Addressing climate and conflict-related loss and damage in fragile states

A focus on Mali

Ritu Bharadwaj, N Karthikeyan, Swati Chaliha and Bakary Dembele

Working Paper
April 2025

Climate change

Keywords:
Loss and damage, social protection, climate justice, climate finance, national climate change policies

iied
TASSAGHT
DCA

About the authors

Ritu Bharadwaj is director of climate resilience, finance and loss and damage at IIED.

N Karthikeyan is a development economist.

Swati Chaliha is a natural resource management professional with experience in research at the intersection of policy and practice, primarily on climate change adaptation, restoration and agroforestry.

Bakary Dembele is the climate loss and damage project coordinator, a climate change environment and territories expert and an international cooperation and humanitarian aid specialist at DanChurchAid Mali.

Corresponding author: Ritu Bharadwaj, ritu.bharadwaj@iied.org

Acknowledgements

We begin by thanking the Danish International Development Agency (DANIDA) for their funding support for this research.

We thank our partners DanChurchAid (DCA) and TASSAGHT, along with their local team in Mali, whose support enabled us to carry out grounded research. Within the DCA team we especially thank Hamidou Maiga for his support in data collection and Claire Mohamed-Petit, conflict prevention and peacebuilding advisor. Special thanks to Mathilde Rabeyroux at DCA for her support in coordinating the project among partners.

We extend our gratitude to the reviewers at DCA — Mohamed Cissoko, Sidsel Koordt Vognsen, Ana Mosneaga and Elisa Benevelli — for their valuable feedback and suggestions that helped strengthen this research paper.

We thank Nikhil Nigam for his contribution to data collection using the Kobo Collect tool, training the research team to use the tool and supporting analysis of the data collected.

We especially thank David Ackers, editorial manager at IIED, for providing input and support throughout the development of this publication. Thanks to Annette McGill for her support in copyediting the working paper and Rosalind Cook for her work on the design and layout.

Finally, we would like to thank Chandrakanth Vivekanandan, programme manager at IIED and Martin Cummins, project manager at IIED, for managing the publication's production.

Published by IIED, April 2025

Bharadwaj, R, Karthikeyan, N, Chaliha, S and Dembele, B (2025) Addressing climate and conflict-related loss and damage in fragile states: a focus on Mali. IIED, London.

iied.org/22618iied

ISBN: 978-1-83759-138-1

International Institute for Environment and Development
44 Southampton Buildings, London WC2A 1AP, UK
Tel: +44 (0)20 3463 7399
www.iied.org

www.linkedin.com/company/iied
www.facebook.com/theIIED

Download more publications at iied.org/publications

This paper examines the compounding impacts of climate change, conflict and socioeconomic vulnerabilities on households in Mopti, Mali. It analyses both economic and non-economic loss and damage using the Comprehensive Climate Impact Quantification toolkit and offers evidence-based recommendations for building resilience in fragile and conflict-affected settings.

Contents

Figures

Tables

Abbreviations

C-CIQ	Comprehensive Climate Impact Quantification
CRI	Climate risk index
EWS	Early warning systems
FCAS	Fragile and conflict-affected states
FGDs	Focus group discussions
FRLD	Fund for Responding to Loss and Damage
GCF	Green Climate Fund
GDP	Gross domestic product
GEF	Global Environment Facility
ICRI	Internal conflict risk index
IDPs	Internally displaced persons
IMF	International Monetary Fund
IRI	Inherent resilience index
KIIs	Key informant interviews
LDCs	Least developed countries
LLA	Locally led adaptation
MDBs	Multilateral development banks
NGOs	Nongovernmental organisations
ODA	Official development assistance
OECD	Organisation for Economic Co-operation and Development
SIDS	Small Island Developing States
SPI	Social protection index
UNDP	United Nations Development Programme
UNDRR	United Nations Office for Disaster Risk Reduction
UNHCR	Office of the United Nations High Commissioner for Refugees

Summary

Nearly a billion people live in countries that are classified as fragile and conflict-affected states (FCAS). This figure has nearly doubled in the past 20 years and is expected to rise substantially by 2030. FCAS must grapple with complex, multidimensional and compounding risks, including climate change, political instability, economic fragility, weak governance and poor resilience. Supporting these states is an urgent global challenge. Mali typifies these issues. Ranked 188 out of 193 countries in the 2022 Human Development Index (United Nations Development Programme (UNDP), no date), Mali faces protracted conflict, escalating climate vulnerabilities and chronic development deficits. The Mopti region is an epicentre of these crises: droughts and floods have devastated livelihoods, while conflict has displaced thousands of people and disrupted social and economic systems.

Our research focused on five communes[1] in Mopti. Our aim was to quantify the economic and non-economic loss and damage experienced by communities in Mopti, explore the triggers of migration and displacement, and identify policy pathways to support resilience building in fragile contexts.

We adopted a multidimensional research approach that integrated quantitative and qualitative methodologies. We surveyed households and conducted focus group discussions (FGDs) and key informant interviews (KIIs). We used two analytical tools: the 3P Framework for analysing the root causes of vulnerability and the Comprehensive Climate Impact Quantification (C-CIQ) toolkit, which integrates household-level data, regional conflict and climate indices, and social protection assessments into a unified framework.

Increasing climate impacts and migration

Mali is witnessing increasing frequency and intensity of climate disasters, including droughts, floods and erratic rainfall. Incidences of drought increased from about six to nearly nine times per decade, while incidences of floods rose from four to more than five times per decade between 1994–2003 and 2014–2023. As climate shocks become more frequent and intense, households are left with diminishing coping capacities, trapping them in cycles of poverty and vulnerability. There has been a sharp rise in migration and displacement, with 68% of migrant and displaced households reporting that they had relocated for the first time within the past five years.

The 3P Framework categorises the drivers of vulnerability into predisposing, precipitating and protective factors using four key indices. The inherent resilience index (IRI) showed that displaced households are the most structurally vulnerable because they have limited access to resources and essential services. The climate risk index (CRI) assesses household exposure to climate-related hazards, and the internal conflict risk index (ICRI) measures household exposure to consequences of conflict. These indices show that displaced households have the biggest exposure to both climate shocks and conflict risks.

Factors driving household migration and displacement

We undertook a regression analysis to get deeper insights into the drivers of migration and displacement: climate risks, conflict exposure and household resilience levels. This found that:

- Households that experienced fewer climate risks, such as droughts, floods and crop failures, were 2.3 times less likely to be displaced and 1.5 times less likely to migrate. This confirms that climate instability is a major trigger for both distress migration and forced displacement.
- Conflict exposure significantly increased the likelihood of forced displacement. Households that faced less violence and insecurity were three times less likely to be displaced, reinforcing the disruptive impact of conflict in uprooting families.

1 In Mali, administrative units are structured into regions, which are further divided into cercles (often translated as circles), communes and villages. A cercle serves as an intermediate administrative division, typically consisting of multiple communes and functioning as a key level of governance and data collection.

- Households' resilience levels also played a critical role. Households with lower resilience were 5.09 times more likely to be displaced than those with stronger resilience. This suggests that economic instability, lack of social support and weak institutional protections leave families far more vulnerable to displacement, even in the absence of direct conflict or extreme climate events.
- There was no statistically significant relationship between the social protection index (SPI) and household mobility choices, indicating that current social protection mechanisms in Mopti are insufficient to prevent migration or displacement.

Overall, the findings confirm that distress migration is primarily driven by climate shocks, while a combination of climate risks, conflict and low resilience makes forced displacement far more likely.

The costs of economic and non-economic loss and damage

The assessment of loss and damage at the household level in Mopti reveals the devastating impacts experienced by non-migrant, migrant and displaced households.

We examined loss and damage values based on the most recent disaster year. They reflect the specific impacts for that year; there is the potential for more significant losses in the future should current conditions persist or worsen.

Droughts impose the highest economic burden across all household types, accounting for 34% of income loss among non-migrants, 42% among migrants and an alarming 61% among displaced households.

Floods cause losses representing 27% of annual income for non-migrants, 29% for migrants and 40% for displaced households. Key drivers include crop loss, livestock sickness, and housing and equipment damage.

Displacement-related income loss adds another layer of vulnerability. Displaced households experience a drop in household income equivalent to 46% of their annual income. This shows the severe financial shock of forced migration and the difficulty of finding employment in displacement contexts.

Overall, non-migrant households face a 75% loss of their annual income, migrant households experience losses of 90%, while displaced households face catastrophic losses of 184%, indicating a crisis that leaves them with no hope of recovery without significant external support.

Recommendations

Addressing these cascading impacts requires integrated, context-specific interventions that bridge the gap between immediate relief and long-term resilience building. Our recommendations focus on five key areas:

1. Promote locally led adaptation (LLA) and adaptive peacebuilding approaches: empowering local institutions, communities and marginalised groups to lead resilience building and adaptation is crucial. Investments in climate-resilient agriculture and water conservation infrastructure can directly reduce vulnerability.

2. Strengthen shock-responsive and anticipatory social protection mechanisms: social protection systems should integrate early warning systems, pre-registered beneficiary lists and forecast-based financing to deliver timely interventions.

3. Invest in social protection delivery mechanisms that work in FCAS: public works programmes, food and in-kind assistance, and school feeding initiatives show higher benefit–cost ratios in FCAS. These programmes can be better integrated into existing systems. Governments and international donors should use a balanced mix of instruments, including public works and targeted cash transfers, that can optimise resources and improve resilience outcomes.

4. Address inequity, exclusion and marginalisation in delivery systems: rights-based frameworks, decentralised delivery systems and portable social protection benefits can improve accessibility and inclusivity. For instance, digital national registries can ensure that migrant and displaced people can access entitlements across administrative boundaries.

5. Enhance financing for resilience building: FCAS face chronic underfunding in social protection and resilience programmes, with an average spending of just 0.86% of gross domestic product (GDP). FCAS receive disproportionately low climate finance. International financial institutions must prioritise debt relief and restructuring for FCAS to help create fiscal space for resilience investments. Scaling up climate finance and official development assistance (ODA) is essential to close the financing gap and enable FCAS to address their systemic vulnerabilities.

Our findings underscore the need for coordinated, inclusive and multifaceted interventions to address the impacts of climate change, conflict and socioeconomic vulnerabilities in Mali and other FCAS. Without significant and sustained efforts, vulnerable communities will remain trapped in cycles of poverty, displacement and loss.

1 Introduction

1.1 Worsening conditions in fragile and conflict-affected states

FCAS represent one of the most pressing global challenges today. Over the past two decades, the scale, complexity and impact of fragility have worsened significantly (UNDP, 2022). The world is witnessing more violent conflicts than at any time since 1945 (International Institute for Strategic Studies, 2021), accompanied by the largest forced displacement crisis on record (Office of the United Nations High Commissioner for Refugees (UNHCR), 2021). Today, nearly one billion people live in FCAS — almost double the figure of 20 years ago (International Monetary Fund (IMF), no date). The number of people living within 60km of conflict-related deaths has also nearly doubled since 2007 (Corral et al., 2020). These trends underscore the deepening vulnerabilities and systemic challenges that FCAS face, where cycles of violence, poverty and instability continue to disrupt lives and undermine development gains (UNDP, 2022).

FCAS encompass a diverse group of countries, including least developed countries (LDCs), Small Island Developing States (SIDS) and other developing nations. It is important to note that there is no universal definition or fixed list of FCAS (see Annex 1 for further details on FCAS definitions). Despite their diversity, these states share a set of interlocking characteristics that hinder sustained progress. They are often marked by weak administrative capacity, limited rule of law, poor provision of basic services and high levels of social polarisation. These structural weaknesses make it difficult for FCAS to manage and mitigate risks stemming from social, economic, political, governance, security and environmental challenges (IMF, 2022).

This increasing fragility poses a significant threat to achieving the Sustainable Development Goals. Two-thirds of the 155 million acutely food-insecure people requiring urgent assistance live in FCAS (Global Network Against Food Crises and Food Security Information Network, 2024). In FCAS, a considerable proportion of young people, more than half of whom are women, are not engaged in employment, education or training (Organisation for Economic Co-operation and Development (OECD), 2022). Gender inequality is particularly acute in FCAS, which have some of the highest rates of gender-based violence and child marriage, and where women and girls lack access to education and healthcare and face greater economic hardships compared to women and girls in more stable societies (OECD, 2022). Countries with higher levels of gender equality tend to be more stable and experience faster growth (Independent Evaluation Group, 2014).

Extreme poverty is becoming increasingly concentrated in FCAS. Fragile states account for only 10% of the world's population, yet they exhibit a disproportionate share of global poverty. Of the world's 43 poorest countries, the majority are either classified as FCAS or located in sub-Saharan Africa, with poverty rates in FCAS exceeding 19% (Corral et al., 2020). Currently, about half of the global poor reside in FCAS and according to World Bank Group estimates this figure is projected to rise to two-thirds by 2030 (Corral et al., 2020). This trend is informed by the fact that while countries that have escaped fragility have reduced poverty rates by more than half, those trapped in chronic fragility have seen little or no progress. In fact, individuals in chronically fragile economies are ten times more likely to remain poor compared to those in stable regions (Corral et al., 2020).

1.2 Climate change is a stress multiplier in FCAS

Climate change is a threat multiplier, exacerbating vulnerabilities and compounding the already fragile conditions in FCAS (OECD, 2023). It is intensifying social, economic and political pressures, eroding resilience and creating a context where communities exposed to climate crises are left without adequate

support, breeding discontent and exacerbating existing inequalities (OECD, 2023). While climate change does not directly cause conflict, its impacts interact with existing fragility and governance failures, driving forced displacement, worsening food insecurity and undermining development gains (Potts et al., 2022). By 2030, climate impacts could push an additional 100 million people into poverty (World Bank Group, 2016). While estimates vary, a World Bank Group assessment estimates that, by 2050, up to 143 million people across sub-Saharan Africa, South Asia and Latin America could become internally displaced due to a combination of slow-onset climate impacts such as droughts, floods and rising sea levels (Rigaud et al., 2018). Moreover, FCAS are disproportionately represented among the world's most climate-vulnerable countries, with nearly three-quarters exhibiting weak institutional and financial capacity to adapt to these impacts. Compounding this vulnerability, FCAS experience GDP losses from climate shocks that are four times higher than those in other countries, amplifying their economic and social fragility (Jaramillo et al., 2023). Despite being at the forefront of climate impacts, FCAS receive disproportionately low levels of climate adaptation funding. Our review of the Green Climate Fund (GCF) portfolio for 2024 shows that on average, FCAS receive less than one-third of climate finance allocated to non-conflict-affected areas. This chronic underfunding perpetuates cycles of vulnerability, leaving states unable to invest in resilient infrastructure, early warning systems (EWS) or long-term disaster preparedness.

This disparity highlights a fundamental climate injustice: FCAS that are also LDCs contribute only 2.7% of annual global greenhouse gas emissions, but they accounted for 44% of people affected by disasters during 2019–2022 (International Rescue Committee, 2023). Yet these regions remain largely excluded from global climate action and adaptation financing. The failure to address these inequalities risks perpetuating cycles of fragility, displacement and poverty, undermining broader efforts towards sustainable development and global peace (International Rescue Committee, 2023).

1.3 How compounding vulnerabilities drive loss and damage

The world is already witnessing unprecedented levels of climate-related displacement, disproportionately affecting those in FCAS.

By the end of 2023, the number of forcibly displaced people worldwide reached 117.3 million, the twelfth consecutive annual increase (UNHCR, 2024). Internally displaced persons (IDPs) now outnumber refugees, with 68.3 million people displaced within their own countries, compared to 43.4 million refugees crossing international borders (UNHCR, 2024). While children make up 30% of the world's population, they account for 40% of all those forcibly displaced, highlighting the disproportionate impact of these crises on vulnerable people (UNHCR, 2024). In 2023 alone, conflict and violence caused 20.5 million new displacements across 45 countries and territories, while disasters triggered 26.4 million new displacements across 148 countries and territories (Internal Displacement Monitoring Centre, 2024). Neighbouring states shoulder a disproportionate burden, hosting approximately 69% of global refugees, placing immense strain on their economies, infrastructure and social services (UNHCR, 2024).

These displacements represent a growing crisis where vulnerable communities are repeatedly forced to adapt, migrate and rebuild with little support. Many IDPs remain trapped in fragile states, where they experience inadequate shelter, limited access to healthcare and precarious living conditions. The failure to address these complex and overlapping risks creates a vicious cycle of vulnerability, where each new climate shock deepens existing vulnerabilities. The result is a growing accumulation of both economic and non-economic losses and damages that are often invisible, unaccounted for and inadequately addressed in conventional climate impact assessments.

For instance, in Niger and Nigeria, the combination of frequent floods and prolonged droughts has devastated agricultural productivity, driving food insecurity, rising debt and dependency on humanitarian assistance. Women and girls in these contexts face compounded risks, including increased caregiving burdens, reduced access to education and heightened vulnerability to gender-based violence (Bharadwaj and Shakya, 2021). Similarly, in Tanzania's Singida municipality, repeated exposure to climate shocks has increased household stress, driven up health expenditures and forced children to drop out of school, perpetuating cycles of poverty and limiting future opportunities for resilience and recovery (Bharadwaj et al., 2022).

Addressing these challenges requires moving beyond narrow sectoral approaches to adopt a multidimensional perspective that captures the full scope of vulnerabilities FCAS communities face. Not addressing these interconnected risks will exacerbate both economic and non-economic loss and damage, entrenching cycles of poverty, inequality and fragility.

1.4 Multidimensional approach to assessing loss and damage in Mali

In this paper we have taken a multidimensional approach to assessing and addressing loss and damage facing communities in the FCAS context (see Box 1 for multidimensional risks affecting FCAS). We selected Mali as the focus of this research because of its acute development deficits, which are compounded by protracted conflict, governance fragility and escalating climate vulnerabilities. As one of the world's most fragile and conflict-affected states, Mali faces intersecting crises that have left millions of people trapped in cycles of poverty, displacement and insecurity (Cold-Ravnkilde and Ba, 2022).

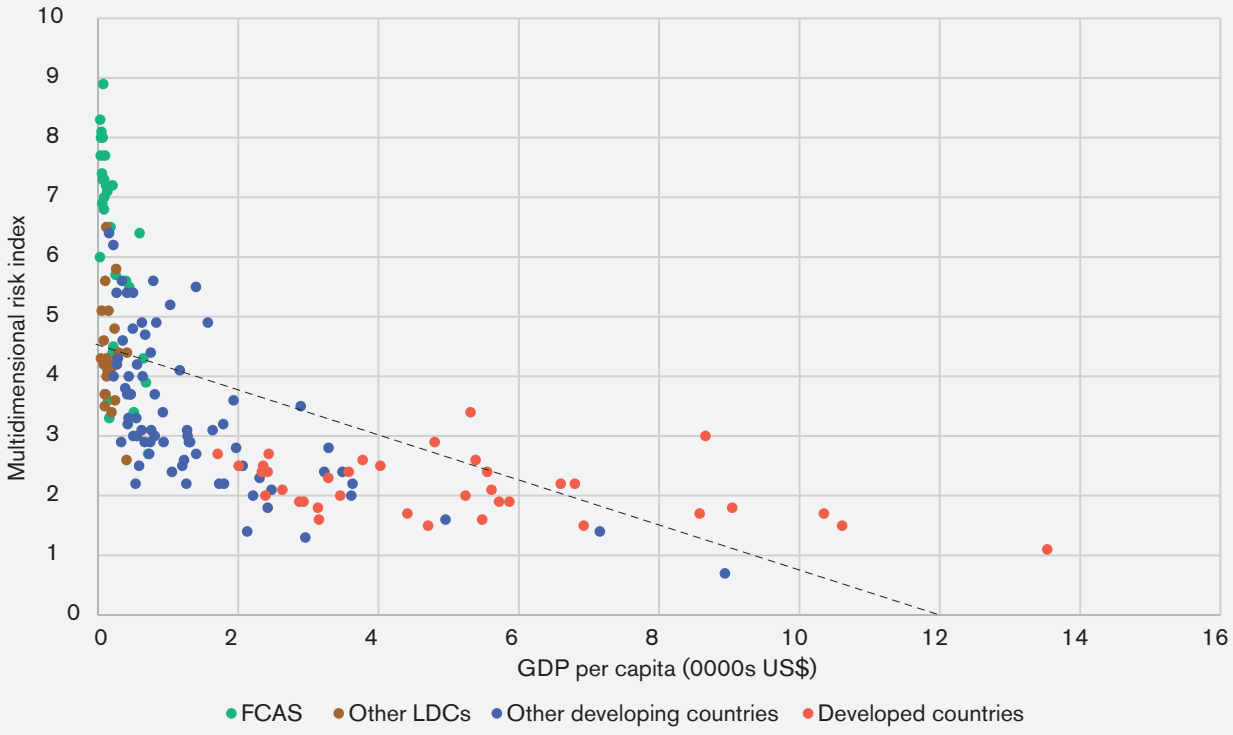
The Mopti region epitomises these interconnected challenges. It is one of Mali's most conflict-affected areas, with a complex interplay of environmental stressors, socioeconomic exclusion and deteriorating governance structures (Cold-Ravnkilde and Ba, 2022). Chronic poverty, limited access to essential services, weak institutions and recurring droughts and floods

BOX 1. MULTIDIMENSIONAL VIEW OF FCAS VULNERABILITIES

The INFORM multidimensional risk index is assessed based on a country's exposure to natural and human-induced hazards, its vulnerability to crises and its capacity to cope and adapt.

We analysed per capita GDP in relation to the INFORM multidimensional risk index for 32 FCAS, 23 non-FCAS LDCs, 75 developing and 37 developed countries, covering a total of 167 countries (see Figure 1).

Figure 1. Multidimensional risk index of FCAS and other countries



Source: Authors' calculation based on data from European Commission Disaster Risk Management Knowledge Centre (DRMKC), no date

Our analysis shows that FCAS exhibit the highest average multidimensional risk at 6.09, which is 40% higher than non-FCAS LDCs (4.36), 81% higher than other developing countries (3.37) and 185% higher than developed countries (2.14). This indicates that FCAS face compounded risks across multiple dimensions, including natural hazards, socioeconomic fragility, governance weaknesses and infrastructure deficits.

The higher vulnerability in FCAS spans several critical dimensions. Under hazard and exposure risk, FCAS show higher exposure to natural hazards such as floods and droughts, alongside human-induced crises like conflict and political instability. In terms of vulnerability, factors such as socioeconomic deprivation, inequality, aid dependency and the presence of vulnerable groups, including displaced populations, further compound their risks. Additionally, lack of coping capacity is evident in weak governance systems, poor infrastructure, limited disaster risk reduction measures and insufficient access to health services.

have rendered Mopti highly vulnerable to both climatic and non-climatic shocks (Benjaminsen et al., 2012). Limited economic opportunities and heavy reliance on climate-sensitive livelihoods such as agriculture and pastoralism leave the population extremely vulnerable to both environmental and sociopolitical shocks (UNHCR, 2021). Prolonged droughts have decimated crop yields, while erratic rainfall and flooding have submerged farmland and displaced thousands of people (Giannini et al., 2017). At the same time, ongoing armed conflicts have driven large-scale population movements, disrupted local markets and intensified competition for scarce resources (Giannini et al., 2017). A study by the Danish Institute for International Studies reveals that over 159,000 IDPs were recorded in Mopti in September 2021, many of whom were forced to flee repeated climate-related shocks and conflict-related violence (Cold-Ravnkilde and Ba, 2022).

To better understand and quantify the overlapping risks affecting Mali, we constructed an internal conflict and governance instability index (see Figure 2; for more detail about the index and indicators used see Annex 2).

This index for Mali shows a worsening scenario, rising sharply from 4.8 in 2006 to 8.48 in 2024. The figures highlight how these multidimensional factors interact and reinforce one another, creating cascading risks that perpetuate fragility. For example, weak institutional frameworks limit the ability to respond effectively to climate-related disasters, while displacement pressures worsen social grievances and heighten the risk of conflict. These vulnerabilities are interwoven, amplifying one another and creating complex challenges that cannot be addressed through siloed interventions.

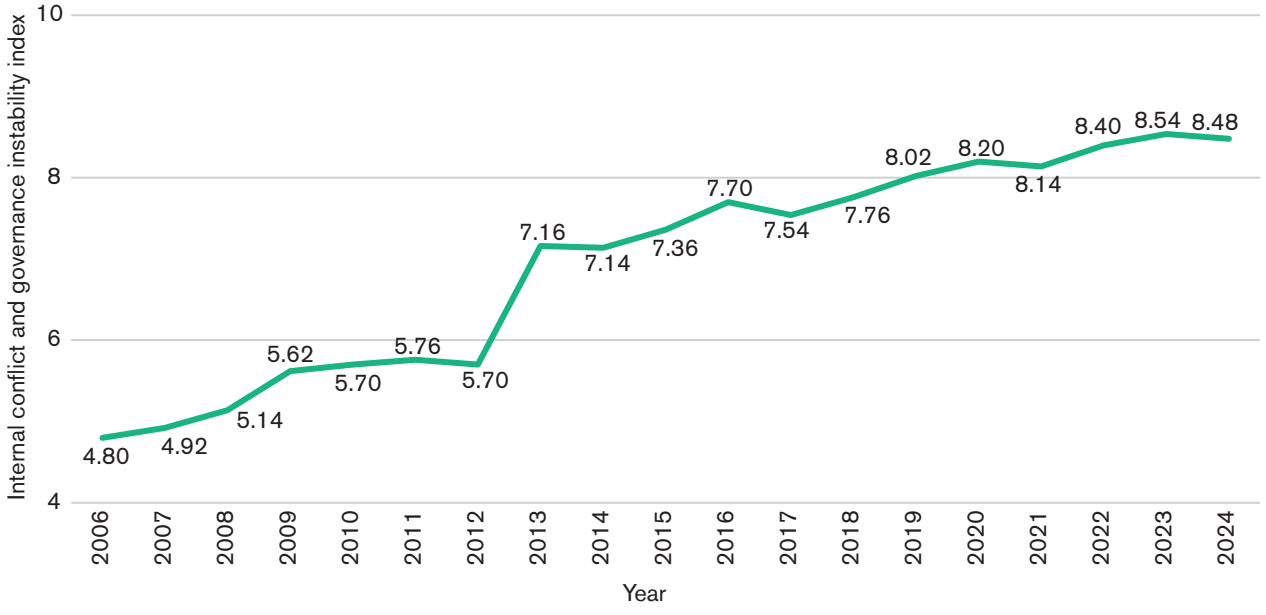
The compounding crises in Mali make it a useful case for understanding how climate change interacts with conflict and fragility to drive both economic and non-economic loss and damage.

Research approach and purpose

To understand the complex links between vulnerabilities in Mali, we adopted a multidimensional research approach that integrated quantitative and qualitative methodologies. This approach allowed us to carry out a holistic assessment of how climate and conflict risks intersect in fragile environments, shaping household-level vulnerabilities and driving both economic and non-economic loss and damage. The research methodology involved household surveys, FGDs and KIIs.

Our research covered five communes in Mopti: Sio, Konna, Fatoma, Socoura and Mopti communes, which were selected to reflect a cross-section of different vulnerabilities and socioeconomic dynamics. Within these communes, we surveyed 408 households, categorising them into 153 non-migrant households, 150 migrant (temporary migration) households and 105 displaced households. The relatively smaller sample size of displaced households was due to logistical constraints in accessing them, along with time and resource constraints. We also conducted 22 FGDs and four KIIs with key stakeholders, including local government officials, humanitarian actors and community leaders, to gather insights on institutional responses, coping mechanisms and gaps in addressing vulnerabilities (for more details on the research sample, refer to Annex 3).

Figure 2. Internal conflict and governance instability index for Mali



Source: Authors' own calculation using data from https://fragilestatesindex.org/country-data/

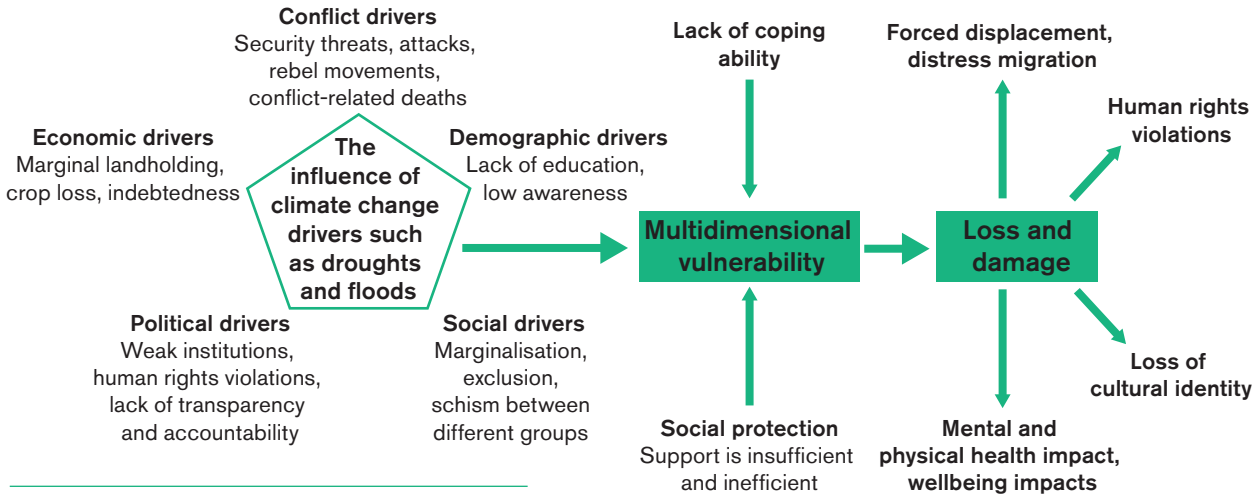
We used two analytical tools: the C-CIQ toolkit (Bharadwaj et al., 2024) and the 3P Framework. The C-CIQ toolkit integrates household-level data, regional conflict and climate indices, and social protection assessments into a unified analytical framework (see Figure 3). It allows for the quantification of both economic losses, such as income decline, infrastructure damage and agricultural disruption, and non-economic losses, such as mental health impacts, loss of cultural heritage and the erosion of social cohesion.

Complementing this, we used the 3P Framework to categorise the drivers of vulnerability into predisposing, precipitating and protective factors (see Figure 4). We assessed predisposing factors using the IRI, which includes structural inequalities, economic limitations and governance challenges that make households inherently vulnerable. We analysed precipitating factors by developing the CRI and the ICRI, focusing on immediate triggers such as climate shocks, droughts and conflict-related damages that drive households into crisis situations. We assessed protective factors using the SPI to understand the effectiveness of programmes designed to mitigate vulnerability, including social safety nets. Together, these tools offer a robust framework for analysing the root causes and cascading impacts of vulnerability in Mali.

The purpose of this research in Mali is fourfold:

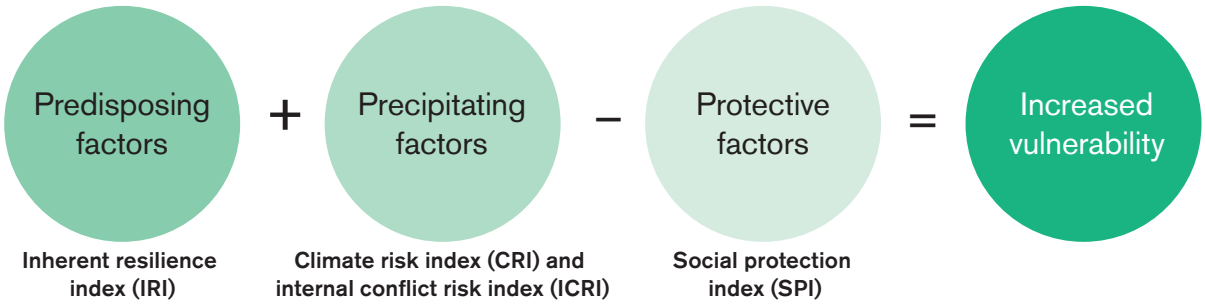
- To examine the multidimensional factors contributing to vulnerability in communities grappling with development deficits, climate impacts and conflict-related challenges
- To understand why some households within the same community are more vulnerable than others, analysing factors such as institutional support, access to resources and social safety nets
- To analyse the drivers of migration and displacement, identifying the triggers and coping strategies employed by different household groups, and
- To quantify both economic and non-economic loss and damage caused by compounding vulnerabilities, highlighting impacts that are often invisible or inadequately accounted for in conventional assessments.

Figure 3. Research framework showing multidimensional approach for assessing vulnerability and loss and damage



Source: Adapted from Bharadwaj et al., 2024

Figure 4. Interaction of predisposing, precipitating and protective factors



Source: Adapted from Bharadwaj et al., 2024

This research seeks to capture the full spectrum of loss and damage, from measurable economic impacts like lost incomes and destroyed infrastructure, to intangible yet profound non-economic losses such as psychological distress, loss of cultural ties and weakened social cohesion.

The findings from this study are not only relevant to Mali but can provide insights for other FCAS facing similar challenges. By demonstrating the usefulness of tools like the C-CIQ toolkit and the 3P Framework, this research provides replicable methodologies that can be adapted to other FCAS contexts. The analytical tools and frameworks used in this study offer practical templates for assessing vulnerabilities and quantifying loss and damage in other regions facing overlapping risks of climate shocks, conflict and development deficits. By demonstrating the utility of these tools, this research aims to bridge the gap between analysis and actionable solutions, offering a replicable model for addressing multidimensional risks in FCAS.

We also want to influence global policy discussions on climate finance, adaptation, loss and damage funding, and disaster risk reduction. By providing evidence of the unique vulnerabilities that FCAS face, we hope stakeholders will use the insights from this research to demand a more equitable allocation of global financial resources to address both economic and non-economic dimensions of loss and damage. Policymakers, humanitarian agencies and development partners can also leverage these findings to design integrated interventions that address immediate vulnerabilities while building long-term resilience and stability.

2

Understanding the scale of climate impacts in Mali

This section examines the scale and extent of climate change impacts in Mali, focusing on both national trends and localised experiences at the community level in the Mopti region. It explores how the increasing frequency and intensity of climate-induced events, including droughts, floods and irregular rainfall patterns, are affecting communities, livelihoods and ecosystems across the country. The analysis also delves into the specific impacts of these climate disasters in Mopti (see Annex 3 for a map of the study area), providing insights into how local populations understand and interpret climate change-related shifts in the frequency and intensity of droughts and floods.

By integrating national data with localised analysis and community-level perspectives, this section offers a comprehensive overview of the scale and intensity of climate impacts in Mali. This analysis serves as a foundation for subsequent discussions on the intersection of climate vulnerability, social resilience and long-term adaptation needs.

2.1 Analysis of disaster occurrence and impact in Mali

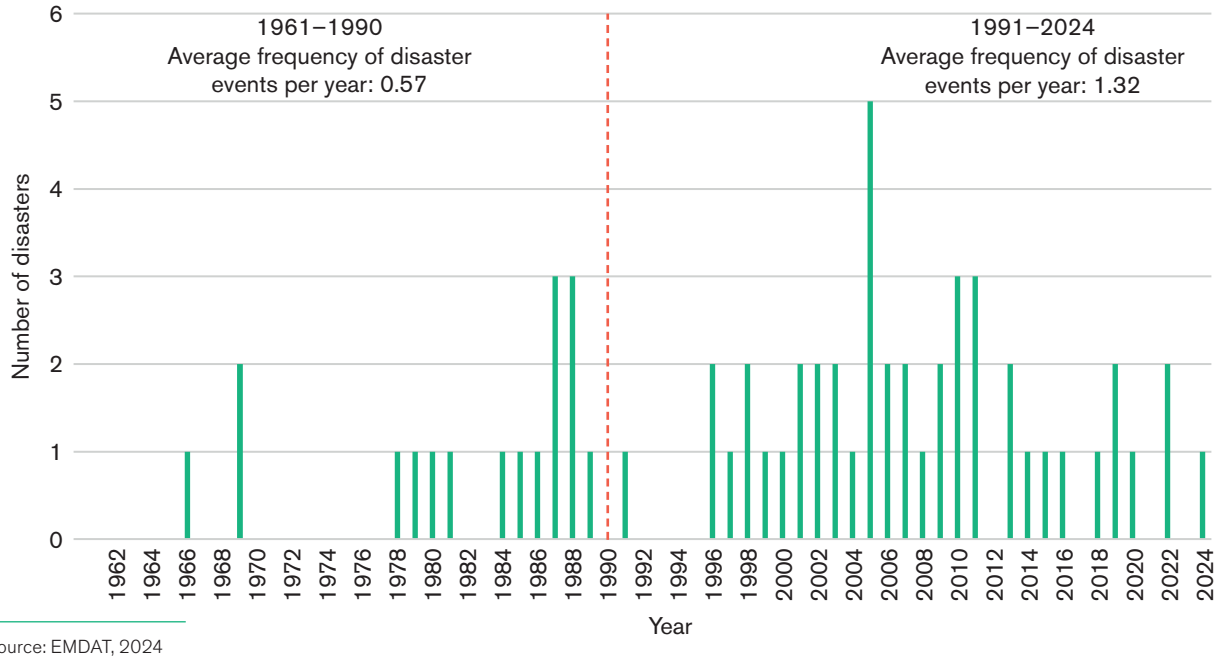
To understand how climate impacts have increased over time, we analysed the frequency of disaster events in Mali over a 64-year period (1960–2024) (EM-DAT, no date). Our analysis shows a clear upward trend in the occurrence of extreme weather events (presented in Figure 5).

The graph shows the rising frequency of disaster events in Mali over two distinct time periods: 1960–1990 and 1991–2024. During the first period, the average frequency of disaster events was relatively low, with an average of 0.57 events per year. Disaster occurrences were sporadic, with significant gaps between events, indicating a relatively stable period in terms of climate-induced disruptions.

However, the second period shows a clear increase: the average frequency of disaster events per year more than doubled to 1.32. This period is marked by more frequent occurrences of droughts, floods and other extreme weather events, reflecting the growing intensity of climate variability and change. Peaks in certain years, such as 2005 and 2010, indicate exceptionally severe climatic events, linked to widespread flooding or prolonged droughts. This upward trend highlights an escalation in the exposure of Mali to climate-related disasters. The increase in frequency corresponds with broader global climate trends, where rising temperatures and changing precipitation patterns are driving more frequent and intense extreme weather events.

