing changes over time, whether in the past or the future, in relation to baseline information. Reference periods are typically chosen to highlight how changes have occurred and how these changes have impacted the target population. In this study, the period referred to as “reference period” is the baseline for comparing livelihood changes over time, including the drivers and outcomes of various livelihood strategies.

Seasonal calendar: A graphical presentation of the months in which food and cash crop production and key food and income acquisition strategies take place, also showing key seasonal periods such as the rains, periods of peak illness, and the hunger season.

Vulnerability: the degree to which a system (in this report, livelihood system) is susceptible to, or unable to cope with climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, as well as its sensitivity and adaptive capacity.

Wealth group: A group of households within the same community who share similar capacities to exploit the different food and income options within a particular livelihood zone.

1 Introduction

The Lake Turkana region in Kenya's Marsabit and Turkana Counties is experiencing social, economic and environmental changes driven by the complex interplay of long-term climatic changes, climate shocks and resource-based conflicts that affect local livelihood systems. Protracted droughts and rising lake water levels have led to significant losses of livelihood assets, fuelling tensions both between and within communities. These tensions are exacerbated by competition over dwindling resources, such as grazing land, water, and fishing and landing sites.[1] Despite numerous reports on climate security in northern Kenya[2] , localized assessments remain scarce, leaving significant gaps in understanding the causes and dynamics of conflicts in Marsabit and Turkana counties and the areas surrounding Lake Turkana.

This report is part of the formative research for the World Food Programme's (WFP) initiative, 'Sustainably Unlocking the Economic Potential of Lake Turkana.' Providing an in-depth climate change-conflict analysis, the report seeks to inform program design by examining the types of conflicts, their triggers, drivers, trends, the connectors and dividers shaping them. The analysis assesses a wide range of factors, including climate change and social, political, environmental, and economic issues, to offer actionable insights for addressing climate-induced instability in the region.

This analysis seeks to answer critical questions: What are the root causes and drivers of conflict around Lake Turkana? How do these conflicts differ across intra-community, inter-community, cross-county, and cross-border contexts? By examining livelihood changes and the conflict dynamics across geographic and social boundaries, this study aims to shed light on the conditions under which conflicts emerge, persist, and interact across these contexts. The goal is to examine how divisions within or between groups — defined by markers such as ethnicity, gender, or clan affiliations — shape group identities, influence relationships and power dynamics, and determine access to natural resources (for livelihoods), opportunities, and decision-making processes while also exploring how climate change intensifies these tensions. This analysis will support WFP and its partners in Marsabit and Turkana Counties in designing conflict-sensitive programmes and interventions that address the root causes of conflict while promoting cooperation and resilience in the region.

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[1] A landing site serves as a hub where fishers dock their boats, sell their catch, and access essential supplies such as food and fuel. Around Lake Turkana, local BMUs develop and manage these sites, establishing rules for access and use. The availability of facilities, services, and market access varies by location.

[2] For a detailed analysis of climate-conflict nexus in Kenya, see: Whitaker, E, Destrijcker, Dieffenbacher JC, & Hannah E.K (2023). Climate Security Study: Kenya. Berlin: adelphi and World Food Programme https://weatheringrisk.org/en/publication/climate-security-study-kenya; International Alert (2024). Conflict sensitivity assessment in Marsabit county, Kenya. International Alert Research. https://www.international-alert.org/publications/conflict-sensitivity-assessment-marsabit-county-kenya/

Based on the results of the qualitative participatory rural appraisal (PRA) methods, we analyse changes in community-level livelihood strategies, focusing on how food and income sources are evolving in response to multiple crises. We also identify climate-related security challenges and conflict risks, exploring how these issues impact different population groups at the household, community, and institutional levels. Based on the analyses the report offers recommendations on opportunities for conflict-sensitive programming and decision-making and monitoring of interventions in the Lake Turkana Basin, accounting for the ethnicity, gender, age, and displacement status of the target population.

The study adopts a climate security approach to identify and understand climate-related security challenges and conflict risks, examining how these issues affect different population groups at the household, community, and institutional levels. To guide the analysis of climate change and conflict pathways, the study's conceptual framework (Figure 1) builds on existing research on the causal links between climate change and conflict. Specifically, it explores how climate impacts may trigger conflicts over resource access and control (Hauge & Ellingsen 1998; Buhaug et al. 2008).

The framework also draws on International Alert's peace and conflict analysis (PCA), which guides asking the right questions and ensuring that gender dimensions are integrated into the analysis in a sensitive and conflict-aware manner. This approach highlights that the impact of climate change on conflict must be understood through multiple interacting factors—political, economic, social, historical, and cultural. These domains are shaped by competing perspectives and interests, with different groups and individuals having varying capacities to advance or defend their positions. Therefore, the influence of climate change on conflict can only be fully understood within this complex web of existing relationships.

Figure 1. Conceptual Framework for the study

<table>
<tr><td rowspan="6">Impact of climate change on local livelihoods</td><td colspan="4">1. Climate-induced Induced Conflicts and Risk Profiling</td><td rowspan="3">Socio-economic & Env impacts of climate change</td></tr>
<tr><td>● Documenting conflicts in the study areas

● Documenting trends in rainfall and temperatures (including local experiences of hazard mapping)</td><td>RQ1. What specific hazards participants are exposed to are influenced or worsened by climate change?</td><td>RQ2. What are the risks posed by these conflicts (exposure, adaptive capacity)</td><td>RQ3. What are the adverse impacts of these conflicts (social, environmental, economic) on poor, vulnerable women and minority groups?</td></tr>
<tr><td rowspan="2">2. Livelihoods Mapping</td><td>Existing livelihood pathways</td><td>Drivers of livelihood transformations</td><td rowspan="2">Impacts on livelihoods (specify per location)</td></tr>
<tr><td>Variation in livelihood pathways (present, good/bad year, 20-30 years ago)</td><td>Connections to climate change</td></tr>
<tr><td rowspan="3">3. Analysis of climate-security pathways in the Lake Turkana Region</td><td colspan="3">Typologies, trends, and emerging mitigation strategies</td><td rowspan="3">Gaps and Loopholes in current Policy and institutional frameworks</td></tr>
<tr><td colspan="3">Impact on resource sharing and mobility
Effects on women and other vulnerable groups
Impacts on traditional & intervention-based adaptation and mitigation measures
Impact on land use systems and local livelihoods
Impacts on the effectiveness of customary institutions and local peacebuilding efforts</td></tr>
<tr><td>4. Climate-conflict indicators for the programming</td><td colspan="3">Key indicators of climate vulnerability-conflict across economic, political, social, and crosscutting dimensions.</td></tr>
<tr><td colspan="5">Findings, Conclusions, & Recommendations (focus on pathways, indicators, and opportunities for the programming to respond to climate security and conflict risks)</td></tr>
</table>

2 Methodology

2.1 Research design and approach

This study employed a standardized quantitative research design – the Participatory Impact Assessment (PIA) – to collect household data from communities living along the shores of Lake Turkana in Turkana and Marsabit Counties. The PIA primarily relies on qualitative data to describe the context and dynamics of a given situation while incorporating select numerical data to illustrate the scale of key relationships. This approach provides a clearer understanding of how households perceive risks and threats from various shocks and the strategies they use to sustain resilient livelihood systems and outcomes despite these challenges. Data collection took place between August and September 2024, specifically focusing on areas covered by the WFP's Sustainably Unlocking the Economic Potential of Lake Turkana initiative in these counties.

The research explored three main themes: livelihood strategies and their transformation over time, experiences and perceptions of the impacts of compound climatic shocks on livelihoods, and the pathways linking climate change to conflict. To investigate these themes, Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs) were structured into multiple modules, each addressing key aspects such as household economics, primary livelihood activities, drivers of change, risks and shocks, livelihood transformations over time, and conflict dynamics. The study incorporated participatory methods, including mapping exercises, proportion piling, seasonal calendars, and discussions on adaptation strategies, experiences with environmental shocks, social cohesion, and conflict.

The research applied International Alert's Peace and Conflict Analysis (PCA) framework for a deeper understanding of conflict dynamics. This approach ensured that questions on conflict were explored in a gender-sensitive and conflict-aware manner, allowing for a more nuanced understanding of the intersections between climate change, livelihoods, and social tensions.

2.2 Research Sites

Interviews and FGDs were conducted in Marsabit County locations of Ileret, Moite, and Loiyangalani and Turkana County locations of Lowareng'ak, Kalokol, and Kerio. These areas are home to multiple ethnic communities with shared resources across the Lake Basin, with fishing and pastoralism — mainly cattle, camel, and goat rearing — being traditionally the main livelihood strategies.

Table 1. Research Sites Characteristics

County	Site Name	Ethnic Majority	Primary Livelihood	Groups Sharing Resources
Marsabit	Ileret	Dasnach	Pastoralism/ Agro-Pastoralism/ fishing	Dasnach (ETH) Gabra (KE) Turkana (KE)
	Loiyangalani	Turkana	Pastoralism/ fishing	Samburu Gabra Rendille
	Moite	Turkana	Fishing/ Pastoralism	Dasnach Gabra Samburu El-Molo
Turkana	Lowaring'ak Todonyang'	Turkana	Fishing/ Pastoralism	Toposa (South Sudan) Karamojong (Uganda) Dasnach (Ethiopia) Hamar (Ethiopia)
	Kalokol	Turkana	Fishing/ Pastoralism	Samburu, Pokot
	Kerio	Turkana	Pastoralism/ Fishing/Agro-Pastoralism	Pokot Samburu

A more recent shock has been the rising water levels in Lake Turkana, which has led to the destruction of social infrastructure, displacement of many households, and difficulties in maintaining landing sites. For instance, Kerio and Kalokol, two essential fishing and livestock areas in Turkana County, have seen communities increasingly displaced due to rising lake levels, forcing households to adapt their livelihood strategies. In response, many households are diversifying their primary livelihoods by tapping into opportunities in fishing, fishing value chains, and urbanization, engaging in activities such as selling fish-based foods, casual labor in urban areas, and producing and selling firewood and charcoal.

Ileret in Marsabit County, once a thriving pastoralist hub with abundant livestock, is experiencing significant socio-economic shifts due to contested grazing territories and conflict-induced migration. As communities seek safety and stability, a noticeable shift toward more sedentary lifestyles has occurred. KIIs indicate that repeated livestock losses from raids have led to shrinking herd sizes, pushing many households to rely more on alternative income sources such as fishing and trade. Additionally, increasing tensions over dry-season water and pasture resources have disrupted traditional grazing patterns, forcing many pastoralists to adopt night herding in Sibiloi National Park. Others have migrated to trading centers such as Ileret and Sericho or turned to new survival strategies to cope with these ongoing challenges.

Marsabit and Turkana counties are also home to in-migrating households, where many non-locals from other areas, such as Busia, Kisumu, and Kakamega, live while still conducting livelihood activities in the Lake. For instance, in Kalokol and Kerio,

a considerable population of in-migrating non-locals continues to provide skilled fishing and boat repair services (skills largely lacking among local populations). These and other groups also provide linkages to lucrative fish markets in Western Kenya and export markets such as the Democratic Republic of Congo, reflecting the intertwined nature of local livelihood opportunities and external markets. Major trading centres like Loiyangalani in Marsabit County continue to serve as crucial tourism hubs connecting the region to lucrative opportunities in the tourism sector.

2.3 Data Collection Methods – participatory techniques

This report draws on findings from semi-structured interviews and focus group discussions (FGDs) conducted in September 2024 with 60 participants from the Lake Turkana region, covering both Marsabit and Turkana Counties. Participants, including men and women from pastoral and fishing livelihoods, considering diversity in socioeconomic status, age, and gender, encompassing rural and peri-urban settings. The FGDs employed participatory rural appraisal (PRA) techniques, including a proportional piling exercise, to assess the relative importance of different household livelihood strategies and income sources for communities in the study sites. Participants first discussed their current household sources of food and income, using a pile of 100 stones to proportionally represent each income source's significance, such as pastoralism, fishing, causal labour own production, salaried income, and aid. This exercise was repeated to focus on the livelihood strategies of participants grandparents' using a general period of "20-30 years ago" through recall as a general point of comparison or a "reference period."

This research employed FGDs to compare past and present livelihood strategies to understand livelihood transformations in the study locations. The "reference period," referred to by participants as "reference period," corresponds to approximately 20–30 years ago. Using this historical baseline, the study analyzed how households adapted to multiple shocks to sustain their livelihoods. The FGDs explored the continuity of existing livelihood strategies and the development of new, climate-resilient approaches within the Lake Turkana Basin. Participants used small piles of stones as visual weight indicators to quantify livelihood contributions, representing the proportion each livelihood activity contributed to household income and food sources. They then ranked these sources of income by importance for both the present ("now") and the reference period ("reference period").

Rather than focusing on specific yearly outcomes, which can vary due to natural system fluctuations, discussions centred on broader livelihood patterns and the key drivers of change over the intervening decades. This approach allowed for a more comprehensive understanding of long-term transformations and adaptive strategies in response to climate variability. This exercise allowed the team to compare diverse sources of income and their significance for people's subsistence. The group then reflected on the "last bad year" in recent memory, identifying additional sources of food and income from that period and repositioning the counters to show changes over time. This process helped capture the shifts in livelihood strategies driven by climate shocks and conflict, including the loss of resources, changing income patterns, and community adaptation measures.

Through the discussions, the research team gained valuable insights into the Lake Turkana region's evolving dynamics around livelihoods, natural resources and related conflicts and climate challenges.

The focus group discussions were complemented with in-depth interviews, focusing on household-level dynamics. They provide a clearer understanding of how women, youth, the elderly, and ethnic minorities are impacted by the challenges. Additionally, twenty-two (22) key informant interviews (KIIs) were conducted with government representatives, and experts from the local and national level, including 12 with county government officials, chiefs, assistant/ county commissioners, and community leaders, and 10 with experts from national government institutions.

Table 2. Distribution of data collection methods by site

County	Site Name	FGD			KII		
		Female	Male	Mixed Group	Female	Male	Mixed Group
Marsabit	Marsabit (County HQ)				-	6	-
	Ileret	1	1	1		1	2
	Loiyangalani	1	1	2	2	2	-
	Moite	2	2	-	1	-	-
Turkana	Lodwar (County HQ)				-	4	-
	Lowareng'ak/Todonyang'	2	2	-	-	3	1
	Kalokol	1	2	1	-	2	-
	Kerio	1	2	1	-	1	1
TOTALS		**8**	**10**	**5**	**3**	**20**	**4**

2.4 Data Analysis

For analytical clarity, KII and FGDs were conducted using semi-structured questionnaires, and detailed transcriptions were made from field notes and recorded data. The interview responses were analysed thematically using the conceptual framework developed for the study in the inception report (Figure 1). This conceptual framework guided the assessment of vulnerability and the socio-economic impacts of climate change-security on the communities around Lake Turkana.

In addition, data collection and analysis were guided by International Alert's (IA) peace and conflict analysis (PCA). IA's PCA seeks to establish internal minimum standards for PCA from Alert's perspective, ensuring that gender dimensions are integrated and that the analyses are conducted in a gender-sensitive and conflict-sensitive manner. IA's PCA guide also promotes the exchange of knowledge and learning within and between Alert's teams and partners.

Findings from Participatory Rural Appraisal (PRA) tools, such as Social Mapping, Seasonal Hazard Calendar, Agriculture Calendar, and the Vulnerability Matrix, were analysed to capture different dimensions of vulnerability and the socio-economic impacts of climate-induced hazards like protracted droughts and rising lake water levels on these livelihood capitals. This helped explain how communities cope with these challenges and the broader impacts on natural resource management, income sources, and social structures. The quantitative datasets from local stakeholders, including county-level agencies and NGOs, were compiled and analysed using Microsoft Excel. The datasets, covering several years, were reviewed to identify trends and significant changes over time.

Descriptive statistics were applied to illustrate these changes and to assess the variation in climate impacts across different years. Additionally, demographic and meteorological data were sourced from government portals and other databases to provide contextual insights into the region's socio-economic conditions. The quantitative analysis was triangulated with qualitative data from interviews, FGDs, and secondary sources to provide a comprehensive understanding of the challenges faced by Lake Turkana communities.

2.5 Study limitations

It is important to acknowledge the limitations that shape our findings:

First, the study took a narrow geographical focus on fisherfolk communities along the shores of Lake Turkana in Marsabit and Turkana Counties, employing a purposive sampling approach. Consequently, it was not possible to capture the full range of livelihoods within the larger Lake Turkana Basin. This approach reduces the complexity and nuances of broader livelihood trajectories in the basin. Additionally, it is narrowly concentrated on the intricate relationships between the two across international borders (Ethiopia, South Sudan & Uganda) cross-county dynamics. As a result, the evidence presented in this report may not be generalised to other locations or contexts within the Lake Turkana Basin.

Second, the research was constrained by the limited duration of the qualitative research and the reliance on secondary sources. These limitations affect the depth and scope of the findings, particularly regarding recommendations on addressing the broader dynamics of climate change and conflict interactions across the Lake Turkana Basin, beyond the specific study sites. Future research should incorporate more extensive ethnographic and qualitative methodologies alongside quantitative approaches to provide a deeper and more comprehensive understanding of the complex interrelations between climate change, conflict, and livelihoods across the wider basin beyond the shores of Lake Turkana.

3 The Lake Turkana Basin Context

3.1 Socio-Economic Profile: The Lake Turkana Basin

According to the Kenya National Bureau of Statistics (KNBS) 2019 Census, Marsabit County has a population of approximately 459,785 people, while Turkana County is home to around 926,976 individuals. Both counties are characterized by their vast arid and semi-arid landscapes, with low population densities due to the expansive land areas. The populations in both counties are predominantly rural. Around Lake Turkana, a significant portion of the population is also involved in fishing as an additional or alternative livelihood. Both counties experience high levels of poverty, low literacy rates, and limited access to essential services like healthcare and education. The demographic profile shows a young population with high fertility rates and high numbers of unemployment (KNBS, 2019).