Existing data shows that growing numbers of people are affected by disasters in Mali. This may indicate worsening vulnerability, particularly in the context of more frequent climate shocks. In particular, 2012 and 2020 stood out as critical years, with over seven million people (nearly 32% of the total population) affected in 2020 alone (EM-DAT, no date). This trend is especially concerning given the country's reliance on agriculture, fragile governance systems and limited institutional capacity to respond effectively to such crises.

Figure 5. Change in disaster frequency in Mali



Source: EMDAT, 2024

2.2 Localised impact of climate trends in Mopti

To understand the impact of the increasing frequency and intensity of disasters in Mali, we examined sub-national data for the Mopti region. Mopti is one of the most vulnerable regions in Mali, frequently affected by droughts, floods and other climate-related disasters. However, as is common in many FCAS, getting data on disaster events is a significant challenge. Limited institutional capacity, fragmented reporting systems and conflict-related disruptions often constrain the collection and consistency of disaster-related data (OECD, 2022; World Bank Group, 2020). Insecurity, political instability and weak governance often disrupt data collection efforts, leading to significant gaps in monitoring disaster impacts. These challenges not only hinder accurate assessments but also obstruct evidence-based policy and planning, perpetuating vulnerabilities within already fragile systems (OECD, 2022; World Bank Group, 2020). Despite data limitations, we used available data from the United Nations Office for Disaster Risk Reduction (UNDRR) portal DesInventar Sendai (UNDRR, no date-a) up to 2014. Based on observed historical trends, we extrapolated estimates for disaster-related mortality and the overall number of people affected by disasters for 2024 and projected these trends to 2034.

Analysis of mortality trends in Mopti due to disasters

In Figure 6, we show the number of people who died due to disasters in the Mopti region up to 2014, as well as projections for 2024 and 2034.

Our analysis shows that between 1991 and 2014, there was a fluctuating but upward trajectory in mortality due to disasters in Mopti, with noticeable peaks during years of intense droughts and floods. Mortality figures remained relatively low during the early 1990s but began to rise significantly from the late 1990s onwards. A sharp increase is observed around 2007, with subsequent peaks in 2010 and 2012, where mortality figures surpassed 50,000 and 60,000, respectively. These years correspond to severe droughts and flooding events, highlighting the vulnerability of Mopti's population to recurring and extreme climatic shocks.

Extrapolated data suggests a continued increase in disaster-related mortality if current trends persist. By 2024, the projected mortality numbers show continuing high fatality rates, with the potential to exceed the historical peaks observed in 2012. If no significant interventions are implemented to enhance disaster preparedness, EWS and adaptive capacity, projections for 2034 suggest an even steeper rise, crossing the threshold of 60,000 deaths annually.

The data underlines how overlapping factors such as weak healthcare infrastructure, inadequate disaster response systems and weak institutions compound the impacts of disasters in Mopti. The rising mortality trend underscores the urgent need for localised disaster preparedness strategies, improved health services and resilience-building measures in the region.

Figure 6. Number of deaths due to disasters in Mopti region, projected up to 2034

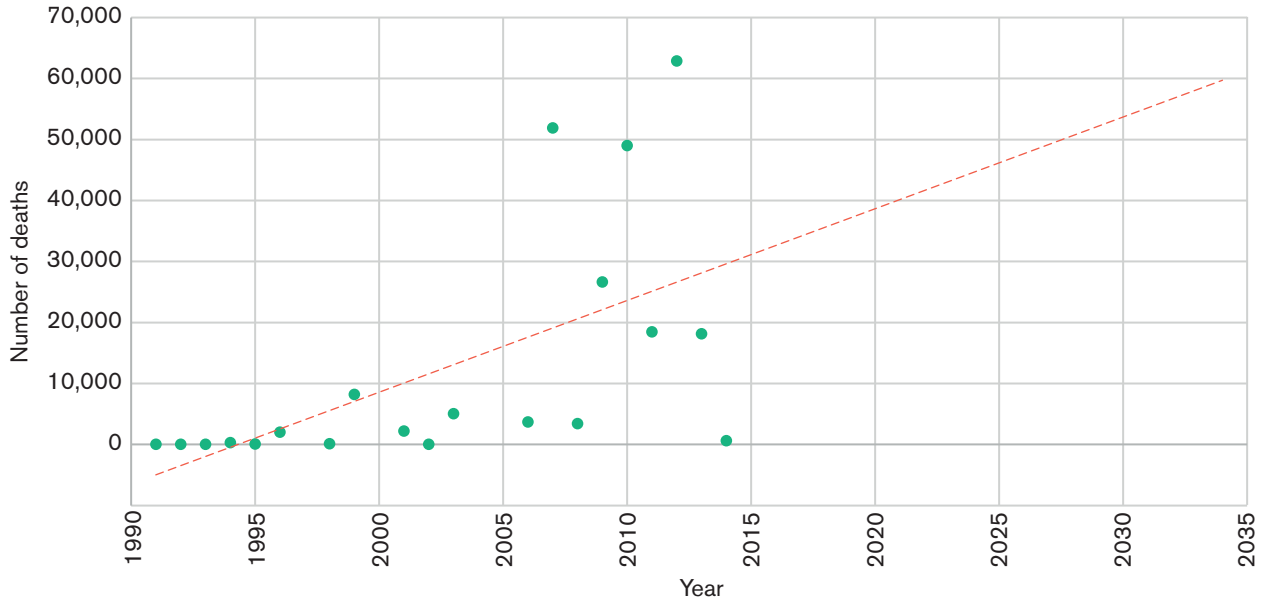
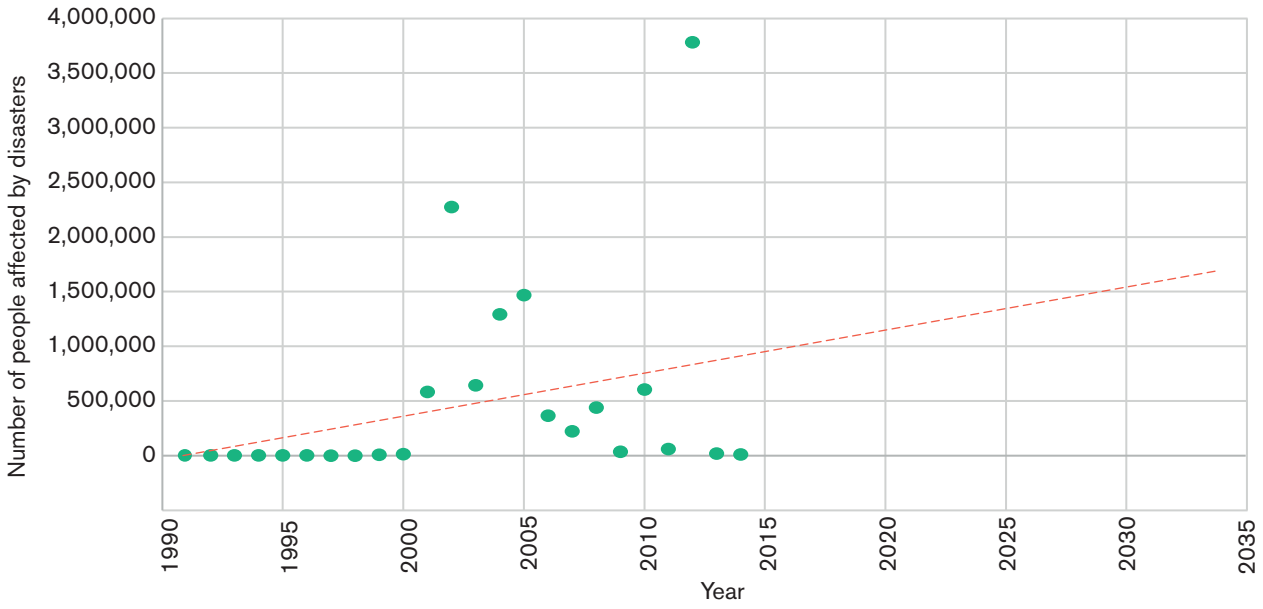


Figure 7. Number of people affected by disasters in Mopti region, projected up to 2034



Analysis of population affected by disasters in Mopti

In Figure 7, we have examined the number of people affected by disasters in Mopti up to 2014 and projected numbers for 2024 and 2034.

The historical data indicates a clear upward trajectory in the number of people affected by disasters in Mopti, with sharp increases observed in the early 2000s and particularly in 2012, when the affected population exceeded 3.5 million. Prior to this spike, the affected population fluctuated but demonstrated a consistent upward trend, with significant events recorded in 2002, 2004 and 2005, when hundreds of thousands of people were impacted by floods and droughts.

Our projections suggest that the number of people affected will continue to rise steeply if current trends persist. By 2024, disaster-affected populations are expected to have surpassed historical peaks, potentially exceeding three million people in a single year. The trendline for 2034 suggests an even more concerning scenario, with affected populations continuing to grow exponentially, driven by both the increased frequency and intensity of disasters and the region's limited capacity to prepare for and respond to such events.

This projected rise in affected populations reflects not only the direct impacts of disasters but also the broader socioeconomic vulnerabilities of the Mopti region. High dependence on agriculture, limited social protection mechanisms, displacement pressures and fragile governance exacerbate the region's susceptibility to climatic shocks.

2.3 Community perception of climate trends

We gathered community perceptions in the Mopti region about the frequency of droughts and floods using household surveys and FGDs. Understanding how communities perceive and experience climate trends provides useful insights into the experiences of those directly impacted by climate-related shocks. We cross-referenced the community perceptions with historical data to identify trends in the frequency of these events over the past three decades. While historical records provide quantitative evidence of climate trends, community perceptions offer crucial qualitative insights into how these changes are experienced at the local level. This helps understand changes such as shifts in seasonal patterns and impacts on agriculture, water security and overall community resilience — factors that may not always be fully reflected in national datasets.

Perceptions of increasing drought frequency

Figure 8 shows the average frequency of droughts, as perceived by communities in Mopti, in three decades: 1994–2003, 2004–2013 and 2014–2023.

The data reveals a clear upward trend in the frequency of droughts, with each decade showing a marked increase in reported occurrences. Between 1994 and 2003, the average frequency of droughts was 5.68 occurrences per decade. While communities recognised drought as a recurring challenge, its frequency was perceived as relatively moderate, with manageable intervals between dry spells. However, during the period 2004 to 2013, the average frequency of droughts rose significantly to 7.18 occurrences per decade. Communities reported more frequent dry spells, disrupting traditional crop cycles, reducing agricultural yields and placing additional stress on pastoral systems. The situation worsened in the most recent decade, from 2014 to 2023, where the average frequency of droughts increased sharply to 8.86 occurrences per decade. Households noted shorter intervals between droughts and longer periods of dry spells, exacerbating water scarcity, damaging rainfed agricultural productivity and threatening pastoral livelihoods. These trends highlight the increasing severity and recurrence of droughts in the Mopti region, which place immense pressure on communities dependent on natural resources for their survival. The community-level insights underscore the growing pressure on water resources and the subsequent impacts on livelihoods and food security.

Perceptions of increasing flood frequency

Figure 9 shows community perceptions of flood frequency across the same three decades: 1994–2003, 2004–2013 and 2014–2023.

Similar to droughts, the data shows an upward trend in the perceived frequency of flood events in the Mopti region over the past three decades. From 1994 to 2003, the average frequency of floods was 4.32 occurrences per decade. While floods were recognised as disruptive events, their occurrence was perceived as less frequent and relatively manageable during this period. Moving into the period from 2004 to 2013, the frequency of floods increased to an average of 4.59 occurrences per decade. Communities

Figure 8. Average perceived frequency of droughts

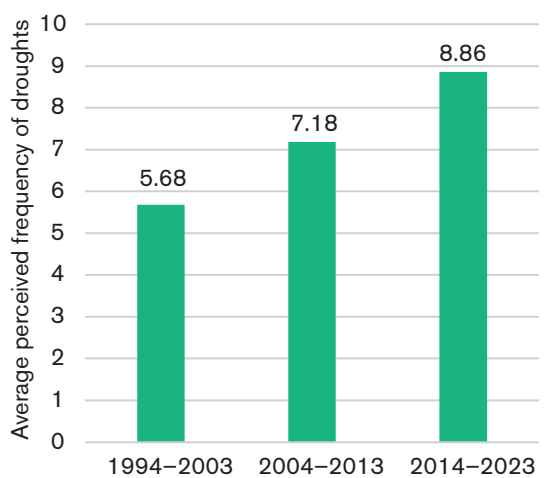
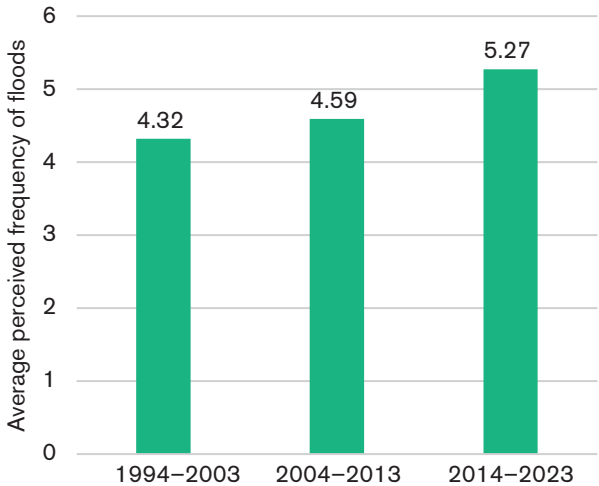


Figure 9. Average perceived frequency of floods



reported more frequent inundation of agricultural lands, disruptions to settlements and significant crop losses. In the most recent period covering 2014 to 2023, the frequency of floods rose sharply to 5.27 occurrences per decade. Communities noted both flash floods and prolonged inundations, causing widespread damage to homes, infrastructure and farmlands. The rising frequency of floods has compounded existing vulnerabilities in the region, with repeated flood events undermining recovery efforts, eroding agricultural productivity and increasing the risk of waterborne diseases. These findings underscore the urgent need for robust flood mitigation strategies and adaptive infrastructure to minimise the recurring damage caused by frequent flood events in Mopti.

Community perceptions align closely with observed meteorological data, highlighting a significant rise in both drought and flood events over the past three decades. These climatic shifts are not isolated occurrences but are part of a broader pattern of increasing climate variability and extreme weather events.

The dual impact of increasing drought and flood frequency creates a complex cycle of vulnerability. Droughts reduce agricultural yields, deplete water resources and trigger food insecurity, while floods cause damage to homes, infrastructure and agricultural fields. This dual burden undermines community resilience and makes recovery increasingly difficult after each event. As these climatic shocks become more frequent and intense, households are left with diminishing coping capacities, trapping them in cycles of poverty and vulnerability. In many cases, the combined effects of prolonged droughts and recurring floods push households to make difficult decisions, including distress migration and forced displacement.

"The frequency of extreme events is increasing in the region. The scarcity of rain makes us very tired and even when it starts raining it doesn't last more than 20 days."
FGD participant from Medina village in Mopti commune

"The cases of flooding and strong winds are becoming more and more frequent in the Mopti region, if not every year. Drought is an ongoing process due to desertification and the advancing Sahara.

The village of Kouna lies on the edge of a large pond fed by runoff and the rising level of the River Niger. It is therefore highly exposed to flooding. Every winter, the flood waters rise right up to the streets of Kouna."
FGD participant from Kouna village in Sio commune

"The main extreme climatic events are floods, drought, strong aggressive winds and the delay in the rainy season (around two months). The trends are negative in the Mopti region. Over the past three years, the drought has become more severe from year to year. Extreme events (floods/drought/strong winds) have had an exponential frequency in the Mopti region in recent decades."
FGD participant from Mandio village in Sio commune

"The scarcity of rain, drought and floods are the main extreme climatic events suffered every year by the village of Barbé. Over the past five years, the village has frequently been the victim of flooding, drought and bush fires caused by hot weather."
FGD participant from Barbe village in Socoura commune

"Torrential rains cause flooding in the village… The development is very strange because the rains are often torrential and less sufficient at the same time in recent years."
FGD participant in Socoura commune

Note: The quotes have been translated from French. While adjustments have been made for clarity, we have tried to preserve the original tone and flow.

3

Impact of climate change and conflict on household migration decisions

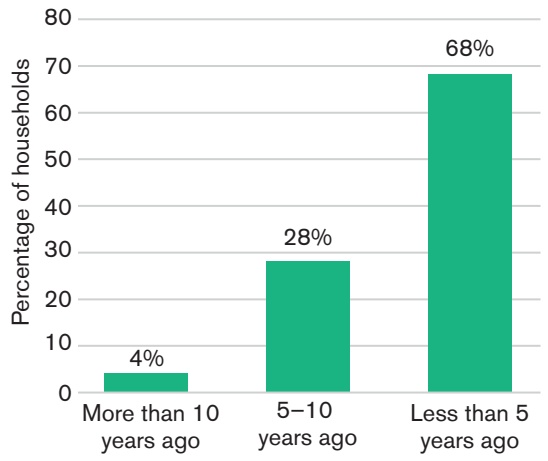
This section explores how climate change is influencing household migration and displacement patterns in Mali, with a specific focus on the Mopti region. Migration, whether temporary or permanent, and forced displacement have become increasingly common as communities grapple with the rising frequency and intensity of climate-related shocks, compounded by persistent conflict and fragile governance structures. This section examines the trends in migration and displacement over recent decades, highlighting how environmental stressors, economic vulnerabilities and social pressures intersect to drive these decisions.

We examine the factors motivating households to migrate or remain in place despite mounting challenges. Our analysis looks at the underlying drivers by examining predisposing factors, such as structural inequalities and socioeconomic vulnerabilities, using the IRI. It further explores the role of climate shocks (CRI) and conflict-related pressures (ICRI) as immediate triggers that precipitate migration. In addition, this section evaluates the effectiveness of social protection systems (SPI) in easing risks and offering households viable alternatives to distress migration. Through regression analysis, we investigate why some households opt for temporary migration or become displaced while others remain, despite facing similar climatic and conflict-related pressures. Through this analysis, we aim to provide a better understanding of the complex dynamics shaping migration decisions in fragile contexts, offering insights for more targeted and effective policy interventions.

3.1 How has migration and displacement increased over the last few decades?

In Figure 10, we show a timeline of when households in Mopti began undertaking migration or were displaced. It highlights a significant rise in migration and displacement in recent years, reflecting the escalating pressures from both climate-related shocks and conflict-related insecurities.

Figure 10. Years since households began migration or moved permanently (displaced)



The data collected from households reveals that 68% of migrant households initiated migration or became displaced within the last five years. This sharp increase underscores the intensifying frequency and severity of climatic events, such as droughts and floods, coupled with growing insecurity. These overlapping stressors have placed immense pressure on household coping mechanisms, compelling many families to seek temporary or permanent refuge elsewhere.

In contrast, 28% of households reported that they started their migration or displacement journey between five and ten years ago. This period aligns with increasing environmental disruptions and sporadic conflict incidents, highlighting a gradual buildup of vulnerabilities that eventually culminated in the large-scale movements observed more recently.

Only 4% of households reported starting migration or displacement more than a decade ago. This indicates that while migration has historically been undertaken in Mopti, it was far less prevalent in earlier decades than now.

The steep rise in migration and displacement within the last five years suggests a critical threshold has been crossed, where households are no longer able to rely on traditional coping strategies (such as water management, crop and livestock diversification, agroforestry systems, cultural and community practices). The confluence of increasing climate shocks, resource depletion and persistent conflict has created conditions where migration is no longer a choice but a necessity for survival.

These findings indicate a transition from temporary migration patterns to more frequent and, in many cases, permanent displacement.

3.2 Trends in temporary migration and forced displacement

The analysis of migration trends reveals distinct patterns in terms of who migrates within a household, where they move to and how long they stay away.

Figure 11 shows the demographic profile of household members who migrated over the past year.

Adult males represent the largest proportion of migrants, with an average of 1.62 per household. Female adults are the next largest group, with an average of 0.39 per household. Among children, male adolescents (15–18 years old) show higher migration rates (0.50 per household) compared to female adolescents (0.11), while younger children (under 15 years old) have significantly lower migration rates, with both male and female children recording an average of 0.05 per household. These figures suggest that migration remains heavily male-dominated, driven by the need to generate income and find livelihood opportunities. Women and children, though less likely to migrate, face increased vulnerability when left behind in resource-constrained environments.

Figure 12 shows the migration and displacement destinations, providing insight into where households choose to go — or end up.

This analysis shows that a significant proportion of migration and displacement occurs within Mali, with 69% of migrants moving to other regions. Although internal migration and displacement is the dominant pattern, cross-border migration/displacement is also substantial, with 39% of households reporting movement to other countries, often seeking employment

Figure 11. Average number of household members who migrated/moved permanently in 2024

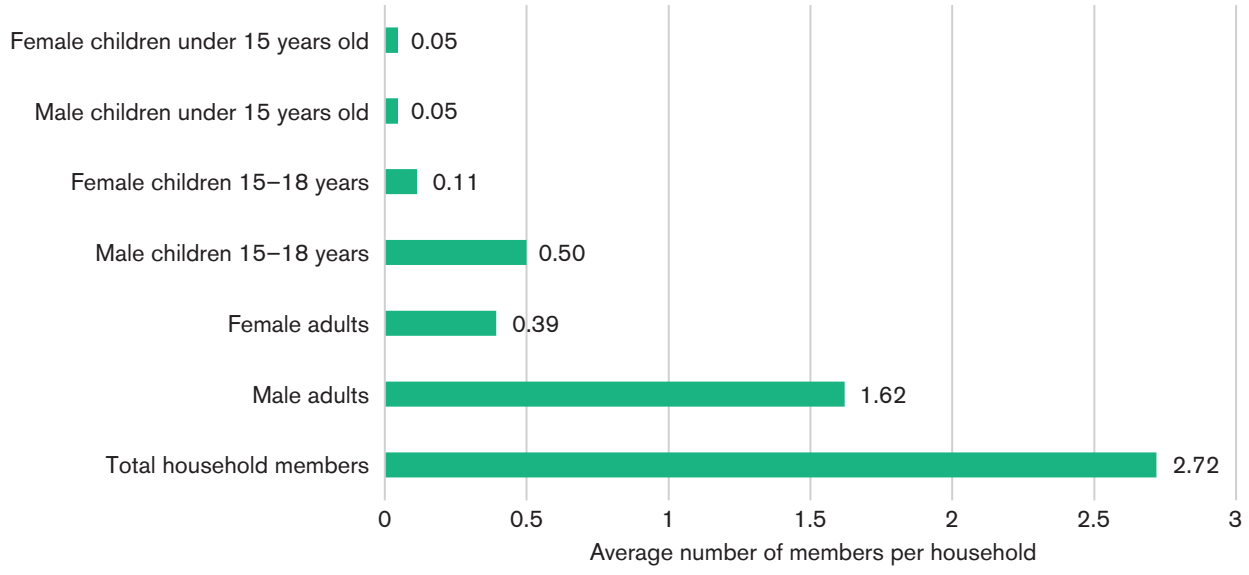
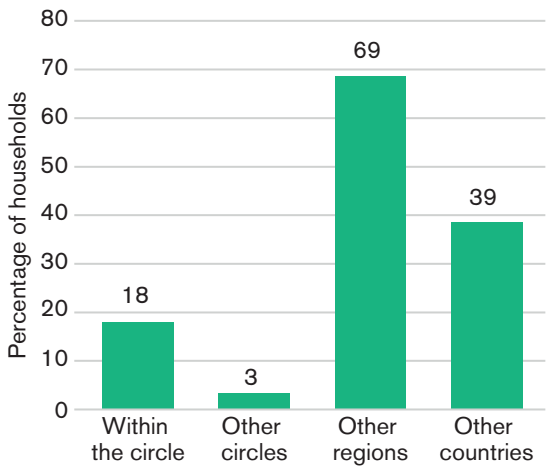


Figure 12. Migration/Displacement destination of households



opportunities in neighbouring nations. Migration within the same circle or locally accounts for 18%, while movement to other circles within the Mopti region remains minimal at 3%. These trends highlight that while migration/displacement is often an internal phenomenon, cross-border movements cannot be overlooked, especially given the recurring economic and environmental pressures in Mopti.

Information collected from households indicates that the major migration destinations are within Mali. Bamako, the capital city, emerges as the top destination, attracting 19% of migrants and displaced populations. This reflects the pull factor of urban centres offering relatively better economic opportunities, social services and perceived safety. Sikasso follows at 16%, while Kayes (9%) and Segou (6%) are also important destinations. These urban migration/displacement patterns highlight the concentration of resources and opportunities in a few key cities, leaving rural regions like Mopti increasingly depopulated and socioeconomically weakened.

3.2 Exploring household reasons for migration and displacement

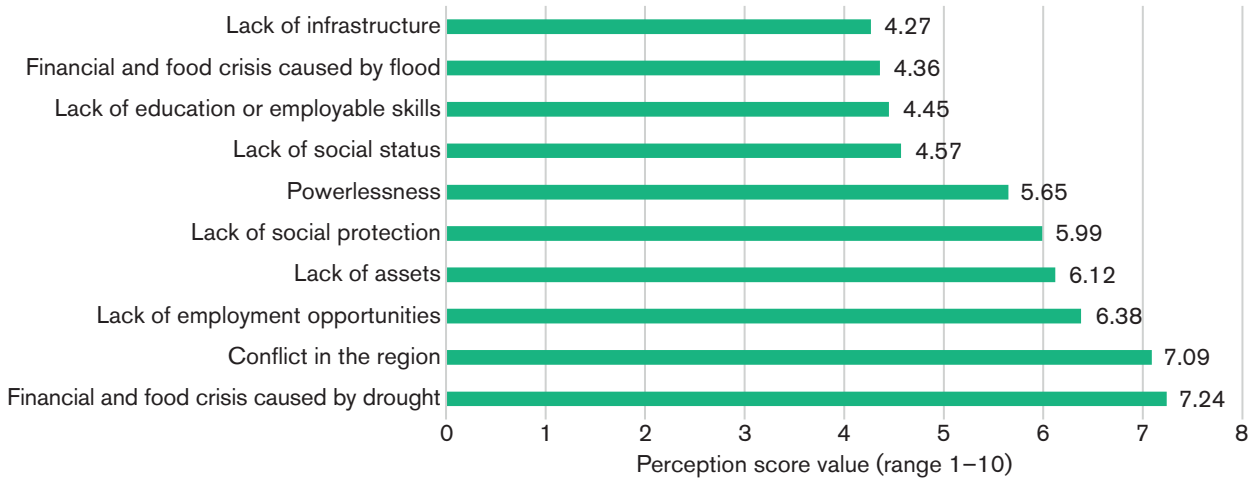
Migration and displacement in Mopti are shaped by a range of interlinked factors, with climatic shocks, conflict and socioeconomic vulnerabilities playing central roles. This section explores the key reasons behind household decisions to migrate temporarily or for the longer term, highlighting the interconnected influences of climate impacts, resource scarcity and inadequate institutional support.

In Figure 13, we show the reasons for migration, highlighting the key drivers that make households leave their villages.

We asked the households to score the reasons for migration on a scale of 10. The main reasons why households migrate are financial and food crises caused by drought (7.24) and conflict in the region (7.09). Droughts lead to significant reductions in agricultural productivity and water availability. These losses result in financial hardship and food insecurity, compelling households to migrate as a distress response to ensure survival. Conflict, often exacerbated by competition over dwindling resources such as arable land and water, has emerged as another major factor. Households living in areas affected by violence and insecurity face limited economic prospects and heightened risks to their safety, leaving migration as one of the few viable coping strategies for those who can afford it.

Lack of employment opportunities (6.38) and lack of assets (6.12) are also significant drivers of migration. Households that rely heavily on agriculture and livestock (both climate-sensitive livelihoods) are particularly vulnerable to environmental disruptions. Without assets or alternative sources of income, they are often forced

Figure 13. Reasons households migrate



to undertake distress migration to sustain their families. The lack of social protection systems (5.99) further compounds these vulnerabilities. In the absence of safety nets, such as cash transfers, food assistance or other social safety nets, households are left with few options but to migrate when faced with crises.

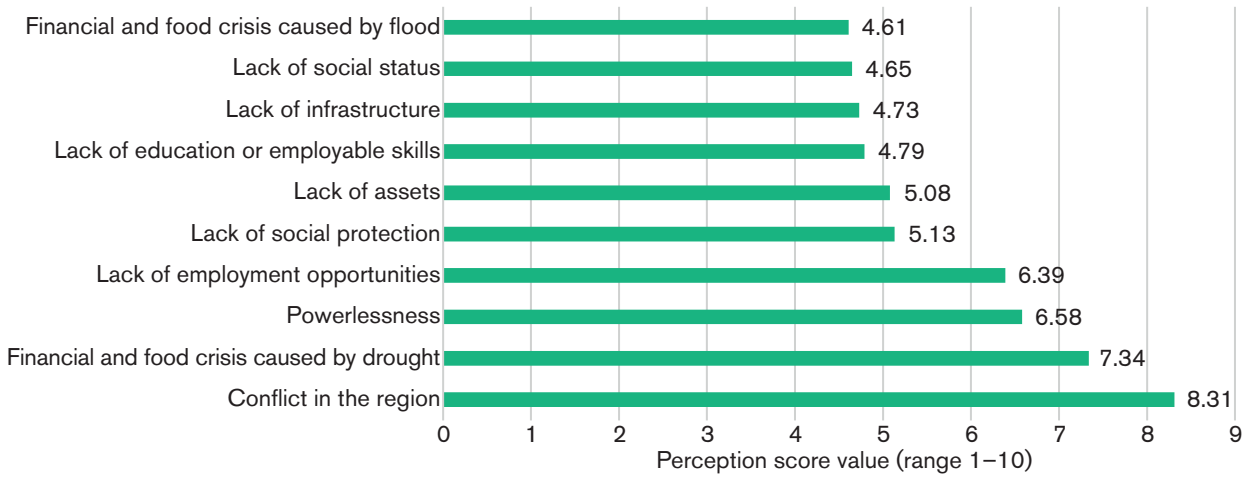
Other notable factors include powerlessness[2] (5.65) and low social status (4.57), which highlight the sociopolitical dimensions of vulnerability. Marginalised groups, including women, young people and those from lower socioeconomic backgrounds, often have limited agency in decision making and resource allocation, leaving them disproportionately affected by both climatic and conflict-related shocks. Structural challenges, such as lack of education and employable skills (4.45) and inadequate infrastructure facilities (4.27), also contribute to households' inability to adapt in place, pushing them towards migration.

Figure 14 shows the reasons for displacement, which reveal both overlaps and differences compared to migration drivers.

Conflict in the region (8.31) stands out as the most significant factor, underscoring the acute vulnerability of households living in conflict-affected areas. Repeated exposure to violence, combined with loss of livelihoods and insecure living conditions, forces many families to flee their homes. Similarly, financial and food crises caused by drought (7.34) remain a critical driver, as prolonged dry spells continue to undermine food security and income generation, leaving households with no choice but to seek refuge elsewhere.

Powerlessness (6.58) and lack of employment opportunities (6.39) also feature prominently in displacement decisions. Displaced households reported a deep sense of disempowerment, as they are forced to leave their homes without adequate support systems or assurance of being safe in their new locations. Lack of social protection (5.13) and lack of assets (5.08) further reflect the economic and institutional gaps that make it difficult for households to remain resilient in the face of repeated shocks. While financial crises caused by floods (4.61) are a significant factor in displacement, they rank lower compared to those caused by droughts, likely due to the higher frequency of droughts in the region.

Figure 14. Reasons households are displaced



2 Powerlessness is a form of marginalisation where individuals lack the agency to influence decisions affecting their lives. Even when entitled to support, systemic barriers and exclusion from decision-making processes deny them access to essential resources and opportunities.

"Our conditions are mostly miserable, as migrants are considered foreigners even in destination locations inside Mali. Government representatives are often not able to impose decisions in these destination locations due to local factors, for example ownership to land rich in gold (where mining companies exert their own regulations)."
FGD participant from Mandio village of Sio commune

"Climate change has caused many young people to leave the countryside because there are no jobs after working in the fields. Drought causes crop loss and pushes young people to migrate."
FGD participant from Barbe village of Socoura commune

"Migrant workers at destination sites deal with various issues — everything from sexual violence and unwanted pregnancies to unpaid wages, withheld salaries and even being deceived or locked up. Their living conditions are quite rough, depending on where they end up."
FGD participant of Takouti village in Socoura commune

"The major factors of migration are poverty and low crop yields in the village. The able-bodied men migrate to the traditional gold-panning sites in the interiors of Mali. Some head towards Maghreb or even Europe for improving the wellbeing of the families."
FGD participant from Soufouroulaye village of Sio commune

"The rate of youth migration is increasing every year. As a result, the village does not even have able-bodied workers in the dry season when there is a need for domestic work and cleaning the fields."
FGD participant from Fatoma commune

"Due to drought, migratory flows have multiplied exponentially every year."
FGD participant from Komoguel 2 village of Mopti commune

Note: The quotes have been translated from French. While adjustments have been made for clarity, we have tried to preserve the original tone and flow.

3.3 Understanding the underlying drivers of mobility: constructing the 3P index

Our analysis in the previous section shows that migration and displacement are not uniform experiences. They are shaped by a combination of structural vulnerabilities, immediate triggers and available safety nets. To better understand these dynamics, we constructed the 3P index, comprising four key components: the IRI, the CRI, the ICRI and the SPI.

The IRI assesses structural vulnerabilities such as poverty, education levels, access to services and economic opportunities, highlighting how pre-existing conditions influence household resilience to shocks. The CRI evaluates the scale and frequency of climate-related hazards, including droughts and floods, and their impact on household stability. The ICRI examines the extent to which conflict exacerbates vulnerabilities and disrupts coping mechanisms, while the SPI measures the availability and effectiveness of institutional safety nets in mitigating risks and supporting recovery.

Together, these indices provide a multidimensional lens to analyse why some households are more vulnerable to distress migration than others despite facing similar shocks. By analysing these drivers, this section offers a clearer understanding of the systemic and immediate factors influencing household mobility in Mopti, helping design more targeted policy responses and resilience-building strategies.

3.3.1 Role of predisposing factors in creating differentiated impacts on households — the inherent resilience index

The IRI was developed to assess the structural and socioeconomic characteristics that shape household resilience and influence migration decisions. It focuses on predisposing factors — conditions that determine a household's capacity to cope with and adapt to climate shocks and related stressors. These factors are not directly tied to immediate climate impacts but serve as foundational drivers of resilience or vulnerability.

The IRI uses eight key variables, each representing different dimensions of household resilience and

adaptive capacity. These variables include food consumption, educational status of the family head, percentage of children currently studying, house ownership, landholding size, household annual income, sex of the family head and toilet type. Each variable was normalised on a scale from 0 to 100, with higher scores indicating greater inherent resilience and lower scores reflecting heightened vulnerability. The aggregated score across these variables provide a single resilience value for each household, enabling a comparative analysis across migrant, displaced and non-migrant households. The analysis below explains each variable in detail, highlighting how these factors contribute to resilience or exacerbate vulnerabilities in different household categories.

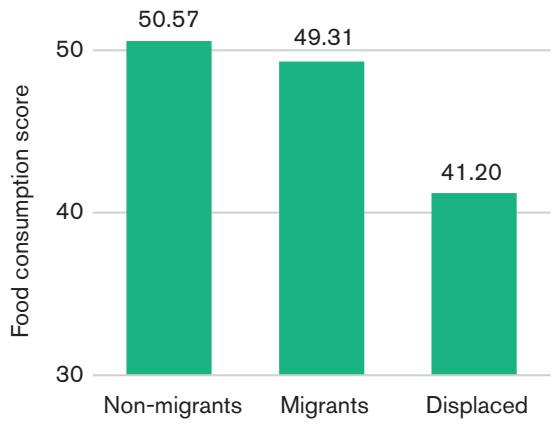
Insights into predisposing factors

Social status and ethnic affiliation (see Figure 15): this plays a significant role in shaping resilience and influencing migration and displacement patterns. In terms of the IRI, some ethnic groups, including the Bozo (50.00), Sarakole (46.85), Malinke (46.85) and Bambara (46.74) ethnic groups, demonstrate higher resilience compared to the Sornhai (42.75), Fulani (40.44) and Dogon (39.96) ethnic groups. Mobility patterns vary across communities, reflecting differences in resilience and vulnerability. Some communities have a higher proportion of households that remain in place, while others experience greater migration or displacement. For example, the highest proportions of non-migrant households are among the Sarakole (58%), Malinke (46%) and Bambara (46%) ethnic groups. In contrast, migration is notably higher among the Malinke (46%), Bozo (43%) and Fulani (38%). Displacement follows a different pattern, with the highest rates observed among the Songhay (41%) and Dogon (33%) showing compounded vulnerabilities related to environmental pressures and social factors, including limited access to resources and protection mechanisms.

Food security (see Figure 16): this is a fundamental indicator of household resilience. Households with higher food consumption scores demonstrate better dietary diversity, meal frequency and access to essential nutrition. Non-migrant households reported the highest food consumption score (50.57), followed closely by migrant households (49.31). Displaced households, however, reported a lower score (41.20), reflecting higher levels of food insecurity and vulnerability.

Educational status (see Figures 17 and 18): education is a critical enabler of resilience, equipping individuals with skills, knowledge and opportunities for creating diversified livelihoods. The analysis in Figure 17

Figure 16. Food consumption, by household migration status



Note: Range 0–100. The higher the score value, the higher the food security.