The Turkana and El Molo communities dominate the Lake Turkana region area, with pastoralism being the primary economic activity. The pastoralists rely on livestock mainly cattle, camels, goats, and sheep for subsistence and income, while mobility plays a crucial role in search of pasture and water, coping with the harsh climatic conditions. Over the years, climate variability, including prolonged droughts, has forced some pastoralists to diversify into fishing, especially in Lowareng'ak and Kalokol in Turkana County and Ileret and Loiyangalani in Marsabit County. Fisherfolk, dependent on Lake Turkana's tilapia and Nile perch, have relied on fishing since generations, often face changing fish stocks due to fluctuations in lake water levels and environmental conditions.

Gender roles are distinct, with men traditionally responsible for herding and fishing while women handle household chores, small-scale trade, and childcare. Economic activities are also intertwined with informal markets, and fish is traded locally and sometimes exported to neighbouring counties and countries. However, access to markets is frequently hampered by poor infrastructure and insecurity (Gok 2017; Schilling et al 2012).

3.2 Geographic and Climatic Profile

The Lake Turkana Basin spans parts of Marsabit and Turkana Counties in northern Kenya, covering an area of approximately 70,000 square kilometres. The waters of Lake Turkana, the world's largest permanent desert lake, originate primarily from the Omo River, in the Ethiopian highlands. The surrounding environment consists of expansive savannahs, rocky plains, and volcanic landscapes. The climatic conditions in the Lake Turkana Basin are harsh, with temperatures exceeding 30°C and an average annual rainfall of around 25-125 mm, which is highly erratic and unevenly distributed across the region (Figure 2).

The region experiences two main rainy seasons: the long rains from March to May and the short rains from October to December. However, these seasonal

patterns are seeing a high variability, and rainfall is increasingly unpredictable. Prolonged droughts severely impact pastoral communities' water and pasture availability. At the same time, occasional flash floods damage infrastructure and disrupt livelihoods, especially during the short rainy season. Recent trends indicate that water levels in Lake Turkana have been rising, but the exact causes remain uncertain. Some explanations suggest that this increase is partially linked to climate change, with projections indicating shifts in rainfall patterns (UNEP-DHI 2021). However, the reasons for this phenomenon have not been conclusively determined.

Previous scientific assessments had predicted that the construction of the Gibe Dam in Ethiopia would significantly reduce inflows into Lake Turkana due to underground reservoir leakage, potentially causing severe disruptions to aquatic ecosystems, biodiversity, and local livelihoods (Avery 2010; ARWG 2009). However, contrary to these expectations, water levels have continued to rise, underscoring the complexity of the factors influencing this trend. Further studies are required to assess the climate change trends and other factors impacting the observed increases in water volume (Bryne et al 2024).

Climate change projections indicate that the region will continue to face longer dry spells, coupled with more intense rainy seasons and increased likelihood of extreme weather events (IPCC 2022). During drought periods, pasture quality deteriorates, leaving only species that can survive minimal rainfall - many of which are unsuitable for livestock consumption. Consequently, many animals die from insufficient and poor-quality pasture. The reduction in livestock numbers significantly impacts food security and undermines the pastoralists' dependence on livestock and their products, which are critical to survival in this region.

3.3 Hazard Profile

Drought is one of the most critical stress factors weakening the socio-economic and livelihood systems in the Lake Turkana Basin. It is primarily caused by a lack of precipitation or insufficient inland water supplies over extended periods.

The increased frequency and severity of droughts have been linked to climate change. Poor water management and land-use practices further exacerbate water scarcity. Over the past 30 years, six significant droughts have occurred almost every five years. More recently, this frequency has increased, with droughts now occurring every 2–3 years. The major drought in 2011 resulted in an estimated US$12.1 billion in damages and losses for Kenya (GoK 2012).

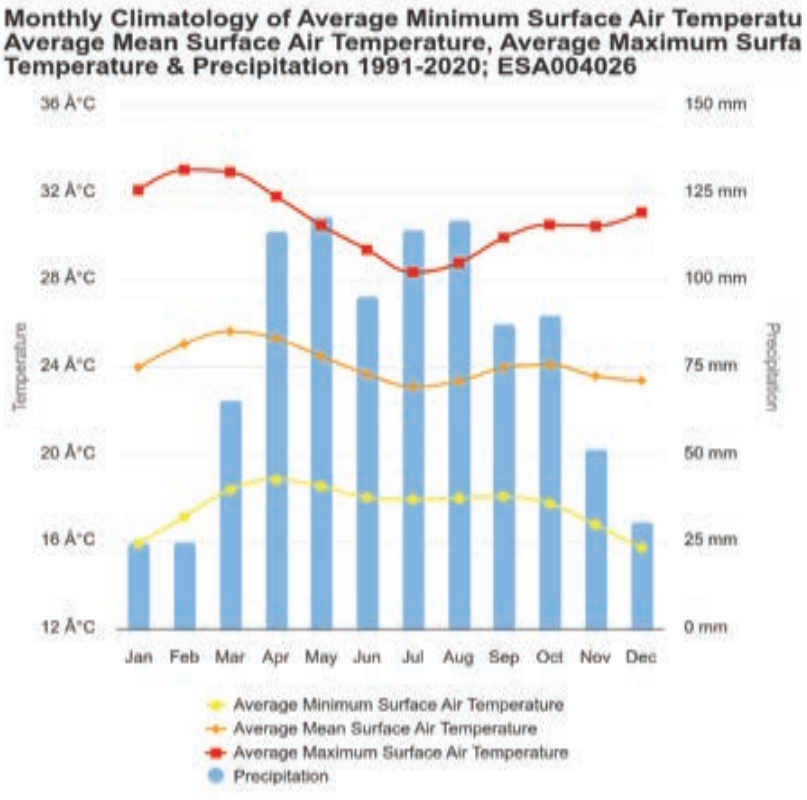
Over the past decade, Kenya has experienced three extremely severe droughts: 2010–2011, 2016–2017, and 2020–2022, with the most recent being the longest and most severe in 40 years. It led to widespread livelihood losses and significant displacement of households in arid areas.

Drought negatively affects numerous aspects of household welfare in the ASALs, including access to clean and safe water, food security, livelihoods and income, health and sanitation, education, displacement, and psychological well-being. Climate models indicate increasing temperatures and decreasing rainfall trends in

the region, leading to further intensifying drought conditions (World Bank 2021). The rising frequency of droughts, compounded by climate change, is expected to continue placing immense pressure on Lake Turkana's ecosystems and the livelihoods of the communities that depend on them.

The severity of drought in the Lake Turkana region is exacerbated by several interrelated factors, further increasing the vulnerability of local communities. Insecurity and localized conflicts in the region are often closely tied to the redistribution of assets and competition for the same resources (Pavanello & Scott-Villiers, 2013). Overgrazing and unsustainable agricultural practices deplete soil fertility and water retention capacity, leaving the land more susceptible to drought effects (Omosa, 2019). Poverty and inadequate infrastructure, particularly poor communication networks, further limit access to critical services and early warning systems, hindering timely responses to drought conditions (Njoka et al., 2015). Furthermore, the erosion of traditional coping mechanisms, or their poor implementation, weakens the capacity of communities to adapt to prolonged droughts. Traditional knowledge, which once played a vital role in managing climatic variability, is either underutilized or insufficiently integrated into modern drought response strategies, leaving communities ill-prepared to cope with the increasing severity of drought (Opiyo et al., 2015).

Figure 2. Climatological averages and trends in the Lake Turkana Watershed



Source: World Bank (2021)

4 | Findings

4.1 Climate Change Impacts on Livelihoods

The analysis of FGD data and KII responses emphasizes the need to move beyond simplistic questions about livelihood changes, pastoralist drop-outs, and mass impoverishment. Instead, it focuses on understanding how livelihoods in the Lake Turkana Basin have continuously adapted to risks and shocks to meet needs, and identifying new strategies resilient to the region's characteristic climate variability. This perspective enables discussions on specific issues that could inform programmatic interventions by WFP or other development and humanitarian agencies, either for future consideration or already underway.

Although the study sites in Marsabit and Turkana Counties offer a limited comparative base, they provide valuable insights into pathways of change and livelihood strategies that are relevant and impactful for many households in the region. Household livelihood strategies in the Lake Turkana Basin can be characterized by primary activities, such as pastoralism, fishing, or non-livestock/fishing. However, this classification may oversimplify the situation, as it implies homogeneity within livelihood zones and heterogeneity between them. In reality, all livelihoods in the region are built on similar strategies, with pastoralism and fishing playing dominant roles. A core question in all FGDs was how livelihoods have changed over time—specifically, how current livelihood strategies differ from those of previous generations, such as during the last 20-30 years, and why. This inquiry involved identifying shifts in livelihood strategies and examining the factors driving those shifts, including specific shocks, ongoing stresses, and broader trends.

This section examines the changing household production and livelihood strategies, including perceptions of the shifts in household primary sources of food and income and the reasons behind them, to understand how these changes have influenced present livelihoods and household strategies. Instead of measuring specific outcomes, we gathered descriptions of household strategies in the past and at present, households' experience of shocks, and the changing household production and livelihood strategies to capture the dynamics of these changes and their outcomes. By doing so, we identified essential climate-related shocks and risks that are given further exploration in the following sections.

4.1.1 Lake Turkana Livelihood Systems in the Past (20-30 years)

Livelihood transformation and shifting household strategies indicate climate change impacts in the drylands, especially in vulnerable contexts like Lake Turkana. As traditional rainfall patterns, temperature, and resource availability change, households are compelled to adapt—changing their main economic activities, diversifying income sources, or even migrating. These adjustments

reveal how deeply climate stressors affect livelihoods and serve as early indicators of broader socio-economic changes. Figure 4.1 illustrates the current sources of food and income for the communities in our research sites (as of September 2024) compared to those of the reference period[1] (20-30 years ago), identified through community recall during FGDs and expert interviews.

In discussions with respondents, "during your reference period" was used as a general point of comparison with the "present day." Given the inherent variability in dryland livelihood systems, the focus was on discussing household sources of food and income, the experiences of shocks, and the changes within those systems rather than specific outcomes, which naturally fluctuate from year to year. This approach allowed for a broader understanding of the long-term livelihood shifts and adaptations.

Historically, residents in the study sites along the shores of Lake Turkana have relied on a combination of pastoralism and fishing to sustain their livelihoods. Pastoralist systems in the region have traditionally depended on the seasonal movement of livestock, including cattle, goats, and sheep, to track pasture and water availability. During the dry season, herders moved in and out of the region, often crossing international borders into Ethiopia, South Sudan, and Uganda. In the rainy season, they returned to areas around the lake where vegetation was abundant.

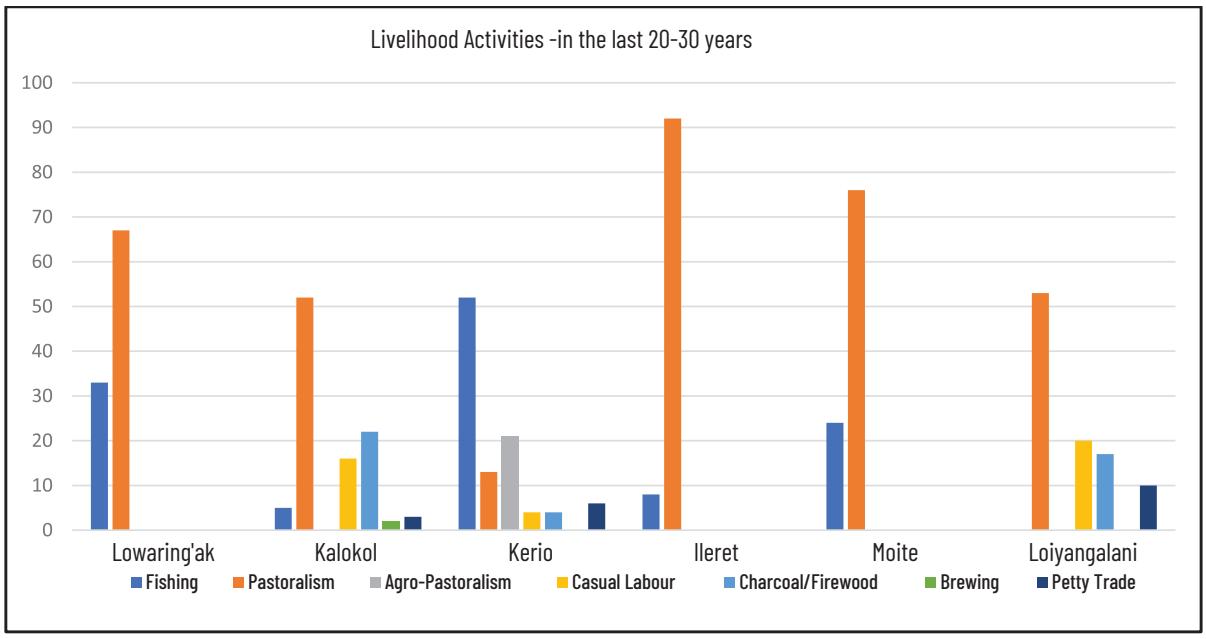
Fishing in Lake Turkana has been another vital source of food and income, supplementing livestock production. While pastoralism was historically linked to a nomadic lifestyle, recent years have seen a growing trend of sedentarization, where part of the household settles in one place while the herds continue seasonal migration. Meanwhile, fishing communities have established semi-permanent settlements along the lake, adapting to fluctuating fish stocks and environmental conditions. Though livestock was traditionally the primary asset for trade, recent climatic pressures have led some households to diversify their income, turning to fishing, small-scale trade, and other low-return activities like charcoal production. Despite these changes, the dual livelihood systems of pastoralism and fishing remain central to the region's economy, even as environmental conditions continue to drive further adaptations (see Figure 4.1).

In the Lake Turkana Basin, the traditional livelihood strategy involving pastoralism and fishing was an important primary livelihood activity for virtually all households. According to FGD participants, for centuries, the livelihoods in the Turkana Basin were primarily based on pastoralism and most household income and food come from the sales and consumption of livestock or livestock products respectively. According to data generated from FGD proportional piling exercises and summarized in Figure 4.1 approximately 50% of the households inhabiting the area were nomadic or semi-nomadic pastoralists.

FGD data on the livelihood strategies of the reference period also indicate that a substantial number of households in the Basin engaged in fishing, which according to KII was a strategy employed by early settlers around the lake to supplement pastoralism, especially for households affected by herd losses or those diversifying from purely pastoral production.

1 *Reference period* is used interchangeably with *"Reference period"* to refer to a culturally significant reference period used as a baseline to analyze livelihood changes over time. This period typically represents a time frame within living memory, often spanning one to two generations ago, and is chosen to capture historical shifts in livelihood strategies, drivers, and outcomes. Using "grandparents time" allows for a meaningful comparison of past and present conditions, offering insights into how changes, particularly those influenced by climate change and socio-economic factors, have impacted target populations.

Figure 4.1 Community Livelihood Portfolios in the Past



Source: authors

FGD participants talked about early adaptors to fishing strategies, characterized by subsistence strategies where fishermen fished primarily to supplement their livestock livelihoods and support the needy within their communities. While it is unclear when fishing became the primary livelihood activity for many, FGD participants recalled that most of their grandparents' who engaged in fishing were still pastoralists, using fishing as a strategy to feed their families and earn additional income during droughts when their livestock migrated in search for pasture and water often far from the permanent villages. With the establishment of major settlements along the lake – such as Kalokol, Lowaringak, Kerio and Todonyang – and the influx of formerly pastoralist households into these settlements, FGD participants stated that the number of inhabitants engaging in fishing activities started increasing especially around the 1960s & 70s. Although there were differing views on when fishing overtook pastoralism as the primary livelihood activity – with Marsabit County FGD participants pointed to the major drought of 1984, while Turkana County cited the early 1970s – there was a consensus across all FGDs that fishing is presently a crucial livelihood for nearly all households along Lake Turkana. The participation in fishing was also driven by the burgeoning population of newcomers to the area and the development of local markets in Lokichogio, Lodwar and Kakuma and urban markets in Busia, Kisumu, and Nairobi.

4.1.2 Changes in Lake Turkana Livelihoods Systems over Time

This section examines the changing household production and livelihood strategies, including perceptions of the shifts in household primary sources of food and income and the reasons behind them, to understand how these changes have influenced present livelihoods and outcomes in household strategies.

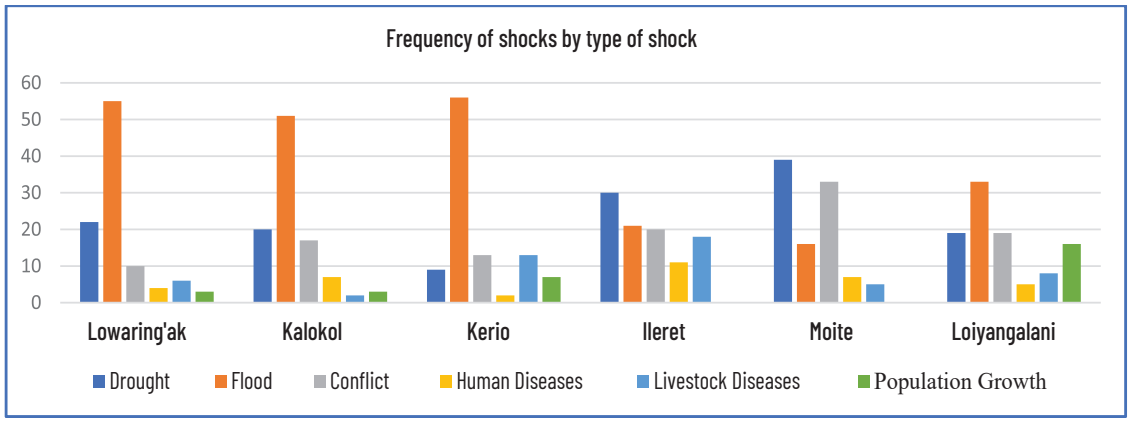
Instead of measuring specific outcomes, we gathered descriptions of household strategies in the past and at present, households' experience of shocks, and the changing household production and livelihood strategies to capture the dynamics of these changes and their outcomes. By doing so, we aim to identify essential climate-related shocks and risks that require further exploration in the next section on hazards and climate-security pathways around Lake Turkana.

4.1.2.1 Experience of Shocks and Stresses

In addition to describing their livelihoods during the reference period, respondents from the study sites identified the shocks that had impacted their households over the past 5-10 years. Using the proportional piling technique, they ranked these shocks based on how severely they affected their ability to "secure enough food and income to meet their needs." The data presented in Figure 4.2, summarized from multiple FGDs, highlights the variety of threats and shocks households face across six communities in the Lake Turkana region: Lowaring'ak, Kalokol, Kerio, Ileret, Moite, and Loiyangalani. The most common shocks include drought, floods, conflict, human diseases, livestock diseases, and population growth. To account for the diversity of livelihoods in the region, the data was disaggregated by primary livelihood systems, mainly pastoralism and fishing. Including all livelihoods without this breakdown would have skewed the analysis of shocks affecting households with non-livestock or non-fishing livelihoods, making it less representative of the region's overall experience. However, the unique challenges pastoralists and fisherfolk face are considered in the broader discussion of the findings.

Drought and flooding – caused by rising water levels in Lake Turkana – are the most frequently reported shocks across all communities. The rising lake water levels have severely disrupted fishing livelihoods by displacing communities and damaging infrastructure. As a result, fishers are forced to venture deeper into the lake and into protected areas, heightening the risk of human-wildlife conflicts, such as crocodile and hippo attacks. This has also led to increased tensions with KWS rangers who are enforcing conservation regulations. As a result, fishing communities face more significant safety risks and reduced access to sustainable fishing grounds and landing sites further threatening the stability of their livelihoods.

Figure 4.2 Frequency of shocks by type of shock among households



Source: authors

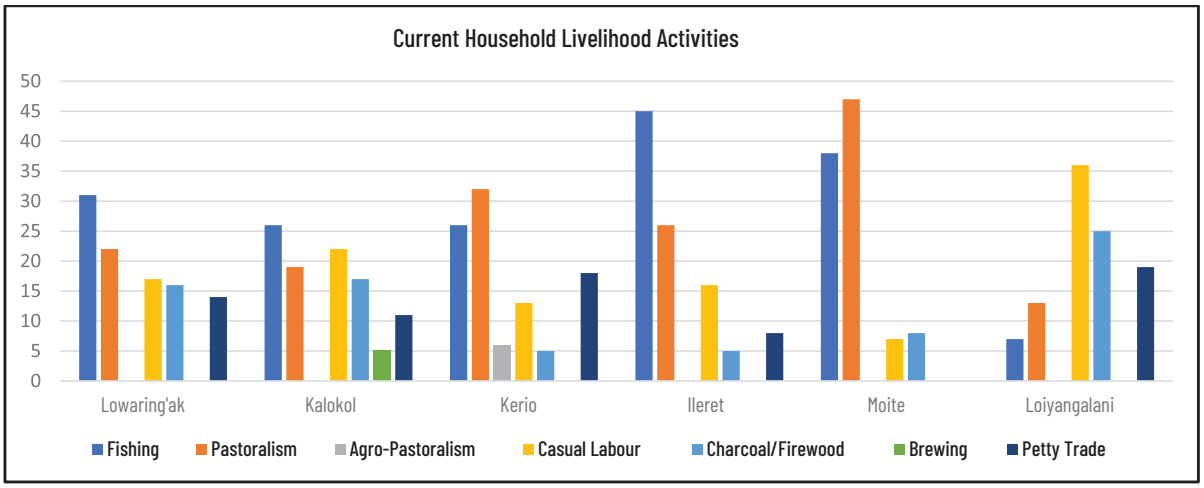
Conflict is another major shock across the study sites, often driven by competition over fishing grounds, grazing lands, water, which become even scarcer during droughts. Tensions are rising around fishing resources, where in-migrating fishers control market prices and access to valuable inland and export markets. In-migrating fishermen came to the region in search of opportunities in fishing and related activities, like boat construction and repair, selling and mending fishing nets, and facilitating connections with inland and international markets. This has created tensions with local fishing communities, struggling to maintain their livelihoods. Further conflict arises between fishers and the Kenya Wildlife Service (KWS) when fishers enter protected areas.

Human and but especially livestock diseases are particularly concerning pastoralist communities like Illeret and Moite. Respondents attribute the rise in livestock diseases to climate change, noting that unpredictable weather patterns, such as prolonged droughts and consequent inter-group competition, disrupt water access and grazing, weaken livestock health, and increase vulnerability to diseases. These environmental stresses together with weak health infrastructures in remote areas reduce people's access to clean water and nutrition, contributing to a surge in waterborne and vector-borne diseases, straining households' health and resilience.

Population growth is perceived to have a significant impact across all study sites, particularly in Loiyangalani and Kerio. It intensifies the pressure on already scarce resources across all six communities, increasing competition for food, water, and grazing land worsening malnutrition, water shortages, and food insecurity. The results show that the impact of shocks varies between communities: For example, Loiyangalani reports fewer shocks than other areas but remains vulnerable to drought and floods, indicating that also communities with fewer immediate challenges are still at risk from long-term climate variability and its effects.

After establishing a clear understanding of current livelihoods and their experience of shocks with the interviewees, respondents were asked to describe how their livelihoods had changed over time, comparing their situation to the reference period. Respondents identified shifts in their livelihood strategies and explained the factors driving those changes, such as specific shocks, ongoing stresses, and broader trends affecting the region.Figure 4.3 illustrates a significant shift in food sources and income compared to the reference period, as shown in Figure 4.1. There is a sharp decline in the reliance on pastoralism as the primary source of livelihood, with a corresponding rise in households engaging in various non-livestock activities. This shift reflects a broader fragmentation of community-level livelihood portfolios, where lower-return, marginal activities such as casual labour, charcoal and firewood production, and brewing—are increasingly filling the gap left by the reduction in pastoral production.

Figure 4.3 Community Livelihood Portfolios in the Past



Source: authors

The livelihood landscape around Lake Turkana has shifted significantly away from traditional pastoralism and fishing, with many households increasingly relying on low-return activities such as firewood and charcoal sales, manual labour, and petty trade.

Figure 4.3 shows that while pastoralism and fishing are still critical, the rise of casual labour, charcoal production, and firewood collection is becoming more prominent, especially with the growth of urbanization and sedentarization in the region. Many households have turned to these low-capital activities due to the high costs of alternative livelihoods like fishing. For instance, several respondents mentioned investing in fishing gear after losing livestock, but this requires significant capital, which many households lack. As a result, firewood collection, charcoal sales, and casual labour have become increasingly vital for subsistence. The expansion of urban centres has also attracted more households to these activities, increasing their profitability due to rising demand.

Opportunities in the fish value chain, such as buying and selling boiled, fried, or salted fish, have become profitable for some households, particularly women. However, these activities are seasonal, fluctuating depending on the local fish catch. In Kalokol, for example, women reported that those with access to fishing gear through their husbands or those with established food kiosks have continued to engage in fish sales. However, these activities have become unsustainable for many due to rising fish prices, seasonal fluctuations, and increased taxes imposed by the County Government. Box 1 below shows taxes levied on fisherfolk and fish traders by county governments, which have a bearing on the long-term viability of the sector.

Casual labour has seen a rise in importance, driven by increased opportunities in construction, security services, and business sectors, particularly with the growth of urban and peri-urban centres. Seasonal demand for construction labour has provided households with additional income, complementing but not replacing other income sources. Petty trade and micro-enterprises, such as selling sugar,

maize meal, tobacco and household goods like clothes and beads, remain minor contributors to household income.

Box 1. Taxes and Costs Associated with Fishing Livelihoods

The fishing industry in the Lake Turkana Basin, a critical source of livelihood and food security for local communities, is increasingly facing challenges stemming from the imposition of taxes and rising costs associated with the fish value chain. Among these challenges are the county government taxes levied on fisherfolk and fish traders, including county cess, business permits, and transport costs. These financial burdens are eroding the profitability of fishing activities and creating barriers to market access and sustainability within the sector.

The county cess, a tax imposed on the movement of goods, significantly affects fish traders transporting their products to markets within and outside the counties. Traders reported during FGDs that the cumulative cost of cess at various checkpoints increases the overall cost of transporting fish, making it less competitive in regional markets. Additionally, business permits, required by both small-scale and larger traders, add to the financial strain. Many fisherfolk and traders expressed frustration during key informant interviews, noting that the fees for these permits are often disproportionate to their earnings, particularly for small-scale operators who work on slim profit margins.

Another critical factor is the very high transport costs. The remoteness of the Lake Turkana Basin, combined with poorly maintained road infrastructure, leads to higher fuel and vehicle maintenance expenses for traders transporting fish to distant markets. This challenge is compounded by the additional cost of cold storage and preservation necessary to prevent spoilage during transit. These costs are often passed down the value chain, resulting in higher consumer prices and reduced demand for Lake Turkana fish in competitive markets.

The cumulative effect of these challenges is squeezing profit margins for fisherfolk and traders, discouraging investment in the fish value chain, and threatening its long-term viability. Many respondents highlighted that the high cost of entry and operations has forced some individuals, particularly small-scale operators, to exit the sector or scale back their activities. This impacts fishing livelihoods and reduces the overall supply of fish, undermining food security and profitability in the region.

Firewood collection and charcoal production have become a survival strategy for many, crucial for households that have lost their primary livelihoods and lack the capital required for other income-generating activities. Young men and women,

in particular, have increasingly taken on labor-intensive tasks such as firewood collection, charcoal production, and casual work at construction sites. The growing need for alternative income sources has pushed all household members, including those traditionally not involved in livelihood activities—such as the elderly, pregnant women, and young children—to participate in these efforts. Although these activities provide a vital source of income, they offer limited opportunities for economic mobility and are vulnerable to environmental degradation and market fluctuations. Nonetheless, firewood and charcoal remain essential for households without the capital to engage in more profitable livelihoods around Lake Turkana. This pattern of livelihood transformation reflects how households and communities in the Lake Turkana region have adapted to prolonged exposure to stressors and escalating resource conflicts. It highlights that the diversification of livelihoods/income sources enabled households to cope with resource variability.

In mobile pastoralist systems, movement and careful management of natural resources have been critical strategies for adapting to changing environmental conditions. Even under normal circumstances, mobile pastoralists engage in various activities, such as gathering wild fruits and gums and resins for sale, trading or bartering for non-livestock food items, and generating income to meet cash needs. While many current activities such as casual labour, charcoal production, and small-scale trade may offer lower returns than livestock-based livelihoods, they are not simply distress strategies. These activities have always played a role in local livelihood systems, they are now more prominent as households respond to climate-induced shocks and environmental stresses.

4.1.2.2 Transformation in Lake Turkana Basin Livelihoods

Based on the evidence presented in this report, drawing broad conclusions about livelihood transformations, how households construct sustainable livelihoods today, or the long-term impacts of these changes is challenging. This difficulty arises because livelihood transformation is highly context-specific in content and form, making it hard to trace consistent trends over time. Moreover, livelihood transformation is a complex and multifaceted process, making it difficult to disentangle the various components and influencing factors within any given context. However, by examining the specific activities and income streams households engage in, the factors influencing their choices, and the conditions enabling some households to pursue alternative income sources, we identified five broad household livelihood categories that capture some of the diversity found in the Lake Turkana Basin. Table 4.1 provides a comparison of these observed livelihood categories.

Table 4.1 Livelihood pathways of Households in the Lake Turkana basin

HH Pathway	Explanation/Key Characteristics	Examples
Pastoralism	• Households still pursue livelihood strategies similar to those of their grandparents, i.e., pastoralism, to serve their desires, interests, and needs better. • Households maintain seasonal mobility of herds in the region traversing county and international borders. • Key shocks include droughts, livestock diseases, and resource-based conflict.	• Pastoralism • Participation in livestock markets
Fishing	• Households primarily engaged in fishing and permanently live in settlements along the lake. • Some are former pastoralists who have lost livestock due to drought or conflict. • Highly skilled in fishing and owns some assets such as boats, nets, and stores. • The household is a member of a local BMU.	• Fishing • Buying and selling fish • Boat and net repair • Fish processing • BMU management (security, enforcement, sales, processing).
Diversifying	• Households engaged to some degree in the livelihood strategies of their parents, i.e., pastoralism, and engaged in one or two complementary activities. • Complementary activities include petty trade, casual labour • Diversification activities are very likely to be central to the construction of sustainable livelihoods, • Livelihood is constructed from a portfolio of activities in addition to a primary activity.	• A portfolio of activities, including a primary livelihood (pastoralism or fishing) with one or two additional activities • A non-fishing/non-livestock activity (e.g., petty trade) with one or two additional activities.
Seasonal activities/ gender-specific opportunities	• Coping strategies during low productivity in primary livelihood strategies. • Include gender-specific activities such as selling food, hawking fish	• Leatherwork, blacksmithing, and handcrafts (mats, pots, storage containers, beadworks, and basket making) • Construction labour • Hired fishing labour
Maladaptive\ activities	• Destitute households living in peri-urban areas • Requires little skills and investment in capital assets • Primarily sex-for fish, charcoal production, and brewing.	• Raiding • Brewing • Firewood collection & charcoal production • Sex for fish

Fishing has emerged as a critical livelihood activity for many households in the Lake Turkana Basin, reflecting its growing significance in the face of socioecological and economic changes. Historically, an important subsistence activity along the lake's shores, fishing became a prominent livelihood strategy during the 1970s and 1980s as the region experienced multiple, overlapping processes of change, including prolonged droughts, resource scarcity, and conflict. According to FGD responses, many pastoralists who lost their herds during this period turned to fishing as a means of diversification and survival. Initially, fishing was a fallback option for food and income for pastoralists exiting the system, but over time,

as market opportunities expanded and pastoralists increasingly exited their traditional livelihood, fishing evolved into a primary economic activity for many.

Today, fishing is a key driver of subsistence and commercial activities in the basin, supporting numerous households and contributing to local and regional economies. Additionally, it has become a significant pull factor, attracting immigrants seeking opportunities in fishing and related sub-sectors, such as fish processing, boat making, and trade. This growing reliance on fishing underscores its importance as a coping strategy for vulnerable populations and as a cornerstone of economic activity in the Lake Turkana Basin.

Apart from fishing, FGD data indicates that many households continue to rely on pastoralism as their primary livelihood strategy. These households depend on traditional practices, including seasonal livestock migrations, to access grazing lands and water sources essential for maintaining herd health and productivity. Their migrations often extend into neighbouring counties and across international borders into Ethiopia, Uganda, and South Sudan, bringing them into contact—and at times conflict—with other pastoralist groups such as the Karamojong, Toposa, Pokot, Dasanach, Samburu, and Gabra. Livestock trade is a crucial economic activity, providing income for food, education, and other necessities. Additionally, selling animal products, such as milk, hides, and meat, contributes supplementary income and supports household food security.

However, FGD participants noted that increasing climatic variability, dwindling resources, and shifting socioeconomic conditions reshape pastoral production strategies. These challenges are compelling households to adapt by diversifying income sources or altering traditional migration patterns to sustain their livelihoods. According to FGD responses, a significant portion of the most vulnerable groups in Turkana County—comprising women, children, and the elderly—are members of pastoralist households who remain in settlements such as Kalokol, Lowareng'ak, and Kerio. These individuals often lack the skills required for fishing and face reduced access to their livestock due to longer and more distant migrations by herding members of their households. As a result, they are frequently in need of external aid. However, it is important to note that not all pastoralist households are poor, as some maintain sufficient resources and resilience to sustain their livelihoods.

A third category of livelihoods in the Lake Turkana Basin revolves around diversification, driven by risks and opportunities that reshape traditional livelihood strategies. While pastoralism and fishing remain important livelihood activities for many, the dynamics of these strategies are shifting as households adapt to changing conditions. At the same time, the pathways for returning to productive livestock-keeping are becoming increasingly limited for those pushed out of pastoralism, leading to heightened risks of impoverishment, malnutrition, and destitution among settled pastoralists. Despite these challenges, many households with diversified livelihoods still strive to maintain a small number of livestock when conditions allow, underscoring livestock's continued cultural and economic importance in the region. These trends illustrate the complex and multi-faceted nature of diversification as a livelihood strategy in the Lake Turkana Basin.

Lake Turkana stands out as a critical source of livelihood diversification, attracting those seeking alternatives to traditional pastoralism and fishing. Many households now survive through a "bundle of livelihoods," combining a primary activity with seasonal and opportunistic engagements such as casual labor, petty trade, and participation in livestock markets. This diversification has created opportunities for pastoralists who have lost their herds due to drought or conflict to transition into fishing and fish-related value chain activities. According to FGDs, diversification often involves investment in fishing as a commercial enterprise for wealthier households, requiring capital assets such as boats, nets, coolers, and transport trucks. These assets enable them to benefit more substantially from the fish value chain. In contrast, poorer households typically adopt alternative strategies that are less financially demanding and do not require specialized skills, such as casual labour or small-scale trade.

A fourth category of livelihoods in the Lake Turkana Basin is centered on seasonal activities and gender-specific opportunities, reflecting the highly dynamic and adaptive nature of the region's livelihood strategies. Seasonal activities, such as causal labour during low seasons, construction work, or food businesses during peak periods, are crucial for households navigating the variability of the region's climate and resources. These activities often align with seasonal cycles of resource availability, providing vital income and food at critical times of the year. Gender plays a significant role in shaping these opportunities, with men typically involved in activities like casual labour and construction, while women take on responsibilities such as fish processing, weaving mats, and selling small-scale goods at local markets. However, these gendered divisions also impose disproportionate labour demands on women, limiting their ability to fully benefit from these opportunities. Seasonal activities thus form an integral part of household survival strategies, but their reliance on unpredictable climatic conditions underscores their vulnerability.

The fifth category of livelihoods involves maladaptive activities linked to poorer wealth groups living in peri-urban centres, often characterized by precarious living conditions and limited opportunities for sustainable income generation. Poorer households, particularly those pushed out of pastoralism, migrate to peri-urban areas in search of better opportunities. However, these areas often fail to provide the stability or resources needed for long-term livelihoods. Instead, households may engage in maladaptive activities such as unregulated charcoal production, firewood collection, or brewing, which can degrade the environment and further entrench poverty.

The rapid rise in the lake water levels has placed additional strain on inadequate infrastructure, worsening access to water, sanitation, and health services. Women in these areas often face compounded challenges, including further worsening the already limited access to and control over resources and increased vulnerability to exploitation, including engagement in sex for fish. While peri-urban living can offer temporary relief for displaced households, it frequently locks them into cycles of poverty and dependence, highlighting the need for targeted interventions to address these maladaptive livelihood strategies.