Figure 15. Differences in mobility among different ethnic communities, by household migration status

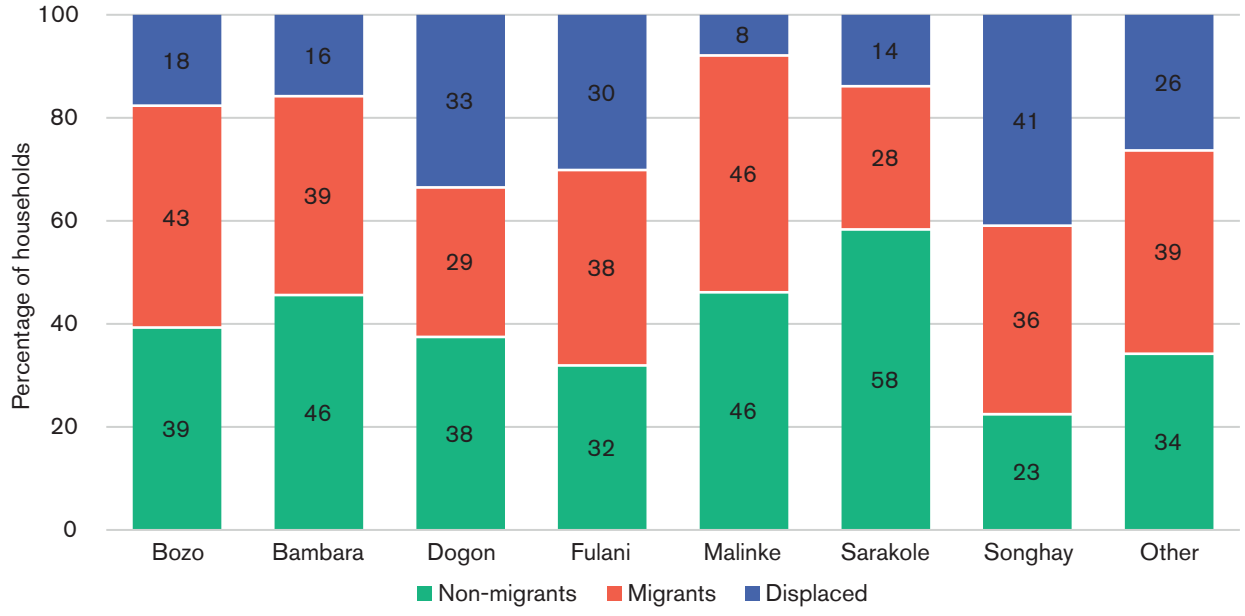


Figure 17. Educational status of the head of the household, by household migration status

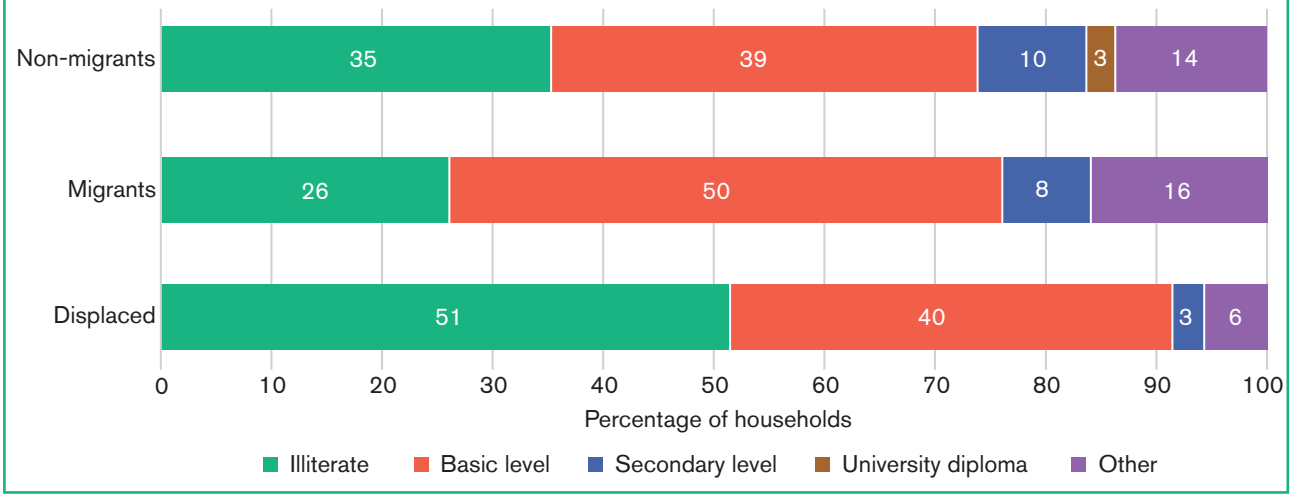
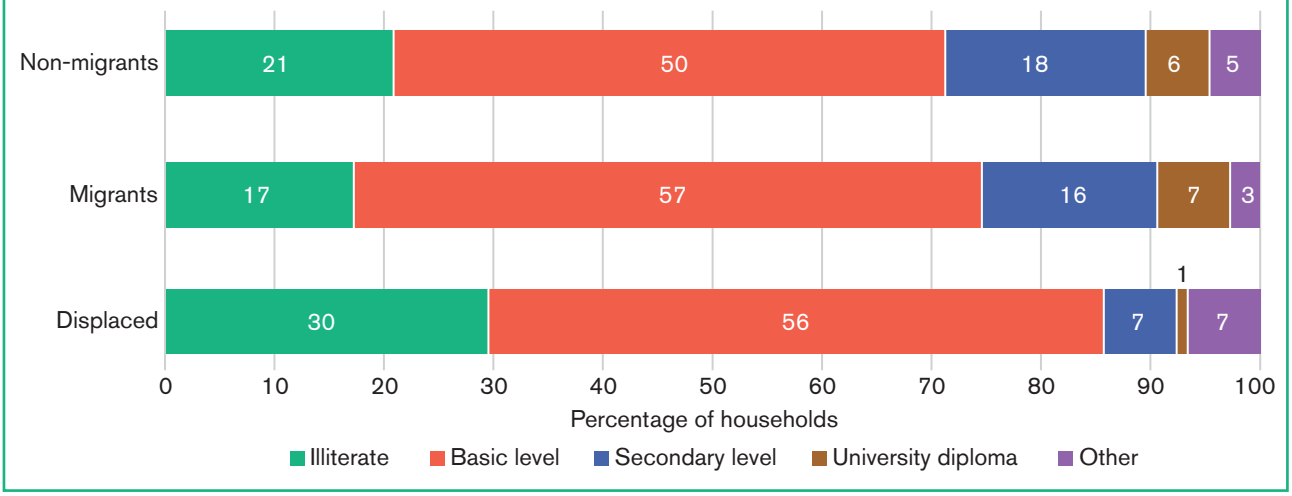


Figure 18. Highest educational attainment within households, by household migration status



shows significant disparities in the educational status of family heads across household categories. Displaced households reported the highest levels of illiteracy (51%), followed by non-migrant households (35%), while migrant households had a comparatively lower illiteracy rate (26%). Households led by individuals with basic or secondary education displayed higher resilience, while those headed by illiterate individuals faced compounded vulnerabilities. Education plays a dual role: it not only shapes livelihood opportunities but also affects access to social protection and external support systems.

The analysis of the highest educational attainment within a household (see Figure 18) further reinforces the resilience-building capacity of education. Among displaced households, 56% reported basic-level education as the highest attainment, with limited representation in secondary or university-level education. Migrant households had slightly higher secondary-level education rates (16%), while non-migrant households reported a more balanced distribution across basic (50%), secondary (18%) and higher education levels. Lower levels of educational attainment in displaced households contribute to restricted livelihood opportunities and reduced capacity to adapt to changing environmental and economic conditions.

Children's educational status (see Figure 19): this is both a reflection of and a contributor to household resilience. Data shows differences in children's education status across household categories. Non-migrant and migrant households reported relatively higher percentages of children currently studying across all age groups, while displaced households consistently reported lower enrolment rates. For example, only 50% of displaced male children aged 6–14 years are currently studying, compared to 73% in migrant households. This gap widens in older age groups, where economic pressures often force children from displaced households into informal labour. The education disruptions caused by displacement have long-term consequences, limiting future adaptive capacity and perpetuating cycles of vulnerability.

Figure 19. Percentage of children currently studying, by household migration status

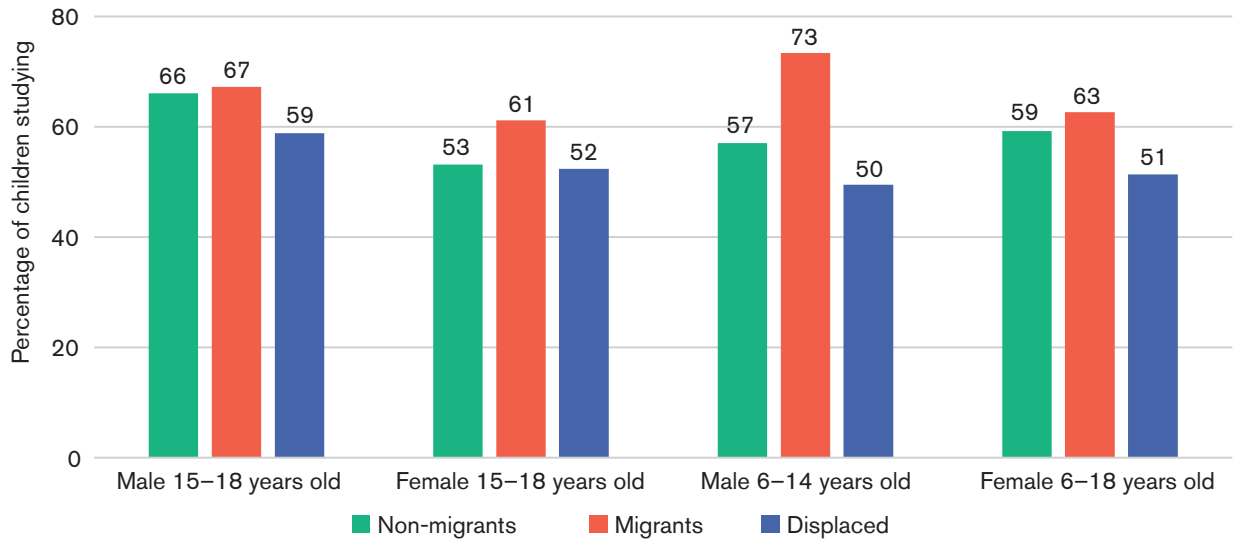
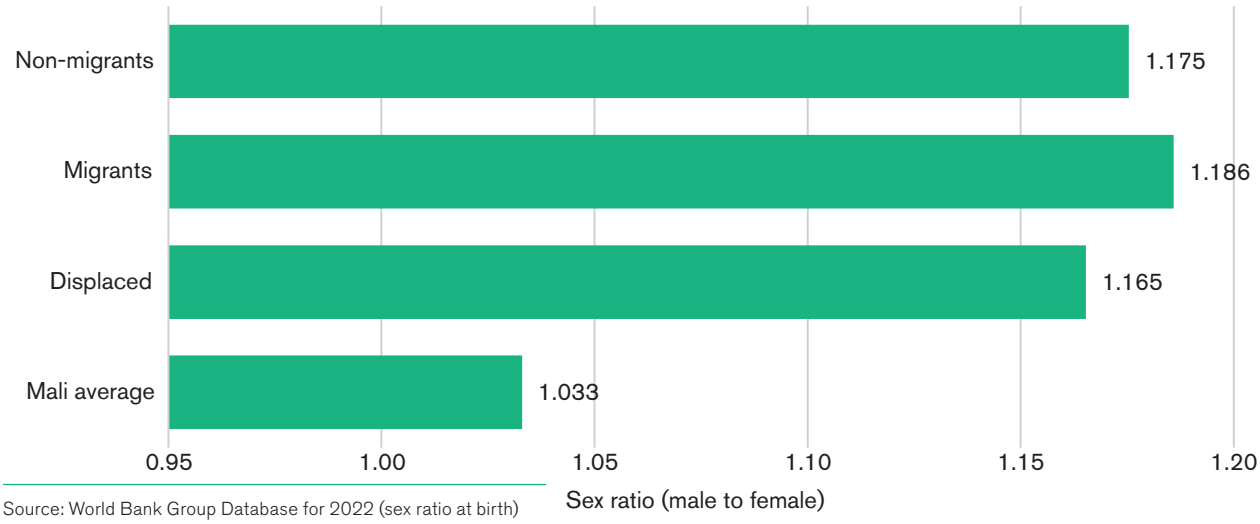
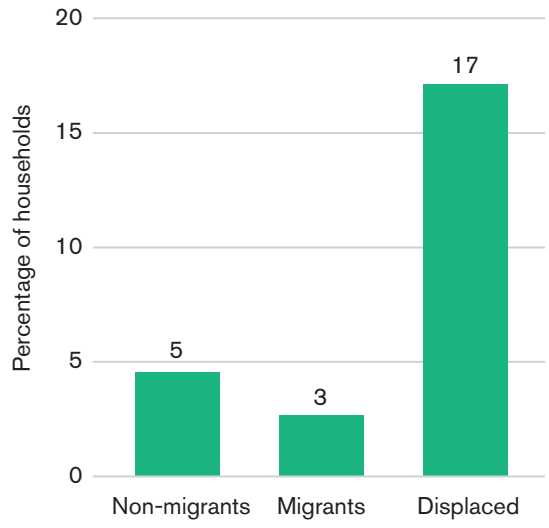


Figure 20. Sex ratio (male to female) of households, by household migration status



Source: World Bank Group Database for 2022 (sex ratio at birth)

Figure 21. Percentage of households headed by women, by household migration status



Sex ratio, family size and gender of family head (see Figures 20 and 21): these are interconnected demographic factors that together provide critical insights into the differentiated vulnerabilities and adaptive capacities of households in Mopti. The average male-to-female ratio for households in Mali is 1.033. In Mopti, this ratio is higher across all groups: 1.175 for non-migrant households, 1.186 for migrant households and 1.165 for displaced populations. The higher ratio of men to women reflects Mopti's broader gender dynamics, with elevated female mortality rates, driven by poor healthcare access, conflict-related violence and the disproportionate impacts of climate change on women. These include increased workload, malnutrition and exposure to health risks during crises, all of which deepen gender disparities and social vulnerabilities.

Closely linked to the sex ratio is the gender of the head of the family, which significantly influences household resilience. Female-headed households often face

compounded social and economic challenges. Among displaced households, 17% are headed by women, compared to just 5% of non-migrant households and 3% of migrant households. This over-representation of female-headed households among displaced groups underscores their heightened vulnerability, as these households often face barriers to accessing resources and opportunities.

Access to credit (see Figure 22): this plays a vital role in buffering households against shocks. Figure 22 highlights a critical gap in financial inclusion across mobility groups, with displaced households being the most marginalised. Non-migrant households report relatively better access to formal banking services (26%) compared to migrants (13%). Displaced households rely almost entirely on informal credit sources (99%). This is because displacement limits financial inclusion (displaced households are not able to open bank accounts without a permanent address), forcing these households to rely on informal credit networks, which often come with higher interest rates and exploitative terms.

Asset ownership (see Figure 23 and 24): data on housing type and ownership status is shown in Figures 23 and 24. The data on housing types highlights the differences in living conditions across non-migrant, migrant and displaced households. Among displaced households, 100% live in mud houses with thatched roofs, highlighting their lack of access to more durable housing. Most migrant and non-migrant households also live in mud houses, with 94% living in similar conditions. A small fraction of migrant and non-migrant households live in houses with metal sheet roofs (5% for both), and an even smaller percentage live in concrete buildings (1% for both).

Home ownership patterns (see Figure 24) further illustrate the precarious situation of displaced households. Among displaced households, 43% own their homes but don't have legal papers confirming they own the land (title). Just over half (51%) own their homes with entitlement, while 6% have made makeshift housing arrangements. Migrant households have slightly better ownership rates, with 59% owning their homes with entitlement and 35% without entitlement. Non-migrant households exhibit similar patterns, with 58% owning homes with entitlement and 37% without entitlement. These patterns underscore how mobility status influences access to secure housing tenure, with displaced populations having the most insecure housing tenure.

Agricultural land ownership and average landholding (see Figure 25): land ownership correlates closely with resilience. Our analysis of the data on agricultural land ownership shows differences across non-migrant, migrant and displaced households. Non-migrant households report the highest percentage of land ownership, with 67% owning agricultural land. Migrant households have the next highest land ownership rates at 61%, while displaced households show the lowest ownership rates at 59%.

When examining average landholding size (see Figure 25), non-migrant households have the largest average holdings, owning 1.80 acres with legal entitlement and 1.62 acres without legal entitlement (that is, they own the land but don't have legal documents). Migrant households own slightly less, with averages of 1.26 acres with legal entitlement and 1.46 acres without. Displaced households appear most disadvantaged, with average landholdings dropping to 0.76 acres with legal entitlement and 1.32 acres without. These findings highlight the compounded vulnerabilities faced by displaced and migrant households in terms of both access to land and their security of land tenure.

Figure 22. Credit sources available, by household migration status

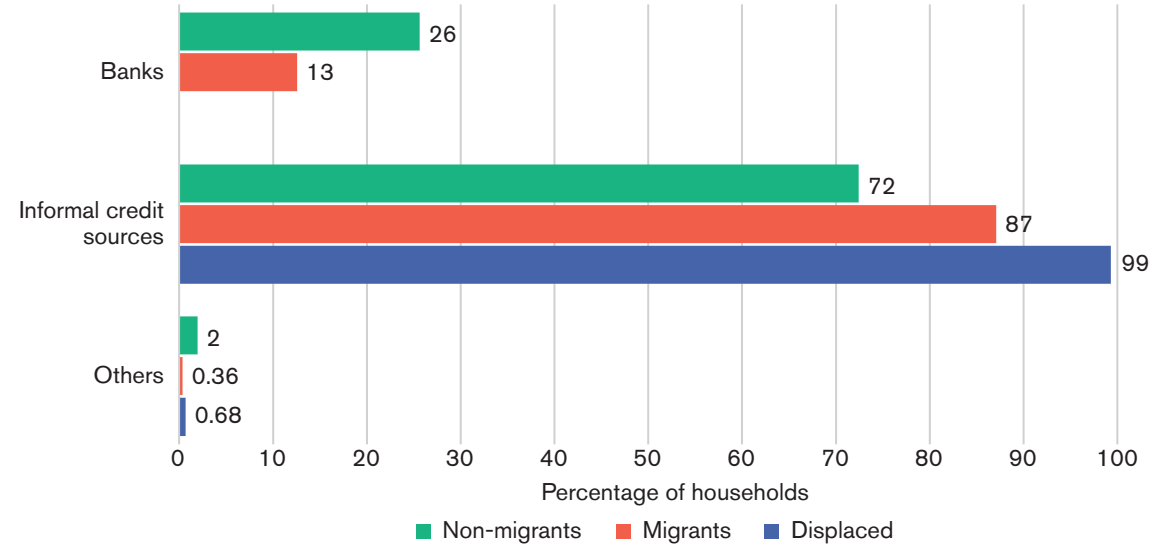


Figure 23. Type of house owned, by household migration status

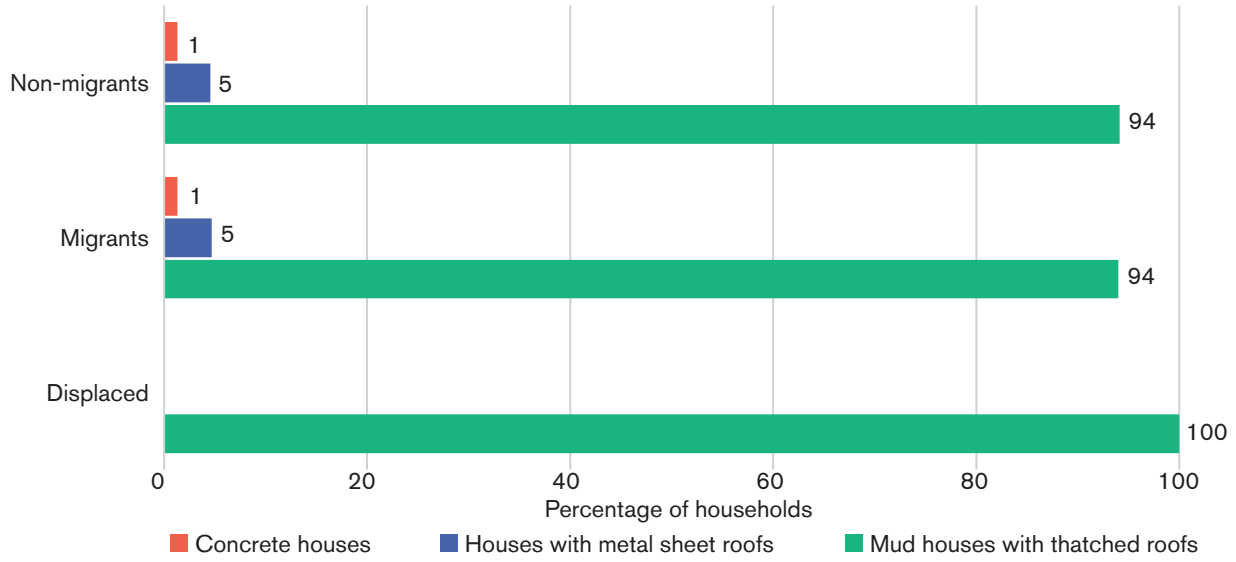


Figure 24. Home ownership status, by household migration status

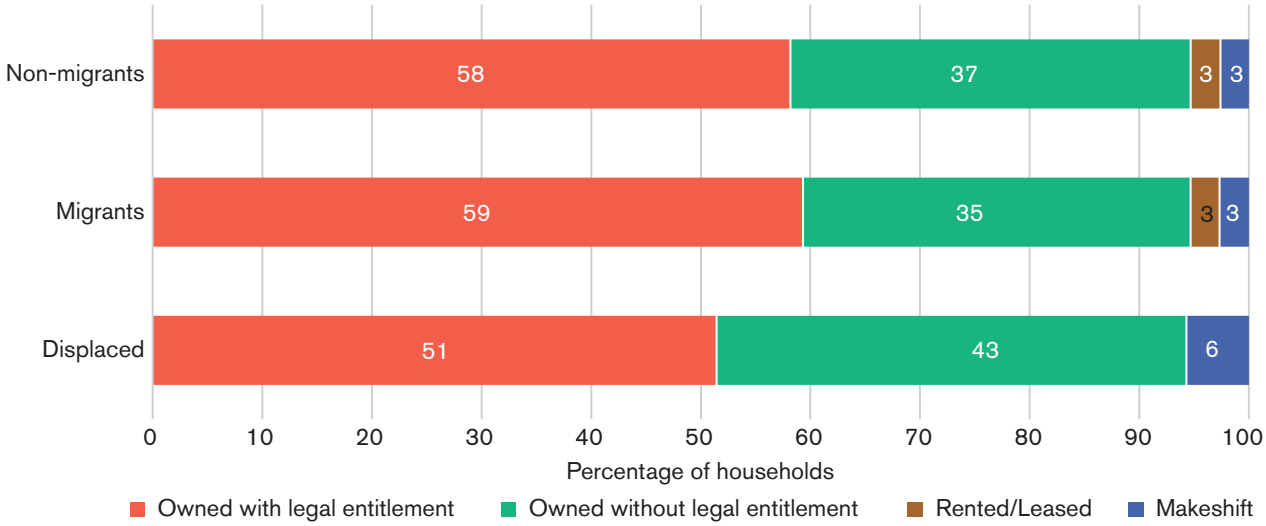
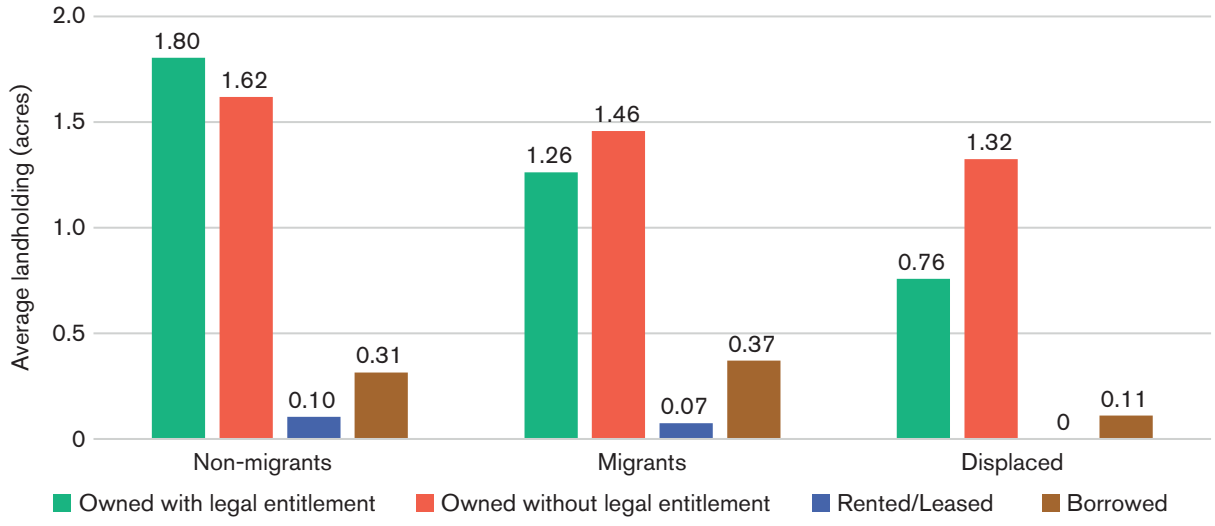


Figure 25. Type of land holding among households, by household migration status



Livestock ownership (see Figure 26): this highlights varying levels of economic resilience and access to productive assets. Non-migrant households exhibit relatively higher ownership of cattle (5%), sheep (2%) and goats (2%) compared to migrant households, which own fewer cattle (2%), slightly more sheep (2%) and fewer goats (1%). Displaced households, however, present an entirely different pattern, with significantly higher ownership of cattle (16%), sheep (8%) and goats (7%). This elevated livestock ownership among displaced households suggests that livestock serves as a critical coping mechanism and mobile asset, acting as both a source of income and food security. These figures indicate that while non-migrant and migrant households rely on diversified livestock holdings for their livelihoods, displaced households demonstrate a heavy dependence on livestock, particularly cattle, as a primary economic buffer. This reliance could be linked to limited access to land, agriculture and formal financial systems, making livestock a portable asset.

Household annual income (see Table 1): this is a significant contributor to resilience. Non-migrant households reported the highest average annual income at XOF 960,330 (US$1,586)[3], followed closely by migrant households at XOF 953,101 (US$1,574). In contrast, displaced households earn significantly less, with an average annual income of XOF 600,329 (US$991). This income disparity highlights the severe economic vulnerability of displaced households, driven by disruption of livelihoods and limited access to sustainable income opportunities.

Income sources also vary across these groups. In Table 1, we show the different income sources across household categories.

The composition of household income reflects the distinct economic profiles of non-migrant, migrant and displaced households, shaped by their mobility patterns, livelihood assets and access to income sources. For non-migrant households, agriculture is the dominant source of income, contributing 35%, aligning with their higher rates of agricultural land ownership and larger average landholdings. This strong reliance on agriculture ties non-migrants to their location, reinforcing their reduced likelihood of migrating. Additionally, non-migrants report that a substantial portion of their income (22%) comes from salaries, predominantly from formal employment, indicating access to relatively stable fixed-

Figure 26. Livestock ownership, by household migration status

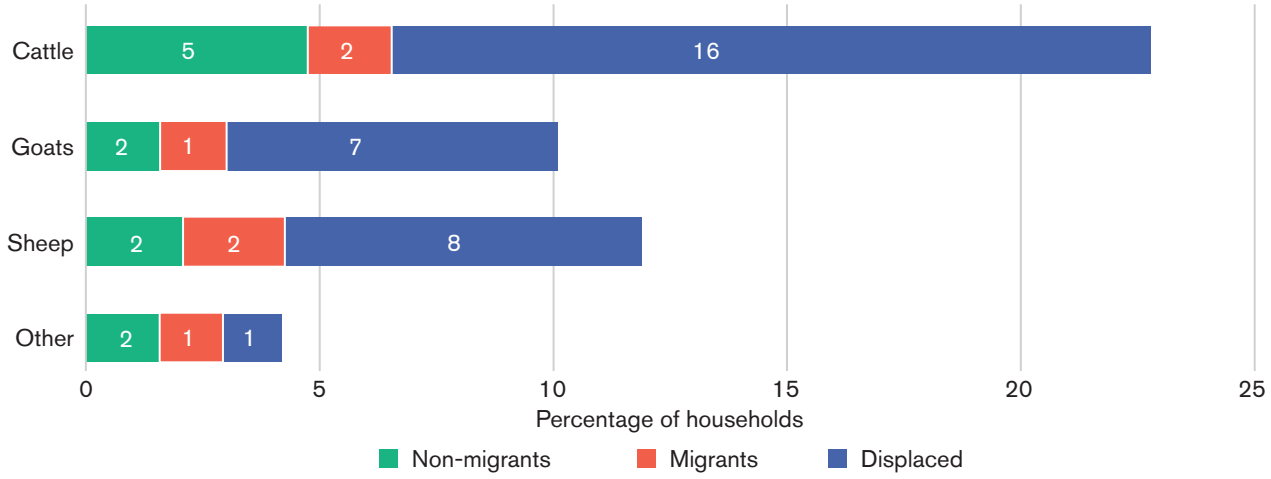


Table 1. Composition of household income, by household migration status

ECONOMIC ACTIVITY	NON-MIGRANTS (% OF HOUSEHOLDS)	MIGRANTS (% OF HOUSEHOLDS)	DISPLACED (% OF HOUSEHOLDS)
Agriculture and agriculture labour	35	28	41
Livestock	11	7	39
Fishing	13	10	6
Non-farm income	5	7	7
Salary	22	16	3
Remittance	14	32	4

3 We have used the exchange rate as XOF 1 = US$0.001651

income opportunities. This income security may act as a financial buffer during crises, providing resilience against economic shocks and reducing the push factors for migration.

Migrant households, on the other hand, display a more fluid income structure that reflects the temporary and seasonal nature of their mobility. Agriculture still plays a significant role, contributing 28% of their income, indicating their continued reliance on agricultural activities at both their origin and destination sites. A significant portion of the income for migrant households (32%) comes from remittances. This means that household members who have migrated send money back to their families, who remain in Mopti. These remittances provide crucial financial support for non-migrant household members. This dual dependence on agriculture and remittances highlights their adaptive strategy to diversify income sources in response to economic vulnerabilities created due to climate impacts.

The income composition of displaced households points to the significant precariousness of their economic situation. Agriculture contributes the largest share (41%) of their income, but this reliance reflects their engagement in low-paying agricultural labour rather than land ownership. Additionally, 39% of their income comes from livestock, aligning with earlier observations about their livestock ownership. This heavy reliance on mobile assets such as livestock suggests that it is a coping mechanism. Displaced households also report minimal contributions from salaried income (3%) and remittances (4%), reflecting their limited integration into formal labour markets and weaker social and financial support networks.

Overall inherent resilience index

The aggregated IRI scores (see Figure 27) provides a comprehensive measure of households structural and socioeconomic capacity to cope with and adapt to shocks, providing an overview of the resilience disparities across non-migrant, migrant and displaced households.

Non-migrant households exhibit the highest average resilience score (44.56), closely followed by migrant households (44.21). Displaced households lag significantly, with an average score of 37.23.

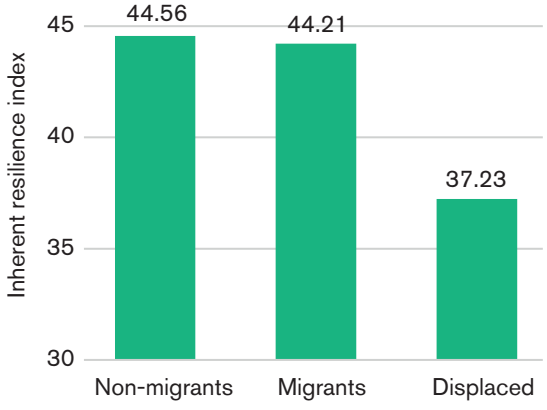
The higher resilience among non-migrant households can be attributed to their relatively stable access to agricultural land, larger landholding sizes, better housing ownership status and higher representation in salaried employment. These factors collectively contribute to greater financial and social stability, reducing their susceptibility to shocks. Additionally, non-migrants benefit from stronger community ties and localised support systems, further reinforcing their resilience.

Migrant households, despite their mobility, maintain a comparable resilience score to non-migrants. This suggests that while migration helps diversify income sources, it does not always lead to greater resilience. Migrant households remain vulnerable to economic and climate shocks, much like those who do not migrate, indicating that mobility alone is not a guaranteed pathway to long-term stability. Migrants remain tied to agriculture both at their place of origin and destination and depend heavily on remittances as a critical financial buffer. The temporary and cyclical nature of migration may limit their ability to secure long-term economic stability. We can infer that for non-migrants, staying in one place may not necessarily signify greater resilience; rather, it could reflect limited mobility options or concerns about the risks associated with migration.

In contrast, displaced households demonstrate significantly lower resilience levels, reflecting the compounded vulnerabilities they face. Their limited access to stable housing, formal employment and agricultural land ownership underscores their economic and social precarity. Displaced households often lose access to traditional support networks, essential services and opportunities to build long-term assets, leaving them highly dependent on informal and often exploitative coping mechanisms.

However, it is important to note that while non-migrant and migrant households display relatively higher resilience scores compared to displaced households, none of the groups exhibit high resilience levels overall. The resilience scores across all household categories are modest, underscoring the broader context of FCAS such as Mali, where systemic challenges, including weak governance, persistent insecurity, limited access to essential services and entrenched poverty, constrain households' ability to build sustainable resilience. This highlights the need for context-specific interventions that address structural inequalities, improve access to social services and promote inclusive development pathways to build long-term resilience for all households, particularly those displaced and most vulnerable.

Figure 27. IRI values, by household migration status



Note: Range 0–100. Higher index value represents higher resilience.

"The children go to school, but the village only has the first cycle of basic education. The village housing the second cycle of basic education seems distant and the lack of housing for the children increases the cases of abandonment. So out-of-school children spend their time doing domestic work, tending livestock, fishing, etc."
FGD participant from Dio village of Sio commune

"Breeders face all kinds of challenges, from pastures getting destroyed and forage areas disappearing, to losing livestock during disease outbreaks. They're forced into transhumance, dealing with constant stress and the disruption of the traditional way of life."
FGD participant from Kouna village of Sio commune

"…children no longer go to school because all the teachers have left the village for fear of reprisals from radical armed groups… the boys carry out agricultural and fishing work. At the same time, daughters support their mothers in domestic tasks."
FGD participant from Kouna village of Sio commune

"Households are adapting by cutting down on the amount of cereals they eat each day!"
FGD participant from Barbe of Socoura commune

"Farming households bear the brunt of extreme weather events, followed closely by fishing households. When the wintering season is unfavourable, both must wait for the next rainy and cold season to adequately meet their subsistence needs. Households in Dio village are not adequately prepared for extreme climatic shocks. The community experiences unpredictable and alternating extreme events, such as droughts and floods."
FGD participant from Dio village of Sio commune

Note: The quotes have been translated from French. While adjustments have been made for clarity, we have tried to preserve the original tone and flow.

3.3.2 Climate impact as a precipitating factor — the climate risk index

The CRI was developed to quantify the immediate and tangible losses and damages households experience due to climate-induced shocks. The CRI captures the precipitating factors that act as triggers for migration and displacement. These factors represent acute and measurable impacts (rather than long-term structural vulnerabilities) which force households to reassess their survival strategies.

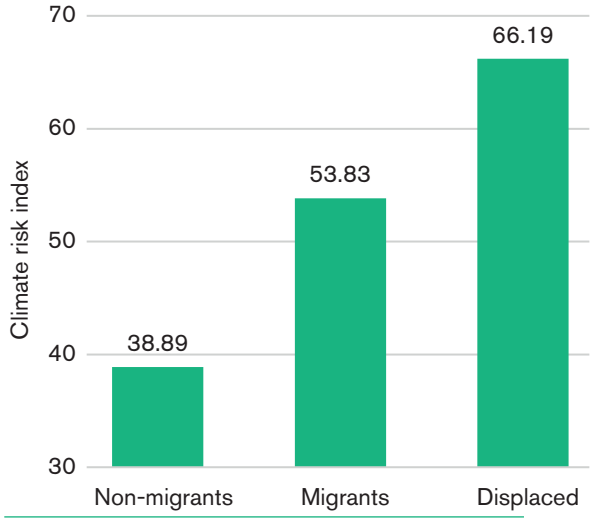
The CRI includes eight key variables: crop losses due to climate disasters, loss of livestock-related income, loss of income due to reduced fish catch, loss of employment, housing damage, damage to livelihood equipment, increased health expenditures caused by water-related hardships, and the purchase of water during drought periods (see section 4 for loss and damage values related to these variables). These variables collectively capture the immediate economic and livelihood impacts experienced by households during climate shocks. We normalised each variable on a scale from 0 to 100, with higher CRI values indicating greater exposure to climate risks and associated losses. This approach enables cross-comparison of cumulative climate-related risks across non-migrant, migrant and displaced households.

The CRI data in Figure 28 highlights the difference in exposure and vulnerability across the three household categories. Non-migrant households report the lowest average CRI score (38.89), suggesting a comparatively lower level of direct exposure to acute climate risks. However, this lower risk does not equate to resilience, as the persistent challenges of limited adaptation capacities, reliance on rainfed agriculture and limited resource bases continue to pose significant barriers to long-term stability. For many non-migrants, the ability to remain in place is not necessarily a reflection of higher resilience but may also indicate a lack of mobility options or the perceived risks of migration.

Migrants report a moderate CRI score (53.83), reflecting higher exposure to climate risks compared to non-migrants. This elevated score suggests that migration often emerges as a reactive coping mechanism rather than a proactive adaptation strategy. Climate shocks act as precipitating factors that drive these households to seek temporary or seasonal mobility. Despite moderate risks, many migrant households remain tied to agricultural activities, perpetuating their vulnerability to future shocks.

Displaced households exhibit the highest CRI score (66.19), emphasising their acute vulnerability and chronic exposure to climate-induced losses. The elevated risk profile among displaced households is driven by compounding factors, including the loss of agricultural assets, reliance on fragile shelters, disrupted livelihoods and limited access to essential services.

Figure 28. CRI values, by household migration status



Note: Range 0–100. Higher index value represents higher risk.

Unlike migrants, displaced households often experience prolonged exposure to repeated shocks, with a limited capacity to recover or rebuild.

The CRI scores highlight the need for targeted interventions that address the specific vulnerabilities of each group. For non-migrants, strengthening local adaptation strategies and improving agricultural resilience can reduce their exposure to shocks. For migrants, enhancing livelihood diversification at both origin and destination points can create more sustainable coping mechanisms. For displaced households, comprehensive support systems that address housing security, access to services and livelihood restoration are essential to breaking cycles of vulnerability and ensuring long-term resilience.