4.1.2.3 Loss of livestock and the strategies of the "drop-outs."

According to FGD with pastoralists, exiting pastoralism due to climate change effects, often referred to as "dropping out," has been a long-standing trend in the Lake Turkana Basin, particularly during periods of extreme drought and livestock losses. Key informants trace significant shifts to 1984 when many people settled in towns along the lake's shores. According to these accounts, the early 1970s through 1980s were particularly harsh due to severe droughts, widespread livestock losses, and increased raids. A Turkana elder in Kalokol described this period vividly:

> *"The worst livestock losses were witnessed here between 1979 and 1990 – but it intensified in 1984, during the year of the yellow-maize (relief food consisted of yellow corn). When the rains came, there were a lot of raids from every direction – Dasnach, Pokot, Toposa, and Samburu. The little livestock that survived the drought was lost to these raids."*

FGD and KII responses suggest that settlements along the lake received waves of pastoral drop-outs throughout the 1990s. The first arrivals were predominantly women, children, and elderly people who settled in small villages around trading centers like Loiyangalani and Kalokol. Many sought refuge in famine relief centers, operated primarily by the Catholic Church and humanitarian organizations, such as Moite and other sites on the outskirts of Kalokol and Loiyangalani. This group began engaging in casual labour, begging for food, and selling firewood, and most never returned to their communities of origin. A second wave included men, boys, and warriors reuniting with kin after the drought, some bringing livestock with them. While some of this group stayed and transitioned to new livelihoods such as casual labour, fishing, and charcoal production, others maintained ties with relatives managing migrating herds. Subsequent droughts brought additional relatives to these settlements, though many maintained livestock connections.

KIIs indicate that exiting pastoralism is often seasonal or short-term for many and emphasize that "dropping out" is synergistic with "the period for rebuilding herds – restocking after the livestock loss." A Marsabit County Livestock Officer cautioned that viewing "drop-outs" in isolation risks reinforcing misconceptions that have hindered efforts to support pastoral livelihoods. In humanitarian and development contexts, pastoral "drop-out" refers to the permanent or long-term loss of livestock, forcing households to exit the pastoral system (Desta et al., 2008). However, development, humanitarian, and government programs have used misconceptions about permanent drop-outs to justify promoting alternative land uses and development paradigms that portray pastoralism as "non-economical," "backward," or merely a humanitarian subsistence system rather than a viable and adaptive livelihood. Information from various FGDs indicates that the term "drop-out" is misleading when applied to pastoralism for several reasons. First, pastoral livelihoods in the ASALs are characterized by the interaction of risk and opportunity, leading to natural fluctuations in herd sizes. Seasonal and environmental conditions often cause temporary reductions in herd sizes, but these are not always permanent.

Second, pastoralists frequently engage in strategies to rebuild their herds, leveraging kinship networks social support systems, and reinvesting in livestock

when conditions improve. This ability to recover and rebuild underscores the resilience of pastoral systems. It is important for "hanging in," "moving up or moving out" and, in the short to medium term, provides opportunities for some people to step up or to accumulate resources for stepping out as developed by earlier frameworks for understanding the differences, interactions, and pathways of change from subsistence pastoralism. Finally, pastoralism is deeply embedded in the local people's cultural identity (Dorward et al. 2009; Catley 2017). It offers a clear comparative advantage in the ASALs, where livestock management aligns closely with the region's ecological and economic realities.

Rather than signaling a permanent exit, what is often labelled as "dropping out" is better understood as a dynamic response to shocks, with many individuals and households maintaining strong ties to pastoralism and striving to rebuild their herds when conditions permit. These issues have been adequately addressed by research on pastoralism and livelihoods. In the Lake Turkana basin, droughts have an increasing impact on "drop-outs" because they affect growing numbers of poorer herders with few animals, who have few options for moving or maintaining their herds. Even those who diversify into fishing, casual labor, or other activities frequently retain connections to pastoral livelihoods, highlighting livestock's enduring cultural and economic importance in the Lake Turkana Basin.

4.1.3 Perceptions of dwindling fish resources in Lake Turkana

The perceived decline in fish resources in Lake Turkana emerged as a central theme in both FGDs and KIIs. The resource maps created by fishermen clearly showed increasing distances of fish-abundant areas in the lake. In mapping livelihood risks and shocks, FGD participants consistently reported experiencing lower catch volumes in areas previously abundant with fish. Additionally, they highlighted the disappearance of high-value fish species such as Nile perch and tilapia, which form the bulk of demand from fish traders that supply lucrative inland markets and export markets in DRC. These perceptions are supported by changing fishing behaviors, including deeper excursions into the lake, riskier fishing in high-wave areas, and increased cross-border activities between Kenya and Ethiopia. Participants across FGDs and KIIs provided firsthand accounts of diminishing fish stocks, stating that once-reliable fishing grounds no longer yield the same volumes. Many fishermen reported a significant decline in catch volumes, particularly in nearshore and shallow areas, forcing them to venture further into the lake in search of fish. They also noted that once-abundant species, such as Nile perch and tilapia, have become increasingly scarce, negatively impacting their income. As a result, fishing trips have become more prolonged and unpredictable, with increased incidences of night fishing in protected areas and some fishermen spending several days at the lake on canoes to secure an adequate catch. One member of Loiyangalani BMU remarked:

> ***"We used to catch enough fish near the shores, but now we must go deeper, and even then, the catch is not the same."***

Similarly, a key informant from the Kalokol BMU leadership group confirmed:

> *"The Nile perch fetches us good money, but now it is difficult to find near the shores of the Lake. Fishermen who operate near the shores, now must rely on smaller, less profitable fish."*

However, the perception of dwindling fish stocks is not a shared understanding by all stakeholders in the Lake Turkana basin. On the one hand, recent studies, including a comprehensive lake-wide acoustic survey—the first in 50 years—conducted by the Kenya Marine and Fisheries Research Institute (KMFRI) in collaboration with UNESCO, indicate a high abundance of fish stocks in Lake Turkana. These assessments report substantial populations of large and small pelagic species, particularly in the central and northern sectors of the lake (Bironga et al. 2024; Malala et al 2021; although they are estimated to be lower in density compared to previous investigations in the 1970s and 1980s (Muška, et al. 2012).

A key finding from this research highlights that while abundant and highly productive, small pelagic species remain underutilized, suggesting untapped potential for fishery diversification (UNESCO 2024). On the contrary, responses from FGDs indicate that the number of individuals engaged in fishing has risen in all the study sites owing to the significant number of pastoralist households that have settled along the lake shores and the corresponding linkages to inland and international markets for the Lake Turkana fish. Consequently, increasing fishing pressure may contribute to localized overfishing, particularly in easily accessible nearshore areas, potentially leading to the observed declines in catch volumes and profitability. A study assessing the sustainability of Lake Turkana's fishery as a local food system further supports these community concerns. The study found that fishermen rated the fishery's performance poorly regarding sustainability, citing challenges such as limited processing and storage capacity, inadequate access to socio-technological infrastructure, and weak community participation in fisheries management (Gownaris et al. 2017).

The disparity between scientific assessments and fishermen's perceptions may stem from several factors. Scientific surveys indicate that fish stocks in Lake Turkana are abundant but unevenly distributed, with higher concentrations in the central and northern sectors of the lake (Malala et al. 2021). As a result, fishermen operating in other areas may not encounter these concentrations, reinforcing perceptions of declining fish stocks. Additionally, while small pelagic species remain abundant, they are vastly underutilized, and fishermen continue to focus on traditional, more profitable species such as Nile perch and tilapia (UNESCO 2024. If these target species become less available, it contributes to the perception of scarcity. Environmental and human-driven factors, including habitat degradation, biodiversity loss, pollution, and climate change, alter fish distribution and availability, further shaping fishermen's experiences on the lake. These findings underscore the ongoing differences between scientific assessments and local lived experiences, emphasizing the need for a more integrated fisheries management approach incorporating ecological assessments and socioeconomic realities.

4.1.4 Seasonality and its implications for the primary livelihoods

The climate in the Lake Turkana Basin is characterized by bi-modal rainfall patterns, with the long rains occurring from March to May and the short rains from October to December. These rainfall patterns, interspersed with prolonged dry spells, define the arid and semi-arid nature of the region. KIIs with county government officials and community leaders highlighted the unpredictable and variable nature of these rains, which significantly impact livelihoods. FGDs with pastoralists and fisherfolk underscored how rainfall seasonality dictates the availability of pasture, water, and fish, shaping the livelihoods of pastoralists and fishing communities. While such climatic variability has traditionally structured life in the basin, it also poses significant challenges, especially during periods of scarcity. According to KIIs, climatic patterns observed over the past 30 years reveal worsening droughts in both frequency and severity, adversely affecting forage and water availability for pastoralist households. Elders participating in FGDs recalled a time when seasonal patterns were more predictable, with clear onsets and endings to rainy and dry seasons. However, they now report consistently hotter temperatures, delayed onset of the rainy season, increased rainfall variability, longer dry spells, more intense rains, and stronger winds from unusual directions. These shifts disrupt established patterns and amplify the risks associated with climate variability.

Seasonality profoundly affects the livelihoods of the Lake Turkana Basin, primarily pastoralism and fishing, by disrupting household production and shaping coping strategies. FGDs with pastoralists highlighted how dry seasons and protracted droughts reduce livestock productivity due to limited access to water and pasture, forcing many households to diversify their livelihoods. Similarly, fishers reported challenges during low seasonal catch rates and species variability, directly impacting income and food security. During times of scarcity, household strategies are influenced by available opportunities, assets (such as skills and capital), and access to social support systems. Respondents noted that coping strategies vary across livelihood groups (detailed in Table 4.2).

Many pastoralist households migrate to urban trading centers to manage these challenges, engaging in non-livestock activities such as casual labor, firewood collection, and charcoal production. During these periods, reliance on kinship networks intensifies, demonstrating the importance of social safety nets in mitigating hardship. Key informants emphasized that resource scarcity places disproportionate burdens on the poor, women, children, and the elderly. Women, as noted during women-only FGDs, shoulder the heaviest workload, managing water, food, and caregiving responsibilities, often under physically and emotionally exhausting conditions. FGDs with women's groups highlighted how these challenges, exacerbated by prolonged dry spells, increase the risk of gender-based violence (GBV). Children, as community elders pointed out, face malnutrition and disrupted education, while the elderly, with limited mobility and resources, depend heavily on already overstretched family networks.

Table 4.2 Livelihood Shocks and Corresponding Coping Strategies

Livelihood category	Seasonal shocks	Risks and Impacts	Coping Strategies
Fishing	• Seasonal and species migration • Low catch rates and seasonal composition of high-yielding species. • Stronger winds	• Low catch rates and scarcity of high-yielding species • Risk-taking by fishing in protected areas & territories, other BMUs, and other fisher groups • Risk of arrest by KWS and foreign governments (Ethiopia).	• Fishing deeper into the Lake • Engage in alternative strategies such as casual labour, firewood, and charcoal production.
Pastoralism	• Delayed onset of the rainy season (longer dry season). • Increased rainfall variability (in space) with longer dry spells between rainfall. • Floods due to more intense rains. • Desert locust invasion • Stronger winds.	• Water and forage scarcity. • Conflict over resources. • Migration and consequent separation of household members. • Increased risk of raids.	• Migration to distant pastures. • Relying on social support networks. • Customary institutions for conflict resolution. • Increased involvement in livestock markets

Communities have long employed adaptive strategies to cope with these challenges. FGDs with elders and community members identified traditional coping mechanisms such as seasonal mobility, allowing pastoralists to access grazing lands and water across communal and national boundaries. Social support networks, including shared labor, food, and responsibilities, were described as crucial during periods of scarcity.

KIIs with local administrators highlighted the role of customary institutions in managing resource access and mitigating conflicts. However, these mechanisms are increasingly under strain. KIIs and FGDs pointed to the growing limitations of traditional strategies due to the intensifying frequency and severity of climatic shocks. Prolonged droughts and erratic rainfall leave communities with insufficient recovery periods, while economic impoverishment further erodes their capacity to invest in adaptive measures, increasing dependency on external aid. Once vital to resource management, traditional institutions are being undermined by modern governance challenges, resource conflicts, and shifting social dynamics. These factors exacerbate the seasonality-shocks-conflict nexus, fueling inter-communal tensions and violent disputes over scarce resources.

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4.1.5 Livelihood Transformations and Well-being in Lake Turkana

Table 4.3 provides a typology of wealth ranking of households, along with descriptions of their key characteristics. This information has been compiled from activity ranking exercises and discussions conducted in various locations, resulting in a generalized overview. As a result, not all strategy groups are present in every area, and not all characteristics apply universally to every household within a given group. Additionally, other groups and strategies may not be included in the table. Despite these limitations, the table offers a useful representation of the strategies commonly adopted by households in the Lake Turkana Basin, particularly those transitioning away from or diversifying beyond pastoralism and fishing. It highlights some of the alternative livelihood options pursued by these households.

Table 4.3. Typology of wealth groups and their livelihood strategies

Period	Ekhabaran (Wealthy)	Ekobotonit (middle)	Ekirionet or Elongait (poor)
Present day	• Employed as a teacher, nurse, or employed by the county government • Owns shop/business. • Owns a car, motorbike, or a boat • Buys fish and sells to cooperative or commercial traders. • Owns 100-150 shoats (kept in the village)	• Own a canoe or fishing net. • Buys (from women in the village) and sells firewood in urban centers. • Own some livestock • 5-15 fish catch per day.	• History of generational poverty (relatives were also poor) • Begs for fish. • Collects firewood and burns charcoal. • Collects and feeds on wild fruits. • Primary recipients of relief food/external charity goods.
Reference periods (20 – 30 years ago)	• 3 Bomas of Shoats • 1 Boma of camel and cattle each. • 50 donkeys. • Can support more than 4 wives.	• boma of shoats (50-100). • Has loaned camels. • 2 -5 camels. • 1-2 cows. • Could support up to 2 wives.	• Obtain livestock through hired labour and loans. • Collects milk and meat from other groups. • Most men in this category could not afford the bride price and marry divorcees.

There is a widespread perception among respondents that livelihood transformations around Lake Turkana have contributed to growing perceptions

of poverty and deprivation as traditional income sources like pastoralism and fishing decline. Figure 4.5 highlights the perceived widening economic gap between wealthy and poor households in the Lake Turkana region, driven by the decline of traditional livelihoods and the rise of low-return activities. The data reflects how communities categorize households as wealthy, middle-class, or poor based on local perceptions of economic status. In most study areas, there has been a notable decrease in wealthy households and a corresponding increase in those classified as poor. This perceived trend aligns with recent evidence and the Kenya Bureau of Statistics data for Turkana and Marsabit counties, indicating a deepening of economic inequality in these communities over time (KNBS 2024; Naeku & Irungu 2024).

Wealth and poverty perceptions are closely tied to the livelihood changes within these communities. Respondents explained that 20 -30 years ago in the past, wealth was often associated with owning large herds of livestock, accessing community institutions and support networks, or controlling valuable fishing resources. Due to the declining reliance on pastoralism as the primary source of food and income, along with the growing challenges of sustaining fishing livelihoods—stemming from increased competition for fishing resources, rising lake levels, inter-group conflicts over fishing territories, and emerging tensions with conservation and border authorities—many households have lost their primary assets and fallen into poverty. The shift toward marginal low-return activities such as firewood collection, charcoal production, and casual labour results from this trend and further exacerbates it.

Figure 4.4. Perceived Household Wealth Ranking by participants

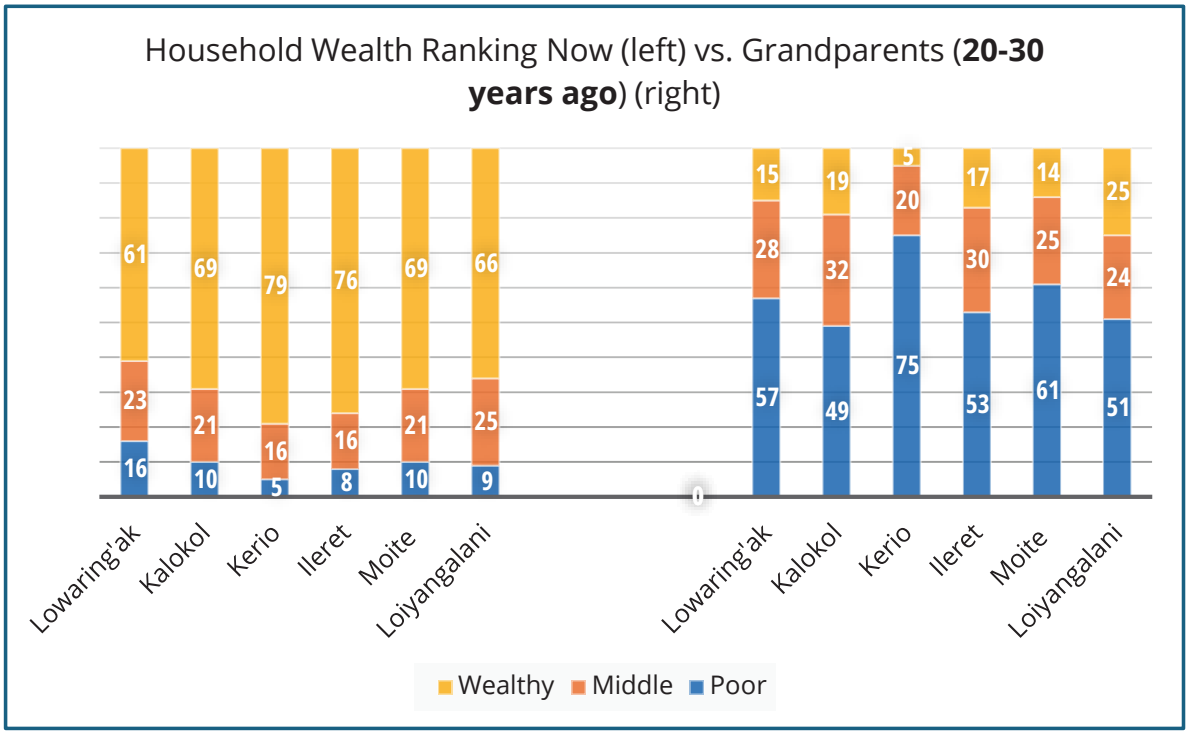


Figure 4.4 compares household wealth rankings—categorized as "Wealthy," "Middle," and "Poor"—across five locations (Lowarenga'k, Kalokol, Kerio, Moite, and Loiyangalani) between the present day and the time of respondents' grandparents (20-30 years ago). The data reveals a significant decline in the proportion of "Wealthy" households across all locations compared to the 20-30 years ago. For example, in Lowarengak, the share of "Wealthy" households decreased from 57% during the reference period to only 16% today, while in Loiyangalani, the decline was from 51% to 9%. FGD discussions suggest a reduction in economic stability and prosperity over time, influenced by changing livelihoods, resource limitations, and socio-economic challenges.