3.3.3 Conflict as a precipitating factor — internal conflict risk index

The ICRI was developed to assess the direct impacts of conflict-related risks on households and their role in shaping vulnerability, resilience and mobility decisions. In FCAS such as Mali, conflict exacerbates existing structural and socioeconomic vulnerabilities, creating acute stressors that force households into migration or displacement as coping mechanisms. The ICRI focuses on the immediate and tangible consequences of conflict, capturing how injuries, fatalities and persistent exposure to violence disrupt household stability and economic security.

To quantify these impacts, the ICRI was constructed using two primary variables that represent critical dimensions of conflict exposure: the percentage of households reporting injuries to family members as a result of conflict-related incidents and the percentage of households that have experienced the loss of a family member directly linked to conflict.

Each variable was normalised on a scale from 0 to 100, with higher scores reflecting higher exposure to conflict-related risks and lower scores indicating reduced vulnerability. The aggregated index provides a single composite risk value for each household, enabling a comparative analysis across non-migrant, migrant and displaced households.

In the context of Mali, and specifically Mopti, understanding the ICRI as a precipitating factor is critical due to the unique intersection of climate risks and conflict dynamics. While climate shocks captured by the CRI create economic and environmental stressors, such as crop losses, reduced fish catch and loss of income, conflict intensifies these vulnerabilities through violence, displacement and disruption of livelihoods. Together, these two indices reveal a layered and compounding vulnerability dynamic, where climate impacts and conflict risks not only coexist but also reinforce one another, creating cyclical and protracted crises for affected communities.

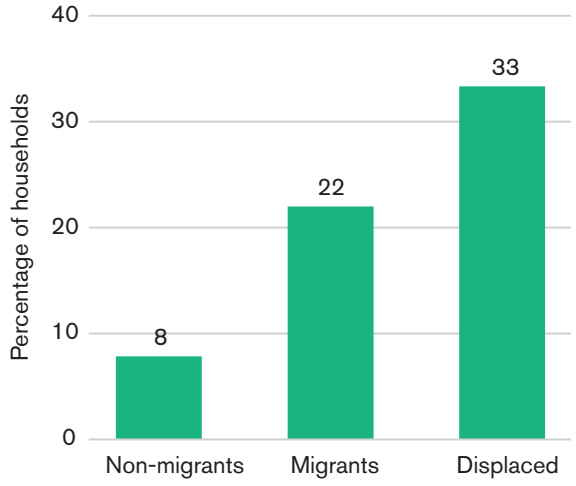
Factors shaping internal conflict risk index

Household injuries and their causes: we analysed how injuries resulting from disasters, accidents and conflict serve as significant stress multipliers, intensifying vulnerabilities and compelling households to make mobility decisions as a survival strategy rather than a voluntary choice.

Figure 29 shows the overall percentage of households experiencing injuries over the past three years.

Non-migrant households report the lowest levels of injuries (8%), reflecting their relative insulation from conflict hotspots and reduced exposure to direct violence. For migrant households, injury rates increase to 22%, indicating heightened vulnerability in transit or engagement in precarious labour activities at their destinations. Displaced households report the highest injury rates (33%), underscoring the severe risks they

Figure 29. Household members seriously injured in the last three years, by household migration status



face, particularly during their displacement journeys and in insecure or resource-scarce settlement areas.

Table 2 sets out the reasons behind these injuries, highlighting how different stressors — conflict, disasters, accidents and other factors — cause these injuries.

For non-migrant households, injuries are predominantly attributed to accidents during travel (42%), while conflict-related injuries (17%) and other reasons (17%) remain low. This suggests that non-migrant households, while facing everyday risks, are less exposed to direct violence from conflict.

For migrant households, the picture shifts significantly. Conflict emerges as the leading cause of injuries (61%), followed by accidents during travel (18%) and workplace incidents (12%). This highlights the precarious nature of migration journeys and the exposure of migrants to conflict zones both at their origin and during transit. Disasters contribute minimally to injuries in this group (6%), indicating that conflict outweighs environmental factors in driving risks during migration.

Among displaced households, conflict is an overwhelming driver of injuries, accounting for 57% of reported cases. This reflects the persistent exposure of displaced communities to conflict not just at their point of origin but also throughout their displacement journey. While accidents during travel (23%) and disasters (11%) also contribute, conflict remains the defining factor behind their heightened vulnerability. Importantly, the injuries reported by displaced households predominantly occurred at their home site, serving as the direct trigger for their displacement.

Household fatalities and their causes: we also analysed how conflict, disasters and other factors contribute to the deaths of household members and how these factors influence mobility decisions. A death within a household is not only an immediate loss but also has long-term social, emotional and economic impacts, and often is a tipping point for migration or displacement.

In Figure 30, we show the percentage of households reporting the death of a family member during the past three years.

Of the households surveyed, 22% of non-migrant households reported a death, 15% of migrant households reported a death and displaced households recorded the highest rate of deaths at 23%. While non-migrant households face a considerable burden of mortality, their deaths are primarily linked to non-conflict factors such as diseases and ageing. Migrant households display relatively lower mortality rates, possibly indicating that migration serves as a temporary coping strategy, reducing prolonged exposure to high-risk environments. Displaced households, however, face the highest mortality rates, underscoring the severe risks they encounter, both during displacement journeys and at their destinations.

In Table 3, we have disaggregated the reasons behind household deaths across non-migrant, migrant and displaced categories.

Non-migrant households attributed the majority of deaths to diseases (64%), ageing (12%) and accidents (6%). Conflict-related deaths account for only 9%, indicating that while conflict is a factor, non-migrants are relatively insulated from direct violence. Migrant households present a more mixed profile, with disease (48%) and ageing (22%) remaining dominant causes, but conflict-related deaths (17%) are noticeably higher compared to non-migrants. This suggests that while migration provides

Figure 30. Households reporting the death of a family member in the last three years, by household migration status

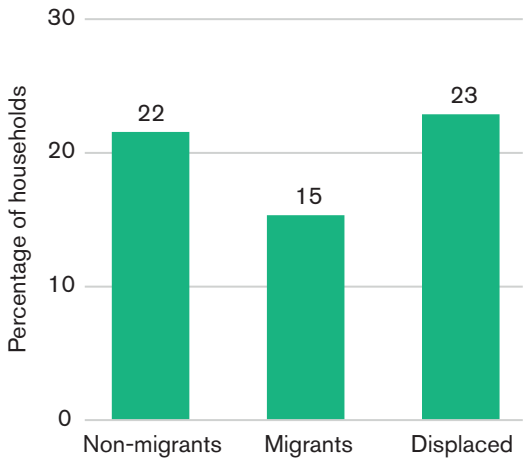


Table 2. Reasons for injury in the last three years, by household migration status

REASON	NON-MIGRANTS (% OF HOUSEHOLDS)	MIGRANTS (% OF HOUSEHOLDS)	DISPLACED (% OF HOUSEHOLDS)
Accidents at workplaces	8	12	3
Accidents during travel	42	18	23
Conflict	17	61	57
Disaster events	17	6	11
Other	17	3	6

Table 3. Reasons for household member's death in the last three years, by household migration status

REASON	NON-MIGRANTS (% OF HOUSEHOLDS)	MIGRANTS (% OF HOUSEHOLDS)	DISPLACED (% OF HOUSEHOLDS)
Accident	6	4	8
Ageing	12	22	13
Conflict	9	17	58
Disaster events	6	9	13
Disease	64	48	8
Other	3	-	-

some relief from prolonged exposure to conflict zones, migrants remain vulnerable during transit and in unstable environments at their destinations.

In contrast, displaced households show a deeply concerning profile, with conflict being the dominant cause of death (58%). Deaths from disasters (13%), ageing (13%), diseases (8%) and accidents (8%) follow but remain secondary contributors. This highlights the acute and ongoing risks displaced households face due to their persistent exposure to conflict-prone areas. The significant share of conflict-related deaths among displaced households indicates that displacement is often a survival necessity driven by immediate threats to life and security.

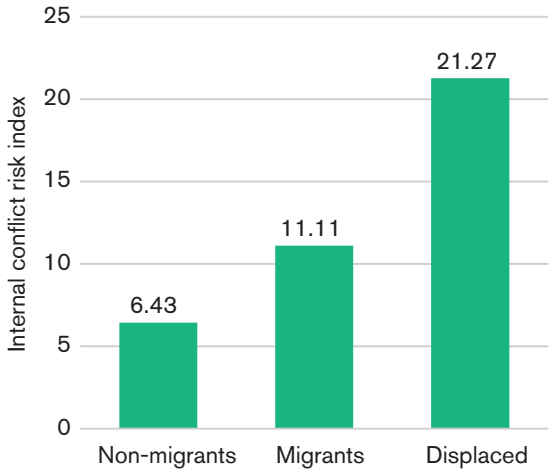
Overall internal conflict risk index

The ICRI provides an aggregated score of the cumulative impact of injuries, fatalities and prolonged exposure to conflict dynamics, offering a comparative understanding of how conflict risk shapes vulnerability and mobility decisions across the different groups.

Figure 31 shows a clear difference in ICRI scores among the three household categories. Non-migrant households exhibit the lowest ICRI score at 6.43, indicating their relatively limited direct exposure to conflict-related risks. This lower score suggests that non-migrants are more likely to reside in relatively stable areas or have access to localised support systems that buffer against the direct impacts of conflict. However, it is important to note that while their risk exposure remains lower, they are not entirely insulated from conflict dynamics, as reflected in the data on injuries and deaths caused by conflict.

Migrant households report a moderate ICRI score of 11.11, highlighting a higher level of exposure to conflict risks compared to non-migrants. Migration often serves as a coping strategy to escape acute conflict stressors, but this index suggests that migrants remain vulnerable to risks during transit and at their destinations. The persistence of conflict-related injuries and deaths among migrant households underscores the precariousness of their mobility pathways and the challenges they face in securing safety and stability in new locations.

Figure 31. ICRI scores, by household migration status



Note: Range 0–100. Higher index value represents higher risk.

Displaced households present the highest ICRI score at 21.27, reflecting their acute and persistent exposure to conflict risks. This score highlights the compounded vulnerabilities faced by displaced populations, who are often forced to leave their homes due to life-threatening conflict events. Displacement rarely eliminates conflict-related risks entirely, as many displaced households continue to face violence, insecurity and unstable living conditions in temporary shelters or conflict-prone resettlement areas. The elevated ICRI score underscores the chronic exposure of displaced households to ongoing violence, injuries and fatalities, making them the most vulnerable group in terms of conflict risk.

Together, these findings underscore the intertwined role of conflict and climate shocks in driving mobility decisions. Addressing these interlinked risks requires integrated interventions that simultaneously focus on conflict mitigation, protection mechanisms during transit, climate adaptation strategies and longer-term integrated solutions for displaced populations, ensuring that households can build resilience to both conflict and climate shocks.

3.3.4 Protective factors that mitigate climate change impacts on households — social protection index

The SPI was developed to measure the extent to which households benefit from protective mechanisms designed to mitigate the adverse impacts of climate shocks and conflict-related stressors. Social protection serves as a safety net, providing critical support through various programmes, including food aid, cash transfers, school meals, agricultural extension services and economic assistance. In fragile and conflict-affected contexts like Mali, these protective mechanisms play an essential role in stabilising vulnerable households, enabling them to recover from shocks, reduce reliance on harmful coping strategies and build long-term resilience.

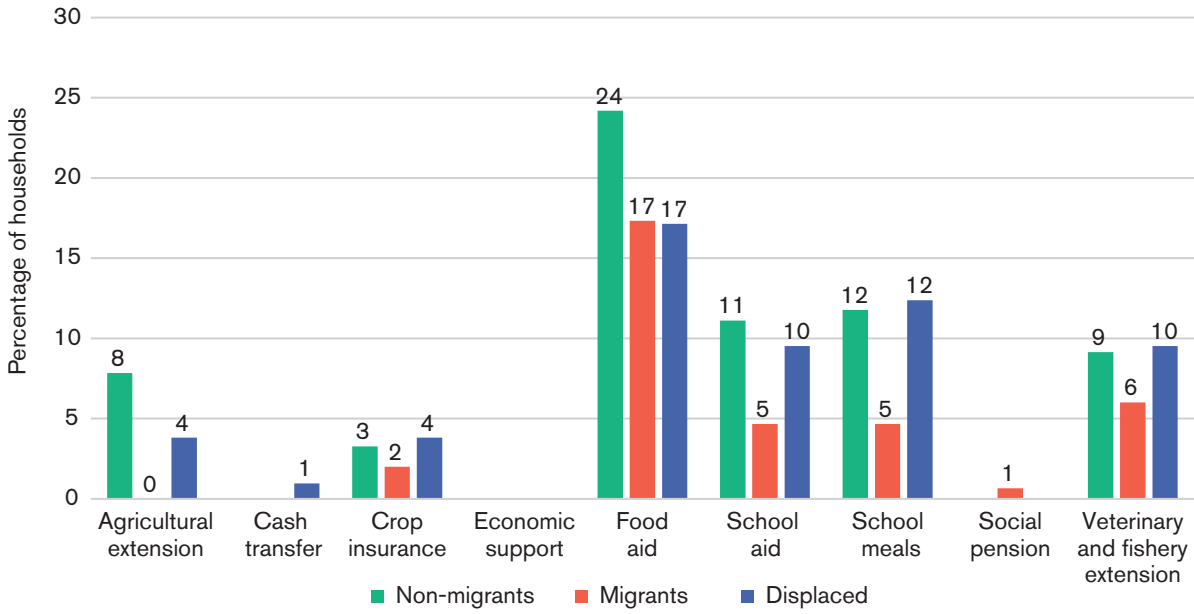
A range of social protection programmes operate in Mali, including government-led initiatives and nongovernmental organisation (NGO)-supported interventions. Government programmes include Jigisemejiri (unconditional cash transfer), EMOP PRRO (food aid), Program Cantine Scolaires (school meal aid) and Assistance Alimentaire pour la Création d'Actifs 3A (public works). However, these programmes face significant challenges in performance, limiting their reach and effectiveness in addressing household vulnerabilities (World Bank Group, no date-a). The coverage rate of all social protection programmes, in other words, the percentage of the population or a specific group benefiting from these programmes, is only 1%, significantly lower than the global average of 48%. Additionally, the benefit incidence — the proportion of total benefits going to the poorest 20% of recipients — is just 0.4%, compared to the global average of 29%.

The SPI uses multiple variables that reflect access to both government and nongovernmental social protection services. These include food aid, cash transfers, school meals, school aids, agricultural and veterinary extension services, crop insurance and economic support for livelihood activities. Each variable was normalised on a scale from 0 to 100, where higher values indicate greater access to protective services and thus stronger resilience against external shocks.

Factors shaping the SPI

Social protection services provided by government (see Figure 32): access to social protection services varies significantly across the three household categories. Non-migrant households report relatively better access to government-led food aid (24%) and agricultural extension services (8%), which helps stabilise their livelihoods and reduce economic shocks. Migrant households display lower levels of access across most social protection services, with limited uptake of cash transfers and school aid (5%). This suggests that their migrant status may limit their integration into social protection systems at both origin and destination points. Displaced households, however, present the most concerning trends. While they report moderate access to food aid at both origin (17%) and destination sites (30%), their overall reliance on destructive coping strategies highlights the fragmented and inconsistent delivery of protective services in displacement settings.

Figure 32. Government social protection services used in the last year, by household migration status



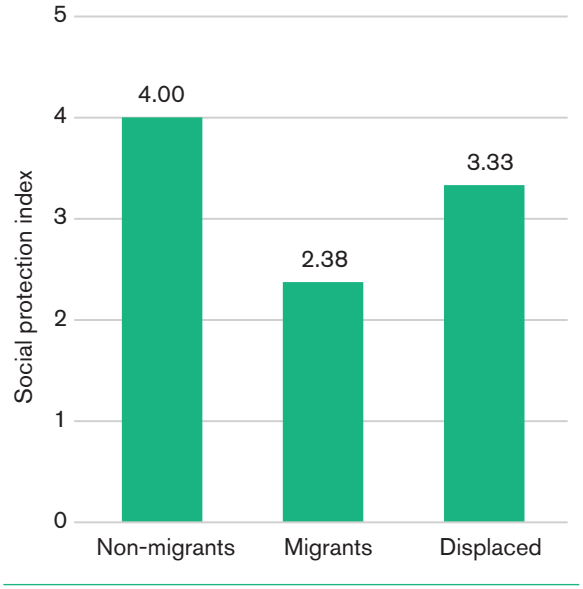
Social protection services provided by NGOs (see Figure 33): the difference between outreach and uptake of government and NGO-provided services further reveals critical gaps in social protection coverage. NGO-led interventions demonstrate higher uptake among displaced households, particularly in food aid (73% at destination), cash transfers (40%) and school aid (19%). Non-migrant and migrant households also benefit from NGO interventions, but at comparatively lower levels, underscoring humanitarian agencies' focus on displaced populations.

Overall social protection index

The aggregated SPI values (see Figure 34) reflect the differences in household access to social protection. Non-migrant households report the highest SPI score (4.00), indicating slightly better access to formal protective mechanisms, while migrant households have a lower score of 2.38. Displaced households have an SPI score of 3.33, suggesting a heavy reliance on fragmented humanitarian support rather than consistent access to structured social protection systems. However, it is critical to note that the SPI scores across all three household categories remain alarmingly low, pointing to a systemic deficiency in the reach and effectiveness of social protection mechanisms in Mali.

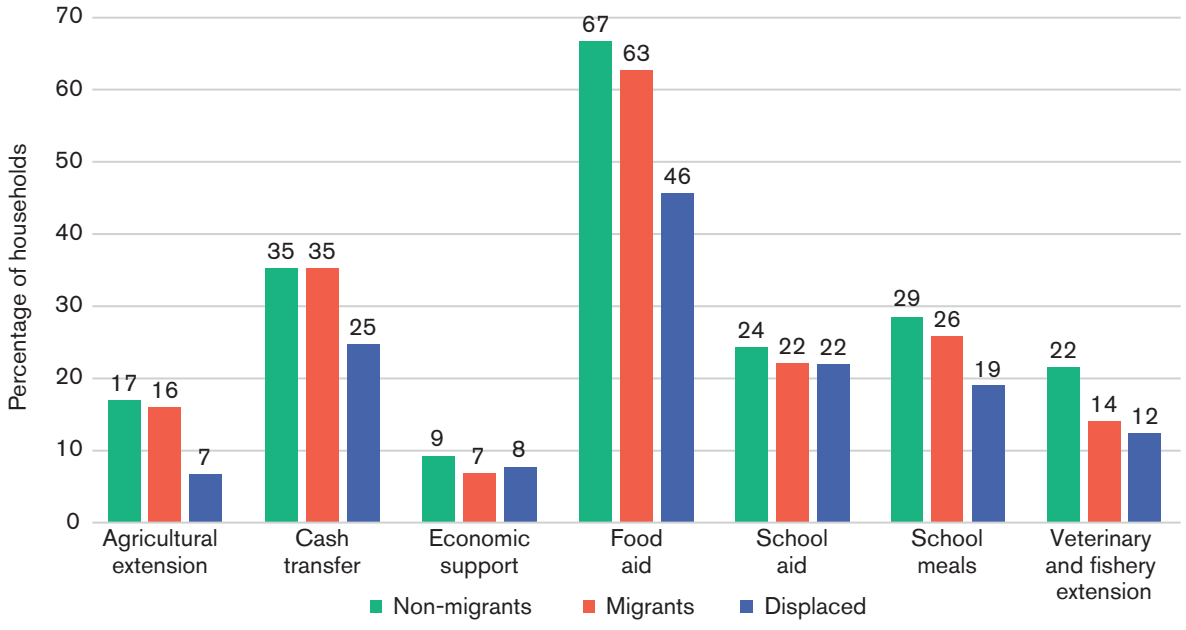
The SPI highlights critical gaps in social protection across all household categories, with the highest disparities observed for migrant and displaced households. While non-migrants have relatively better access to government safety nets, their SPI scores reveal substantial unmet needs. These findings underscore the importance of strengthening and decentralising social protection systems to ensure inclusivity, accessibility, transparency and long-term resilience-building strategies for all household categories.

Figure 34. SPI scores, by household migration status



Note: Range 0–100. Higher index value represents higher protection.

Figure 33. NGO social protection services used in the last year, by household migration status



3.4 Why some households choose to migrate while others do not

In FCAS such as Mali, where households face overlapping vulnerabilities from climate shocks, conflict risks and limited social protection, decisions regarding migration and displacement are complex and multidimensional. While some households remain in place despite escalating risks, others choose migration as a coping strategy or are forced into displacement. To unpack these dynamics, we carried out a regression analysis (see Annex 4 for details of the regression analysis model) to identify the key factors driving household mobility decisions. We specifically tried to explain the roles of inherent resilience (IRI), climate risk (CRI), conflict risk (ICRI) and social protection (SPI) in shaping these outcomes.

3.4.1 Analysis of distress migration drivers

The regression analysis helps understand the key factors influencing households' decisions to migrate as a response to climate, conflict and socioeconomic pressures. Our findings suggest that the decision to migrate internally is significantly driven by climate-related risks, while other factors, such as inherent resilience, conflict and access to social protection, appear less influential.

The CRI emerged as a statistically significant driver of distress migration. Households experiencing lower climate risks were 1.95 times less likely to migrate compared to those facing high climate risks. This suggests that gradual changes of the climate and extreme weather events, including repeated droughts and floods, and resulting agricultural failures, exert substantial pressure on households, pushing them towards migration.

The regression results indicated that IRI was not statistically significant for migration decisions, suggesting that differences in household resilience levels do not strongly differentiate between non-migrant and migrant households. Migrating households may not necessarily have lower resilience but are more likely responding to acute triggers, such as economic pressures or insecurity.

Conflict exposure, captured through the ICRI, was also not found to be statistically significant in influencing migration decisions. This indicates that while conflict remains an acute stressor, it might not act independently as a migration driver but rather intensifies other vulnerabilities, such as food insecurity and economic shocks.

The SPI was set as zero because of its low value. The limited availability and reach of social protection mechanisms across all household categories mean such mechanisms fail to act as a decisive buffer against migration pressures. This underscores systemic weaknesses in social safety nets in Mali, which are unable to provide sufficient support to prevent distress migration.

Overall, the regression findings reveal that climate risks remain the most statistically significant driver of distress migration, while resilience, conflict exposure and social protection play secondary or context-dependent roles.

Understanding of these drivers highlights the need for targeted interventions that address climate vulnerability as a primary migration driver. Policies should focus on enhancing climate resilience through sustainable agricultural practices, EWS, better governance and management of shared natural resources and livelihood diversification. Additionally, social protection systems must be strengthened and made more accessible, particularly in high-risk areas, to reduce the pressure to migrate under distress. Addressing conflict risks through peacebuilding and security measures can create safer conditions for households, reducing forced migration patterns.

3.4.2 Analysing the drivers of displacement

The regression analysis explored the determinants of displacement, providing insights into why some households end up being uprooted in response to environmental, conflict and socioeconomic pressures. The findings indicate that climate risks, conflict and inherent resilience play a significant role in influencing displacement patterns, whereas social protection appears to have limited influence.

The analysis reveals that IRI is statistically significant in explaining displacement patterns. Households with lower resilience were 4.09 times more likely to be displaced compared to those with higher resilience. This highlights that pre-existing socioeconomic vulnerabilities — such as limited income, poor housing conditions, lack of access to education and insufficient land ownership — significantly increase the likelihood of displacement. Vulnerable households are less equipped to absorb shocks or recover from crises, pushing them into displacement.

Climate risk also plays a decisive role in driving displacement. The CRI is statistically significant, showing that households experiencing lower climate risks were 1.29 times less likely to be displaced than those facing high climate risks. High exposure to climate shocks trigger abrupt displacement, leaving households with little control over timing or destination. The findings emphasise the critical role of climate

shocks in amplifying existing vulnerabilities and acting as immediate triggers for displacement.

Conflict exposure, captured through the ICRI, emerged as another statistically significant driver of displacement. Households experiencing lower internal conflict risks were 2.07 times less likely to be displaced than those exposed to high levels of violence. Conflict disrupts household stability through violence, loss of lives, destruction of assets and restricted access to essential services. In Mopti, several households have been forced to flee their homes due to persistent violence, often without resources or clear relocation plans. The significant role of ICRI underscores how conflict acts as both an immediate and sustained driver of displacement, often compounding vulnerabilities caused by climate risks and socioeconomic fragility.

The SPI was set to zero in the regression model, as access to social protection by both displaced and non-displaced households is too substantially low to make any difference to mobility decisions. This finding highlights a systemic failure of social protection systems to act as effective safety nets in preventing displacement. Limited access to food aid, cash transfers, school meals and agricultural extension services means that households already on the brink of crisis lack the support needed to prevent displacement. Furthermore, even after displacement, social protection mechanisms remain insufficient to provide meaningful assistance to stabilise affected households.

The findings illustrate that inherent resilience, climate risks and conflict risks are deeply intertwined in driving displacement. Households facing low resilience are disproportionately affected by both climate shocks and conflict, which act as immediate triggers for displacement.

While migration may typically involve elements of agency and planned mobility, displacement is often characterised by urgency, lack of preparedness and restricted choices. The statistically significant role of IRI, CRI and ICRI in displacement (compared to their limited role in migration) reflects the acute nature of the stressors driving displacement.

Addressing displacement requires multidimensional interventions that tackle both structural and acute drivers. Key policy priorities include strengthening household resilience through poverty alleviation, education and diversified income opportunities, enhancing climate adaptation measures to reduce vulnerability to environmental shocks, implementing peacebuilding initiatives to reduce conflict risks and create safer living conditions, and improving social protection systems to ensure they act as effective safety nets before displacement becomes unavoidable or to assist households in searching for solutions once they become displaced.

4

Understanding the scale of economic and non-economic loss and damage

The preceding section highlighted how varying levels of inherent resilience (IRI), exposure to climate risks (CRI), internal conflict risks (ICRI) and the availability of protective factors (SPI) influence household mobility choices. However, these factors go beyond shaping mobility decisions. They also drive significant economic and non-economic loss and damage, much of which remains underassessed and under-reported. In FCAS contexts such as Mopti, where vulnerabilities are deeply entrenched, the cascading impacts of these risks manifest in profound ways.

To better understand and quantify the losses and damages, we used the C-CIQ toolkit (see Box 2). This toolkit provides a structured approach to measuring both tangible economic losses, such as income reduction, property damage and livelihood disruptions, and intangible, non-economic losses, including psychological trauma, social disintegration and cultural erosion. By unpacking these impacts, we can generate insights to inform evidence-based interventions, guide resource allocation strategies, and support the design of context-specific policies that can effectively address multifaceted challenges.

In the previous sections of this report, we focused on the first two stages of the C-CIQ methodology: community assessment and identifying predisposing, precipitating and protective factors. In this section, we delve into the categorisation and quantification of loss and damage, focusing on how households in Mopti have experienced and absorbed the impacts of cascading risks.

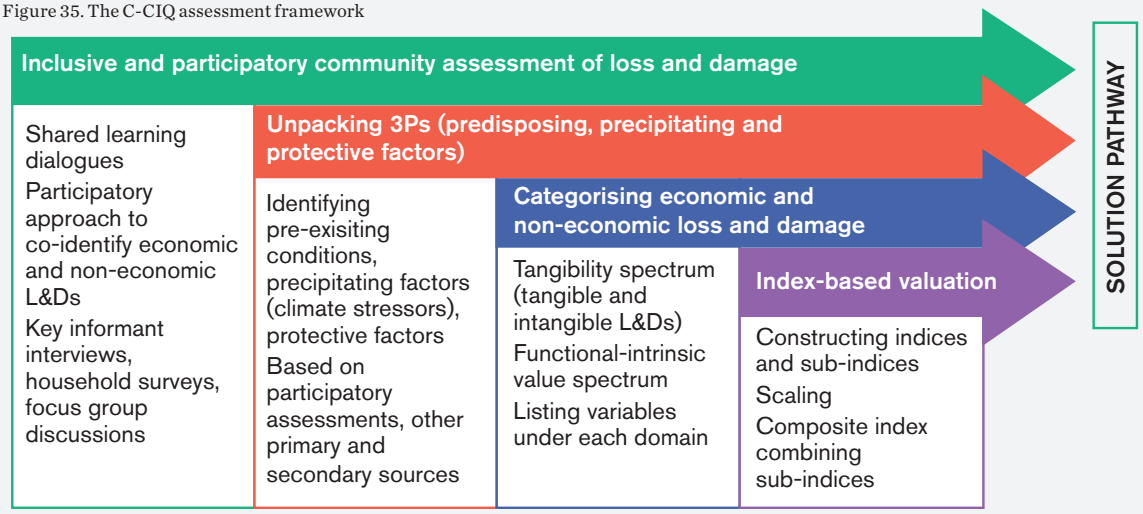
4.1 Understanding the interaction between different types of economic and non-economic loss and damage

Figure 37 shows different types of economic and non-economic loss and damage impact assessment that are used in the C-CIQ toolkit. The framework categorises impacts along two key spectrums: the value spectrum (intrinsic vs. functional) and the tangibility spectrum (tangible vs. intangible). Additionally, it highlights the importance of temporality (short-term vs. long-term impacts) and spatiality (source vs. destination locations). For example, tangible losses, such as injuries or asset losses, are often measurable, while intangible losses, including mental health deterioration or loss of cultural identity, are harder to quantify but equally significant. On the value spectrum, functional values refer to practical impacts affecting livelihoods and survival, while intrinsic values represent losses of aspects valued for their inherent worth, such as dignity and cultural heritage. This framework allows us to understand how these losses manifest and interact across multiple dimensions.

BOX 2. WHAT IS THE C-CIQ TOOLKIT AND HOW DOES IT ASSESS LOSS AND DAMAGE?

The C-CIQ toolkit (Bharadwaj et al., 2024) is an integrated framework designed to assess and quantify the economic and non-economic loss and damage experienced by communities exposed to climate risks, conflict and other multidimensional stressors. It combines participatory approaches, community-led assessments and robust analytical tools to capture the full scale and complexity of loss and damage across diverse contexts.

Figure 35. The C-CIQ assessment framework

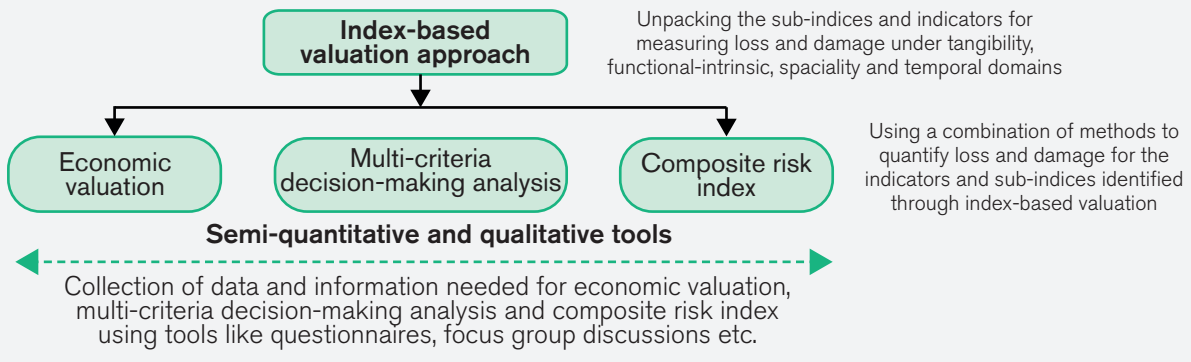


Source: Bharadwaj et al., 2024

As shown in Figure 35, the C-CIQ assessment process begins with an inclusive and participatory community assessment of loss and damage. This stage uses shared learning dialogues, household surveys, FGDs and KIIs to co-identify both economic and non-economic loss and damage. The toolkit then moves to the unpacking of the 3Ps — predisposing, precipitating and protective factors. This stage identifies pre-existing vulnerabilities, immediate stressors (for example, climate events and conflict) and available protective mechanisms.

The assessment then categorises economic and non-economic loss and damage, covering two critical dimensions: the tangibility spectrum (distinguishing between tangible and intangible losses) and the value spectrum (functional versus intrinsic value). These categories allow for a holistic understanding of how loss and damage manifests across different household contexts.

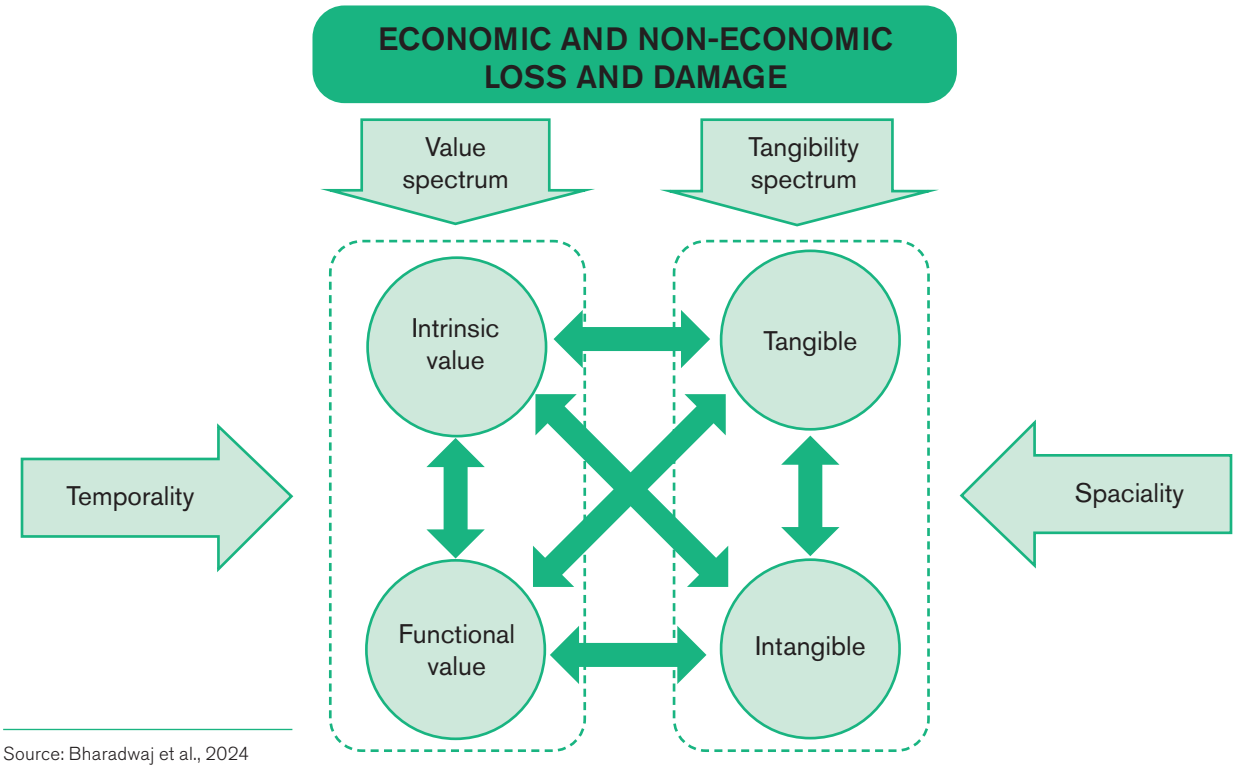
Figure 36. Methodological framework for the C-CIQ toolkit



Source: Bharadwaj et al., 2024

Figure 36 details the methodological framework of the C-CIQ toolkit, showing how the index-based valuation approach serves as the foundation for quantifying loss and damage. This approach combines economic valuation, multi-criteria decision-making analysis and the creation of a composite risk index. By integrating semi-quantitative and qualitative tools, such as household surveys and FGDs, the C-CIQ toolkit ensures that both measurable and less tangible impacts are systematically captured and analysed.

Figure 37. Domains of economic and non-economic loss and damage impacts



Source: Bharadwaj et al., 2024

The tangibility spectrum

In Mopti, the impacts of climate change and conflict are visible and measurable, but they also extend into intangible, less observable dimensions. On the tangible spectrum, households face serious injuries, loss of life and loss of assets such as housing, livestock and land in their home areas. These immediate and visible impacts are further exacerbated by loss of income caused by crop failures, reduced livestock yields and declining fish catches, which push households into cycles of poverty and distress. At destination sites, tangible impacts manifest in ways such as increased health costs due to water scarcity-related drudgery and ongoing asset losses.

However, these tangible impacts trigger less visible but equally devastating intangible impacts. At their home sites, households face mental health problems, loss of cultural identity, biodiversity loss and land degradation, which are harder to quantify but deeply felt. At destination sites, intangible losses translate into food insecurity, forced labour and deteriorating living conditions. The links between these tangible and intangible losses create a cascading chain of vulnerabilities. For instance, the loss of income (tangible) at the home site directly contributes to forced labour and mental health challenges (intangible) at the destination site. This interdependence highlights how tangible losses set off ripple effects that permeate through various aspects of household wellbeing.

Intrinsic-functional spectrum

The intrinsic-functional spectrum helps categorise these losses based on their perceived value and purpose. Functional values are practical and related to the ability of households to meet basic needs and sustain livelihoods. For example, loss of income, forced labour and declining food security are functional losses that disrupt the ability of households to work, earn and provide for their families. These losses have direct consequences for household survival and economic stability.

On the other hand, intrinsic losses hold inherent value, independent of their practical utility. Deteriorating mental health, loss of cultural identity and biodiversity loss represent intrinsic values that cannot be easily measured but are profoundly significant. For instance, mental health problems arising from loss of income or displacement are not valued for their effect on work capacity but for their intrinsic impact on personal wellbeing and dignity.

These intrinsic and functional losses are deeply interconnected. A household's inability to sustain functional roles (for example, because of loss of ability to earn an income) often intensifies intrinsic vulnerabilities (for example, mental health problems). This dual spectrum emphasises the need to address both practical and emotional aspects of loss and damage.

The temporal dimension

The temporal dimension captures how losses and damages evolve over time, distinguishing between short-term shocks and long-term, chronic impacts. In Mopti, short-term impacts include serious injuries, immediate loss of assets and sudden drops in income caused by droughts, floods or conflict incidents. These shocks are acute and demand immediate responses.