Conversely, the proportion of "Poor" households has increased significantly. In Kerio, for instance, "Poor" households rose from 5% in the reference period to 76% today, while in Moite, the increase was from 14% to 69%. These increases indicate growing vulnerabilities among lower-income groups, potentially driven by economic shocks, environmental challenges, and limited resource access. The proportion of the "Middle" category remains unchanged across all locations in both eras, with a slight decrease in most areas. According to the FGD responses, these variations suggest a narrowing gap between wealthy and poor households in some areas, while in others, economic challenges continue to erode middle-class stability.

Regional differences in wealth distribution are also evident, with locations such as Lowarenga'k and Loiyangalani showing relatively higher proportions of "Middle" households. At the same time, Kerio and Ileret exhibit a pronounced decline in both the "Wealthy" and "Middle" categories. This disparity highlights the influence of localized factors such as access to resources, livelihood opportunities, and external pressures like droughts or conflicts. Overall, the decline in "Wealthy" households, the rise in "Poor" households, and the varied **stability of the** "Middle" group emphasize growing inequality and economic challenges across generations.

The data also indicates rising inequality as more and more households are pushed into poverty. This growing wealth polarization has significant implications for social cohesion and inter-group relations. The perception is that wealth en an influx of in-migrating fishermen. These non-local fishermen from other parts of Kenya are perceived by local and non-local fishermen in communities like Kalokol, Moite, and Ileret, where there has been an influx of in-migrating fishermen. These non-local fishermen from other parts of Kenya are perceived by local communities to have an unfair advantage in controlling fish prices and dominating access to lucrative inland and export markets. The growing economic disparity is not only deepening poverty but also heightening social tensions and fuelling inter-group conflicts over resources in the region.

4.2 Conflict Context in Lake Turkana: Actors, Drivers & Causes

Climate change profoundly affects key sectors around Lake Turkana, exacerbating challenges in primary production strategies and livelihood security. As environmental pressures increase, they drive significant livelihood transformations,

altering mobility patterns, resource use, and inter-group relations. With traditional livelihoods like pastoralism and fishing becoming less viable, households increasingly turn to marginal activities such as firewood collection and charcoal production. These shifts significantly strain shared resources, sparking tensions between local groups and in-migrating communities over access to land, water, and fishing grounds. The growing competition for these resources, combined with existing inequalities and vulnerabilities, heightens the risk of conflict. This section examines how these livelihood changes impact local resources under climate stress and inter-group relations and their risks of escalation. It analyses the conflict dynamics, identifying conflict actors, mapping trends, and exploring the types of conflicts and their underlying drivers.

4.2.1 Types and Causes of Conflict in the Lake Turkana Region

Table 4.4 shows that conflict in the Lake Turkana region takes many forms, driven by a combination of resource scarcity, cultural practices, political tensions, and gender-based inequalities. These conflicts have become more intense as environmental pressures from climate change exacerbate communities' underlying challenges.

Table 4.4 Types, functionality, and drivers of conflict

Nature/ Type	Functions/specificity	Drivers/Causes	Selected Examples
Resource-based conflicts	• Herder-herder conflict	• Water points • Grazing land • Resource Boundaries (esp. dry season pasture and water)	• Turkana vs. Gabra, Gabra vs. Dasnach (Moite, Ileret) • Turkana vs. Dasnach (ET), Turkana vs. Samburu (Loiyangalani, Kerio)
	• Inter-fisherfolk conflict • Intra-fisherfolk conflict • Local fisherfolk vs. in-migrating fishermen/ traders • Locals vs. conservation authorities (KWS, BMUs)	• Price control • Management of landing sites • Access and use of protected areas • Enforcement of conservation regulations	• Lowareng'ak fishermen (Kenya) vs. Dasnach fishermen (Ethiopia) • Kenya Wildlife Service vs. fishermen (all sites) • Beach Management Units (BMU) vs. Fishermen (Ileret, Moite) • BMU vs. Cooperatives (Ileret)
Culture-driven conflicts	• Cattle rustling • Banditry	• Cultural practices/ customary events (e.g., rites of passage). • Restocking after mass losses • Revenge over past conflict acts • Availability of SALWs	• All herder groups
Institutional-based conflicts	• Inter-BMU conflict • BMU vs. cooperatives • BMU vs. local fishermen over the use of monofilament	• Inter-group BMU territory • Price control • Conservation rules	• All fishing sites • BMU vs. Fishermen on Monofilament (Ileret, Moite)

Nature/ Type	Functions/specificity	Drivers/Causes	Selected Examples
Ethno-political conflicts	• Inter-group conflict over ethnically defined boundaries	• Historical inter-group grievances • Marginalization of ethnic minorities	• Turkana vs. Samburu (Loiyangalani) • Dasnach vs. Gabra (Ileret)
Gender-based violence	• Household disagreements impact linked to loss of assets • "Sex for fish" exploitation practices • Risk of rape linked to extended hours on the lake shores	• Emasculating male pride/strength • Gender roles • Harmful cultural practices (FGM, early marriages) • Erosion of cultural norms protecting women and girls	• "Sex for fish" exploitation practice (Kalokol) • Targeting of women in Dasnach vs. Gabra conflict • Increased incidences of rape for women returning late at night from the lake (Ileret, Loiyangalani)

a) Resource-based conflicts

Resource-based conflicts are among the most prevalent in the Lake Turkana region, arising from competition over scarce natural resources such as water, grazing land, and fishing grounds. Key informants argue that climate change has intensified these conflicts, with prolonged droughts and fluctuating lake water levels reducing the availability of these essential resources. For instance, herder-herder conflicts often occur during dry seasons and droughts when access to water points and grazing land becomes severely scarce. In the fishing sector, conflicts emerge among fisherfolk over group fishing territories and access to dwindling fish stocks. Overfishing and rising lake levels have reduced catches, prompting intra-fisherfolk tensions. Additionally, there are frequent confrontations between local fishermen and conservation authorities, such as the Kenya Wildlife Service (KWS), when fishing activities encroach on protected or ecologically sensitive areas. These conflicts demonstrate how environmental pressures push traditional livelihood systems to the brink, forcing communities to compete for vital resources and triggering violence.

The growing concerns among local fishermen and institutions over dwindling fish stocks and the risks associated with how these perceptions are key factors in access to lake resources are intensifying competition and fueling inter-group conflict over fishing rights and territorial boundaries. Two significant impacts of these perceptions have emerged from the qualitative data, emphasizing how they shape fishing behaviors, resource governance, and regional stability within the Lake Turkana basin.

First, as fish stocks dwindle in traditional fishing grounds, fishermen are increasingly venturing into deeper waters, sometimes in designated protected areas or across international borders. This shift has increased exposure to hazardous conditions, such as strong lake waves and storms, making fishing more dangerous, especially for poorer groups without boats and modern fishing equipment.

Second, due to the increased need to navigate the complexities of fish scarcity by venturing into protected areas and areas beyond local BMU boundaries, fishermen experience increased inter-community tensions and conflict with different fishing groups and law enforcement agencies. Fishermen in Todonyang, Lowering'ak, Kalokol, Moite, and Ileret reported violent encounters with law enforcement, particularly with the KWS rangers, as they ventured into restricted fishing areas. The conflicting encounter with KWS rangers has, in turn, led to allegations of arbitrary killing of fishermen, arrest, and destruction of boats and fishing equipment. A fisherman from the Lowaring'ek BMU noted:

> *"Fish scarcity is now forcing us into dangerous waters. If the fish were still near, we would not risk our lives this way."*

The situation has also intensified cross-border tensions, with many fishermen seeking fish in Ethiopian waters, leading to confrontations with Ethiopian authorities and BMUs. A fisherman from the Ileret BMU explained:

> *"We have no choice but to go further, even into Ethiopia. However, when we do, we face arrests, detention for extended periods, fines, and imprisonment."*

Similarly, a County Government of Turkana official from the fisheries department acknowledged:

> *"The pressure on fish stocks is pushing fishermen into areas where they should not be, like the southern island, which is guarded around the clock by KWS, leading to increased conflicts and risks."*

b) Culture-driven conflicts

Culture-driven conflicts are deeply rooted in the traditions, practices, and historical grievances of the communities around Lake Turkana. Cattle rustling, a cultural practice among local pastoralist groups, is a prominent example of such conflicts. Traditionally linked to rites of passage, such as circumcision or warriorhood, cattle rustling frequently escalates into a violent, organized activity involving small arms and light weapons. This practice has become more destructive as pastoralist systems face increasing challenges, with cattle rustling being a means of restocking livestock after losses caused by droughts.

Banditry, often related to historical raiding practices, has similarly increased in frequency and intensity, especially in areas with limited governance or weak presence of security forces. According to key informants, banditry is usually fuelled by the desire to accumulate wealth and social status, with livestock ownership remaining a key indicator of wealth in many pastoralist communities. However, as climate change undermines traditional pastoralist systems to manage resources and solve conflicts, these activities have grown increasingly violent, leading to loss of life, destruction of property, and further destabilization of vulnerable communities.

c) Institutional conflicts

Institutional conflicts stem from disagreements within or between formal and informal institutions, particularly those related to resource access, use and management in the fisheries sector. Recently, disputes have arisen between Beach Management Units (BMUs), fisherfolk cooperatives, and local fishermen over the use and phasing-out of monofilament nets. To regulate fishing practices and promote conservation, conservation organisations have used BMU officials to implement interventions to phase out monofilament nets. However, the process has been marked by a lack of inclusivity, as key decisions regarding the modalities and timeframes for phasing out these nets were made solely between BMU officials and the organisations, without consultation with members of the BMU. This exclusion left many fishermen, some of whom had invested over Kshs. 25,000 in monofilament nets, unprepared for the abrupt enforcement of the ban.

Once the agreed-upon phase-out period had lapsed, BMU enforcement officials, alongside conservation NGO representatives, conducted raids on the homes of member fisherfolk, confiscating and burning monofilament nets. In the process, affected individuals also lost other valuables, including cash and essential household items.

This antagonistic enforcement approach has fuelled tensions between local fishing communities and their BMUs, particularly in Kalokol, Ileret, and Moite, where fishermen view the restrictions as unfair and detrimental to their livelihoods. The resulting clashes underscore the growing discontent among fisherfolk, who argue that they were neither adequately informed nor given a viable alternative before the ban was enforced.

Allegations of corruption and collusion between BMU leadership and many conservation organizations have further escalated tensions. Conflicts have also emerged between cooperatives and BMUs over price controls and the distribution of fishing-related revenues and equipment provided by donors or government agencies. According to County Government officials, after the collapse of the Lake Turkana Fishermen Cooperative Society in 1984, BMUs took on additional responsibilities beyond their core role of co-managing lake resources. These included negotiating fish prices with traders, enforcing local fishing regulations, and maintaining health and sanitation standards for fish processing.

With the introduction of county governments in 2013, efforts to revive fishing cooperatives have gained momentum. Supported by the County Department of Fisheries and the State Department of Fisheries, these cooperatives operate within and across BMUs as fisher-led organizations focused on fish collection, processing, and marketing. The Fisheries Act (2012) mandates BMUs to support the activities of cooperatives and fisher self-help groups within their jurisdictions. However, while the Fisheries (Beach Management Unit) Regulations (2007) outline the BMUs' regulatory and marketing functions—such as constructing and supplying marketing facilities and organizing fish auctions—the regulations also limit BMUs' authority over price regulation. Section 6(6) of the Regulations explicitly states that BMUs "shall not in any circumstances have the right to determine or dictate the prices at which fish or fishery products are to be sold."

According to the Fisheries Chief Officer of Turkana County, these regulations underscore the necessity of cooperatives in county fisheries management. Fishing cooperatives act as the first buyers of fish from their members, negotiate prices with traders, provide shared transportation to markets, and help cushion members against economic shocks such as catch shortfalls or surplus fish. In Marsabit and Turkana Counties, county and national governments have supported cooperatives by facilitating their formation, investing in infrastructure, and providing training and skills development. While many cooperatives still function under the leadership of their respective BMUs, independent fisher and trader cooperatives are emerging. In Kalokol and Ileret, for example, fisherfolk cooperatives primarily engage in the dried fish trade, assisting members in negotiating fair prices and coordinating bulk transportation to inland markets such as Busia and Bungoma. By pooling resources, members reduce transport costs, streamline logistics, and strengthen their bargaining power.

However, fishing cooperatives remain less influential than BMUs, leading to conflicts over their roles and responsibilities. Many external interventions—including government programs, NGOs, and donor projects—prefer working with BMUs, which are more established and institutionally recognized. This exclusion has frustrated cooperative members, who argue that cooperatives are better suited to addressing fisherfolk's economic needs, particularly in price negotiations and market access. The lack of clear institutional mandates and overlapping responsibilities between BMUs and cooperatives has intensified competition rather than fostering collaboration, ultimately hindering effective fisheries management and support for fishing communities.

Violent clashes have occurred between local fishermen and KWS rangers enforcing conservation regulations in protected areas. For instance, a response by KWS to the killing of two rangers by suspected Ethiopian Dassanach fishermen led to the deaths of 10 local fishermen, with allegations of revenge killings and destruction of property. KWS, in response, argued that their actions were lawful and that they had carried out arrests and prosecutions in relation to the incident.

County government officials interviewed for this study are concerned by these trends and worried that these institutional conflicts destabilize fishing communities and undermine sustainable resource management in the region.

d) Ethno-political conflicts

Ethno-political conflicts in the Lake Turkana region are driven by political marginalization, and historical grievances between different ethnic groups. These conflicts often manifest as inter-group violence, particularly during protracted drought periods and during election periods when political competition is influenced by local political leaders mobilizing support along ethnic and socio-economic divides. The region's complex ethnic composition, coupled with its geographical remoteness and limited government presence, creates a volatile environment where ethnic tensions can quickly escalate.

Historically, ethnic groups for example the Turkana, Samburu and Dassanach in the region have competed for control over grazing land, water resources, and fishing grounds. In recent years, political dynamics have exacerbated these

conflicts, such as the distribution of government resources and representation in local governance. Political actors often mobilize support along ethnic lines, further deepening divisions and inciting violence. For example, respondents in Marsabit reported incidents of mass displacement and destruction of property before the 2022 general elections, as communities clashed over elected positions in the County Government. These conflicts not only result in loss of life and property but also disrupt livelihoods by displacing communities and cutting off access to essential resources.

e) Gender-Based Violence (GBV)

Gender-based violence (GBV) is a widespread issue in the Lake Turkana region, aggravated by climate-induced livelihood pressures and harmful cultural practices. The economic strain caused by the decline of traditional livelihoods often leads to heightened stress within households and pressure on men to fulfil their traditional role of providing for the family, contributing to increased domestic violence and other forms of GBV. Women and girls face increased vulnerability when households lose critical assets like livestock. Several interviews revealed that male partners or relatives may resort to violence when they feel emasculated by the loss of assets or by women's increased access to household resources and income-generating opportunities.

In some cases, harmful cultural practices, such as early forced marriages and female genital mutilation (FGM), further perpetuate gender-based inequalities and violence, particularly in Marsabit County. Respondents in the study described instances of violence triggered by these socio-economic pressures: A divorced mother in Kalokol recounted how her husband burned down her house when she refused to give him money for alcohol, claiming that anything she earned from a business he started belonged to him. The local Chief explained that men who feel their masculinity threatened by women's access to resources or economic success may retaliate with violence.

Resource conflicts also disproportionately affect women and girls, who are often responsible for gathering essential household items like water and firewood. As competition for these resources intensifies, women and girls are exposed to more significant risks of violence, exploitation, and abuse when fetching/collecting these essentials. Evidence from Marsabit and Isiolo Counties shows that women are forced to make day-long trips to collect firewood in distant, unsafe locations, where they are vulnerable to harassment and violent attacks.

4.2.2 Conflict Actors and Level of Influence

The Lake Turkana region faces complex conflicts, with various actors playing different roles in either exacerbating or mitigating these tensions. These actors are categorized based on their role, formality (formal or informal) and their level of influence (high or low) on conflict dynamics. The interplay between these actors significantly affects the region's opportunities for conflict resolution, peacebuilding, and sustainable livelihood practices and resource management. Both formal and informal actors may influence conflicts in various ways either contributing to their resolution or benefiting from conflicts while, in other cases, actively hindering conflict resolution and peacebuilding efforts. Based on their

roles and impact on the conflict dynamics in Lake Turkana Basin, the analysis identified four categories of actors.

a) Formal actors with high influence.

Formal actors with high levels of influence have institutional authority, access to government-backed resources, and the power to shape policy and regulation. These actors are central to decision-making, conflict management, and resource allocation.

- The national governments of Kenya and Ethiopia are the most influential, as their policies determine overall natural resource distribution, budget allocations, security measures, and conflict resolution strategies. By enforcing laws and overseeing resource management, the national governments of Kenya and Ethiopia significantly impact both the mitigation and escalation of inter-group conflicts in the Lake Turkana Basin.

- Local governments (County Governments in Kenya, Woreda Administration in Ethiopia) also hold substantial sway as they implement national policies and oversee community-level development initiatives. Their proximity to affected populations directly influences land use, resource management, and resolving disputes, particularly over land and water rights. The decisions made by local governments can either calm or exacerbate tensions, especially in relation to access to grazing land or fishing grounds.

- Elected officials, including members of parliament and county assemblies, influence resource allocation and policy-making at the local level. Their involvement in community affairs allows them to mediate disputes or, at times, escalate tensions depending on their engagement with constituents

- Religious leaders and organizations also wield significant influence, providing moral and social guidance while fostering dialogue and peace-building efforts between conflicting groups.

- Kenya Wildlife Services (KWS) plays a critical role in managing conservation efforts around protected areas like the southern island and its constituent crater lakes – Crocodile Lake, Flamingo Lake and Tilapia Lake – which often brings conflict with local communities, mainly fishermen who rely on restricted areas for their livelihoods. KWS's enforcement of conservation laws – the control of illegal fishing practices and implementation of measures to ensure stocks sustainability – makes it a central figure in fuelling and resolving resource-based disputes. Similarly, private conservation organizations, working in partnership with government bodies, advocate for stricter environmental protections, sometimes clashing with local communities over access to vital resources and the use of monofilament nets suspected to be in use in areas where there is little or no KWS surveillance.

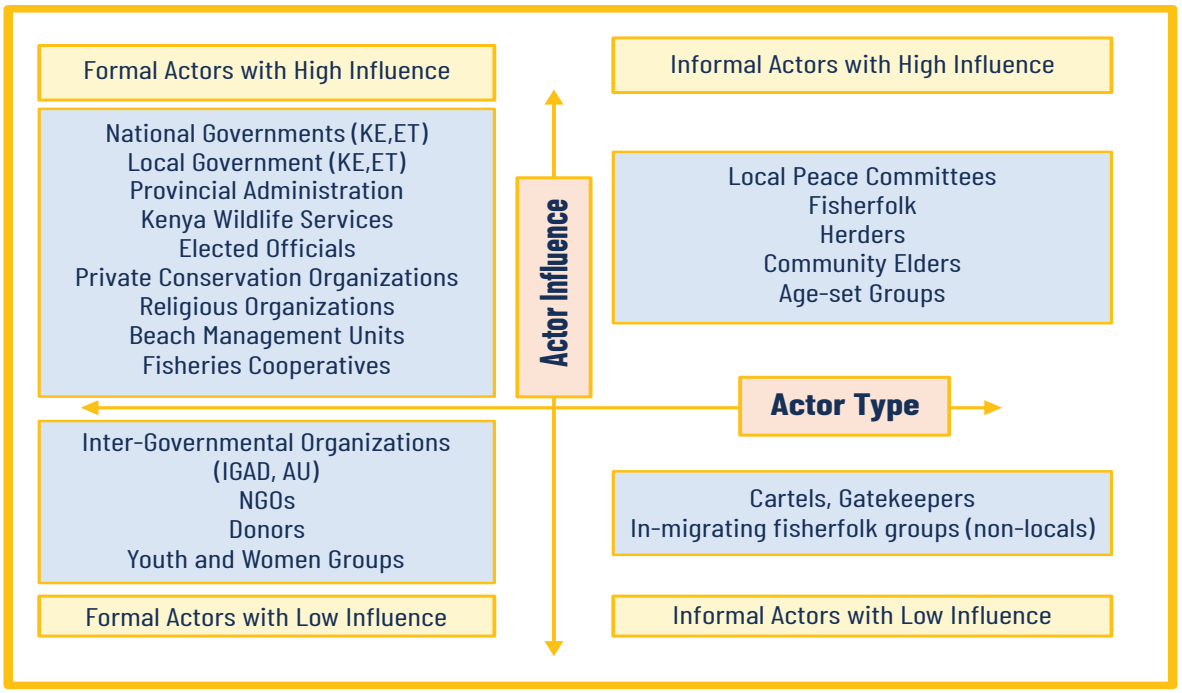
- Community-based organizations such as Beach Management Units (BMUs) and fisheries cooperatives manage local fishing resources and beach activities. These organizations notably influence local decision-making, particularly in fisheries management and access to fishing territories. While conflicts often arise over governance practices within these groups, their role in mediating disputes positions them as essential actors in conflict resolution within the Lake Turkana region.

b) Informal actors with high influence

Informal actors wield considerable influence within their communities. This influence often stems from their traditional leadership roles, social standing, or control and decision-making over essential resources.

- Local Peace Committees, for instance, are community-based groups that play a critical role in conflict resolution, especially in areas where formal governance is weak or absent. These committees mediate resource disputes and promote peace-building initiatives, often acting as the first line of defence against escalating conflicts.
- Fisherfolk and herders, as the primary users of natural resources like fish stocks, grazing land, and water points, have significant influence over resource management. Their actions directly affect resource competition and conflict dynamics, making them key players in initiating and resolving resource-based disputes.
- Elders, who hold traditional authority in many communities, are typically responsible for making important decisions regarding land use, resource access, and conflict resolution.
- Age-set groups, which are social organizations based on generational cohorts, also have considerable influence in pastoralist societies, where they help enforce social norms and mediate disputes within the community.

Figure 4.5 Conflict actors and level of influence around Lake Turkana



- Gatekeepers, "cartels" and their role in the conflict. KIIs and FGDs with community members revealed agreement that powerful actors leverage existing or absent institutions to influence resource distribution, opportunities, and external aid, thereby affecting livelihoods. Historically, resource distribution and dispute resolution regarding natural resources, livestock, and fishing activities were mediated by community elders chosen for their age, intelligence, and wisdom. These elders represented a form of customary governance that interfaced with formal civil and political administrations like Chiefs and County Commissioners.

Their responsibilities included land management, conflict resolution, and local justice mechanisms.

FGD participants expressed concern about the erosion of their traditional customs due to factors like education, sedentarization, and the cash economy, which have given rise to the emergence of an interconnected political and economic elite. These elites include local businesspeople, contractors, in-migrating fishermen (primarily from Kisumu and Busia), and politicians. Participants specifically highlighted the emergence of powerful "cartels" and "gatekeepers," particularly in the fishing sector. According to FGDs, "gatekeepers" are informal power structures that exert significant influence over how, when, and where local investments are implemented. These individuals or groups—often including elders, local elites, elected or former politicians, and sometimes lower-level county and national government officials such as village administrators and chiefs—operate outside formal accountability mechanisms. They are neither answerable to the government nor the communities they claim to represent.

In contrast, "cartels" are organized groups driven primarily by commercial interests, focusing on business and service provision. These groups often control access to resources and opportunities, distorting procurement and resource allocation processes to serve personal or group interests. FGD participants highlighted that while gatekeepers and cartels can hinder effective service delivery, cartels are more commercially motivated and pose unique challenges to government and development agencies.

Another category of gatekeepers and cartels identified by locals are "in-migrating" fisherfolk. These individuals, often non-local in-migrants, dominate fishing and trade networks, leveraging skills such as boat-making and repair to gain control of fishing operations and distribution to lucrative markets in Western Kenya, urban markets such as Nakuru and Nairobi, and international markets such as the Democratic Republic of Congo. FGDs with BMUs emphasized that these cartels and gatekeepers disrupt local fishing livelihoods by charging exorbitant fees for boat repair, fishing nets, and fish prices. Beyond fishing, FGD participants noted similar issues in other sectors, such as county government services and development and humanitarian projects. Examples included the diversion or non-completion of water and fishing-related services, often through collusion with County Government employees, NGOs, and local politicians. KIIs revealed that cartels are prevalent in the water sector, where they distort site selection for boreholes, manipulate water supply infrastructure projects, and engage in nepotism in contract awards.

Contrasting community perspectives, a County Government official in Turkana argued that the so-called "cartels" and "gatekeepers" are merely local wealthy individuals with the resources and connections to secure service provision contracts. He explained further that delays in exchequer transfers from the National Treasury and county government pending bills, rather than deliberate sabotage by contractors, often caused uncompleted projects. Similarly, a CSO representative in Marsabit County noted that County Governments and NGOs usually rely on local contractors and elites due to their knowledge of local contexts

and ability to facilitate community participation and project completion. He added that external contractors frequently fail to bid on these projects because of challenges like high transportation costs, unfamiliarity with local conditions, and perceived insecurity.

c) Formal actors with low influence

Although formal, these actors have limited influence due to geographic distance, resource constraints, or restricted authority over local affairs.

- Inter-governmental organizations, like the African Union (AU) and the Intergovernmental Authority on Development (IGAD), as well as their specialized institutions, can provide support policy guidance and apply diplomatic pressure to enforce regional and intergovernmental agreements on resources and peaceful coexistence. However, their influence in resolving local conflicts is often restricted. While they facilitate regional cooperation and peacebuilding efforts, they lack the direct authority, mandate, access and ground presence needed to enforce decisions or policies at the community level.

- Local and International Non-Governmental Organizations (NGOs) are essential in advocacy, capacity-building, and delivering services around the Lake Turkana region. However, their influence is often limited by the scope of their projects, funding constraints, and dependence on partnerships with local governments. Nevertheless, they can significantly impact specific issues such as environmental conservation, women's rights, or livelihood support.

- While essential in providing funding for development and conflict resolution initiatives, donors wield indirect influence. Their impact depends heavily on how effectively the recipient organizations and governments use the funds.

- Though able to advocate for their interests, formal local youth and women's groups often have limited influence due to their marginalized status in many communities. Despite this, they play a critical role in representing vulnerable populations and are instrumental in grassroots peace-building efforts, where their voices are vital for fostering inclusive dialogue and addressing local challenges.

d) Informal actors with low influence

In-migrating fisherfolk and their groupings are one example of informal actors with low influence. Though present and involved in the region, these actors have limited influence over the broader conflict dynamics, primarily due to their outsider status and lack of established social and political networks within local communities. As "outsiders," they often do not have the necessary connections or authority to shape local decision-making or conflict-resolution processes. These groups struggle to exert meaningful influence due to unfamiliarity with local power structures and outsider status. However, despite their limited authority, the in-migrating fisherfolk presence significantly impacts resource dynamics. As they compete with established local communities for access to fishing grounds, local prices, and lucrative inland and export markets, their arrival often intensifies

existing tensions. In-migrating fisherfolk can inadvertently exacerbate conflicts over fish prices and access to external markets, particularly in areas where local communities feel threatened or marginalized by the outsiders' economic activities.

4.2.3 Structural, proximate and immediate factors leading to conflict in the Lake Basin.

In both counties, long-standing structural issues such as economic decline, unequal access to resources and decision-making and social dislocation (e.g., pastoral dropouts) create vulnerabilities and grievances of different ethnic and socio-economic groups. A culture of violence driven by revenge attacks and the weakening of customary institutions are further destabilizing factors. Socio-economic grievances and inequalities may escalate into open conflict and can be exploited to mobilize (ethnic) groups against each other. In Marsabit County, proximate factors such as droughts, rising lake levels, and floods disrupt livelihoods, historical ethnic tensions, uncontrolled insecurity, and political manipulation related to elections and the allocation of county resources also create divisions within and among communities and lead to violent conflict. In Turkana County, proximate factors include mass population movements that generate social tensions, fear, and insecurity. These issues are compounded by external destabilizing factors, such as conflicts in neighbouring countries and the widespread availability of small arms and light weapons.

In both counties, immediate triggers such as the arrest or killing of community members, disagreements over resource access, and exclusionary practices in administrative processes often ignite latent tensions. Other triggers include cultural events or rites of passage, and changes in resource boundaries. The recent rise in lake levels has also caused widespread flooding, displaced households, and submerged critical infrastructure. These losses and displacements have heightened tensions between and within groups, further exacerbating conflict and contributing to incidents of GBV.

The analysis shows that conflict dynamics in both counties are shaped by the interaction of systemic and enabling factors alongside localized and external pressures. Immediate events, such as violent confrontations, resource disputes, or exclusionary practices, often escalate pre-existing grievances. KIIs reveal that while ethnicity and clan affiliations provide a structural backdrop for tensions, they are not inherently conflictual. Instead, structural issues such as the implementation of devolution play a central role. Although devolution was intended to promote equity and local governance, it has sometimes politicized ethnicity and intensified competition for resources and leadership roles. Historical marginalization and the exclusion of minority groups from governance have deepened feelings of alienation. For instance, FGDs in Ileret, Marsabit County, revealed how successive county administrations excluded local communities from investments in critical water and livestock infrastructure, resulting in the loss of dry-season water sources and increased resource-based conflicts.

Table 4.5. The most important structural, proximate, and immediate factors leading to conflict in Lake Turkana

County	Structural (systemic) factors	Proximate (enabling) factors	Immediate (triggering)
Marsabit	• Resource scarcity, general economic decline, and resource depletion • Impoverishment and social dislocation (e.g., pastoral drop-outs) • Culture of violence - cultural support for violence (revenge and retaliatory attacks) and diminishing role of customary institutions • Inequitable access to natural resources and lack of equal economic and social opportunities	• The effects of climate change (including water shortage, food insecurity, and more frequent natural disasters) • Historical ethnic tensions and uncontrolled insecurity • Role of politics and elites	• Drought, lake level rise, and floods • Arrest/murder of community members and other repressive actions (restrictions of mobility, fishing and landing sites, prices) • Cultural events/rites of passage • Changes in resource boundaries, access rights, and exclusion
Turkana		• Mass population movements and social tensions, fear and insecurity • Destabilizing role of neighbouring countries in conflict and availability of SALWs • The effects of climate change (including water shortage, food insecurity, and more frequent natural disasters).	

Source: Compiled by the authors from FGDs and KIIs

4.3 Climate Change Conflict Pathways

Recognizing that violent conflict is influenced by a complex interplay of local factors rather than an inevitable consequence of climate-related outcomes, the pathway framework is used to analyse how climate change interacts with conflict drivers in the Lake Turkana region. Four key conflict pathways (Mearns & Norton 2010), through which climate change impacts can heighten the risk of violent conflict were identified. This section delves into these four pathways, illustrating how climate change, human mobility, livelihood systems and conflict dynamics interact in Lake Turkana. Figure 4.6 summarizes these links.

4.3.1 Pathway I: Increased mobility and inter-group competition over scarce resources

The climate-conflict pathway related to competition over increasingly scarce resources, such as water, grazing land, and fishing grounds, is particularly evident in the Lake Turkana region. Climate change fuels environmental pressures, exacerbating tensions among communities dependent on these resources for survival. Pastoralists in the study frequently cited water scarcity as a critical conflict trigger. Prolonged dry seasons and unpredictable rains have severely strained water sources like boreholes and wells, especially during extended droughts. In areas where pastoralism dominates, access to water for livestock has become increasingly contested. A community elder from Loiyangalani explained that during dry seasons herders from different communities converge on the few remaining water points, often resulting in violent clashes as groups compete for access the water. Similarly, competition for grazing land has intensified. As

productive pastures become scarcer due to climate change, herders are forced to migrate farther, encroaching on land traditionally used by other groups, which leads to frequent conflicts, particularly during droughts.

Fishing communities have also experienced rising tensions due to fluctuating lake water levels which has made lake navigation more challenging for fishers and led to a decline in fish catch. In-migrating fisherfolk from other regions, seeking better opportunities in Lake Turkana, has worsened the situation. Fishermen from Kalokol and Ileret reported growing conflicts between local and non-local fishers. The competition for fishing grounds and landing sites has led to violent confrontations. Conservation efforts further complicate the situation, as Kenya Wildlife Services (KWS) restricts access to protected fish breeding zones, sparking conflicts between local fishermen and authorities. These conflicts underscore the link between environmental degradation and social instability. As climate change diminishes access to critical resources, communities are forced into competition, threatening livelihoods and destabilizing the region. Respondents consistently noted that these conflicts are becoming more frequent and severe, further undermining stability and increasing poverty in the affected areas. Different livelihood groups are impacted in distinct ways by climate-related mobility and the impact on livelihood systems (Table 4.6).

Figure 4.6. Possible Pathways from Climate Change to Conflict in Lake Turkana Region

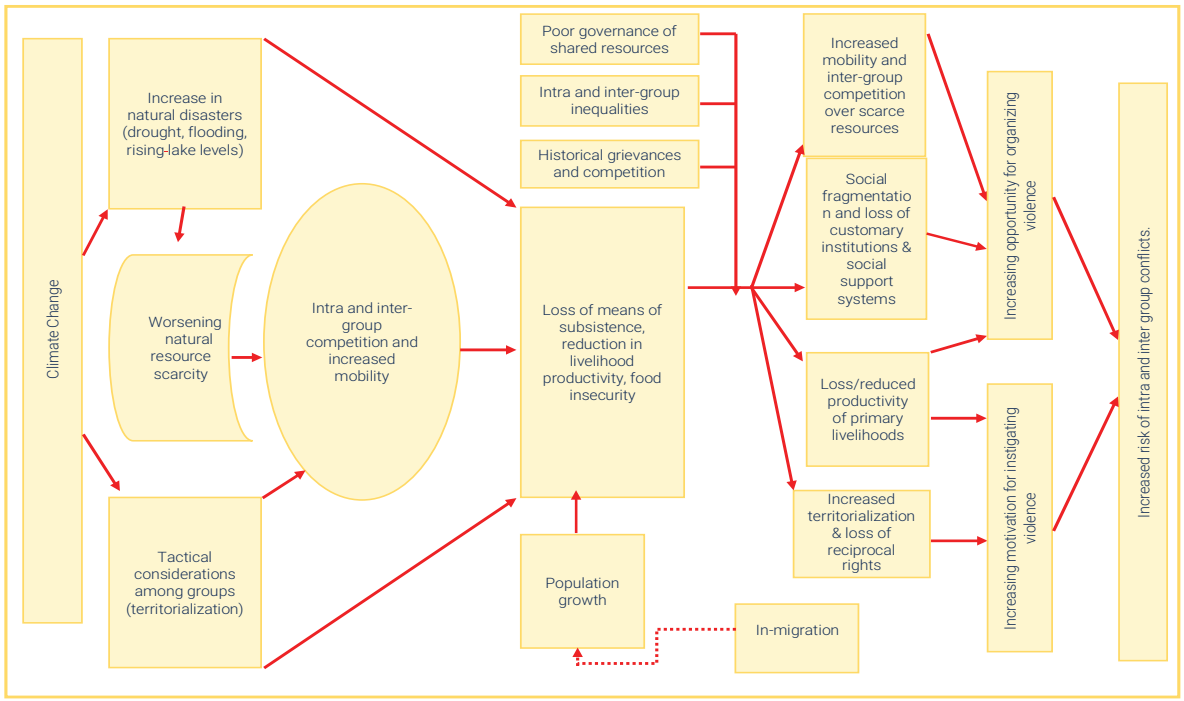


Table 4.6. Pathway I: Climate Change, Livelihood Systems and Conflict

Livelihood group	The connection between climate change and livelihoods	Conflict outcome
Pastoralism	Drought conditions result in water and pasture scarcity, forcing pastoralist groups to migrate more frequently and over longer distances. As their movements increase and increase and extend, they come into contact with both local and in-migrating pastoral groups, leading to competition for the limited water and grazing resources.	Competition between groups over water, pasture, and migration routes often leads to conflict. Pastoralists face a dual challenge: losing livestock while also dealing with rising insecurity and violence. Prolonged droughts and periods of excessive rainfall contribute to further livestock losses, increased outbreaks of livestock diseases, and inter-group raids for restocking. These factors not only severely hinder livelihood recovery for affected communities but also lead to further conflict, perpetuating a vicious cycle of violence and instability. As resources dwindle and tensions rise, the likelihood of conflict increases, making it even harder for communities to rebuild and recover.
Fishing	Fish production is increasingly challenged by fluctuating water levels, which cause the drying up or flooding of key fishing zones such as Ferguson Gulf. Additionally, declining fish stocks leading to reduced fishing activity in the open lake. Other factors, including climate change impacts, unpredictable wind patterns, and conflicts in various parts of the lake that restrict access to fishing grounds (see Section 4.1.6 for a detailed discussion), further compound these challenges. As a result, fishing becomes a less reliable source of income and food security for local communities, destabilizing livelihoods and limiting economic opportunities in the region.	As fish stocks dwindle, competition for fishing grounds intensifies, often resulting in conflict between local and in-migrating fishers. Additionally, conservation regulations further limit access to certain fishing areas, exacerbating tensions between fishermen and KWS and contributing to heightened conflict over diminishing resources.
Alternative livelihoods	Climate change-related losses among pastoralists and fishermen push many to seek alternative/additional livelihoods outside traditional livestock and fishing activities. With livestock deaths and households increasingly turn to non-livestock and non-fishing options such as casual labour and petty trade.	Opportunities in alternative livelihoods are limited, and the influx of both local and in-migrating populations seeking similar alternatives has intensified competition, often leading to conflicts between households. This competition not only fuels tensions between local and migrant communities but also strains household dynamics. As households struggle to adapt to the loss of their primary livelihood assets, the economic stress often results in GBV, with male partners reacting violently to the perceived empowerment of female partners who may gain more access to income from alternative sources.