However, long-term impacts are more insidious and persistent. Over time, short-term shocks translate into chronic food insecurity, prolonged mental health issues and worsening living conditions. These long-term impacts often stem from repeated exposure to stressors and a lack of adequate coping mechanisms. The temporal dimension also reflects how households make difficult trade-offs: immediate survival (short term) often comes at the cost of long-term wellbeing and resilience.

For example, a family may migrate temporarily to cope with sudden income loss but face chronic poverty and exploitation at their destination that can have profound impact over the longer term. Addressing both short-term and long-term impacts requires interventions that are not only reactive but also forward looking, ensuring households can break free from cycles of repeated vulnerability.

The spatial dimension

The spatial dimension highlights geographic variations in how loss and damage are experienced across source and destination locations. At their home sites, households grapple with loss of life, injuries, loss of assets and dwindling income opportunities, which serve as primary drivers of migration and displacement. These impacts are compounded by the lack of adequate social protection measures and limited access to resources.

At their destinations, households encounter new and different challenges, including drudgery caused by water scarcity, forced labour and food insecurity. These spatial disparities show that while migration or displacement may offer temporary relief from one set of risks, it often exposes households to a different set of vulnerabilities.

The spatial interplay also demonstrates the cyclical nature of loss and damage. For instance, households forced to migrate due to failed crops and income losses at their home locations may face exploitative labour conditions and poor living standards at their destinations, creating a feedback loop of vulnerability and deprivation.

Understanding the interaction between these dimensions — tangibility, intrinsic-functional values, temporal dynamics and spatial variations — is crucial for designing holistic strategies to address loss and damage. Each dimension interacts with and reinforces the others, making it essential to move beyond siloed interventions and adopt integrated, context-specific approaches that address the full spectrum of household vulnerabilities.

In Figure 38 we have presented the broad categories of loss and damage suffered by communities in Mopti, under each of these domains.

4.2 Quantifying the loss and damage affecting Mopti communities

We quantified the economic and non-economic loss and damage using four key indices constructed using the C-CIQ toolkit. These indices offered a framework to assess the diverse dimensions of loss and damage experienced by communities facing intersecting risks from climate change, conflict and other multidimensional vulnerabilities. The tangible-functional loss and damage index captures measurable, physical impacts that directly affect community functions, such as loss of livelihoods, housing and income sources. The tangible-intrinsic loss and damage index focuses on material losses valued for their inherent significance, such as the destruction of cultural heritage sites. The intangible-functional loss and damage index evaluates less visible disruptions that hinder community functionality, such as the breakdown of social cohesion or deteriorating mental health. Finally, the intangible-intrinsic loss and damage index addresses deeply personal, non-material losses, including the erosion of cultural identity or a sense of place.

These indices, presented in Figure 39, served as the foundation for quantifying the impacts experienced by households in Mopti.

4.2.1 Tangible-functional loss and damage index

The tangible-functional loss and damage index captures the measurable and practical consequences of climate change and environmental stressors on communities. This index focuses on the functional disruptions caused by biodiversity loss, economic decline, land degradation, water scarcity and the physical burdens associated with accessing essential resources. These tangible impacts are often quantifiable and have direct implications for livelihoods, health, productivity and overall wellbeing, highlighting the cascading effects of environmental disruptions on both households and communities.

Figure 40 illustrates the six key sub-indices that constitute the tangible-functional loss and damage index: the biodiversity loss index, the loss of income index, the loss of income due to displacement index, the land degradation index, the elevated cost due to water scarcity index and the water-related drudgery index.

Figure 38. C-CIQ's conceptual framework for categorising loss and damage in Mopti

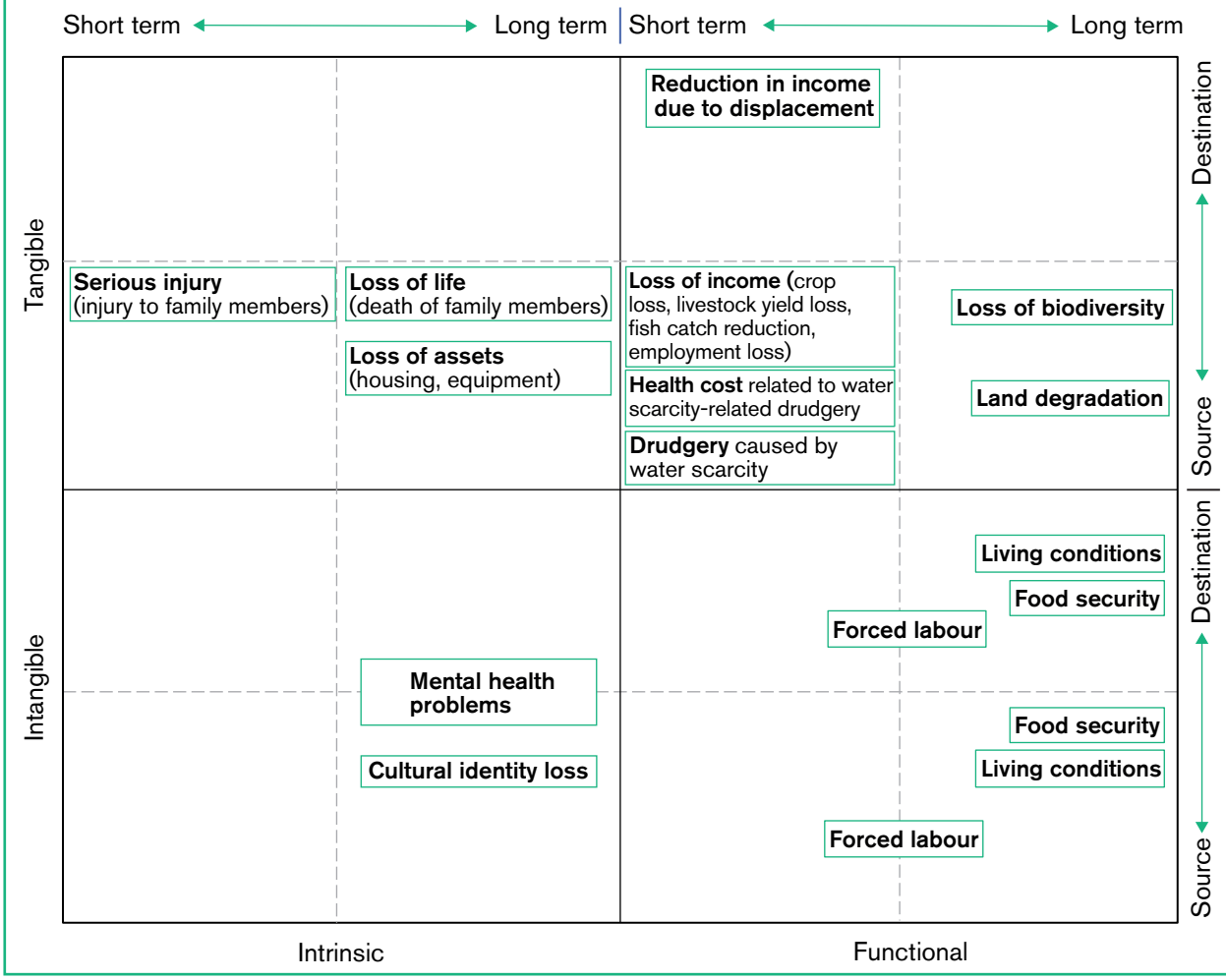
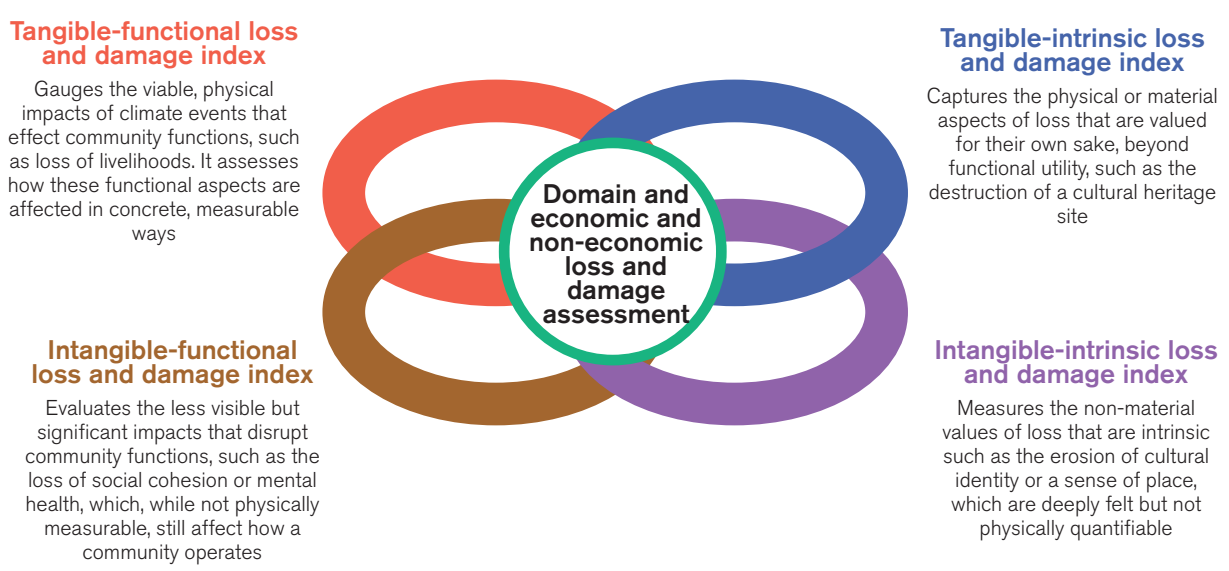


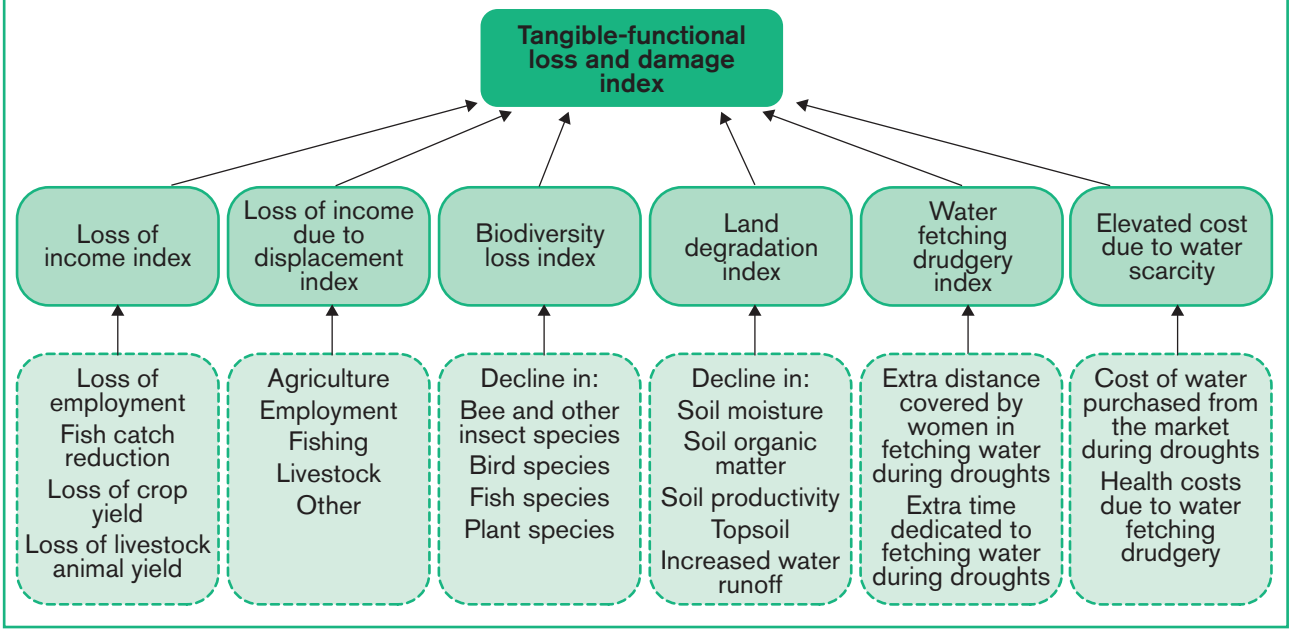
Figure 39. Indices constructed via the C-CIQ toolkit using the index-based valuation approach



Source: Bharadwaj et al., 2024

These interconnected dimensions provide an overview of the functional impacts experienced by affected populations, emphasising the need for targeted policy measures to address both immediate and long-term consequences. The subsequent sections of this paper will delve into the detailed analysis of each sub-index.

Figure 40. Formulation of the tangible-functional loss and damage index



1. Quantification of the loss of income index

The quantification of the loss of income index covers the economic impacts of climate-induced events, focusing on crop yield, livestock productivity, fishing income, employment opportunities, and access to land and livestock resources. The analysis highlights disparities across non-migrant, migrant and displaced households, highlighting the varying degrees of vulnerability and economic loss.

Crop loss (flood and drought impacts): floods and droughts have severely impacted crop yields, crop continuity and associated household income.

- **Flood-related crop loss (see Table 4):** non-migrant households reported an 12% reduction in crop yield, while migrant households experienced a 11% loss and displaced households reported the highest loss at 12%. Similarly, discontinuation of crop variety was most prevalent among non-migrants (23%) compared to migrants (15%) and displaced households (14%). In terms of annual household income, non-migrants lost 11% of their income, migrants 11% and displaced households 12%.
- **Drought-related crop loss (see Table 5):** households reported that there were significantly higher reductions in crop yields during droughts, with 51% of non-migrant households reporting reduced yields, compared to 35% of migrant households and 52% of displaced households. Discontinuation of crop variety — where farmers could no longer plant water-dependent crops due to water scarcity — followed a similar pattern, with non-migrants at 35%,

Table 4. Flood-related crop loss, by household migration status

NATURE OF LOSS	NON-MIGRANTS	MIGRANTS	DISPLACED
Reduction of crop yield (% of households)	12	11	12
Discontinuation of crop variety (% of households)	23	15	14
Loss value (% of total household annual income)	11	11	12

Table 5. Drought-related crop loss, by household migration status

NATURE OF LOSS	NON-MIGRANTS	MIGRANTS	DISPLACED
Reduction of crop yield (% of households)	51	35	52
Discontinuation of crop variety (% of households)	35	20	38
Loss value (% of total household annual income)	12	13	23

migrants at 20% and displaced households at 38%. Non-migrant households lost 12% of their annual total income, while migrant households lost 13%. Displaced households lost 23% of their total annual income, underlining the disproportionate vulnerability of displaced families.

These figures show that displaced households bear a significantly higher burden during both floods and droughts, underscoring their heightened vulnerability.

Livestock loss (flood and drought impacts): livestock productivity also suffered as a result of both floods and droughts.

- **Flood-related livestock loss (see Table 6):** during floods, 26% of displaced households reported cattle sickness, compared to 10% among non-migrants and 8% among migrants. Cattle deaths were similarly higher among displaced households (21%) compared to non-migrants (5%) and migrants (10%). The percentage of annual household income lost was 8% for displaced households, compared to 2% for both non-migrants and migrants.
- **Drought-related livestock loss (see Table 7):** cattle sickness related to droughts affected all types of households: 39% of displaced households reported cattle sickness, significantly higher than 23% among non-migrants and 20% among migrants. Similarly, 36% of displaced households reported cattle deaths, compared to 21% among non-migrants and 18% among migrants. Income loss values were also highest for displaced households at 14%, compared to 6% for non-migrants and 9% for migrants.

These figures reveal that livestock losses disproportionately affect displaced households, deepening their economic vulnerability.

Fishing income loss (flood and drought impacts): fishing households experienced significant reductions in fish catch and income during both floods and droughts.

- **Flood-related fishing income loss (see Table 8):** non-migrant households reported a 7% reduction in fish catch, migrants 12% and displaced households 10%. The loss in household income was 1% for non-migrants, 3% for migrants and 0.5% for displaced households.
- **Drought-related fishing income loss (see Table 9):** fish catch reductions were more severe during droughts: non-migrants reported a reduction of 22%, migrants 23% and displaced households 19%. Income losses followed a similar trend, with 2% for non-migrants, 4% for migrants and 1% for displaced households.

These results indicate that while both floods and droughts impact fishing households, droughts cause more severe and widespread income losses across all groups.

Table 6. Flood-related livestock loss, by household migration status

NATURE OF LOSS	NON-MIGRANTS	MIGRANTS	DISPLACED
Cattle fell sick (% of households)	10	8	26
Cattle died (% of households)	5	10	21
Loss value (% of total household annual income)	2	2	8

Table 7. Drought-related livestock loss, by household migration status

NATURE OF LOSS	NON-MIGRANTS	MIGRANTS	DISPLACED
Cattle fell sick (% of households)	23	20	39
Cattle died (% of households)	21	18	36
Loss value (% of total household annual income)	6	9	14

Table 8. Flood-related fishing income loss, by household migration status

NATURE OF LOSS	NON-MIGRANTS	MIGRANTS	DISPLACED
Fish catch reduction (% of households)	7	12	10
Loss value (% of total household annual income)	1	3	0.5

Table 9. Drought-related fishing income loss, by household migration status

NATURE OF LOSS	NON-MIGRANTS	MIGRANTS	DISPLACED
Fish catch reduction (% of households)	22	23	19
Loss value (% of total household annual income)	2	4	1

Employment loss (flood and drought impacts): employment opportunities were severely affected, especially among non-migrants and migrants.

- **Flood-related employment loss (see Table 10):** the average number of employment days lost per year was 10.38 for non-migrants, 12.06 for migrants and significantly lower at 3.81 for displaced households. Income loss values were 2%, 2% and 1%, respectively.
- **Drought-related employment loss (see Table 11)**: the average employment days lost per year were substantially higher during droughts: 58.59 for non-migrants, 77.76 for migrants and 64.14 for displaced households. Income loss values were 9% for non-migrants, 12% for migrants and 16% for displaced households.

These figures highlight that migrants suffer higher employment disruptions, but displaced households experience more sustained income losses over time.

Reduction in landholding and livestock ownership among displaced households

- **Landholding (see Figure 41):** displaced households experienced a drastic reduction in landholding. In their source village, they owned, on average, 0.76 acres of land with legal entitlement, which decreased to 0.04 acres at their displaced location. Similarly, land owned without legal entitlement dropped from an average 1.32 acres to 0.04 acres.
- **Livestock ownership (see Figure 42):** livestock ownership also sharply declined. The average number of goats owned fell from 7.10 to 0.40, sheep from 7.62 to 0.34, and cattle from 16.24 to 0.25. This overall reduction indicates a substantial loss of productive assets, further limiting opportunities to earn income.

The loss of income index reveals that displaced households in Mopti suffer disproportionately higher losses across crop yield, livestock, fishing, employment and landholding during both floods and droughts. These losses are compounded by their limited access to resources and support systems. Addressing these vulnerabilities requires interventions that restore livelihood assets, improve resilience and provide financial safety nets for displaced and migrant households.

Table 10. Flood-related employment loss, by household migration status

NATURE OF LOSS	NON-MIGRANTS	MIGRANTS	DISPLACED
Average number of employment days lost	10.38	12.06	3.81
Loss value (% of total household annual income)	2	2	1

Table 11. Drought-related employment loss, by household migration status

NATURE OF LOSS	NON-MIGRANTS	MIGRANTS	DISPLACED
Average number of employment days lost	58.59	77.76	64.14
Loss value (% of total household annual income)	9	12	16

Figure 41. Reduction in average landholding of displaced households (acres)

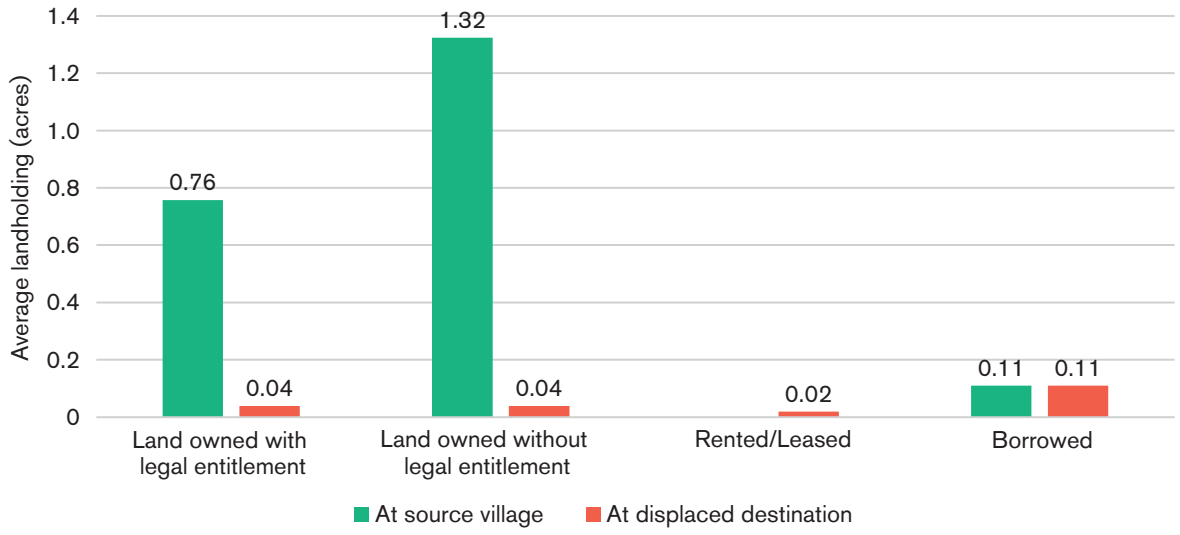
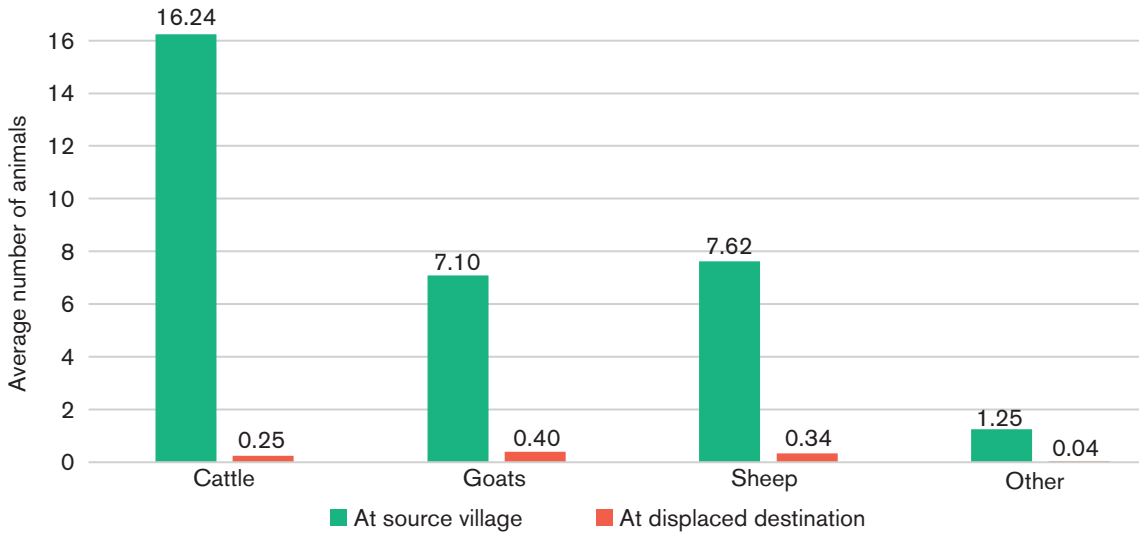


Figure 42. Falls in average livestock ownership among displaced households



2. Quantification of the biodiversity loss index

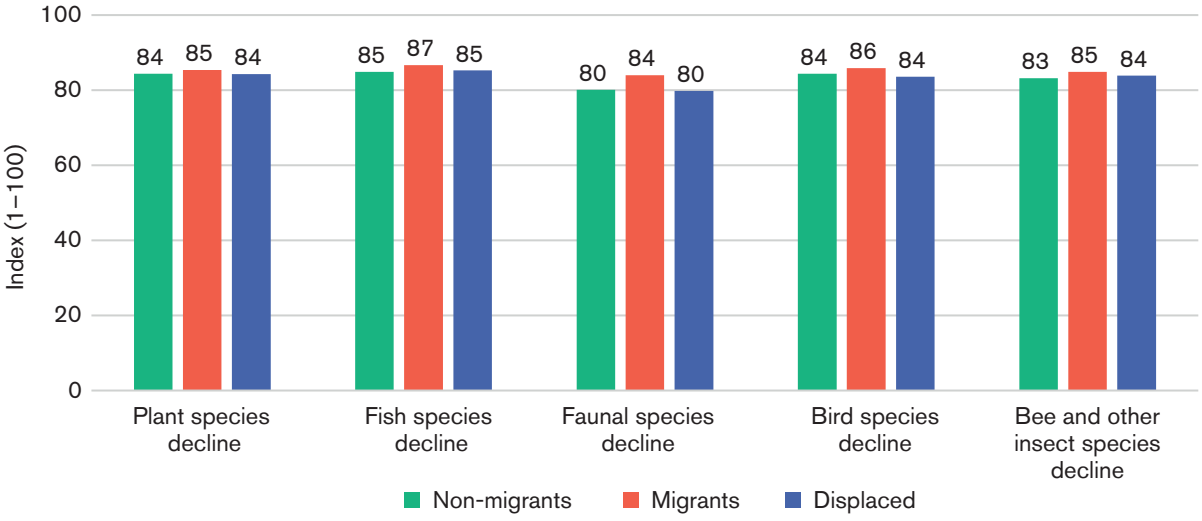
Biodiversity loss is a critical component of loss and damage on the intangible-intrinsic spectrum, with significant impacts on ecological balance, food systems and community resilience. The biodiversity loss index assesses the decline across various species categories and identifies key drivers of this decline.

Figure 43 presents the perceived biodiversity loss reported by households across different mobility categories, including declines in bees and insects, faunal species, birds, fish, and plants. Migrant households reported the highest levels of biodiversity loss across most categories, with an index value of 87 for fish species and 86 for bird species. Non-migrant households reported slightly lower levels, such as 84 for bird species and 85 for fish species. Displaced households also reported significant biodiversity loss, with values of 84 for bee and insect species, 84 for bird species, and 85 for fish species.

While biodiversity loss is an area-wide phenomenon, differences in reported values may reflect variation in household exposure, dependence on natural resources and direct observation of ecosystem changes. Migrant households, for instance, may be more attuned to environmental changes due to their movement across different locations and their economic reliance on multiple ecosystems. Displaced households, on the other hand, may perceive biodiversity loss differently due to their forced relocation, loss of traditional livelihoods and reduced access to familiar ecological resources.

Figure 44 shows the key reasons for biodiversity loss based on household perceptions, highlighting deforestation (8.06) as the most significant driver, followed by frequent droughts (7.18), pollution (6.46)

Figure 43. Biodiversity loss univariate indices, by household migration status



Note: Higher index value represents higher loss.

and destruction of natural habitats (4.69). Floods (2.48) and internal conflict (2.73) contribute comparatively less to biodiversity loss but remain important factors.

The scale of biodiversity losses experienced by the community highlights the urgent need for integrated conservation strategies, including reforestation programmes, sustainable agricultural practices and pollution control measures. Additionally, community-led biodiversity conservation initiatives could play an important role in addressing these losses and mitigating further damage.

3. Quantification of the land degradation index

Land degradation in Mali results from a combination of factors including climate change, deforestation, overgrazing, overcultivation, unsustainable agricultural practices, population growth and pollution. These deplete soil nutrients, increase erosion and reduce agricultural productivity, harming the environment and also impacting the livelihoods of communities who depend on the land. Addressing this challenge requires sustainable solutions that consider the intricate interplay of these contributing factors (Coulibaly, 2021).

The analysis of the land degradation index shows significant patterns of environmental decline across non-migrant, migrant and displaced households. Figure 45 highlights the extent of degradation in soil and land quality indicators, while Figure 46 provides insights into the underlying causes of land degradation.

Figure 45 highlights the severe impact of land degradation across all household categories, with key indicators reflecting significant declines in soil quality, productivity and water retention. The data measures the extent of decline in various soil properties, including soil productivity, topsoil retention and moisture levels.

Soil productivity shows the highest levels of degradation, with all groups reporting values above

Figure 44. Reasons for biodiversity loss

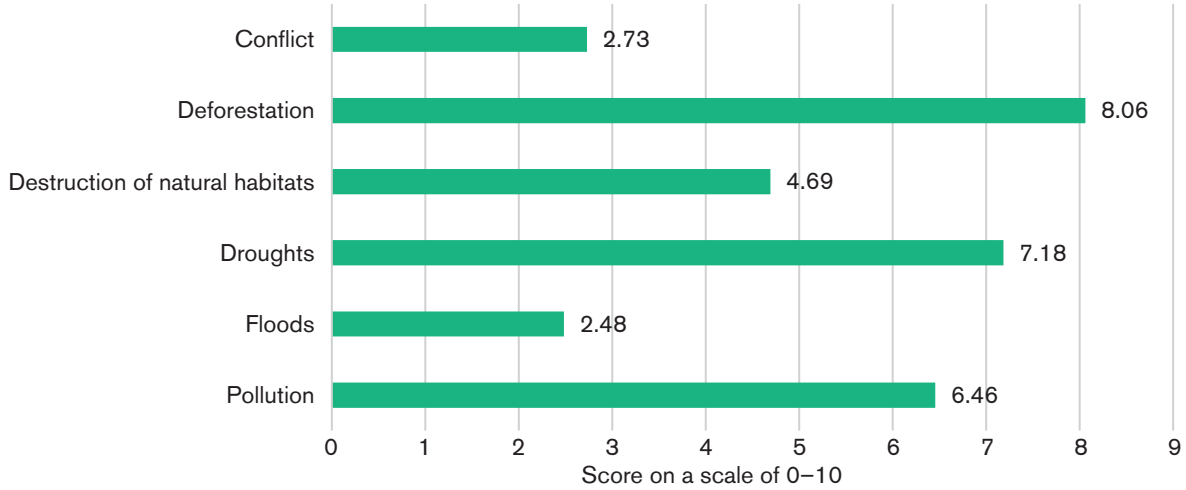
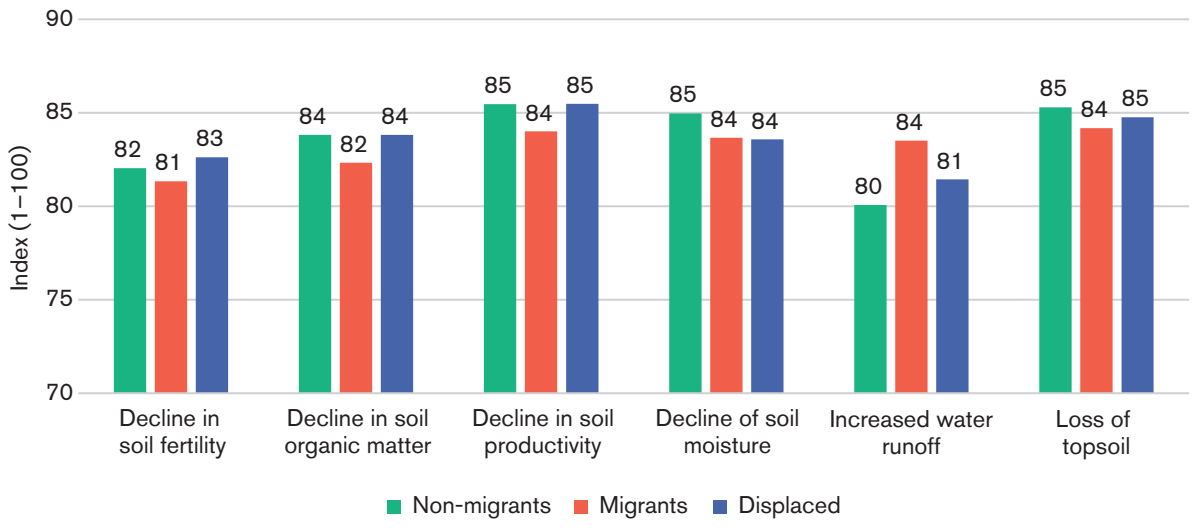


Figure 45. Land degradation univariate indices, by household migration status



Note: Higher index value represents higher loss.

84, indicating widespread declines. Similarly, topsoil loss and soil moisture reduction follow a comparable trend, reinforcing the scale of degradation across the region. Increased water runoff, though slightly lower in magnitude, remains high across all household groups. While there are small variations between non-migrant, migrant and displaced households, the overall takeaway is that land degradation is a widespread issue that affects all groups, rather than one category being significantly worse off than others. The findings suggest that climate stressors, deforestation and unsustainable land use are collectively driving a sharp decline in soil health, impacting agricultural productivity and ecosystem stability.

Figure 46 shows the main drivers considered by households to be causes of land degradation. Drought emerged as the most significant cause, scoring 8.13, followed by deforestation at 8.02. Destruction of natural habitats was another critical factor, scoring 6.67, while pollution scored 4.47 and floods 4.59. Conflict also contributed, scoring 5.67.

In summary, land degradation was a pervasive issue impacting all surveyed groups, with displaced households showing marginally higher vulnerability. The drivers underscore the need for targeted interventions, including sustainable land management practices, reforestation programmes and conflict mitigation measures.

4. Quantification of the water-related drudgery index

The water-related drudgery index highlights the physical and social burdens associated with accessing water during periods of scarcity, particularly during droughts, which disproportionately affects women and girls, as they bear the main responsibility for fetching water in the household. The analysis captures key aspects of water availability, accessibility and the health impacts arising from the efforts involved in collecting water.

The data presented in Table 12 shows that:

- Water scarcity affected 52% of displaced households, higher than non-migrant (46%) and migrant households (45%), highlighting increased vulnerability due to displacement
- Access to clean water remained limited, with 23% of non-migrant, 25% of migrant and 23% of displaced households reporting unavailability during droughts, showing minimal variation across groups

Figure 46. Reasons for land degradation

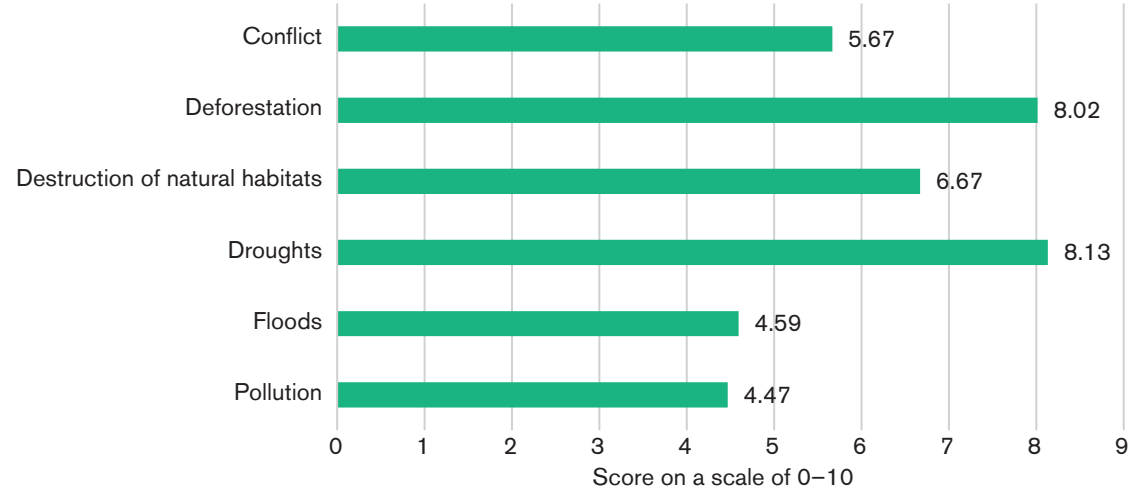


Table 12. Water availability-related drudgery, by household migration status

ISSUES FACED	NON-MIGRANTS (% OF HOUSEHOLDS)	MIGRANTS (% OF HOUSEHOLDS)	DISPLACED (% OF HOUSEHOLDS)
Clean water not available during drought periods	23	25	23
Family members had health issues due to walking longer distances to collect water	18	12	13
Must walk long distances to collect water	44	47	45
Water is scarce during drought periods	46	45	52

- Walking long distances for water impacted 44% of non-migrants, 47% of migrants and 45% of displaced households, and
- Health issues due to walking longer distances affected 18% of non-migrants, 12% of migrants and 13% of displaced households, reflecting the physical toll, particularly on women and girls.

These findings collectively demonstrate that water-fetching drudgery is a multidimensional challenge, with its impacts on all category of households. The index underscores the need for interventions, such as improved water infrastructure, localised water management systems, and health support services, to alleviate these burdens effectively.

5. Quantification of the elevated cost due to water scarcity index

Droughts and water scarcity increase the financial burden on households in several ways, including having to buy water and health costs related to the heavy physical labour of collecting water. The elevated cost due to water scarcity (see Table 13) reflects the financial burden households face as they cope with limited water availability during drought periods.

Health-related costs due to walking long distances to collect water were highest among migrant households (3% of annual household income), followed by non-migrant households (2%) and significantly lower among displaced households (0.5%). This suggests that migrants endure more strenuous conditions to access water collection points.

Spending on drinking water during drought periods showed relatively low percentages, with displaced households spending slightly more (0.7%) compared to non-migrants (0.6%) and migrants (0.5%). This indicates a marginally higher dependency on purchased drinking water among displaced communities.

The spending on water for agriculture was notably higher for migrant households (2%), compared to displaced (1%) and non-migrant households (0.5%). Migrants likely face higher costs due to their dependence on external water sources for sustaining agricultural productivity.

The spending on water for livestock was highest among displaced households (0.7%), followed by non-migrants (0.6%) and migrants (0.4%). This highlights the reliance of displaced households on purchased water for sustaining livestock.

Overall, water scarcity led to significant income losses, with migrant households experiencing the highest impact (5% of annual income), followed by non-migrants (4%) and displaced households (3%). This highlights the financial strain on migrant households, likely driven by higher costs and reduced productivity.

Addressing costs incurred due to water scarcity requires targeted interventions, such as improving access to affordable and reliable water supply systems, including community-based water storage and distribution infrastructure, and promoting drought-resilient agricultural practices. Additionally, reducing health burdens by providing localised water access points and enhancing social protection schemes can help alleviate the financial strain on vulnerable households.

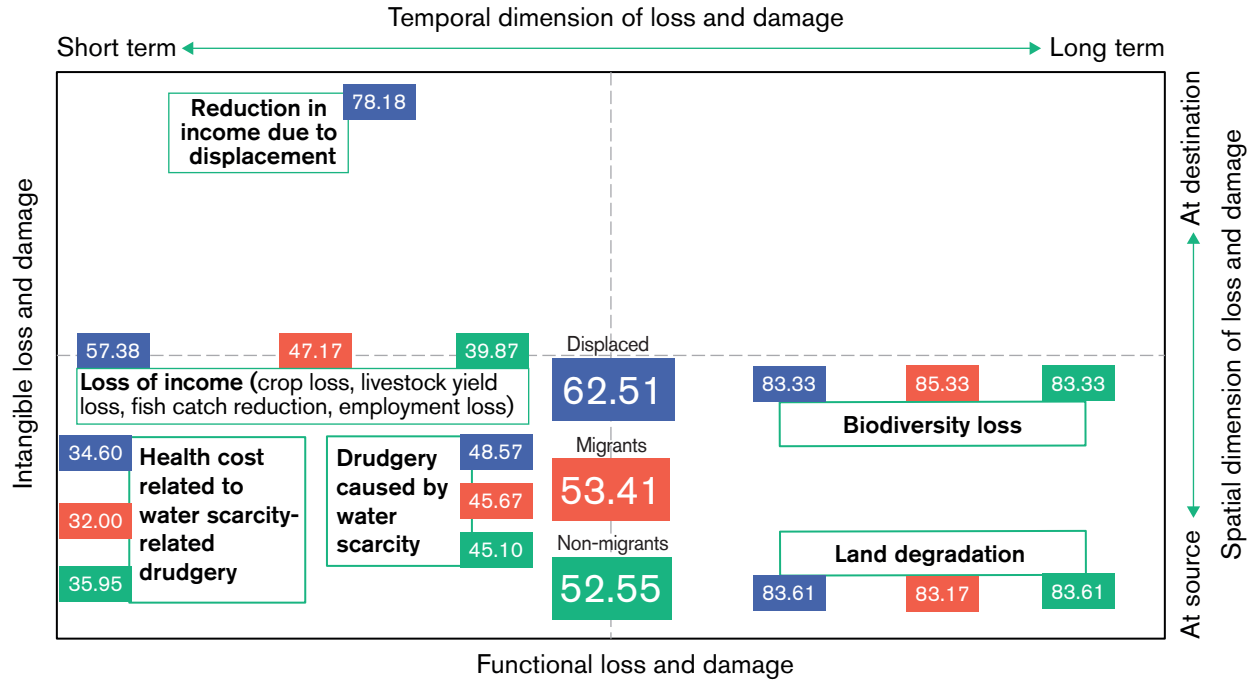
What does the tangible-functional loss and damage index reveal?

The tangible-functional loss and damage index (see Figure 47) highlights the immediate and measurable impacts of environmental and climate-related stressors on economic productivity, natural resources and physical wellbeing. The analysis reveals significant disparities

Table 13. Additional costs due to water scarcity, by household migration status

COST TYPE	NON-MIGRANTS (% OF HOUSEHOLD ANNUAL INCOME)	MIGRANTS (% OF HOUSEHOLD ANNUAL INCOME)	DISPLACED (% OF HOUSEHOLD ANNUAL INCOME)
Buying water for drinking during drought periods	0.6	0.5	0.7
Buying water for agriculture during drought periods	0.5	2	1
Buying water for livestock during drought periods	0.6	0.4	0.7
Health cost because of walking long distances to collect water	2	3	0.5
Total loss of income because of water scarcity	4	5	3

Figure 47. Tangible-functional loss and damage index



across displaced, migrant and non-migrant populations, with displaced households experiencing the highest levels of tangible-functional loss and damage.

The index indicates that displaced households face the most severe economic impacts, scoring 62.51, followed by migrants at 53.41 and non-migrants at 52.55. This reflects significant income losses caused by crop yield reduction, livestock yield decline, fish catch reduction and loss of employment opportunities.

Among displaced households, reduction in income due to displacement emerges as one of the most significant short-term functional losses, scoring an alarming 78.18. These households often face immediate livelihood interruptions, limited access to productive assets and restricted economic opportunities, amplifying their financial precarity.

In terms of water-scarcity-related drudgery, displaced populations score the highest (48.57) due to the additional physical and time burdens associated with accessing water, particularly during droughts. Migrants and non-migrants score 45.67 and 45.10, respectively. Similarly, the health cost index due to water scarcity drudgery shows notable burdens, with displaced households scoring 34.60, migrants 32.00 and non-migrants 35.95, emphasising the associated physical and financial tolls of water scarcity.

The biodiversity loss index reveals minimal variation across the groups, with migrants scoring slightly higher at 85.33, followed by displaced households and non-migrants at 83.33. This indicates widespread and shared consequences of biodiversity degradation, including the decline of plant, fish, bird and insect species.

The land degradation index also shows similar values across the three groups, with displaced and non-migrants scoring 83.61 and migrants at 83.17. This reflects a shared vulnerability to soil fertility loss, reduced organic matter and increased water runoff.

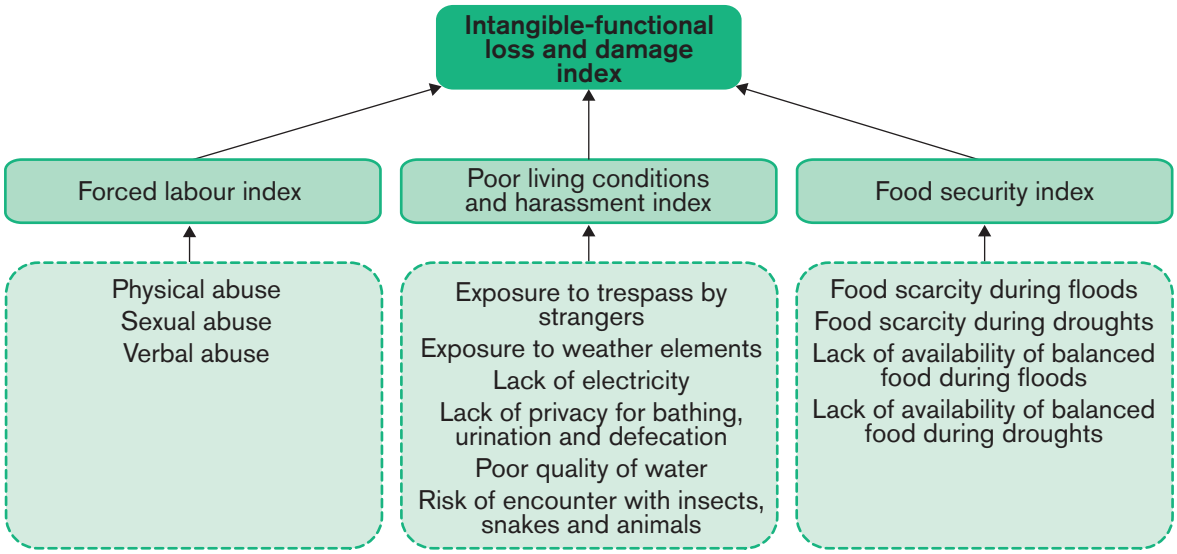
Overall, Figure 46 shows that displaced households experience the most severe and immediate impacts across most indices, particularly in income loss and water scarcity-related drudgery and health costs. While biodiversity loss and land degradation remain pressing challenges across all groups, displaced populations bear the heaviest burden of tangible-functional loss and damage. These findings call for targeted interventions to address these inequalities and build resilience among the most vulnerable communities.

4.2.2 Intangible-functional loss and damage index

The intangible-functional loss and damage index captures the less visible but deeply impactful consequences of climate-related shocks and stressors on households in Mopti. While these impacts may not always be easily quantifiable, they significantly disrupt daily life, erode wellbeing and perpetuate long-term vulnerabilities. This index focuses on three key dimensions: forced labour, poor living conditions and harassment, and food security.

These dimensions collectively shed light on how intangible-functional losses impact household resilience, social stability and overall quality of life. Figure 48 illustrates the structure of the intangible-functional loss and damage index, detailing its key components and their interconnected nature.

Figure 48. How the intangible-functional loss and damage index is constructed



1. Quantification of the forced labour index

Forced labour is an important dimension of intangible-functional loss and damage, capturing the coercive and exploitative conditions faced by households exposed to climate and conflict risks. The analysis focuses on three key indicators: physical abuse, verbal abuse and sexual abuse.

Overall trends across household categories (see Figure 49): physical abuse affects non-migrant households with an index value of 42, migrant households at 44 and displaced households at 43. Verbal abuse is slightly more prevalent among displaced households (46) compared to non-migrant households (42) and migrant households (44). Sexual abuse remains a significant concern, reported by non-migrant households at 38 and by both migrant and displaced households at 41.

The data indicates that displaced households are the most affected by sexual and verbal abuse, highlighting their vulnerability post-displacement.

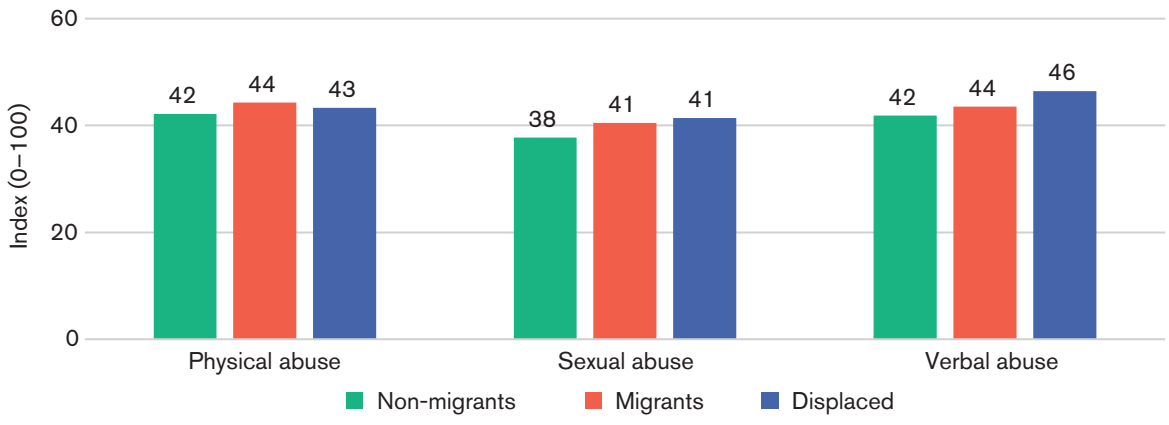
Forced labour among migrant households (see Figure 50): at source sites, the index value for physical abuse was 44, increasing to 48 at destination sites. Verbal abuse also rises from 44 at source sites to 49 at destination sites. Sexual abuse shows a similar pattern, increasing from 41 at source sites to 45 at destination sites.

This trend suggests that migration exacerbates exposure to exploitative and abusive conditions, particularly at destination locations.

Forced labour among displaced households (see Figure 51): for displaced households, physical abuse remains consistent between source sites (43) and destination sites (44). Verbal abuse, however, shows a sharp decline from 46 at source sites to 44 at destination sites. Sexual abuse also decreases from 41 at source sites to 40 at destination sites.

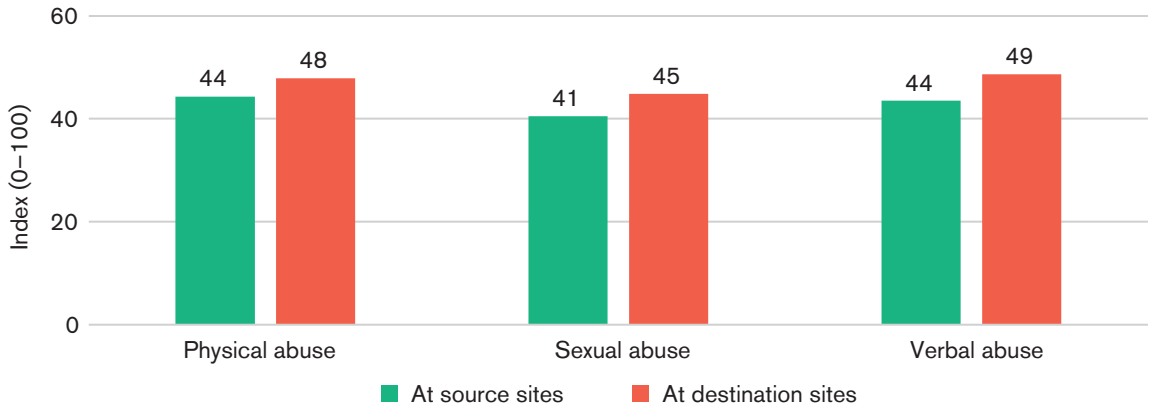
While verbal and sexual abuse slightly reduce following displacement, physical abuse persists at concerning

Figure 49. Forced labour univariate indices, by household migration status



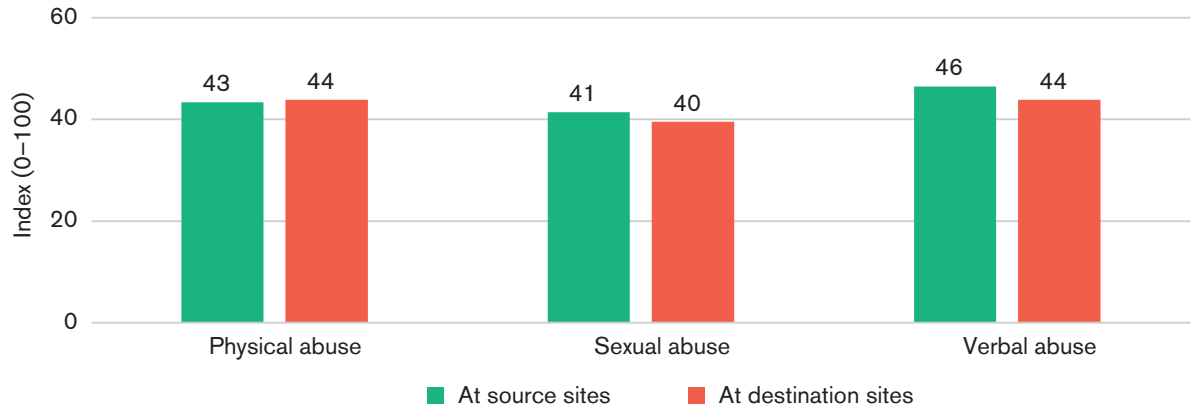
Note: Higher index value represents higher vulnerability.

Figure 50. Forced labour univariate indices for migrant households



Note: Higher index value represents higher vulnerability.

Figure 51. Forced labour univariate indices for displaced households



Note: Higher index value represents higher vulnerability.

levels, underscoring the long-term vulnerability faced by displaced populations.

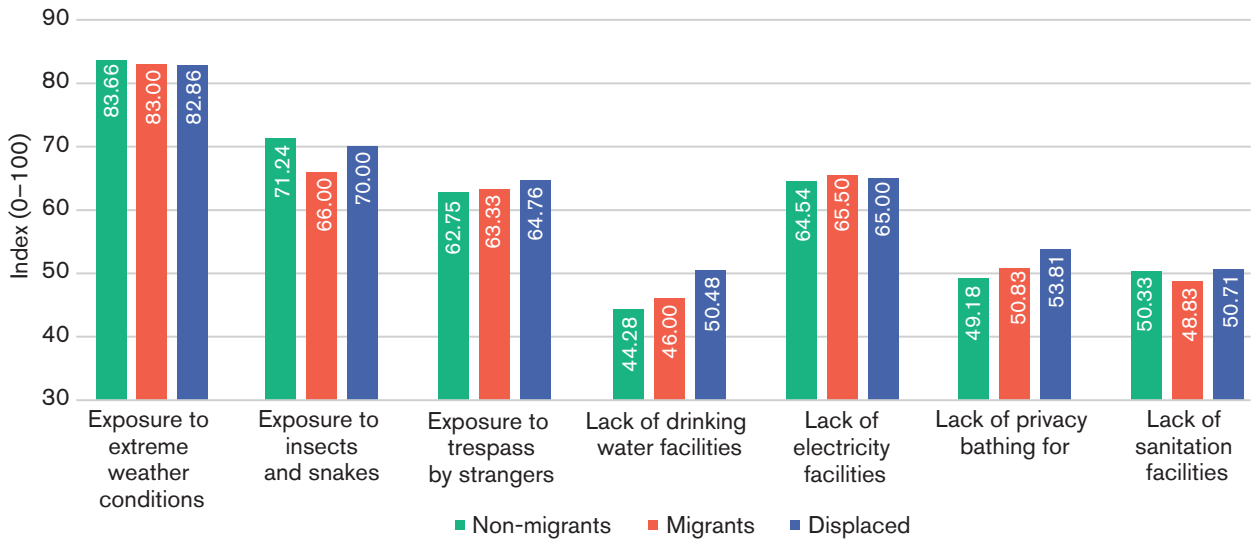
These findings highlight the heightened vulnerability of migrant households at their destinations, where they are more exposed to exploitative conditions. Displaced households, despite some reductions in verbal and sexual abuse post-relocation, continue to face persistent risks of physical abuse. The data underscores the urgent need for targeted interventions, including stricter enforcement of labour rights, community-based monitoring systems to detect exploitation and improved psychosocial support services to address the mental health impacts of forced labour. Addressing these issues holistically is essential for reducing the vulnerability of affected households and ensuring their long-term resilience to exploitative labour conditions.

2. Quantification of the poor living conditions and harassment index

Our analysis of poor living conditions and harassment highlights critical challenges faced by non-migrant, migrant and displaced households across various indicators, revealing both common vulnerabilities and group-specific variations.

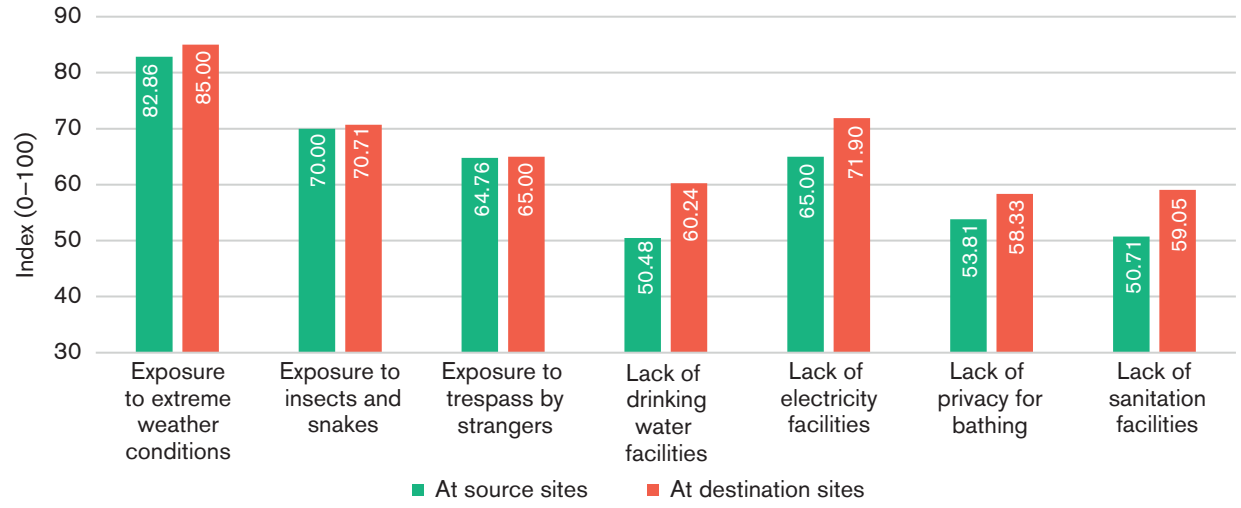
Figure 52 shows that non-migrant, migrant and displaced households report consistently high exposure to extreme weather conditions, with values of 83.66, 83.00 and 82.86 respectively, underscoring widespread vulnerability across all groups. Exposure to insects and snakes is slightly higher among non-migrant households (71.24) compared to displaced (70.00) and migrant households (66.00). Exposure to trespassing by strangers shows displaced households scoring highest (64.76), followed by migrants (63.33) and non-migrants (62.75). Lack of privacy for bathing is more pronounced among displaced households (53.81) compared to migrants (50.83) and non-migrants (49.18). Sanitation facilities are slightly better among migrant households (48.83) compared to non-migrants (50.33) and displaced households (50.71). The lack of drinking water facilities is notably higher among displaced households (50.48) compared to non-migrants (44.28) and migrant households (46.00). A lack of electricity remains a significant concern, with displaced households scoring 65.00, migrants 65.50 and non-migrants 64.54, indicating persistent challenges across all groups.

Figure 52. Living conditions univariate indices at source sites, by household migration status



Note: Higher index value represents higher vulnerability.

Figure 53. Living conditions univariate indices for displaced households



Note: Higher index value represents higher vulnerability.

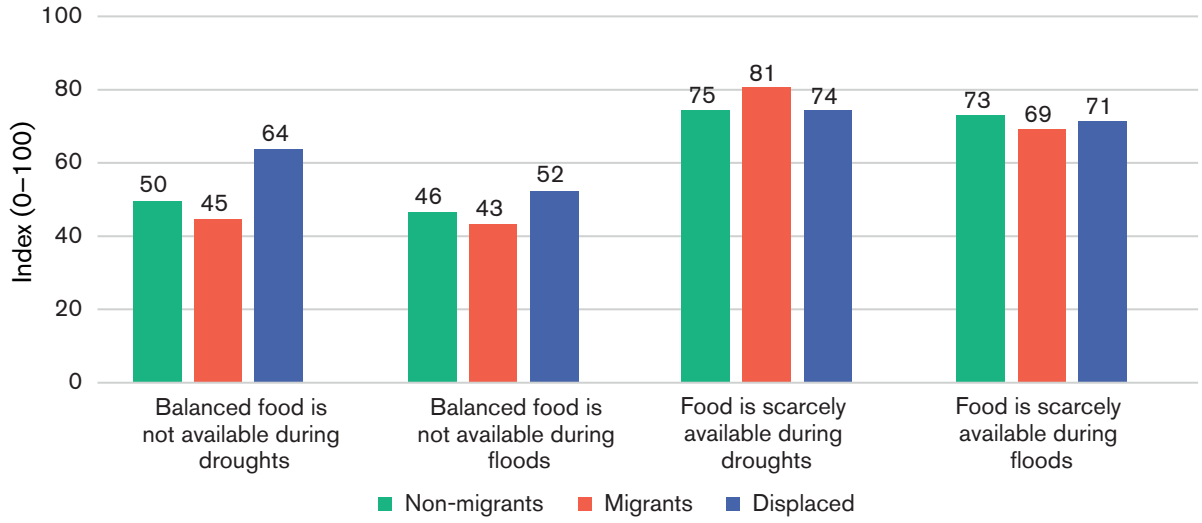
In Figure 53, a closer look at displaced households reveals more difficult conditions at destination sites compared to source sites. Exposure to extreme weather rises from 82.86 to 85.00, while exposure to insects and snakes remains relatively stable (70.00 at source, 70.71 at destination). Lack of privacy for bathing increases from 53.81 at source to 58.33 at destination sites. Similarly, lack of sanitation facilities rises from 50.71 to 59.05, while drinking water facility inadequacies grow from 50.48 to 60.24. A more pronounced difference is seen in electricity access, with scores escalating from 65.00 at source to 71.90 at destination sites, highlighting the severe infrastructural deficits faced by displaced households in their new environments.

Overall, the analysis reveals that displaced households face compounding vulnerabilities, especially at destination sites, with worsening access to sanitation, electricity and drinking water facilities. Addressing these gaps requires targeted interventions focusing on improving basic infrastructure, enhancing privacy and sanitation facilities, and ensuring reliable access to electricity and clean water, particularly for displaced and migrant households.

3. Quantification of the food security index

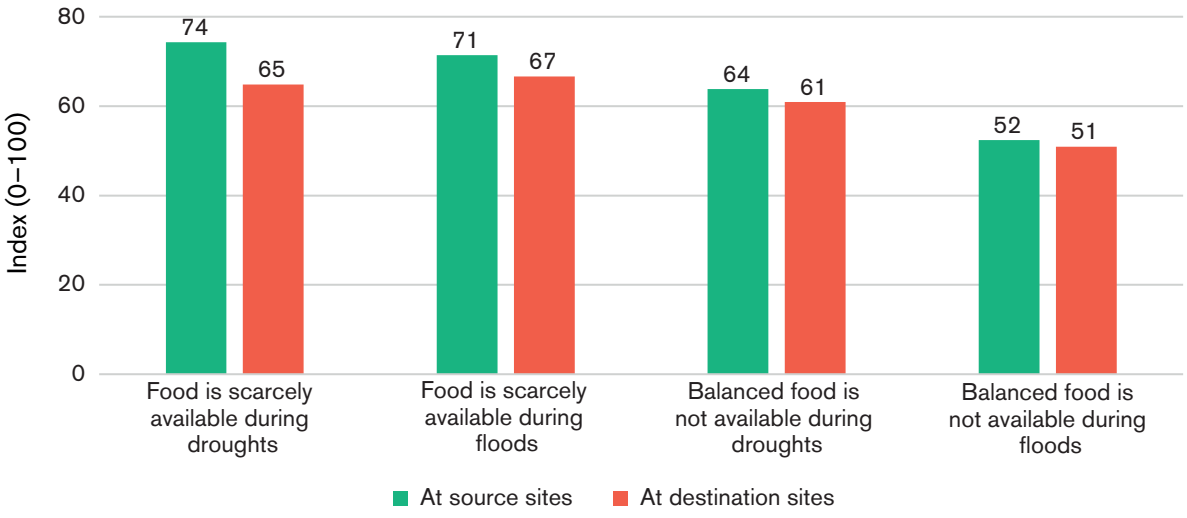
The analysis of the food security index highlights significant gaps in both food availability (the overall supply of food in an area) and food access (whether households can actually get access to food due to awareness, distance, cost or other barriers). These gaps affect non-migrant, migrant and displaced households, and differ between source and destination sites for displaced populations.

Figure 54. Food security univariate indices, by household migration status



Note: Higher index value represents higher vulnerability.

Figure 55. Food security univariate indices for displaced households



Note: Higher index value represents higher vulnerability.

Figure 54 shows that households experience food scarcity and a lack of a balanced diet during both floods and droughts. During floods, the index value for displaced households reporting a lack of a balanced diet was 52, compared to 43 for migrants and 46 for non-migrants. Similarly, during droughts, the index value for displaced households without access to a balanced diet was 64, significantly higher than that for migrants (45) and non-migrants (50). Scarcity of food during floods was most pronounced among non-migrants (73), followed closely by displaced households (71) and migrants (69). During droughts, food scarcity was critical across all groups, with migrants reporting the highest index value (81), followed by non-migrants (75) and displaced households (74).

Figure 55 provides further insights into food security among displaced households at source and destination sites. During floods, the index value for households reporting a lack of balanced food was slightly higher at source sites (52) than at destination sites (51). A similar pattern is observed during droughts, with more households at source sites (64) lacking a balanced diet compared to those at destination sites (61).

Food scarcity follows the same trend, with higher index values reported at source sites during both floods (71) and droughts (74) compared to destination sites (67 and 65, respectively). These patterns suggest that displaced households remaining at source sites experience greater food insecurity, especially during droughts, likely due to constrained access to markets and support systems — one of the reasons for displacement.

However, there was marginal improvement in food security at destination sites. Interventions should focus on improving food assistance mechanisms, ensuring timely delivery of balanced food supplies and building resilient agricultural systems to address recurring food insecurity during extreme weather events.

What does the intangible-functional loss and damage index reveal?

The intangible-functional loss and damage index (see Figure 56) reveals differences in forced labour, poor living conditions and food security across non-migrant, migrant and displaced households, with additional differentiation between source (lower part of the figure) and destination sites (upper part of the figure) for displaced populations.

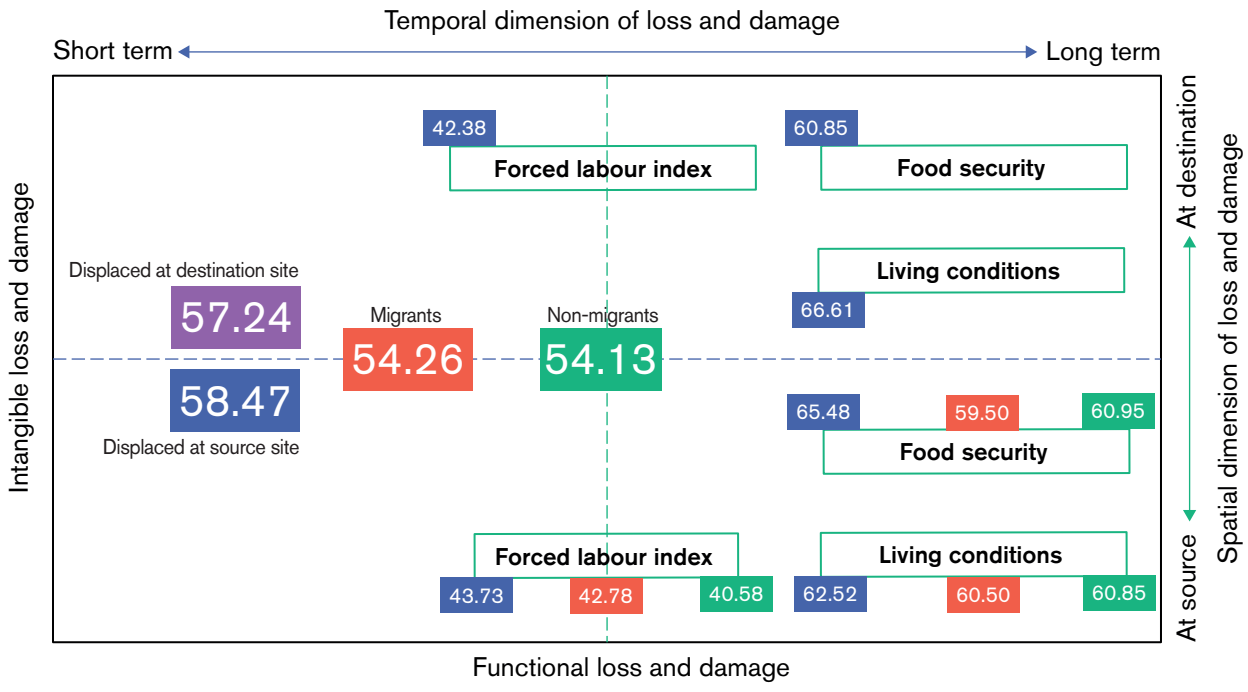
The forced labour index highlights significant vulnerability, with displaced households at source sites scoring the highest at 43.73, followed by migrants at 42.78 and non-migrants at 40.58. While displacement itself can increase vulnerability to forced labour, these figures suggest that displaced households face greater risks of forced labour at source sites, potentially due to reduced livelihood options, economic desperation or conflict-related conditions. In contrast, forced labour risks at destination sites may manifest differently, with displaced households having to navigate through exploitative labour conditions in unfamiliar environments.

Poor living conditions are a significant issue, with displaced households reporting the highest score (66.61) at destination sites, signifying acute challenges in maintaining basic living standards after relocating. In comparison, displaced households at source sites scored 62.52, while migrants scored 60.50 and non-migrants scored 60.85, emphasising the widespread prevalence of poor living conditions across all groups.

Food insecurity is widespread, with the highest score among displaced households at source sites (65.48), while migrants scored 59.50 and non-migrants reported a slightly lower score of 60.95.

Overall, the analysis indicates that displaced households, both at their source and destination sites, experience heightened vulnerabilities across forced labour, living conditions and food security. These findings emphasise the need for interventions that address the structural and systemic barriers affecting displaced and migrant populations, focusing on improving labour protections, enhancing living conditions and ensuring consistent access to food.

Figure 56. Intangible-functional loss and damage index



4.2.3 Tangible-intrinsic loss and damage index

The tangible-intrinsic loss and damage index captures the most severe and irreplaceable impacts of climate-induced events and conflict on communities. Unlike functional losses, these damages are often permanent and involve life, physical wellbeing and critical assets.

The index is constructed of three key sub-indices: the serious injury index, the loss of life index and the loss of assets index. Taken together, these three sub-indices provide a comprehensive picture of the tangible and intrinsic impacts of loss and damage, highlighting the gravity and permanence of such impacts. In Figure 57, we illustrate the structure and components of the tangible-intrinsic loss and damage index, providing an overview of the different dimensions assessed.

1. Quantification of the serious injury index

The serious injury index highlights the primary causes behind serious injuries experienced by different household types. As shown in Figure 58 (see section 3.3.3 on the internal conflict risk index for more analysis on this issue), the injury causes vary significantly across these groups.

Conflict-related injuries are the most serious injuries among migrant households (61%) and displaced households (57%). They are lower among non-migrant households (17%). This highlights the heightened vulnerability of migrants and displaced populations to conflict-related violence while relocating and after settlement. Disaster-related injuries, including those caused by floods and droughts, are reported at much lower levels across all groups. Non-migrant households report 17%, displaced households report 11% and migrant households report the lowest level at 6%. This shows that while disasters pose significant risks, they are not the dominant driver of serious injuries in these contexts. Other causes of injuries dominate among non-migrant households (67%). Migrant households (33%) and displaced households (31%) report lower levels of injuries in this category, indicating that these groups are more vulnerable to conflict- and disaster-related injuries.

The analysis highlights the need for targeted interventions addressing conflict-related risks for migrant and displaced populations, alongside strengthened disaster preparedness and response mechanisms. For non-migrant communities, interventions should focus on broader safety measures to address localised risks.

Figure 57. Construction of the tangible intrinsic loss and damage index

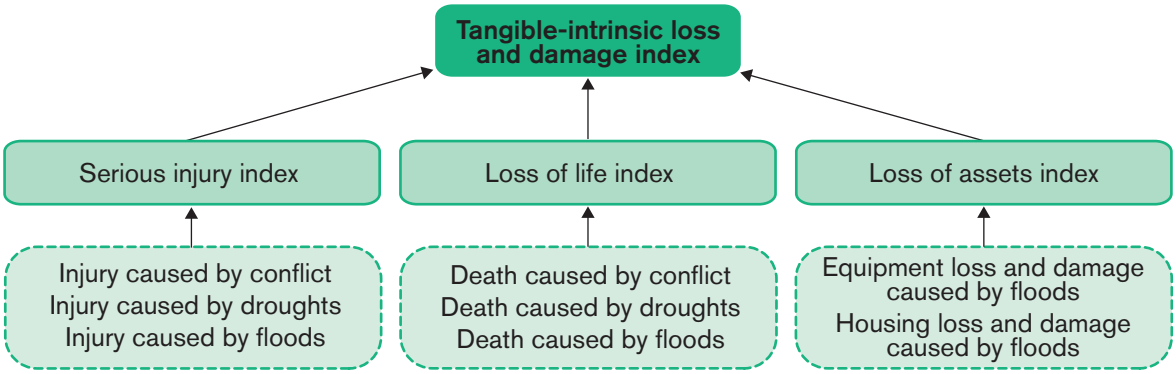
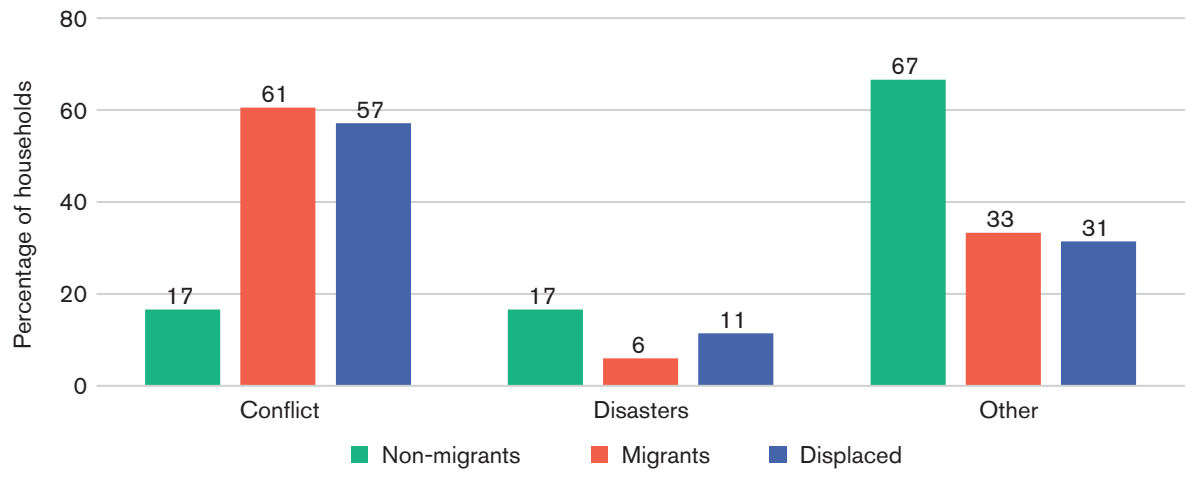


Figure 58. Reasons for serious injuries among household members in the last three years, by household migration status



2. Quantification of the loss of life index

The loss of life index highlights the cause of the death of household members over the past three years across non-migrant, migrant and displaced groups. The data in Figure 59 (see section 3.3.3 on internal conflict risk index for more analysis of this issue) shows the reasons for death of household members in the last three years.

Disaster-related deaths, including floods and droughts, account for a significant share of overall mortality. Among displaced households, disaster-related deaths account for 13%, which is higher than migrant households (9%) and non-migrant households (6%). This suggests that displaced populations remain more vulnerable to environmental hazards.

Conflict-related deaths are high among displaced households (58%), compared to migrant households (17%) and non-migrant households (9%). The disproportionately high share among displaced populations highlights the risks associated with conflict exposure during and after displacement. In contrast, non-disaster and non-conflict-related causes of death (such as health conditions or accidents) dominate among non-migrant households (85%) and migrant households (74%), indicating that these groups experience more typical mortality patterns. However, among displaced households, deaths from other causes are significantly lower (29%), suggesting a shift in which conflict becomes the primary driver of mortality, rather than health related or accidental deaths.