4.3.2 Pathway II. Reduced productivity of primary livelihoods and risk-taking

The loss and reduced productivity of primary livelihoods due to climate change in the Lake Turkana region have driven pastoralists and fishermen to increasingly take high-risk actions to survive, often leading to violent confrontations with government institutions. As droughts persist, grazing lands shrink, and water sources become scarce, pastoralists are frequently forced to graze their livestock in restricted areas, including national parks, where grazing is prohibited. This encroachment into protected areas has sparked violent conflicts with KWS rangers tasked with enforcing conservation laws. Similarly, fishermen facing dwindling fish

stocks (see detailed analysis in section 4.1.6) have been compelled to venture into protected areas of Lake Turkana, designated breeding and conservation zones, where fishing is restricted or banned. The conflict between these fishermen and KWS rangers has become increasingly common, with several violent confrontations as fishermen resist restrictions limiting their access to the already scarce fish resources vital for survival.

Additionally, as pastoralists and fishermen encroach into these protected areas, they come into more frequent contact with wildlife such as crocodiles, hippos, and lions. These interactions often result in human-wildlife conflict, further heightening the risk to human lives and increasing the tension between communities and conservation authorities. Crocodile and hippo attacks on fishermen, for example, have become more frequent as fishermen venture deeper into Lake Turkana in search of fish, while pastoralists grazing in parklands face threats from lions and other predators. These incidents not only result in human casualties but also provoke retaliatory killings of wildlife by communities, which brings them into further conflict with conservation bodies.

The underlying pressure of climate change, which diminishes traditional livelihoods' productivity, pushes pastoralists and fishermen into these risky behaviours. In turn, the resulting confrontations with government institutions over resource use in protected areas, combined with escalating human-wildlife conflict, create a volatile environment that exacerbates the overall cycle of violence and instability in the region.

4.3.3 Pathway III: Changing Customary Institutions & Social Support Systems

Customary institutions and social support systems have traditionally played a key role in maintaining social cohesion and resolving disputes in the Lake Turkana region. Led by community elders, age-set groups, and other traditional authorities, these systems mediate conflicts over resources like grazing land, water, and fishing territories, fostering mutual support among households and enabling communities to manage challenges together. However, social, economic, and political changes, grievances and vulnerabilities, heightened by the climate stress on livelihoods, have weakened these traditional structures.

The increased challenges due to rising environmental pressures and migration exceed the capacity of customary institutions to manage conflicts, leaving a governance vacuum. This weakening of traditional dispute resolution mechanisms destabilizes community relations and problem-solving mechanisms, escalating unresolved grievances and fuelling more frequent and violent inter- and intra-group tensions. As resource competition over water, pasture, and fishing grounds intensifies the lack of effective mediation is causing tensions to escalate. Social fragmentation has also undermined community resilience, as traditional mutual aid systems break down and households are left to compete for survival. In the absence of strong customary institutions to manage conflicts, climate-induced scarcities have deepened historical ethnic and territorial disputes, often leading to violent confrontations, particularly between local and in-migrating groups.

4.3.4 Pathway IV: Drought shocks and increasing ethnic territorialization

In the Lake Turkana region, the experience of successive severe droughts has overburdened traditional systems of shared resource access, fuelling ethnic territorialization and inter-group conflicts. For generations, pastoralist communities relied on shared access to water points and grazing land, which supported inter-group cohesion. These reciprocal arrangements allowed different ethnic groups to access resources during times of scarcity. However, this cooperative system has deteriorated as climate change intensifies and droughts become more frequent and severe. Communities, now facing increasingly scarce water and pasture, are adopting a more territorial and competitive approach to resource access, restricting entry to what were once shared spaces. Long-standing agreements are broken and traditional mobility patterns of pastoralists disrupted, forcing them to travel farther or enter contested areas. As a result, inter-group violent clashes over access to resources have emerged, particularly during drought periods.

These territorial conflicts have begun to spill into the fishing territories of Lake Turkana. The exclusion of certain ethnic groups from fishing grounds – driven by current resource competition and historical grievances – mirrors the exclusion over grazing land and water points. Ethnic groups that have experienced exclusion due to territorialization are now carrying those tensions into the lake's fishing areas, where fishing communities are increasingly divided along ethnic lines. This climate change-conflict pathway highlights how the breakdown of traditional reciprocal systems, driven by environmental stress, is not only causing inter-group violence over grazing land and water but also extending these tensions into fishing territories. The loss of shared access to resources, compounded by territorialization and historical tensions, pushes communities into deeper conflict, further destabilizing the Lake Turkana region.

4.4 Identification and analysis of local coping capacities

4.4.1 Local Knowledge and Resources for Adaptation and Risk Reduction

This section presents findings on local knowledge and resources for adaptation and risk reduction in the Lake Turkana region. The analysis highlights community-level adaptations to increasing climate stress, including strategies for managing water, grazing lands, and fishing resources. It also examines the role of local institutions, such as traditional elders and community-based organizations, in mediating resource conflicts and supporting adaptive responses. Additionally, the findings explore the impact of external interventions, including government programs, NGOs, and international organizations, in enhancing local capacity for climate resilience and conflict risk reduction. PRA tools such as piling, ranking, and resource mapping have been used to assess the effectiveness of current coping mechanisms among participants. Participants detailed the impacts of various hazard events and listed their adaptation strategies to secure and improve their livelihoods.

Table 4.7. Conflict types and their impact scores by location

County		Impact Score (on a scale of 10)					
		Resource based	Culture driven	Institutional	Ethno-political	GBV	Mean
Marsabit	Ileret	10	4	8	10	9	8.4
	Loiyangalani	9	6	7	9	7	7.6
	Moite	9	5	6	9	7	7.6
Turkana	Lowareng'ak/Todonyang,	8	4	5	5	5	6
	Kalokol	9	4	5	6	8	7.2
	Kerio	9	4	7	8	6	6.8
Mean		9	5	6	8	7	6.9

Source: Authors compilation from proportional piling scores

Based on community perceptions in the Lake Turkana region, resource-based and ethno-political conflicts significantly impact local communities, leaving them highly vulnerable due to the lack of adequate and sustainable adaptation measures. Respondents assigned an average impact score of 9 for resource-based conflicts and 8 for ethno-political conflicts, underscoring both the high frequency and severity of the consequences associated with these issues. The more effective adaptation strategies identified by the communities include leveraging customary institutions, implementing negotiations over shared resources, and creating multi-ethnic peace agreements. These agreements often include measures such as sanctions on raids, compensation for losses, and rules governing access to water, grazing lands, and fishing areas. These strategies, rooted in traditional conflict resolution mechanisms, are viewed as more sustainable because they foster long-term collaboration and resource-sharing between ethnic groups.

Table 4.8. Coping and adaptation strategies to conflict

Conflict Type	Coping and Adaptation Strategies	Challenges to Effectiveness, Sustainability
Resource Based	• Migrating of herds to distant pastures, sometimes across international borders. • Inter-group negotiations for water, pasture, and safe passage • Formation of BMUs and enforcement of fishing boundaries	• Increasing ethnic territorialization of shared resources. • Protracted droughts (all experiencing droughts, nowhere to turn). • International boundaries and different levels of buy-in from authorities
Culture driven	• Multi-ethnic peace agreements, including sanctions on raids, compensation, and rules of access and use. • Inter-group cultural exchanges • Customary institutions	• Lack of proper enforcement mechanisms • Stubborn cultural practices • Diminishing power of customary institutions.

Institutional	• KWS/County Government information sessions and community sensitization campaigns. • Enforcement of BMU and cooperative rules on boundaries, fishing gear (i.e., monofilament nets), etc. • Community participation in reporting and enforcement of regulations	• Conservation territories are not marked, leading to the arbitrary arrest of fishermen. • Disagreements over phasing out strategies of monofilament nets. • Conflict between BMUs and Cooperatives.
Ethno-political	• Multi-ethnic peace agreements, including sanctions on raids, compensation, and rules of access and use. • Inter-group cultural exchanges • Customary institutions	• Lack of proper enforcement mechanisms • Stubborn cultural practices • Diminishing power of customary institutions. • Administrative boundaries (county, constituencies, locations, etc.) and claims of historical injustices
GBV	• Alternative dispute resolution mechanisms and compensation involving community elders and age-set groups. • Seeking legal action	• Cultural bias against women • Corruption • Fear of retaliation, especially if redress fails.

However, communities also noted that certain adaptation strategies are perceived as less sustainable. For instance, reliance on community participation in reporting incidents and enforcing regulations is seen as effective in the short term but insufficient to address the deeper drivers of climate change-induced conflict. Similarly, information sessions and sensitization campaigns led by KWS and the County Government are valued for raising awareness, but they lack the long-term impact needed to prevent future conflicts and build resilience. The combination of high-risk scores for resource-based and ethno-political conflicts, alongside the perceived shortcomings of some adaptation strategies, underscores the challenges these communities face in enhancing their resilience. While some initiatives show promise, particularly those rooted in customary practices and collective agreements, others fail to address the structural issues driving conflict. As a result, without more sustainable and holistic approaches, these strategies may fall short of building long-term resilience for climate-vulnerable communities in the Lake Turkana region.

4.4.2 External interventions and their effectiveness in conflict resolution

The Lake Turkana region hosts numerous external interventions to support local adaptation and risk reduction in the Lake Turkana region. Various state and non-state actors, including government programs, NGOs, and international organizations, have implemented initiatives designed to build resilience by addressing the growing impacts of climate change on livelihoods and conflict. These interventions target resource management, livelihood improvement, financial inclusion, and climate risk reduction (REF 2020). Table 4.10 summarizes some examples of key interventions with climate change and/or conflict focus within both state-led and non-state-led programs while highlighting thematic areas in these interventions.

Table 4.10. Examples of projects supporting local adaptation and risk reduction

Project	Implementing Partners	Donors	Thematic Focus	Geographical Focus
Addressing Climate and Environment-Induced Mobility in the Semi-Arid and Arid Lands in Kenya.	IOM	U.S. department of State, Bureau of Population, Refugees, and Migration (PRM).	• Evidence-based strategies through effectively using data for Climate-Resilient Human Mobility and Livelihood Interventions in Garissa and Turkana. • Inclusive climate resilience and adaptive interventions for displaced people and host communities living in fragile ecosystems in Garissa and Turkana, including in and around Dadaab and Kakuma.	Turkana, Garissa
Water Peace and Security	International Alert IHE Delft, Wetlands International, Deltares, World Resources Institute, Hague Centre for Strategic Studies	Netherlands Ministry of Foreign Affairs	• Working with communities to foster dialogue and cooperation in resolving water-related conflicts. • Utilizing data/ knowledge tools by engaging with technical teams at the county level on water and conflict mapping and developing a dashboard for the planning and policymaking process. • Facilitating awareness-raising and capacity-building through water and peace sector forums.	Turkana - Omo borderlands
USAID Nawiri Programme	Mercy Corps	USAID	• Market systems development and service delivery; empowering local actors and the private sector to enhance food products, financial services, and nutrition commodities. • Community-owned planning processes such as the Community Integrated Assessment and Action Planning (CIAAP),	Marsabit, Turkana

The ECOFISH Project	IGAD Ministry of Mining, Blue Economy, and Maritime Affairs	EU	• Gillnet-Making Training to Combat Illegal Fishing in Lake Turkana	Turkana
The Kakuma-Kalobeyei Challenge Fund (KKCF)	The Africa Enterprise Challenge Fund (AECF)	IFC, EU, SDC, KfW	• Improve the development of Turkana County through socio-economic integrations of host and displaced communities.	Turkana
Host Family Programme	Catholic Church	Caritas	• Families from conflicting groups host each other to reduce inter-group conflicts	Marsabit
Infrastructural development through their respective NGCDF committees.	Turkana County	NG-CDF	• The operationalization and staffing of the newly created administrative units are designed to bring security and citizen services closer to Wananchi.	Turkana
Cross-Border Cooperation Between Kenya and Ethiopia for Conflict Prevention and Peace Building	UNDP	EU	• Transboundary programme to support efforts to realize lasting peace, social cohesion, and human security in Marsabit-Moyale Cluster	Marsabit
Towards Free Movement and Transhumance in the IGAD region	IGAD, ILO	EU	• To support the adoption, ratification, and domestication of the IGAD Protocols on the Free Movement of Persons and Transhumance. • To improve opportunities for regulated labour mobility and decent work for migrant workers in the region.	Regional

Findings on external interventions supporting local adaptation and risk reduction in the Lake Turkana region reveal that, while many programs exist, most are inadequately equipped to address the complex and rapidly changing livelihoods essential for an effective climate change response. According to key informants, a key issue in external interventions supporting local adaptation and risk reduction in the Lake Turkana region is that programming tends to be framed within the context of disaster planning. Most interventions focus on risk management, primarily treating local communities, households, and institutions as vulnerable entities preparing for impending crises.

This resilience agenda emphasizes establishing anticipatory mechanisms – such as information systems, crisis monitoring, and insurance schemes – designed to mitigate the impact of future shocks. While these tools are valuable, this approach often models resilience in a linear, ordered way that overlooks climate change's complex and multifaceted nature and its impact on livelihoods. However, these strategies do not always work in a vulnerable context like the Lake Turkana Region.

According to a local CSO, "Focusing on 'the crisis' as the primary framework to understand local livelihood systems, these interventions fail to fully address the ongoing, everyday challenges communities face, limiting their effectiveness in supporting long-term adaptation and conflict prevention." This view is shared by recent assessments in the region that such a narrow focus misses the broader dynamics of livelihood transformations and local resource management, which are critical to building true resilience in the face of climate change in the Lake Turkana region (Young et al. 2024). Although gender considerations are embedded in many programs, there remains a significant gap in achieving true gender equality in decision-making, access to resources, equitable workload distribution, and benefit-sharing as well as addressing GBV. Women, who often bear the brunt of climate impacts, are still not fully empowered by these interventions.

According to multiple County government officials, many external interventions are based on "outdated or negative assumptions about pastoralism," perpetuating misconceptions that limit their effectiveness. These misguided frameworks often provide an enabling environment for actors with vested interests, who may manipulate these interventions for their benefit rather than genuinely supporting community resilience. Despite County Governments and local NGOs or CSOs actively involved in community efforts to prevent or mitigate conflicts over climate-affected natural resources, their work remains geographically limited. These organizations struggle to address the broader transboundary conflicts emerging in the region, especially as competition for resources increasingly spans across national borders. Although external interventions are in place, their limited scope, short-term focus, and lack of engagement with the deeper livelihood transformations required for climate resilience hinder their effectiveness in reducing conflict and promoting sustainable adaptation in the Lake Turkana region.

Box 2. Transboundary issues in the Lake Turkana Basin

The three most important transboundary issues currently affecting communities in the Lake Turkana transboundary region are mobility across shared county borders, cross-border livestock mobility across international borders, and cross-border fishing in Lake Turkana. These transboundary issues pose significant challenges to livelihoods in the Lake Turkana Basin, as highlighted through KIIs and FGDs. According to KIIs with local administrators and county officials, **disputes over access to vital resources such as pasture, water, and fishing areas** are widespread between Turkana and Marsabit Counties. FGDs with pastoralist groups emphasized that these tensions often extend to neighboring counties like Samburu, West Pokot, and Baringo, particularly during dry seasons when resource scarcity is most acute. Participants noted that competition for grazing lands and water frequently escalates into inter-communal conflicts, which have far-reaching consequences for livelihoods and regional stability.

KIIs with pastoralist leaders and cross-border representatives also identified **seasonal mobility across international borders** as a critical transboundary issue. During prolonged droughts, pastoralists from the Lake Turkana Basin migrate to Uganda, South Sudan, and Ethiopia in search of water and pasture for their livestock. While essential for sustaining household incomes, these migrations often result in confrontations with host communities and local governments.

FGDs with herders detailed experiences of resistance, demands for grazing fees, and occasional violence, highlighting the vulnerability of pastoralists due to the absence of formal agreements to regulate and support cross-border mobility.