This analysis reveals that conflict is a significant driver of mortality for displaced households, while health-related and other non-disaster causes dominate among non-migrant and migrant groups. Addressing conflict-related risks, improving healthcare access and enhancing disaster preparedness mechanisms are critical for reducing mortality across these vulnerable populations.

3. Quantification of the loss of asset index

The analysis of the loss of asset index is derived from two key components: damage to housing assets and damage to tools and equipment related to economic livelihoods.

Damage to housing assets: as shown in Table 14, damage to housing assets is most pronounced among non-migrant households, with 31% reporting damage. In comparison, displaced households reported damage at a lower rate (20%), followed by migrant households at 18%. However, the financial loss as a percentage of annual household income presents a slightly different picture. The greatest losses were reported by non-migrant households at 7%, followed by displaced households at 5% and 4% of migrant households. This suggests that while non-migrants experience greater rates of housing damage, the financial impact of damage to housing is more significant for displaced households.

Figure 59. Reasons for death of household members in the last three years, by household migration status

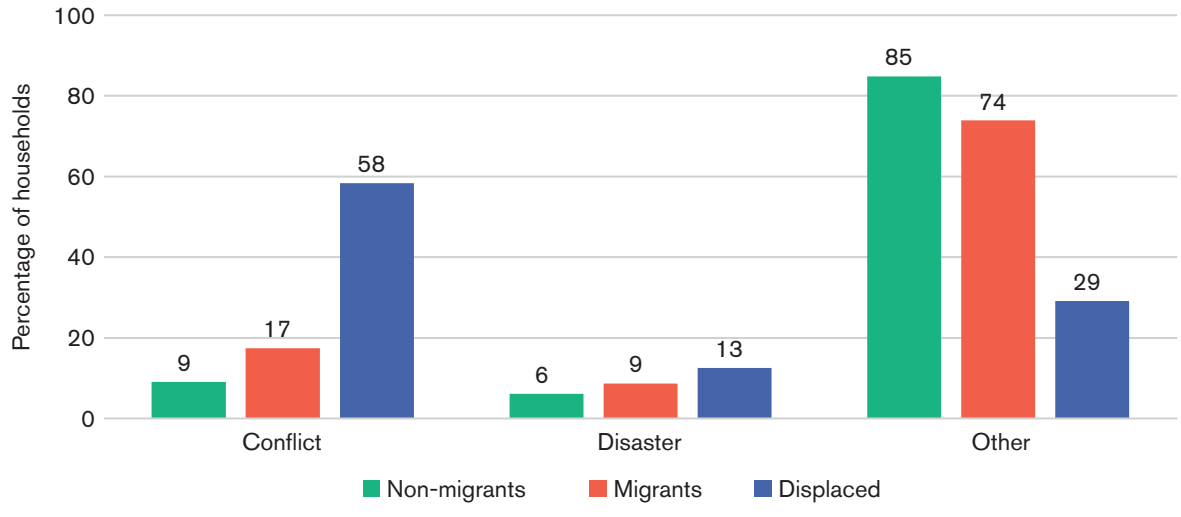


Table 14. Damage to housing assets, by household migration status

NATURE OF LOSS	NON-MIGRANTS	MIGRANTS	DISPLACED
Damage to housing assets (% of households)	31	18	20
Loss value (% of total household annual income)	7	4	5

Damage to economic livelihood tools and equipment: Table 15 sets out damage to tools and equipment essential for economic livelihoods. Non-migrant households reported the highest percentage of damage to their tools and equipment at 16%, while displaced households reported 13% and migrant households reported the lowest at 12%. However, the financial loss associated with damaged tools and equipment present a different picture. Displaced households experience the highest financial impact at 12% of their annual income, significantly higher than 7% for migrant households and 6% for non-migrant households. This suggests that while physical damage is lower among displaced households, the economic value of the damaged assets is disproportionately high.

Overall, while non-migrant households experience the highest rates of damage to both housing and tools and equipment, their resulting financial losses remain moderate. In contrast, displaced households face a comparatively lower incidence of damage but suffer the highest financial losses. These findings highlight the need for targeted interventions, such as housing reconstruction programmes and economic asset insurance schemes to mitigate these losses effectively.

What does the tangible-intrinsic loss and damage index reveal?

The tangible-intrinsic loss and damage index, as illustrated in the Figure 60, highlights significant differences in the severity and distribution of loss and damage across displaced, migrant and non-migrant households. These losses are categorised into three key dimensions: serious injury, loss of life and loss of assets, with each group experiencing varying degrees of vulnerability.

Serious injury is most prevalent among displaced households (25.08), significantly higher than migrants (14.89) and non-migrants (3.92). This indicates that displaced households are at a heightened risk of injury due to exposure to hazardous environments and limited access to healthcare services.

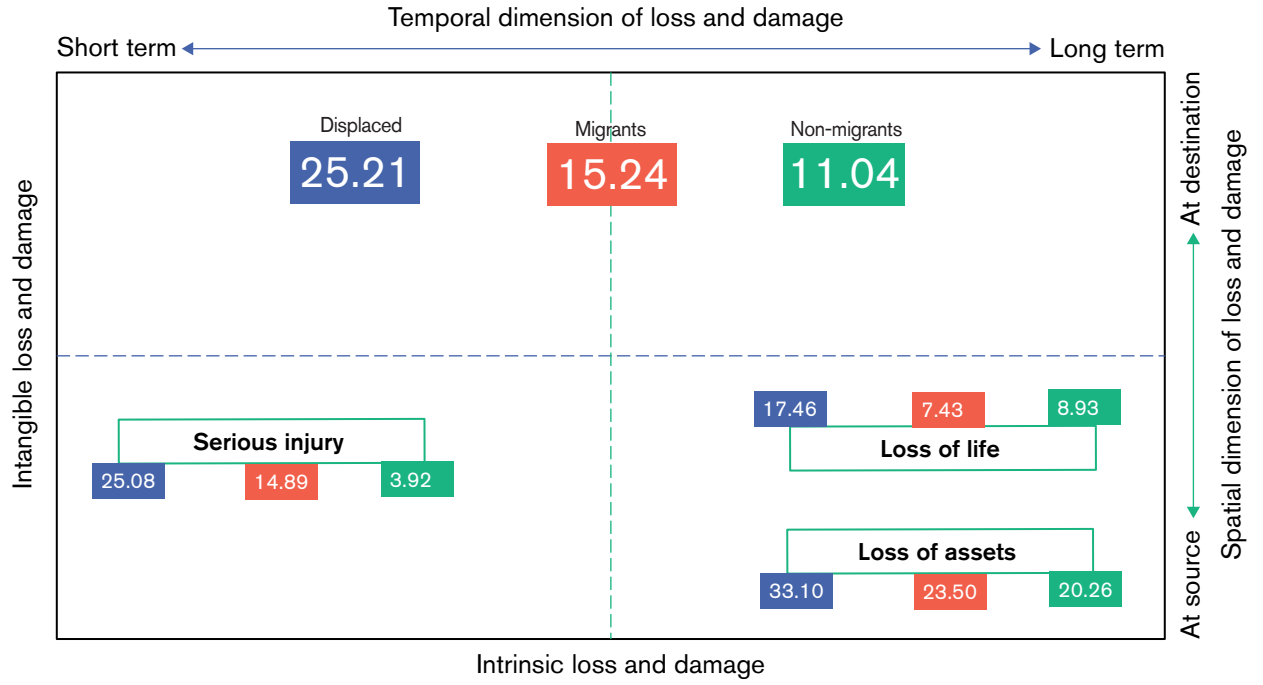
The loss of life index also follows a concerning trend, with displaced households reporting the highest score at 17.46, followed by migrants at 7.43 and non-migrants at 8.93.

Loss of assets emerges as a critical issue, with displaced households scoring 33.10, far surpassing migrants (23.50) and non-migrants (20.26). The higher

Table 15. Damage to tools and equipment related to livelihoods, by household migration status

NATURE OF LOSS	NON-MIGRANTS	MIGRANTS	DISPLACED
Damage to tools and equipment (% of households)	16	12	13
Loss value (% of total household annual income)	6	7	12

Figure 60. Tangible-intrinsic loss and damage index



asset losses among displaced households indicates both immediate destruction and long-term erosion of household stability and livelihoods.

Overall displaced households have the highest tangible-intrinsic loss and damage score at 25.21, followed by migrant households at 15.24 and non-migrant households at 11.04. This picture highlights that displacement exacerbates vulnerability, leading to higher short-term and intrinsic losses.

The tangible-intrinsic loss and damage index shows an urgent need for targeted interventions: priorities should include improved healthcare services, livelihood restoration and infrastructure resilience to reduce these tangible and intrinsic losses effectively.

4.2.4 Intangible-intrinsic loss and damage index

The intangible-intrinsic loss and damage index examines the non-material and personal impacts of environmental shocks, climate-induced disruptions and conflict. Unlike physical losses, these impacts affect cultural identity, social cohesion and mental wellbeing, leaving profound emotional and psychological scars on individuals and communities. Such losses are often overlooked in conventional damage assessments but carry long-term consequences that impact recovery and resilience-building efforts. As shown in Figure 61, this index focuses on two critical dimensions: the loss of cultural identity index and the mental health problem index.

This index can serve as a tool for policymakers and stakeholders to address these multidimensional impacts through culturally sensitive and community-driven interventions by integrating support for them into disaster response and promoting community-led support initiatives that reinforce social ties and collective resilience.

1. Quantification of the loss of cultural identity index

The loss of cultural identity is a significant intangible-intrinsic impact of climate change, displacement and conflict, affecting the sense of belonging, traditional knowledge and ability of the affected households to continue their cultural practices.

Figure 62 highlights the univariate indices of cultural identity loss across non-migrant, migrant and displaced households. Overall, displaced households report the highest levels of cultural erosion across most indicators. Decline in fluency in the household's traditional language shows high values across all groups, with displaced households at 77, non-migrants at 74 and migrants highest at 80. Similarly, there was a significant decline in the consumption of traditional foods, with values of 79 among migrants, 77 among displaced households and 74 among non-migrants. Other significant declines include wearing traditional clothing (79 among migrants), traditional agricultural practices (79 among migrants) and traditional health knowledge (78 among migrants). While non-migrants show slightly lower values across most indicators, overall these indices indicate that both migrants and displaced households experience higher levels of cultural erosion.

Figure 63 identifies the primary reasons for loss of culture. The most significant contributing factor is limited resources for preservation (7.79), followed by physical destruction due to climate events (7.55) and

Figure 61. Formulation of the intangible intrinsic loss and damage index

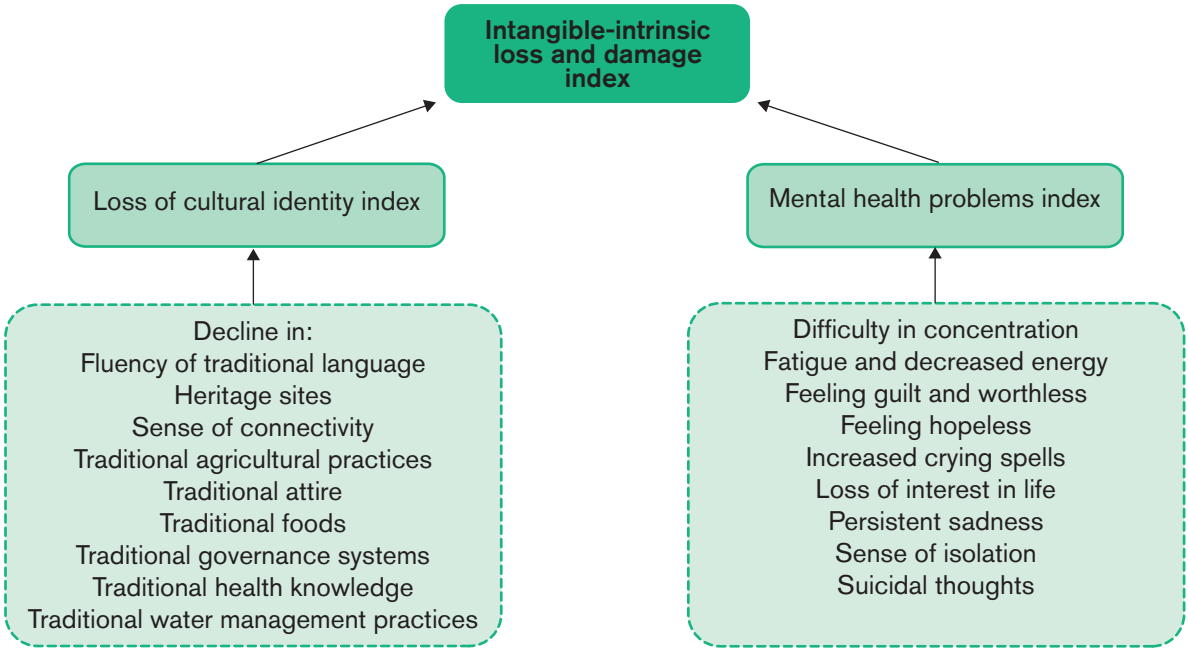
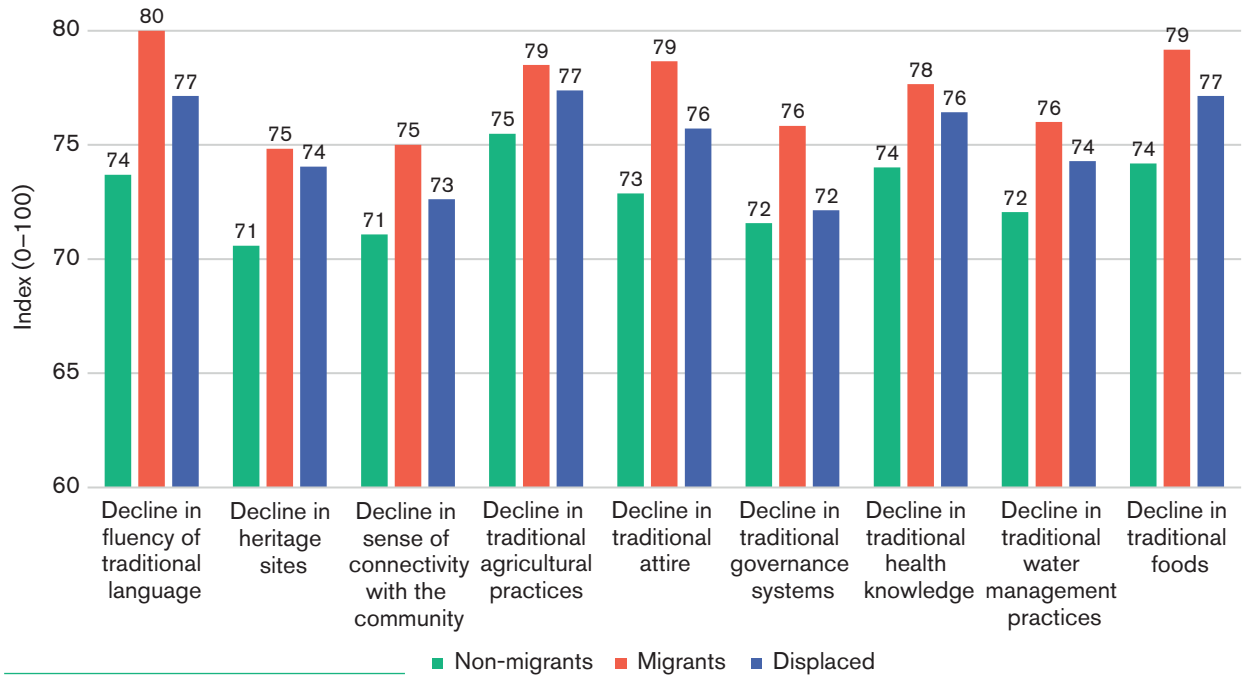
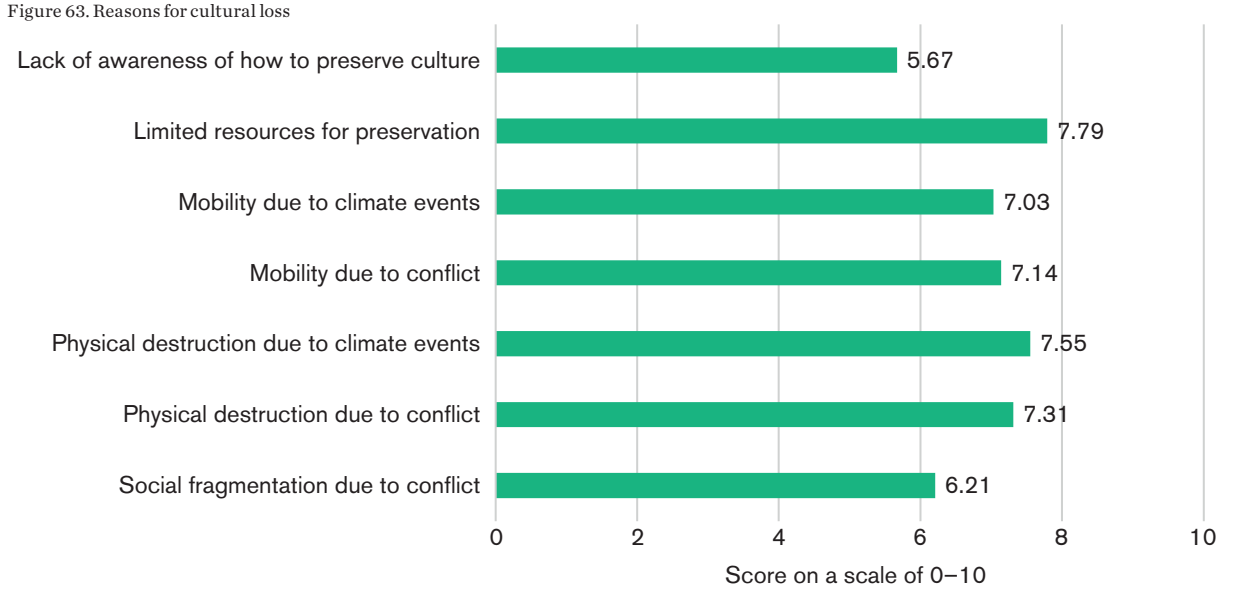


Figure 62. Loss of cultural identity univariate indices, by household migration status



Note: Higher index value represents higher loss.

Figure 63. Reasons for cultural loss



physical destruction due to conflict (7.31). Factors related to mobility such as conflict-related mobility (7.14) and climate-related mobility (7.03) also significantly contribute. Social fragmentation caused by conflict (6.21) and lack of awareness of how to preserve culture (5.67) are lower but still notable contributors.

Our analysis shows that the loss of cultural identity is deeply intertwined with displacement, mobility and systemic vulnerabilities. Efforts to address these losses need to focus on preserving traditional knowledge systems, supporting cultural heritage restoration and mitigating mobility-related disruptions through targeted interventions.

2. Quantification of the mental health problem index

The mental health problem index highlights the psychological toll experienced by households because of climate-induced displacement, resource scarcity and prolonged uncertainty. The data presented in Figure 64 illustrates the prevalence of various mental health challenges across these groups.

Displaced households exhibit the highest occurrence of mental health issues across almost all indicators, reflecting the compounded stress of displacement and prolonged instability. Persistent sadness is highest

among displaced households at 70, compared to 63 for non-migrants and 62 for migrants. Loss of interest in life shows a similar pattern, with an index value of 70 for displaced households, while non-migrants and migrants report slightly lower values at 61 and 63, respectively.

Fatigue and decreased energy also show high prevalence, with index values of 70 among displaced households, 61 among migrants and 58 among non-migrants. Feelings of hopelessness are more pronounced among displaced households (63), compared to 58 for both migrants and non-migrants.

More severe mental health indicators, such as suicidal thoughts, show relatively lower but concerning levels, with displaced households at 32, migrants at 24 and non-migrants at 22. Difficulty in concentration and feelings of guilt and worthlessness follow similar patterns, with displaced households showing the highest scores at 57 and 63 respectively, compared to lower scores for migrants and non-migrants.

Overall, the mental health burden is disproportionately higher among displaced households, with higher levels of persistent sadness, hopelessness and fatigue. Migrants also experience significant mental health challenges, though slightly lower in comparison. These findings highlight the urgent need for integrated mental health services, psychosocial support programmes and community-based resilience-building initiatives to address the mental health consequences of climate-induced displacement and associated stressors.

What does the intangible-intrinsic loss and damage index reveal?

The intangible-intrinsic loss and damage index captures the deeply rooted, non-material impacts of climate change and associated stressors, encompassing emotional wellbeing, cultural identity and social cohesion. The data in Figure 65 highlights significant differences in these dimensions across displaced, migrant and non-migrant households, with displaced populations consistently showing the highest levels of intangible-intrinsic loss.

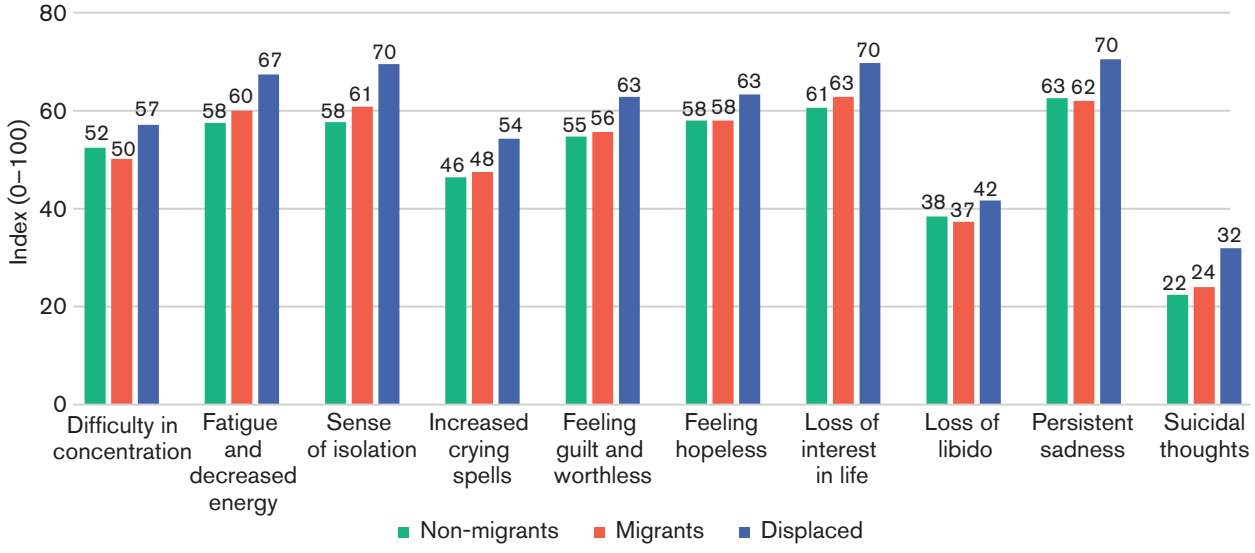
Displaced households report the highest overall index value at 67.02, followed closely by migrant households (64.56), while non-migrant households score relatively lower at 61.96. This picture suggests that displacement and mobility exacerbate intrinsic losses, disrupting social structures, cultural practices and mental wellbeing.

When examining specific sub-indices, mental health problems are significantly higher among displaced households (58.83) compared to migrants (51.83) and non-migrants (51.08). This indicates the compounded psychological stress faced by displaced households, driven by prolonged uncertainty, resource scarcity and loss of community support systems.

In terms of loss of cultural identity, migrant households report the highest levels at 77.30, followed by displaced households (75.21) and non-migrants (72.84). This pattern highlights the erosion of cultural heritage, language fluency and traditional practices, especially among migrant and displaced populations.

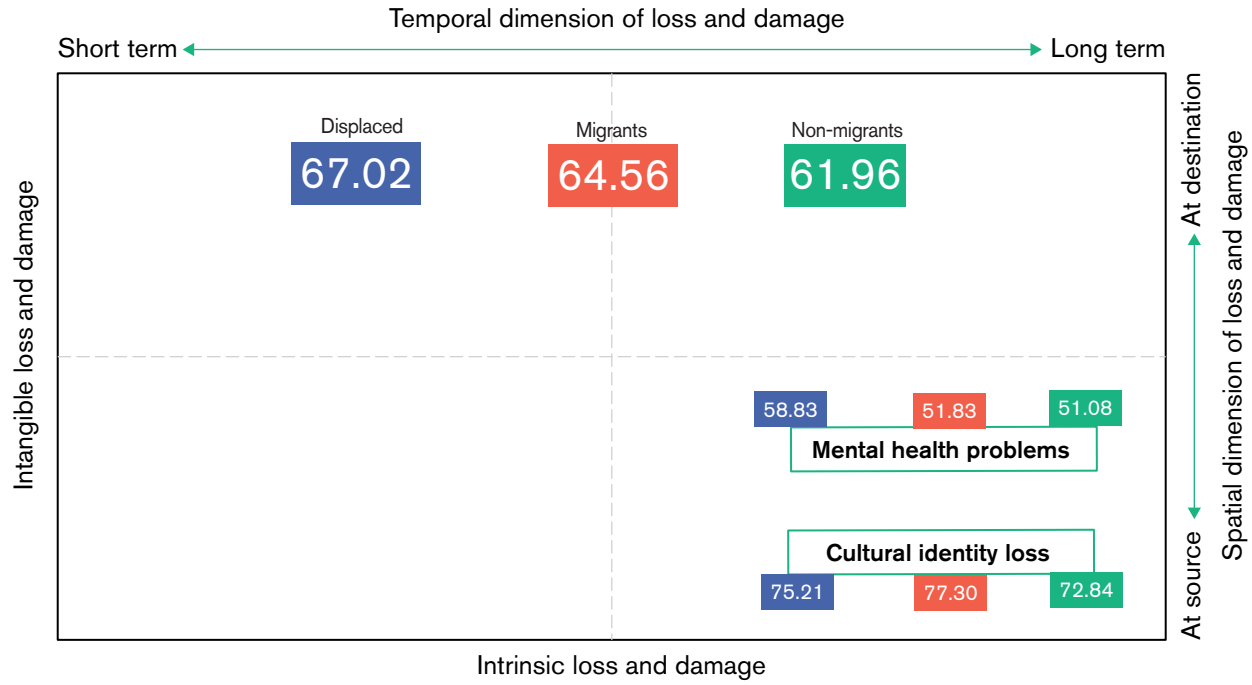
Overall, the intangible-intrinsic loss and damage index underscores the profound emotional and cultural toll of displacement and migration, emphasising the need for culturally sensitive interventions, psychosocial support programmes and initiatives aimed at preserving cultural heritage and fostering social cohesion within affected communities.

Figure 64. Mental health problem univariate indices, by household migration status



Note: Higher index value represents higher vulnerability.

Figure 65. Intangible-intrinsic loss and damage index



4.3 The cost of economic and non-economic loss and damage for households

The assessment of loss and damage at the household level in Mopti reveals the devastating and disproportionate impacts experienced by non-migrant, migrant and displaced households. While climate-related hazards such as floods, droughts, water scarcity and land degradation affect all groups, the severity and nature of these impacts vary significantly based on households' socioeconomic status, resilience capacity and compounded vulnerabilities arising from the intersection of climate hazards and conflict.

These loss and damage values are based on the most recent disaster event year, rather than an average over multiple years. This reflects the specific impacts for that year and should not be seen as a worst-case scenario, though it underscores the potential for much greater losses in the future should current conditions persist.

Table 16 shows the economic and non-economic loss and damage suffered by different household groups in in Mopti.

Droughts impose the highest economic burden across all groups, accounting for 34% of income loss among non-migrants, 42% among migrants and an alarming 61% among displaced households. The largest losses among displaced households are crop loss (23%) and employment loss (16%), underscoring their dependence on agriculture and wage labour for survival.

Flood-related losses reach 27% of annual income for non-migrants, 29% for migrants and a staggering 40% for displaced households. Key drivers include crop loss, livestock sickness, housing damage and equipment damage. For displaced households, equipment damage alone represents 12% of their income, reflecting their heightened vulnerability because of their limited capacity to replace tools that are essential for recovery.

Water scarcity contributes a smaller proportion of economic losses, accounting for 4% of annual income for non-migrants, 5% for migrants and 3% for displaced households. However, the associated health costs are significant. Migrant households, in particular, spend 2.62% of their income on healthcare due to water scarcity, further straining already limited resources.

Crop yield reduction caused by land degradation represents a loss of 11% of annual income for non-migrants, 15% for migrants and 35% for displaced households. This highlights the critical vulnerability of displaced households to long-term environmental degradation, which directly erodes their primary sources of food security and income.

Displacement-related income loss adds another layer of vulnerability. For displaced households, the reduction in household income represents 46% of their annual income. This reflects the severe economic shocks caused by forced migration and the difficulty of securing stable employment in displacement contexts.

Table 16. Economic valuation of loss and damage suffered, by household migration status

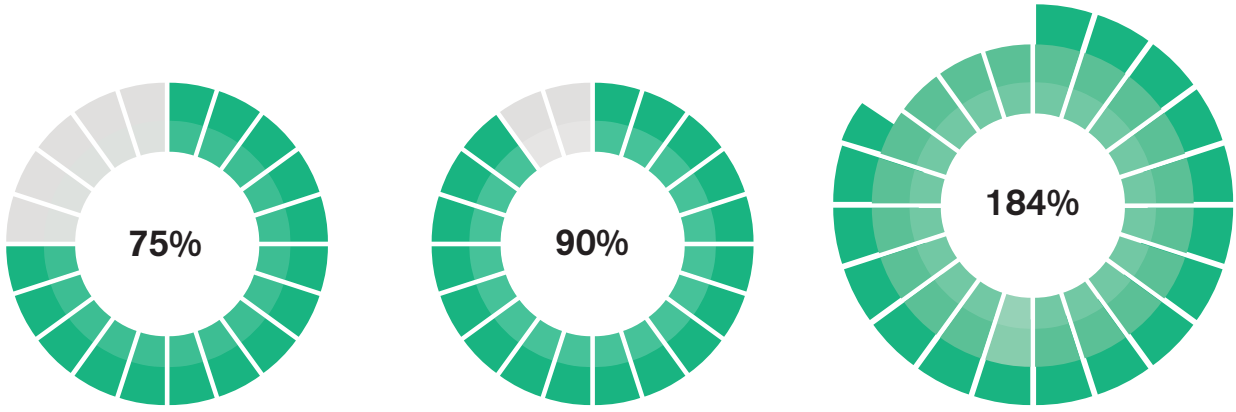
		NON-MIGRANTS	MIGRANTS	DISPLACED
		(AMOUNT IN XOF)		
	Annual household income	**960,330 (US$1,585)**	**953,101 (US$1,573)**	**600,329 (US$991)**
Types of loss and damage				
Displacement	Reduction in household income			277,923
Drought	Crop loss	118,431	124,727	136,095
	Employment loss	82,846	116,640	96,210
	Fish catch reduction	17,020	41,660	8,690
	Livestock death	43,967	31,900	43,238
	Livestock sickness	60,363	82,667	82,152
Flood	Crop loss	104,379	106,133	73,833
	Employment loss	14,682	17,053	5,400
	Equipment damage	56,719	66,300	74,600
	Fish catch reduction	7,582	27,267	3,057
	Housing damage	62,863	41,967	30,524
	Livestock sickness	14,654	16,467	49,790
Land degradation	Crop yield reduction	102,042	139,093	207,824
Water scarcity	Agriculture water purchase	4,948	15,637	4,950
	Drinking water purchase	5,468	4,309	4,186
	Health costs	18,706	25,000	2,829
	Livestock water purchase	6,117	3,545	4,418
	Total loss and damage value	**720,786 (US$1,190)**	**860,363 (US$1,420)**	**1,105,721 (US$1,825)**

Figure 66 illustrates the overall scale of these impacts. Non-migrant households face a 75% loss of their annual income, migrant households suffer an even higher loss of 90%, while displaced households face catastrophic losses of 184%, exceeding their annual income and indicating a crisis that leaves them with no means of recovery without significant external support.

These economic losses are not one-off impacts. They trigger a downward spiral of indebtedness and asset depletion, pushing households further into poverty. Households' inability to recover economically cascades into non-economic impacts, including heightened mental health challenges, loss of cultural identity and social fragmentation. Mental health crises, characterised by persistent sadness, hopelessness and social isolation, are particularly pervasive among displaced households. Cultural identity erodes as traditional agricultural practices, heritage sites and fluency in traditional languages decline. Educational disruptions are common, with children often being pulled out of school, compromising their long-term prospects and perpetuating intergenerational cycles of poverty.

While climate hazards alone are devastating, their intersection with conflict in Mopti exacerbates vulnerabilities, trapping households in cycles of poverty, debt and social exclusion. Conflict disrupts livelihoods, dismantles community support systems and intensifies mental health crises, creating an environment where recovery becomes nearly impossible. It is important to note that the above assessment does not include economic and non-economic losses resulting from injuries and fatalities caused by conflict and other hazards. If these were integrated, the overall loss and damage figures would be significantly higher across all household categories, and particularly for displaced households.

Figure 66. Total loss and damage at household level, by household migration status



Non-migrants
Total income = XOF 960,330
Total loss and damage = XOF 720,786

Migrants
Total income = XOF 953,101
Total loss and damage = XOF 860,363

Displaced
Total income = XOF 600,329
Total loss and damage = XOF 1,105,721

The lack of adequate support and protection mechanisms means households are not only losing their income and productive assets but also their ability to recover and rebuild. Economic losses cascade into non-economic crises, with impacts on mental health, cultural identity and education continuity. Without adequate support, households will continue to face a vicious cycle of vulnerability and poverty that will deepen with each recurring crisis.

This assessment underscores the need for holistic resilience-building strategies that account for both economic and non-economic dimensions of loss and damage, ensuring that no household is left behind in these cascading crises.

5 Recommendations

Our assessment of economic and non-economic loss and damage in Mali reveals the heavy burden faced by non-migrant, migrant and displaced households. These findings show that the overlapping crises of climate change and conflict are not only widespread but also deeply entrenched, affecting different aspects of household and community wellbeing.

Well-designed social protection can act as both a safety net and a pathway to recovery, preventing households from falling deeper into vulnerability while helping them rebuild livelihoods and adapt to future risks. However, a key issue is the weakness of social protection systems in Mali. Our assessment showed very low SPI scores, with non-migrant, migrant and displaced households scoring 4.00, 2.38 and 3.33, respectively, on a scale of 0 to 100. Although various social protection programmes such as food aid, cash transfers, agricultural extension and school meal programmes are in place, they remain fragmented, inconsistent and insufficient in addressing household vulnerabilities. To be truly effective, these programmes must integrate climate resilience measures, such as shock-responsive assistance and access to climate-resilient infrastructure, ensuring that they not only address loss and damage but also reduce future risks. The recommendations in this section aim to tackle both immediate vulnerabilities and the structural drivers of risk in Mali.

While these recommendations have been suggested in the context of Mali, they also provide valuable lessons for other FCAS facing similar climate and socioeconomic vulnerabilities.

Promote locally led adaptation to strengthen climate resilience and peacebuilding efforts

Communities in Mali face overlapping challenges from climate change, conflict and economic instability, all of which undermine livelihoods, weaken institutions and heighten social tensions. To build resilience, locally led adaptation (LLA) offers a more effective approach than top-down interventions, which often fail to address local realities. LLA empowers local institutions, collective action and community-based decision making, ensuring that adaptation efforts reflect the needs and knowledge of those most affected.

LLA also aligns with adaptive peacebuilding approaches (UNDP, 2022), which focus on strengthening social structures, local governance and resource management, rather than imposing external solutions. By leveraging community knowledge, traditional governance systems and local networks, LLA can help build long-term resilience to both climate shocks and conflict risks.

For LLA to be effective, it must promote livelihood diversification, climate-resilient agriculture and sustainable resource management to reduce vulnerabilities. Practical approaches include supporting drought-resistant crops, improving irrigation systems and promoting sustainable grazing practices, all of which help communities adapt to environmental stress while reducing resource-based conflicts.

However, adaptation requires not just local action but also enabling policies and financial support. Governments and donors must ensure that funding reaches local institutions, giving them the authority to decide how resources are used. Equally important is the development of EWS that can help communities prepare for climate shocks, improve disaster response and strengthen adaptation efforts.

Strengthening social cohesion is another key pillar of both climate resilience and peacebuilding. In Mali, community-driven initiatives can improve climate adaptation while rebuilding trust among divided social groups. Collaborative resource management, such as shared irrigation schemes or community-led water conservation, provides opportunities for cooperation and reduces tensions over land and water use. However, these initiatives need strong government backing through policies that support decentralisation, ensure fair resource distribution and prevent exclusionary practices.

An LLA approach must also be inclusive, ensuring that women, young people and marginalised groups play an active role in decision-making. Providing women with land, credit, and agricultural training is only part of the solution. It must be accompanied by leadership opportunities, legal protections and safeguards against gender-based violence. Without addressing social and institutional barriers, adaptation efforts will remain inequitable and unsustainable.

In Table 17, we summarise these pathways to explain how LLA can support adaptive peacebuilding in Mali.

Table 17. Pathways for LLA to support climate resilience and adaptive peacebuilding

KEY PATHWAYS	EXAMPLES OF LLA INTERVENTIONS	CONTRIBUTION TO ADAPTIVE PEACEBUILDING
Addressing underlying vulnerabilities	Livelihood diversification through small-scale enterprises, provision of financial services for vulnerable groups and promotion of sustainable agricultural practices	Reduce economic insecurity and social tensions, addressing root causes of conflict while building long-term stability
Strengthening social cohesion	Community-led natural resource management projects, shared water access programmes and open consultations to address community grievances	Promote trust, solidarity and collaboration between social groups, reducing potential conflict triggers
Promoting resilience and adaptive capacity	Introduction of drought-resistant crops, diversified ecologically sustainable agricultural practices and sustainable livestock management, rehabilitation of degraded pasturelands, construction of community water harvesting systems and rehabilitation of degraded farmland	Strengthen communities' ability to withstand environmental shocks and reduce reliance on harmful coping mechanisms
Enhancing legitimacy and trust in local institutions	Transparent resource allocation, capacity-building for local governance, formalisation of land rights, and community-based decision making	Improve governance credibility, reduce corruption and foster trust of community in local institutions
Promoting inclusive decision making	Empowering women, youth and marginalised groups to participate in community-level institutions and take up leadership roles	Build equitable community structures, ensuring diverse representation and reducing marginalisation-related grievances
Preventing recurrence of climate shocks	Ecosystem restoration projects, integrated watershed management, construction of resilient infrastructure and establishment of EWS for climate shocks	Reduce exposure to recurring risks, preventing resource-related conflicts and building long-term sustainability

Source: Adapted from Bharadwaj and Karthikeyan, 2023

Strengthen climate information systems and risk management tools for local-level decision making

Effective social protection programmes, resilience-building measures and early responses to disasters rely on accurate, timely and localised climate data. However, in Mali and other FCAS, significant challenges hinder access to reliable climate information. These include limited hydro-meteorological services, weak institutional frameworks for data dissemination, and gaps in climate risk modelling. As a result, EWS are not accurate, disaster response is delayed and governments often take a reactive rather than anticipatory approach to managing climate risks.