Fisherfolk in the region face similar challenges related to transboundary resource access. KIIs with local fishing cooperatives and FGDs with fisherfolk communities revealed that some fishers venture into **the Ethiopian waters of Lake Turkana in search of better fishing grounds.** However, these activities frequently lead to arrests, harassment, and confiscation of equipment by Ethiopian authorities. FGDs described the financial and emotional toll of these incidents, which disrupt livelihoods and create an ongoing sense of insecurity among fishing-dependent communities.

KIIs with stakeholders, including local CSOs, identified gaps in managing and responding to these transboundary issues. A lack of effective enforcement and implementation of collaborative resource management frameworks leaves local and national governments ill-equipped to address the challenges faced by cross-border communities. A representative from a local CSO advocated for the establishment of joint agreements on resource sharing, mobility corridors, and conflict resolution mechanisms involving local communities, county governments, and neighboring countries. Such coordinated efforts, the representative argued, are essential to mitigate tensions, ensure equitable resource access, and promote sustainable livelihoods across the Lake Turkana Basin.

5 | Conclusion and Practical Implications

5.1 Conclusion

This report presents findings from a conflict and climate security analysis study to understand the structural, proximate, and immediate causes of tensions, conflicts, and instability in the Lake Turkana region. The study aims to guide the development of interventions and policies that address the challenges posed by climate change, focusing on conflict sensitivity, community engagement, inclusive governance, and women and youth empowerment. The research draws on semi-structured interviews and focus group discussions conducted in September 2024 with participants from Marsabit and Turkana Counties in the Lake Turkana Basin. Participants representing pastoral and fishing livelihoods were selected to capture diversity in socioeconomic status, age, and gender across rural and peri-urban settings. The study is based on the premise that analysing the structural, proximate, and immediate causes of climate change-induced conflict can provide valuable lessons to inform solutions and help vulnerable households manage social and economic shocks, avoid harmful coping mechanisms, and diversify their livelihoods sustainably.

The findings reveal that the connections between climate change, livelihood transformations, and conflicts in the Lake Turkana region are deeply intertwined. The Lake Turkana region faces increasingly severe climate impacts, disproportionately affecting its most vulnerable communities. Frequent droughts, floods, and displacement devastate food security, infrastructure, and livelihoods such as fishing and pastoralism. Declining livelihoods force poorer households into unsustainable coping mechanisms, while competition for scarce resources like water and grazing land escalates conflicts, particularly during seasonal stress. Weak institutions and social support systems leave communities isolated and increasingly insecure.

Climate change amplifies vulnerabilities, increasing risks of inter-group conflict, intra-community insecurity, and displacement. Women, children, and ethnic minorities are disproportionately affected, as intensifying competition for dwindling resources often leads to violent clashes. These conflicts are rooted in resource scarcity and broader social, political, and economic grievances. Weak governance and violent conservation enforcement exacerbate these tensions, leaving communities disempowered. The study identifies four pathways linking climate change to conflict: increased inter-group competition driven by mobility, the decline of livelihoods pushing people toward riskier behaviours, the erosion of customary institutions that previously resolved disputes, and ethnic territorialization over shared resources. These pathways are not isolated but often intersect, amplifying risks.

Addressing these challenges requires conflict-sensitive, context-specific, and scalable climate change adaptation strategies. Immediate interventions must address urgent needs, such as ensuring safety, restoring livelihoods, and securing

access to essential resources for conflict-affected communities. Medium-term strategies should prioritize building the capacity of local actors to address the underlying drivers of conflict, strengthening governance systems, and promoting inclusive resource management practices.

Long-term efforts should emphasize conflict-sensitive climate change adaptation, focusing on preventing and mitigating future environmental and climate-related conflicts. A systemic approach combining preparedness, early warning systems, and understanding climate change-conflict pathways is essential. Expanding the capacity to monitor livelihood transformations and emerging risks will enable WFP and its partners to integrate immediate relief with sustainable solutions, enhancing resilience and fostering lasting peace in the Lake Turkana Basin.

5.2 Knowledge gaps and future research themes

This study provides an essential foundation for understanding the climate change-conflict nexus in the Lake Turkana Basin. Research gaps revealed through this report call attention to several unexplored avenues that require further investigation to fully understand the complexities of climate change-conflict dynamics in the Lake Turkana Basin.

Further socio-economic and climate impact studies

While this study provides valuable insights into the relationship between climate change and conflict in the Lake Turkana Basin, significant research gaps remain in understanding the broader socio-economic and climate-related impacts on livelihoods. A comprehensive livelihood transformation profile of households in the region would be instrumental in establishing standardized criteria for comparing livelihood outcomes and generating data to support climate- and conflict-resilient food systems across the region's drylands. Expanding the research scope beyond fishing and pastoralism to include alternative livelihoods would provide a more holistic understanding of resilience and vulnerability in the basin. Additionally, mapping current and future climate change-conflict pathways, especially in shifting pastoralist livelihoods, growing market-oriented production strategies, and cross-border dynamics—including areas such as the Kenya-Uganda border—would offer critical insights into regional stability.

As communities in the basin transition from pastoralism, many diversify into alternative economic activities, including marginal livelihoods, often pursued with limited skills, knowledge, and resources. While these strategies provide new economic opportunities, they intensify competition over scarce resources and weaken communities' ability to cope with climate stressors. Further analysis is needed to examine how climate change disproportionately affects the poorest households, particularly their capacity to adapt. Additionally, a deeper understanding of local power dynamics and resource competition is essential, as these factors can escalate grievances and heighten the risk of localized conflicts.

Research into contrasting perspectives on fish stock fluctuations in Lake Turkana

Research on fish stock assessments in Lake Turkana is required to generate data and evidence for a shared understanding of the status of fish stocks, fisheries, and the lake's broader environmental conditions, helping to balance conservation efforts with the livelihoods of fishing communities. As this report has shown, addressing the contrasting perspectives on fish stock and their geographic and seasonal fluctuations in Lake Turkana requires a comprehensive approach integrating scientific research with local knowledge. Future research and analyses should strive to explore and document hydrological, environmental, and socio-economic factors underpinning fish stock trends, such as rising fishing pressure, species-specific declines, seasonal fluctuations, and the expansion of fishing efforts into deeper, often contested lake areas. Regular stock assessments in Lake Turkana are crucial for evaluating fish populations and equipping fisheries managers across public, private, and development sectors with the necessary data for regulation, policy development, and monitoring. Beyond resource management, these assessments can also foster a shared understanding of the status of fish stocks, fisheries, and the lake's broader environmental conditions, helping to balance conservation efforts with the livelihoods of fishing communities.

More research on transboundary governance of lake Turkana

Given that there is now a concerted push to respond to climate-induced conflicts in cross-border areas, more data is required to ascertain the effectiveness of existing bilateral agreements and intergovernmental cooperation mechanisms and the extent to which they mitigate or exacerbate tensions in the shared borders between Kenya and Ethiopia in the Lake Turkana basin. A critical study would be to evaluate the effectiveness of existing bilateral agreements and what governance mechanisms would be most beneficial and effective for the Lake Turkana basin in light of current conflict dynamics. Understanding the governance mechanisms that regulate fisheries and resource access on both sides of the border would help identify opportunities for improved cooperation, conflict mitigation, and sustainable fisheries management. Additionally, research is needed to assess how informal cross-border trade influences livelihoods and whether it provides a stabilizing economic force or fuels competition over diminishing resources.

Research into the sustainability of adaptation strategies in future climate-related conflicts

Given the increasing environmental and socio-economic pressures in the Lake Turkana Basin, understanding the long-term sustainability of adaptation strategies is crucial for mitigating future climate-related conflicts. While communities have adopted various coping mechanisms, including livelihood diversification, cross-border resource access, and modified fishing practices, there is limited data on whether these strategies can provide lasting resilience or if they inadvertently heighten future vulnerabilities. Research on the interplay between adaptation efforts and conflict dynamics remains insufficient, making it difficult to assess whether these strategies will foster stability or intensify competition over scarce resources. Organizations and policymakers could benefit from longitudinal

studies tracking the evolution of adaptation measures, their socio-economic and environmental trade-offs, and their overall effectiveness in enhancing resilience. Thus, generating empirical data on the sustainability of current adaptation efforts would be instrumental in informing policies and programs that balance livelihood security with conflict prevention in this fragile and dynamic region.

5.3 Recommendations

5.3.1 Potential Strategies for Immediate Interventions

Efforts to reduce people's vulnerability to climate change-induced livelihood risks and shocks can also help lower the risk of violent conflict by decreasing the opportunities and motivations for violence, including inter-group conflict, raiding, revenge attacks, risky grazing or fishing in protected areas, and participation in cultural practices that incite violence against other groups. Livelihood interventions to strengthen resilience could involve tailored measures to address specific seasonal stresses and shocks. This could include supporting climate-adaptive livelihood improvement programs, facilitating the resettlement of vulnerable households and communities from low-lying areas around Lake Turkana that are increasingly prone to flooding due to rising water levels, and ensuring that these interventions are conflict-sensitive, incorporating peacebuilding efforts, and addressing underlying tensions related to climate stressors. Some focus areas to target for immediate interventions include:

- **Support climate-adaptive livelihood improvement programs** by broadening the scope of livelihood projects beyond pastoralism and fishing to include non-livestock and non-fishing strategies and tailoring interventions to address specific seasonal stresses and shocks affecting communities, such as drought, floods, and market fluctuations. Investments in mitigating livelihood shocks and emerging risks can be achieved by promoting sustainable livelihood diversification and identifying entry points for pro-poor growth. Examples include:

    - » Support diversifying households, especially women in food businesses, establishing feeder markets for livestock and fish, and providing skills training for youth.
    - » Expand social protection coverage and increase support for households that fall into poverty due to seasonal losses of their primary livelihoods. This may include scaling up initiatives like the Hunger Safety Net Programme (HSNP) and other social protection mechanisms.
    - » Ensure that climate-adaptive livelihood improvement programs are tailored to specific contexts and driven by the community to guarantee long-term sustainability.
    - » Routinely incorporate seasonality assessments into the design of all livelihood development projects.

- **Prevention, protection, and response mechanisms to address GBV**. Immediate interventions should prioritize safeguarding vulnerable populations and preventing GBV by establishing accessible, secure spaces for women, children, and other at-risk groups, supported by community-led initiatives to promote safety and reduce exposure to violence. Key measures could include:
  - » Deploying trained protection officers to enhance safety and response capabilities, integrating GBV prevention into all humanitarian and development programs to ensure a holistic approach.
  - » Establishing rapid response systems for the timely reporting and resolution of incidents.
  - » Provide survivors with rapid and targeted support such as health care, psychosocial counselling, legal aid, and livelihood assistance is essential to mitigating the long-term impacts of violence.

- **Reduce the risk of rising lake water levels and related shocks by facilitating the resettlement of vulnerable households**, communities, and critical infrastructure from low-lying, flood-prone areas. The rising water levels of Lake Turkana are proving to be a devastating livelihood shock, leading to widespread displacement, infrastructure destruction, and significant loss of livelihoods. The long-term impact remains uncertain, with little understanding of how prolonged or severe the situation might become if water levels continue to rise. While it is crucial to support the development of locally appropriate, climate-smart infrastructure to protect fishing livelihoods, immediate interventions are essential. These should include:
  - » Support County Government efforts to resettle vulnerable households, communities, and critical infrastructure in low-lying, flood-prone areas.
  - » Prioritize the urgent needs of vulnerable groups in low-lying, flood-prone areas by ensuring access to education, healthcare, social protection, and women's development programs.

5.3.2 Potential Strategies for Medium-Term Interventions

To address the clear links between livelihood transformation due to climate change and violent conflict risks in the Lake Turkana region, medium-term strategies that integrate livelihood transformation with individual empowerment through skills and capacity development are crucial. These strategies require targeted investments in climate-resilient livelihoods, vocational training, and conflict-sensitive programming. By fostering collaboration among local leaders, government institutions, and civil society, these efforts help individuals and communities transition toward sustainable livelihoods while addressing the underlying risks of climate change and conflict. Engaging communities, local leaders, and organizations in a collaborative process strengthen local capacities, enhancing resilience to climate shocks and promoting peaceful coexistence. These inclusive, locally driven solutions ensure communities are better equipped to navigate the complex dynamics of climate change and conflict, ultimately leading to more stable and prosperous outcomes.

Key focus areas include:

- **Investing in inclusive skills and capacity development among local stakeholders**, including comprehensive training programs that equip local communities, leaders, and institutions with the skills needed to adapt to the impacts of climate change. These programs should focus on sustainable livelihood practices, climate-resilient livelihood alternatives, and natural resource management to help communities diversify their income sources and reduce vulnerability to environmental shocks.

  - » Collaborate with government entities like the County Department for Labour to implement skills development programs tailored to local needs.

- **Strengthening county governance and institutional capacity** to manage climate-related risks and conflicts. This includes enhancing their ability to implement gender and conflict-sensitive programming, integrate peacebuilding efforts into development projects, and ensure that interventions account for the social and environmental realities affected communities face. Governance structures should be inclusive and participatory to make sure livelihood adaptation and peacebuilding activities are locally led and including all groups and perspectives.

- **Addressing vulnerability by empowering vulnerable and marginalized groups** such as women, youth, and other marginalized groups through targeted capacity-building initiatives. These programs should include leadership training, vocational skills development, and entrepreneurship support, ensuring these groups can actively contribute to and benefit from climate adaptation and livelihood transformation efforts. This could include creating employment opportunities and market linkages for agro-pastoralism and irrigated agriculture in regions like Kerio and Ileret, helping to stabilize household incomes and reduce donor reliance.

- **Building adaptive learning and knowledge-sharing platforms**, such as peer-to-peer networks and community-led workshops, to promote knowledge-sharing and adaptive learning. This strategy will ensure that local stakeholders remain responsive to evolving climate risks and conflict dynamics, improving the long-term sustainability of investments.

- **Increased investment in conflict-sensitive anticipatory action** is essential in program design to ensure that interventions address immediate needs and prevent the escalation of tensions.

  - » Programs design should incorporate peacebuilding efforts, considering the underlying conflicts that may be exacerbated by climate stressors such as droughts, floods, and resource scarcity.
  - » Integrate gender and conflict sensitivity into program design, the interventions can help mitigate potential violence triggers and foster cooperation among communities.

» Invest in peacebuilding and anticipatory measures is far more effective than relying solely on emergency and reactive responses to conflict. Proactive approaches allow for the early identification and management of risks, helping to prevent conflict from arising or intensifying. These strategies reduce the likelihood of violence and build resilience in communities, enabling them to better cope with the pressures of climate change and other external stresses. Consequently, programs integrating peacebuilding with anticipatory action are better equipped to deliver sustainable, long-term outcomes while promoting stability and cooperation in conflict-prone areas.

5.3.3 Potential Strategies for Long-Term Interventions

Sustainable and long-term solutions to address the connections between livelihoods, climate change, and conflict in the Lake Turkana region depend on strengthening systems and institutions at local, regional, and international levels. Long-term interventions should focus on building the capacity of local governments and communities to conduct risk assessments and manage disaster responses effectively. This also includes promoting conservation and natural resource co-management to ensure the sustainable use of critical resources. Additionally, comprehensive research on local livelihoods, climate-conflict pathways, and seasonal stresses is essential to inform targeted interventions that address the region's unique challenges.

By concentrating on these areas, long-term strategies can build resilience, enhance peacebuilding efforts, and prepare the region to better adapt to the evolving impacts of climate change. Key areas to focus on include:

- **Strengthening systems and institutions:** Prioritize the development of early warning systems, disaster preparedness, and preventive measures to mitigate climate change-induced conflict and maladaptive coping strategies. Specific activities could include:

  » Build the capacity of county governments and communities to conduct risk assessments and manage disaster response effectively is critical.
  » Support cross-border initiatives such as livestock mobility, trade facilitation, and transboundary fishing to promote peace and economic stability.
  » Support successful implementation of peace agreements and conflict resolution mechanisms that address climate-related tensions is also vital for sustaining long-term peace.

- **Promoting conservation and natural resource co-management** for effective and sustainable way of structural conflict prevention measures at policy level, which address the basic sources of conflict.

  » Support reforms and frameworks that map protected areas around Lake Turkana and strengthening collaborative efforts to manage these resources inclusive, fair and sustainably.

- » Develop preparedness plans that include anticipatory actions, such as providing context fit fishing equipment, to help prevent environmental harm and support sustainable livelihoods for communities dependent on natural resources.

- **Research, learning, and policy advocacy:** Support comprehensive studies on local livelihoods, climate-conflict pathways, and seasonal stresses to guide targeted interventions. Advocacy for participatory natural resource governance policies will drive systematic investments and create clear solutions for managing climate impacts on livelihoods. Additionally, promoting community-level involvement in transboundary resource management will enhance collaboration between Kenya and Ethiopia, particularly in cross-border fishing and mobility management, fostering greater cooperation and sustainable resource use.

- **Addressing gender inequality in adaptation and tackling the root causes of GBV:** Adaptation efforts must prioritize the empowerment of women and girls who are disproportionately affected by climate-induced vulnerabilities and violence while ensuring that programs actively challenge and transform systemic inequalities and harmful socio-cultural norms. Key actions include:

  - » Integrating gender-responsive approaches into climate adaptation: Ensure that adaptation programs, such as livelihood diversification, resource management, and disaster risk reduction, are designed to address the specific needs and vulnerabilities of women and girls. This includes providing women equitable access to resources, education, skills training, and decision-making platforms to strengthen their adaptive capacity.
  - » Strengthening social and legal protections against GBV: Establish accessible and safe spaces for women and girls to report violence and seek support. This includes strengthening community-led initiatives and institutional frameworks to prevent GBV, including deploying trained personnel and promoting awareness campaigns to challenge cultural norms that perpetuate violence and discrimination.

  - » Empowering women economically and socially: Support women in gaining economic independence through targeted interventions such as access to credit, training, and market linkages in non-traditional sectors. Facilitate women's participation in resource management and community governance to amplify their voices and reduce the marginalization that often fuels GBV.
  - » Promoting inclusive governance and decision-making: Ensure women's and marginalized groups' perspectives are integrated into local, regional, and national adaptation and development planning. Inclusive governance structures will help address power imbalances and ensure solutions reflect diverse community needs.

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