To address these gaps, international donors must collaborate with local governments and NGOs to invest in climate information and risk management systems. A key priority is improving projections of climate impacts across different regions and timescales. This includes identifying and registering vulnerable populations in advance (pre-identification and pre-registration of the most at-risk geographies and people) to ensure targeted interventions before crises escalate.

Improving EWS requires both 'top-down' and 'bottom-up' approaches. A top-down approach involves enhancing hydro-meteorological projections and climate modelling to improve risk anticipation and resource allocation. However, these models often fail to capture community-specific vulnerabilities, localised risk factors and socioeconomic conditions that affect resilience capacity. To bridge this gap, bottom-up approaches must be strengthened through participatory processes that integrate community knowledge, lived experiences and traditional practices.

Strengthening EWS and risk management tools will also enable the government to implement anticipatory and forecast-based financing mechanisms, such as early action protocols, parametric insurance schemes and pre-arranged disaster relief funds, ensuring proactive resource allocation rather than reactive crisis management. Improved access to timely and locally relevant climate information will empower local governments, community leaders and humanitarian actors to take early action, minimising loss and damage while reducing long-term vulnerabilities.

Building local capacity is essential to ensure that climate information systems are both technically sound and accessible. In Mopti, local government officials, community outreach workers and grassroots organisations must be given training and technical support to interpret and apply climate data effectively. Without this, even the best climate information systems will remain underutilised.

Enhance finance for resilience building efforts

To address the challenges of climate risks, conflict and economic fragility, Mali requires significantly increased financial investment from national governments, multilateral development banks (MDBs), international climate funds and bilateral donors. However, lack of financing remains a major barrier to scaling up effective interventions such as social protection and resilience building.

Currently, social protection programmes in Mali suffer from chronic underfunding due to low domestic tax revenue generation, unsustainable debt burdens and limited access to international development and climate finance. Our analysis shows that social protection spending in FCAS averages just 0.9% of GDP, far lower than the 1.3% of GDP spent by non-FCAS countries.

Climate shocks further strain public finances by damaging infrastructure, which then requires rebuilding, disrupting economic activities and reducing tax revenues (Bharadwaj and Karthikeyan, 2023) while simultaneously increasing the need for emergency response and recovery funding (Bharadwaj and Karthikeyan, 2023). These financial pressures have pushed many FCAS, including Mali, into cycles of debt that further limit their ability to invest in long-term resilience efforts. But despite their high vulnerability, FCAS receive significantly less climate finance than other developing countries. Between 2014 and 2021, an assessment by UNDP found that 'extremely' fragile states received just US$2.10 per person in climate finance, compared to US$10.80 per person in 'other' fragile states. In the Sahel, adaptation finance per person ranges between US$2–13, well below the US$18 per person average for LDCs (UNDP, 2021a). Our analysis further shows that FCAS require targeted and context-specific financial support due to their higher multidimensional risk levels.

To address these gaps, three critical financing pathways must be prioritised.

- First, debt relief is essential to free up fiscal space for resilience building. The burden of unsustainable debt limits FCAS governments' ability to invest in social protection, adaptation and climate resilient infrastructure. Debt restructuring, supported by multilateral institutions such as the World Bank Group, IMF and Paris Club, must take into account the compound risks of fragility, conflict and environmental stressors.
- Second, international climate finance must be significantly scaled up. The Fund for Responding to Loss and Damage (FRLD) was established to assist particularly vulnerable developing countries in responding to loss and damage associated

with climate change. The FRLD should prioritise FCAS in its disbursement strategy, ensuring these regions receive the financial support needed to address both economic and non-economic loss and damage. Other mechanisms, including the GCF, the Global Environment Facility (GEF) the Adaptation Fund and the Climate Investment Fund, must also increase allocations to FCAS. Our analysis highlights the stark underfunding faced by these regions, with cumulative GCF funding for FCAS at just US$2.1 billion, proportionally below the levels allocated to other vulnerable countries such as LDCs (US$4.61 billion) and SIDS (US$1.8 billion). Climate finance must support not only urgent adaptation needs but also broader resilience efforts, including EWS, sustainable agriculture and community-based adaptation initiatives.

- Third, increasing ODA is critical for countries like Mali, where domestic resources are insufficient to meet both immediate and long-term needs. ODA must be predictable, flexible and aligned with locally identified priorities to ensure maximum impact. In fragile contexts, financing must bridge the gap between humanitarian assistance and long-term development, strengthening essential services such as education, healthcare and social protection while also investing in institutional capacity for resilience and self-reliance.

At the national level, Mali must prioritise local, context-specific interventions that strengthen institutions so that climate finance and ODA can be delivered to community-level institutions for implementing LLA efforts.

Promote shock-responsive and anticipatory response mechanisms in social protection programmes to deliver better resilience

In FCAS settings such as Mali, social protection systems can play a critical role in addressing both chronic vulnerabilities and sudden shocks. However, achieving the full potential of social protection programmes requires coordinated action from national authorities, international donors and multilateral development partners to strengthen shock-responsive and anticipatory social protection mechanisms.

Social protection serves as a safety net to protect vulnerable households from the immediate impacts of crises while promoting long-term resilience, social cohesion and sustainable development. Evidence from Ethiopia's Productive Safety Net Programme and Kenya's Hunger Safety Net Programme demonstrates that well-designed social protection interventions help households stabilise their livelihoods, reduce asset erosion and maintain food security during crises (Cabot Venton et al., 2012). For instance, during the 2008–2011 droughts in Kenya, beneficiaries of the Hunger Safety Net Programme maintained their standard of living, while those without support decreased their spending by 10% (Cabot Venton et al., 2012). Similarly, in Yemen's Desert Locust Response Project, cash transfers and medium-term recovery support helped vulnerable farmers and herders mitigate losses caused by climate hazards (World Bank Group, no date-c). These examples highlight the transformative potential of social protection in preventing households from descending into and becoming trapped in poverty.

Traditional social protection systems, which are primarily designed to address chronic poverty, are often ill-equipped to respond to rapid-onset crises. This is where shock-responsive social protection systems become essential. These systems are designed to expand, adapt and deliver timely support during periods of crisis, whether caused by floods, droughts or conflict-related disruptions. Importantly, these systems must also be responsive to the needs of migrants and displaced populations, ensuring that they are widely accessible to those who are often excluded from existing support structures. Evaluations show that such systems can prevent harmful coping mechanisms like child labour, asset liquidation and skipping meals. For example, Ethiopia's safety net programme ensured that despite recurring droughts, 62% of enrolled households avoided selling assets and 36% preserved their savings (Cabot Venton et al., 2012). As well as mitigating immediate losses, shock-responsive systems can address both economic and non-economic vulnerabilities, including mental health challenges and disruptions to education systems, contributing to social stability in fragile regions (Bharadwaj and Karthikeyan, 2023).

While shock-responsive systems focus on post-crisis support, anticipatory response mechanisms can provide support before a crisis fully materialises. Anticipatory mechanisms rely on EWS, pre-arranged financing and data-driven forecasting to trigger pre-emptive interventions. For example, studies show that every US$1 spent on anticipatory action can save up to US$2.8 in Ethiopia and US$2.9 in Kenya by reducing the need for expensive humanitarian aid and avoiding long-term economic losses. A study by the UNDRR found that every US$1 invested in risk reduction saves up to US$15 in post-disaster recovery (UNDRR, no date-b). Anticipatory measures can also prevent cascading impacts such as malnutrition, school dropouts and mental health crises, which disproportionately affect vulnerable groups, particularly women and children. Without anticipatory social protection, climate shocks can push households deeper into cycles of poverty, exacerbating intergenerational inequalities and reducing the prospects of long-term recovery.

To make social protection systems more effective in FCAS contexts like Mali, key stakeholders, including the national government, international development agencies and donor organisations, need to prioritise the following actions:

Invest in EWS and data infrastructure: robust EWS and climate information services must be established to ensure timely identification of risks and trigger anticipatory actions. Investments should focus on community-based EWS, leveraging local knowledge alongside scientific data to ensure early, targeted responses.

Ensure flexible and scalable delivery mechanisms: social protection systems must have the capacity to scale up support during crises, including pre-identified beneficiary lists and flexible cash and in-kind assistance mechanisms. These delivery systems must ensure transparency and accountability to minimise exclusion and mismanagement. Particular attention must be given to newly displaced households, ensuring that they are swiftly identified and included in beneficiary lists, possibly through flexible registration processes or rapid assessments that can adapt to changing population dynamics.

Enhance localised implementation capacity: local authorities and community-based organisations must be empowered and equipped with resources and tools to implement shock-responsive programmes. This includes training local teams, simplifying administrative processes and ensuring context-specific approaches designed to the needs of vulnerable populations in Mopti.

Strengthen pre-arranged financing mechanisms: pre-arranged financing ensures that funds are immediately available when a crisis occurs. This requires multi-year, predictable financial commitments from international donors and the establishment of risk financing facilities at the national and sub-national levels.

Integrate social protection into broader development plans: social protection systems must be aligned with broader climate resilience, disaster risk reduction and peacebuilding strategies. This integration ensures synergies across sectors and promotes a holistic approach to addressing vulnerabilities.

The government needs to be supported by international donors, multilateral organisations and local actors to act urgently to strengthen these systems as a critical component of resilience-building efforts. In Table 18,

Table 18. Types of social protection delivery mechanisms for supporting climate resilience and adaptive peacebuilding in Mali

PATHWAYS	EXAMPLES OF ANTICIPATORY AND SHOCK-RESPONSIVE SOCIAL PROTECTION INTERVENTIONS	CONTRIBUTION TO RESILIENCE AND ADAPTIVE PEACEBUILDING
Anticipatory cash transfers	Pre-disaster cash transfers based on EWS to help households secure food, shelter and essential supplies before a crisis hits	Reduce reliance on harmful coping strategies, protect household assets and enhance food security
Food aid programmes	Timely food distribution during climate shocks and conflict-related disruptions to prevent hunger and malnutrition	Stabilise food security, prevent malnutrition and reduce community tensions during crises
Public works programmes	Employment-generation programmes during or after droughts and floods that focus on soil and moisture conservation, water harvesting and watershed management infrastructure	Provide immediate income support, enhance environmental resilience and create long-term adaptive infrastructure
Livelihood insurance schemes	Crop and livestock insurance to safeguard against economic losses due to droughts, floods and market shocks	Protect income sources, reduce post-shock indebtedness and promote long-term livelihood sustainability
Education and health support	Subsidised healthcare services, school meal programmes and cash incentives to prevent school dropouts during crises	Prevent long-term setbacks in health and education outcomes, especially for children
Community-based social safety nets	Establishing local food banks, revolving loan funds and cooperative savings programmes	Build community cohesion, promote shared responsibility and enhance localised resilience capacities
Empowerment programmes for women and marginalised groups	Financial support and targeted livelihood opportunities for women, young people and marginalised groups	Strengthen social cohesion, promote gender equality and empower vulnerable populations to participate in recovery efforts

we provide more information on how different delivery options for anticipatory and shock responsive social protection can support resilience and adaptive peace building efforts in Mali.

If implemented effectively, shock-responsive and anticipatory social protection systems have the potential to stabilise households during crises, prevent harmful coping strategies and foster long-term resilience. By addressing both immediate needs and structural vulnerabilities, these systems can act as a bridge between humanitarian assistance and sustainable development, transforming fragile communities into resilient, self-reliant and peaceful societies.

Invest in social protection delivery mechanisms that work in FCAS

In FCAS, the effectiveness of social protection systems hinges not only on their design but also on how well they are delivered; they need to be delivered via mechanisms that are proven to work under conditions of fragility and instability. This requires concerted efforts from the government, international donors, multilateral development agencies, as well as humanitarian and development partners on the ground, to prioritise and scale up social protection instruments that have demonstrated success in FCAS contexts.

Our analysis of all FCAS shows that the highest proportion of social protection funding goes towards food programmes (0.5% of GDP), followed by unconditional cash transfers (0.3%), fee waivers (0.2%) and public works (0.2%) (Bharadwaj and Karthikeyan, 2023). In comparison, non-FCAS countries allocate higher proportions of their social spending to social pensions (0.7%), unconditional cash transfers (0.4%) and fee waivers (0.3%). However, further analysis of social protection programmes in FCAS highlights significant gaps in delivery (Bharadwaj and Karthikeyan, 2023). Coverage remains alarmingly low, reaching only 14% of the population in extreme poverty, compared to 61% in non-FCAS settings. Institutional barriers, weak monitoring frameworks, limited funding and fragmented data systems further exacerbate these limitations. Additionally, benefit adequacy, a measure of whether social protection support meets the basic needs of households, is significantly lower in FCAS (3.5%) compared to 37% in non-FCAS contexts. Despite these constraints, our analysis reveals that social protection interventions in FCAS demonstrate higher benefit–cost ratios, underscoring their strong returns on investment in poverty reduction and resilience building (Bharadwaj and Karthikeyan, 2023).

Public works programmes, food and in-kind assistance, and school feeding initiatives have emerged as particularly effective in FCAS contexts (Bharadwaj and Karthikeyan, 2023). Public works programmes, for example, not only address immediate livelihood needs by providing employment during crises, but also contribute to building critical infrastructure, including roads, irrigation systems and water harvesting structures. These programmes have the highest coverage rates (20%) among populations in extreme poverty and deliver the highest benefit incidence (75%). Their dual focus on providing immediate relief and creating long-term assets can ensure sustainable benefits that extend beyond crisis management (Bharadwaj and Karthikeyan, 2023).

Similarly, food and in-kind assistance programmes are vital in regions like Mopti, where supply chains are often disrupted by conflict and displacement. These programmes ensure access to essential nutrition during crises, directly addressing food insecurity and preventing long-term health impacts, particularly for children and pregnant women. School feeding initiatives, though more targeted, play a crucial role in maintaining school attendance during crises and addressing child malnutrition, contributing to long-term human capital development.

In contrast, while cash transfer programmes are widely adopted across many FCAS, their effectiveness is often limited (Bharadwaj and Karthikeyan, 2023). Cash transfers also require higher per capita investments to deliver meaningful outcomes and may not address immediate needs, such as food security or infrastructure rehabilitation, as effectively as public works or food and in-kind programmes. However, cash transfers can play a significant role in protracted crises, providing flexible support that allows households to meet diverse needs in volatile contexts. Their impact depends on improved targeting, delivery mechanisms and complementarity with other interventions. Therefore, in the context of cash transfer programmes, governments, donors and development agencies must move away from a 'one-size-fits-all' approach and prioritise instruments better suited to FCAS realities.

Key actions for governments, donors and development partners:

1. **Prioritise investments in proven instruments:** governments and international donors should prioritise public works programmes, food and in-kind assistance, and school feeding initiatives as core components of social protection strategies in FCAS. These instruments have shown higher coverage, better benefit adequacy and stronger returns on investment, making them more effective in addressing both immediate humanitarian needs and long-term resilience goals.
2. **Adopt a diversified mix of social protection tools:** a balanced mix of social protection tools should be adopted to address both short-term climate impacts that cause loss and damage and

long-term resilience and development objectives. Public works programmes and food assistance can be paired with cash transfer schemes to provide comprehensive safety nets.

3. **Strengthen local institutional capacity:** investments must focus on building the capacity of local institutions and community-based organisations to deliver social protection programmes effectively. Local actors are often best placed to navigate the complexities of fragile contexts, ensuring last-mile delivery, transparency and accountability.
4. **Enhance monitoring, evaluation and data systems:** robust data collection, monitoring and evaluation frameworks must be established to track programme outcomes, identify vulnerable populations and ensure accountability in resource allocation. Transparent data systems can also support evidence-based decision making for programme scaling and adaptation.
5. **Foster collaboration across stakeholders:** effective social protection delivery in FCAS requires strong partnerships between governments, international donors, NGOs and local actors. Coordination mechanisms should be strengthened to avoid duplication of efforts and maximise resource efficiency.

Address inequity, exclusion and marginalisation in the delivery approach

In FCAS such as Mali, addressing the compounded impacts of climate shocks, conflict and socioeconomic fragility requires inclusive and equitable social protection, resilience-building and adaptation interventions. However, these programmes are often hindered by systemic inequities, gender disparities, weak institutional coordination and limited transparency. Effective resilience-building and adaptation strategies must actively address these structural inequities to ensure that no one is left behind.

Governments, international donors and implementing agencies need to prioritise marginalised and vulnerable groups in the design and delivery of resilience-building and adaptation interventions. Women, women-headed households, older people, people with disabilities and children in Mopti face disproportionate impacts from recurring droughts, floods and displacement, compounded by conflict-related insecurities. These groups often lack access to essential services, economic opportunities and decision-making processes, increasing their vulnerability to cascading risks.

Our analysis shows that displaced households experience the highest economic losses, equivalent to 184% of their annual income, while migrant households suffer losses amounting to 90% of their income, both significantly higher than the 75% losses experienced by non-migrants. These economic losses are further intensified by non-economic losses, including psychosocial trauma, social fragmentation and cultural identity erosion. For example, displaced children are frequently removed from school, perpetuating intergenerational cycles of poverty and vulnerability.

To address these disparities, governments and international agencies must invest in integrated data systems that combine socioeconomic vulnerability indicators with information on exposure to climate and conflict risks. A unified vulnerability database can ensure accurate targeting and prioritisation of social protection, resilience-building and adaptation programmes, reducing duplication and inefficiencies while maximising reach.

Migrants and displaced households in Mopti represent some of the most vulnerable and overlooked populations. Displacement often results in economic loss, interrupted access to essential services and severe psychosocial stress. Many adaptation and resilience programmes are designed with static geographic boundaries, thereby excluding displaced populations and migrants from accessing critical benefits when they move across administrative regions. Similarly, families left behind face heightened vulnerabilities without safety nets or continued support.

Governments, multilateral institutions and humanitarian agencies need to prioritise the portability of entitlements and benefits across social protection, adaptation and resilience programmes. By leveraging digital national registries and interoperable systems, entitlements such as cash transfers, health services, food assistance and adaptation resources can follow migrants and displaced households across regions. This would ensure uninterrupted access to essential services and enable displaced communities to recover and rebuild their lives more effectively. Although a unified social registry system exists in Mali, it faces limitations such as a small scale and incomplete and outdated information. The Malian government needs to take urgent action to strengthen and expand the existing registry system.

Resilience and adaptation interventions must adopt a rights-based approach, ensuring that every individual, regardless of gender, socioeconomic status, mobility or geographic location, has guaranteed access to essential services, resources and decision-making spaces. This approach must include ensuring access to food security, shelter, education, healthcare and economic opportunities, underpinned by legal protections and accountability mechanisms.

In fragile regions like Mopti, where governance structures are weakened by conflict, decentralised implementation mechanisms are essential for delivering

both social protection and adaptation interventions effectively. Local governments, community-based organisations and civil society actors must be empowered and adequately resourced to deliver context-specific solutions. Decentralisation can promote trust, transparency and accountability, while also ensuring last-mile delivery of critical services. However, decentralisation must be accompanied by clear accountability frameworks, financial transparency and robust monitoring systems to prevent misuse of resources and inefficiencies.

Fragmented and siloed management of resilience, social protection and adaptation programmes remains a particular challenge in FCAS contexts. In Mali, numerous ministries, agencies and organisations operate small-scale interventions, leading to duplication of efforts, gaps in coverage and inconsistent programme outcomes. The government supported by international agencies and donors, must undertake a comprehensive overhaul of institutional management structures to streamline governance, improve coordination and adopt integrated delivery mechanisms.

6 Conclusion

The findings from this study highlight the enormity of the challenge facing FCAS such as Mali, where climate shocks, conflict and structural vulnerabilities intersect, creating compounded risks and cascading impacts. These crises perpetuate cycles of poverty, displacement and erosion of human dignity. Households in Mopti are bearing a disproportionate burden of global inaction, despite contributing minimally to the climate crisis. The scale of economic and non-economic loss and damage suffered by these communities underscores the stark climate injustice at work. Vulnerable households are not only losing their income and assets but also their mental wellbeing, cultural identity and opportunities for future generations.

The urgency to act cannot be overstated. Without immediate, targeted and sustained interventions, the vulnerabilities of communities in FCAS will only deepen, leaving millions trapped in a downward spiral of loss and fragility. Addressing these challenges requires collective responsibility and global solidarity. National governments need to prioritise inclusive and locally led resilience-building initiatives, while international financial institutions, donor agencies and development partners must ensure that FCAS are prioritised in global climate finance, debt relief mechanisms and adaptation funding.

The FRLD must prioritise FCAS in its disbursement strategy to address the full spectrum of economic and non-economic loss and damage these regions face. Climate finance from mechanisms such as the GCF, the GEF and the Adaptation Fund must be significantly scaled up and directed towards integrated, locally led interventions that address not only immediate vulnerabilities but also structural barriers to resilience.

The global response to the climate crisis must not overlook countries like Mali. While Mali and other FCAS bear the brunt of climate impacts, the consequences of inaction will extend far beyond their borders. Climate risks such as extreme weather, food insecurity and displacement, already severe in FCAS, are becoming more widespread and could increasingly affect other regions. Climate change is a global challenge and neglecting countries like Mali will not only deepen existing inequalities but will ultimately undermine collective progress towards sustainability, peace and equity.

Annexes

Annex 1. Definition of fragile and conflict-affected states (FCAS)

Conflict is a state of opposition or hostility between two or more parties, often arising from differences in interests, values or resources. It can manifest in various forms, including verbal disputes, physical confrontations, political disagreements or armed warfare.

Fragility refers to a context where the state or society faces significant vulnerabilities, often stemming from weak governance, institutional fragility, social inequalities, and limited capacity to absorb and respond to shocks. Fragile situations are marked by high levels of exclusion, grievances and inadequate provision of basic services, with states often struggling to manage risks associated with social, political, economic, environmental and security challenges.

Different institutions have characterised FCAS as follows:

- The World Bank describes FCAS as countries with weak or ineffective state institutions, where fragility, conflict or violence exacerbate poverty, vulnerability and inequality. This characterisation is drawn from its Strategy for Fragility, Conflict, and Violence 2020–2025 (World Bank Group, 2020), which identifies fragility through institutional weaknesses, governance failures and inability to manage social, economic, political and environmental risks. Countries in violent conflict are further classified based on the intensity of conflict-related deaths, as outlined in its annual List of Fragile and Conflict-affected Situations.
- The UNDP views FCAS as contexts where persistent poverty, inequality, conflict, gender-based violence, climate emergencies and economic challenges impede progress toward sustainable development goals. This perspective is informed by the UNDP Strategic Plan 2022–2025 (UNDP, 2021b), which highlights weak governance structures, inadequate institutional capacity and heightened vulnerability to shocks and crises in such settings.
- The OECD defines FCAS as countries or regions facing serious long-term challenges in governance, institutional capacity, development policies or violent conflict. This definition is based on the States of Fragility 2022 report (OECD, 2022), which employs a multidimensional fragility framework assessing six dimensions: political, security, societal, economic, environmental and human.

While the wording of these definitions varies, they converge on critical elements: institutional weakness, vulnerability to shocks and an inability to address social, economic and political risks.

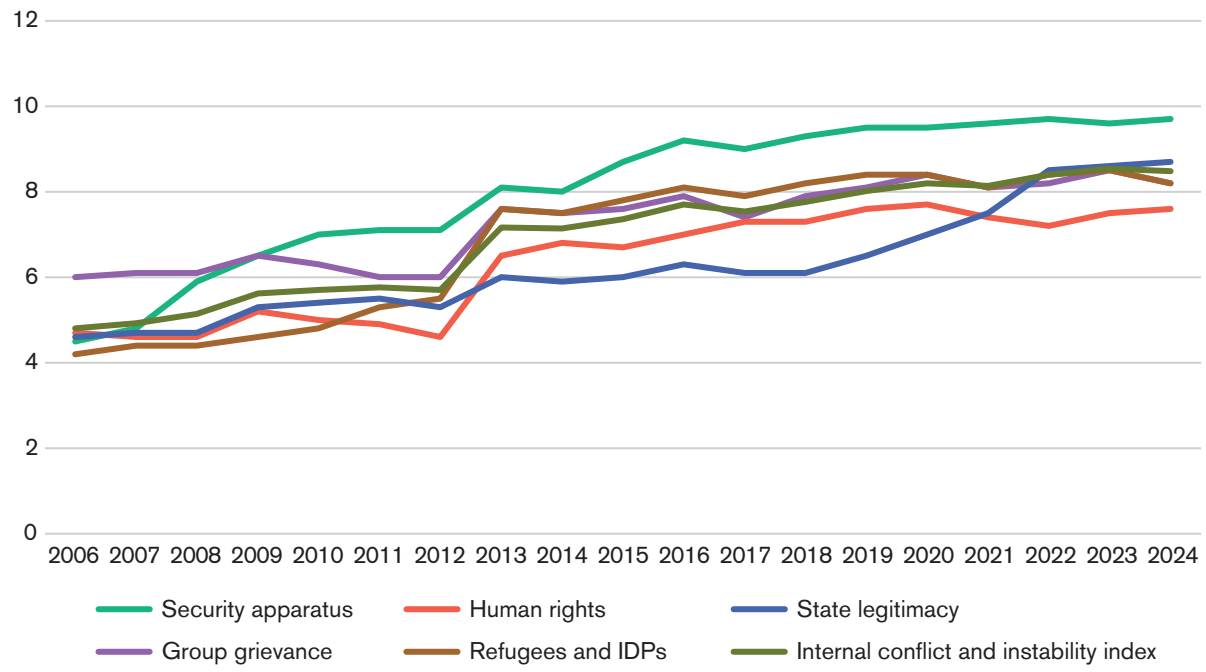
Annex 2. Indicators for the internal conflict and governance instability index for Mali

To better understand and quantify these overlapping risks, we constructed the internal conflict and governance instability index using data from five key indicators sourced from the Fragile States Index[4]. These indicators include:

- **Conflict:** the security apparatus indicator considers the security threats to a state, such as bombings, attacks and battle-related deaths, rebel movements, mutinies, coups or terrorism.
- **Social:** the group grievance indicator focuses on divisions and schisms between different groups in society — particularly divisions based on social or political characteristics — and their role in hindering access to services or resources and inclusion in the political process.
- **Institutional:** the human rights and rule of law indicator considers the relationship between the state and its population insofar as fundamental human rights are protected and freedoms are observed and respected.
- **Political:** the state legitimacy indicator considers the representativeness and openness of government and its relationship with its citizenry.
- The refugees and internally displaced persons indicator measures the pressure upon states caused by the forced displacement of large communities because of social, political, environmental or other causes.

The individual trends of these indicators are provided in Figure 67.

Figure 67. Indicators for the internal conflict and governance instability index for Mali



4 See: https://fragilestatesindex.org/

Annex 3. Sample profile of the study area

The study was conducted in five communes — Sio, Konna, Fatoma, Socoura and Mopti — located within the Mopti circle, an administrative division in the Mopti region of central Mali, situated within the Inner Niger Delta.

Figure 68. Location of the study area

These communes, while geographically distinct, are home to diverse communities whose economies are primarily driven by three interconnected production systems: pastoralism, agriculture and fishing. These systems frequently overlap, highlighting the interdependence of resource use and the integrated nature of local economies.

The selection of the Mopti region for this study was informed by its acute vulnerability to recurrent droughts and flooding, which accelerate environmental degradation and pose significant threats to local livelihoods. In addition to climate-induced hazards, the region is marked by persistent insecurity and conflict. This intersection of environmental stress and sociopolitical instability generates a reinforcing cycle, compounding the vulnerabilities faced by local communities. Although traditional governance structures and local leadership have historically helped to manage resource-based disputes, intensifying competition over resources driven by environmental pressures has led to escalating conflicts, further destabilising the region.

In Mopti, the convergence of climate change and conflict places considerable strain on natural resource-dependent livelihoods, eroding social cohesion and prompting the diversification of economic activities (Cold-Ravnkilde and Ba, 2022). These overlapping pressures exacerbate pre-existing inequalities (World Bank Group, 2020), constraining the adaptive capacities of marginalised groups, particularly women (UNDP, 2021b) and young people, while increasing vulnerability to gender-based violence and deepening socioeconomic disparities.

Figure 69. Geographic distribution of the study area

The sample profile for qualitative and quantitative data collection is detailed in Tables 18 and 19.

Table 19. Sample covered for quantitative data collection

PARTICULARS	COMMUNE					TOTAL	% OF TOTAL
	Sio	Konna	Fatoma	Socoura	Mopti		
Non-migrants	34	15	26	36	42	153	38
Migrants	20	10	20	40	60	150	37
Displaced	21	6	18	28	32	105	26
Total	**75**	**31**	**64**	**104**	**134**	**408**	

Table 20. Sample design for qualitative data collection

TOOL	COMMUNE					TOTAL
	Sio	Konna	Fatoma	Socoura	Mopti	
Focus group discussions						
Mixed groups	5	2	4	5	6	22
Key informant interviews						
Communication officers of local NGO						2
NGO representatives/Development organisations						2

Annex 4. Regression analysis model for understanding mobility-related decisions

To understand why some households in Mali choose migration or displacement as a coping strategy while others remain in place, we used a logistic regression model. This model examines the relationship between household decisions regarding mobility and key structural, environmental and social factors.

Model specification: the regression model is specified as:

$$\ln\left[\frac{Px}{1-Px}\right] = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + ... + \beta_k X_{ki}$$

1: Non-migrant households (no members migrated)

2: Households with members who migrated internally

3: Households with members who were displaced

Independent variables: four key indices were used to capture the diverse factors influencing household mobility decisions:

Inherent resilience index (IRI): this measures the structural and socioeconomic capacity of households to cope with shocks (1 = low resilience; 2 = high resilience).

Climate risk index (CRI): this captures exposure to climate-related risks, including disasters and environmental shocks (1 = low risk; 2 = high risk).

Internal conflict risk index (ICRI): this reflects exposure to conflict-related injuries, deaths and violence (1 = low risk; 2 = high risk).

Social protection index (SPI): this assesses access to social protection services such as food aid, cash transfers and education support (1 = low access; 2 = high access).

Purpose of the model:

- To identify and quantify the significance of structural, environmental, conflict-related and social protection factors in influencing household mobility decisions
- To determine whether migration is primarily driven by climate vulnerability, conflict exposure or resilience deficits, and to understand the role of social protection mechanisms in mitigating these risks, and
- To distinguish between households undertaking distress migration or forced displacement in response to stressors.

By isolating the effects of these indices, the regression model provides evidence-based insights into the drivers of migration and displacement in FCAS settings such as Mali. This allows policymakers and humanitarian actors to design more targeted interventions that address the specific vulnerabilities and needs of each household category. This model can serve as an analytical tool for bridging the gap between empirical data and actionable strategies for resilience building, conflict mitigation and social protection.

References

Benjaminsen, TA, Alinon, K, Buhaug, H and Buseth, JT (2012) Does climate change drive land-use conflicts in the Sahel? *Journal of Peace Research* 49(1) 97–111. doi:10.1177/0022343311427343.

Bharadwaj, R and Huq, S (2022) Climate-induced migration and health issues: a toolkit for policymakers. IIED, London.

Bharadwaj, R and Karthikeyan, N (2023) Shock-responsive social protection in fragile and conflict-affected states. IIED, London.

Bharadwaj, R and Shakya, C (2021) Loss and damage case studies from the frontline: a resource to support practice and policy. IIED, London.

Bharadwaj, R, Karthikeyan, N and Pichandi, K (2024) Comprehensive Climate Impact Quantification (C-CIQ): an approach to co-developing policy and programmatic responses for climate risk management. IIED, London.

Cabot Venton, C, Fitzgibbon, C, Shitarek, T, Coulter, L and Dooley, O (2012) The economics of early response and disaster resilience: lessons from Kenya and Ethiopia.

Cold-Ravnkilde, SM and Ba, B (2022) Climate-related conflict drivers in the Mopti region. In: *Unpacking 'new climate wars': actors and drivers of conflict in the Sahel*. Danish Institute for International Studies. pp.43–58.

Corral, P, Irwin, A, Krishnan, N, Mahler, DG and Vishwanath, T (2020) Fragility and conflict: on the front lines of the fight against poverty. World Bank Group, Washington DC.

Coulibaly, ON (2021) Mali – Land, climate, energy, agriculture and development: a study in the Sudano-Sahel Initiative for Regional Development, Jobs, and Food Security. Working Paper 308805. Center for Development Research, University of Bonn, Bonn. doi:10.22004/ag.econ.308805.

DRMKC (no date) INFORM Risk Index. https://drmkc.jrc.ec.europa.eu/inform-index/INFORM-Risk

EM-DAT (no date) EM-DAT The International Disaster Database. Centre for Research on the Epidemiology of Disasters (CRED), University of Louvain. www.emdat.be

Giannini, A, Krishnamurthy, PK, Cousin, R, Labidi, N and Choularton, RJ (2017) Climate risk and food security in Mali: a historical perspective on adaptation. *Earth's Future* 5(2) 144–157. doi:10.1002/2016EF000404.

Global Network Against Food Crises and Food Security Information Network (2024) Global Network Against Food Crises 2024. Rome.

IMF (2022) The IMF strategy for fragile and conflict-affected states. Policy Paper No. 2022/004. Washington DC.

IMF (no date) Fragile and conflict-affected states. www.imf.org/en/Topics/Fragile-and-Conflict-Affected-States

Independent Evaluation Group (2014) World Bank Group assistance to low-income fragile and conflict-affected states: an independent evaluation.

Internal Displacement Monitoring Centre (2024) 2024 Global Report on Internal Displacement. Geneva.

International Institute for Strategic Studies (2021) The long aftermath of war: dilemmas of post-conflict intervention – An Armed Conflict Survey 2021 Event, 21 October.

International Rescue Committee (2023) Climate action for the epicenter of crisis: how COP28 can address the injustices facing conflict-affected communities.

Jaramillo, L, Cebotari, A, Diallo, Y, Gupta, R, Koshima, Y, Kularatne, C, Lee, JD, Rehman, S, Tintchev, KI, and Yang, F (2023) Climate challenges in fragile and conflict-affected states. Staff Climate Notes, 2023(001). IMF. doi:10.5089/9798400252082.066.

OECD (2018) States of Fragility 2018. OECD Publishing, Paris. doi:10.1787/9789264302075-en.

OECD (2022) States of Fragility 2022. OECD Publishing, Paris. doi:10.1787/c7fedf5e-en.

OECD (2023) Development finance for climate and environment-related fragility: cooling the hotspots. OECD Development Perspectives, No. 41. OECD Publishing, Paris. doi:10.1787/0db04331-en.

Potts, M, Rüttinger, L and Vivekananda, J (2022) What does the IPCC report tell us about climate and conflict? *Climate Diplomacy* 7 March.

Rigaud, KK, de Sherbinin, A, Jones, B, Bergmann, J, Clement, V, Ober, K, Schewe, J, Adamo, S, McCusker, B, Heuser, S and Midgley, A (2018) Groundswell: preparing for internal climate migration. World Bank Group, Washington DC.

UNDP (2018) Journey to extremism in Africa: drivers, incentives, and the tipping point for recruitment. New York.

UNDP (2021a) Climate finance for sustaining peace: making climate finance work for conflict-affected and fragile contexts. New York.

UNDP (2021b) UNDP Strategic Plan 2022–2025. New York: United Nations Development Programme.

UNDP (2022) New threats to human security in the Anthropocene: demanding greater solidarity. New York.

UNDP (no date) Human Development Index (HDI). https://hdr.undp.org/data-center/human-development-index#/indicies/HDI

UNDRR (no date-a) DesInventar Sendai. www.desinventar.net

UNDRR (no date-b) Our impact. www.undrr.org/our-work/our-impact

UNHCR (2021) Global trends: forced displacement in 2019. Copenhagen, Denmark.

UNHCR (2024) Global trends: forced displacement in 2023. Copenhagen, Denmark.

World Bank Group (2016) Closing the gap: building resilience to natural disasters and man-made shocks through social safety nets. Washington DC.

World Bank Group (2020) World Bank Group Strategy for Fragility, Conflict, and Violence 2020–2025 (Vol. 1 of 2). Washington DC.

World Bank Group (no date-a) ASPIRE: the Atlas of Social Protection Indicators of Resilience and Equity, Data sources and methodology. www.worldbank.org/en/data/datatopics/aspire/documentation

World Bank Group (no date-b) Fragility, conflict & violence. www.worldbank.org/en/topic/fragilityconflictviolence/overview

World Bank Group (no date-c) The World Bank Group and the Locust crisis. www.worldbank.org/en/topic/the-world-bank-group-and-the-desert-locust-outbreak

This paper examines the compounding impacts of climate change, conflict and socioeconomic vulnerabilities on households in Mopti, Mali. It analyses both economic and non-economic loss and damage using the Comprehensive Climate Impact Quantification toolkit and offers evidence-based recommendations for building resilience in fragile and conflict-affected settings.

IIED is an international policy and research organisation working with partners globally to build a fairer, more sustainable world. Together, we challenge the destructive economic models, unjust power dynamics, entrenched mindsets and protectionist laws that perpetuate poverty, suppress rights and hinder progress towards a thriving world. We explore solutions to complex economic, social and environmental crises, using research, action and influencing to tackle the root causes of climate change, nature loss and inequality.

iied

International Institute for Environment and Development
44 Southampton Buildings, London WC2A 1AP, UK
Tel: +44 (0)20 3463 7399
www.iied.org

Knowledge Products

Funded by:

MINISTRY OF FOREIGN AFFAIRS OF DENMARK

This material has been funded by the Ministry of Foreign Affairs of Denmark. However, the views expressed do not necessarily reflect the Danish government's official policies.