PATHWAYS TO STABILITY: UNDERSTANDING THE RELATIONSHIP BETWEEN INCLUSIVE NATURAL RESOURCE GOVERNANCE, VERTICAL SOCIAL COHESION, AND CLIMATE RESILIENCE

Evidence From a Survey Experiment in Mali and Niger Justice and Stability in the Sahel (JASS)

November 2025

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ACKNOWLEDGEMENTS

Note to the Reader: The primary audience of this document is a set of stakeholders already familiar with Mali and Niger. As such, the report does not provide extensive background information
about the history of the area, or other contextual information that could be considered common knowledge for the document's primary audience.

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EXECUTIVE SUMMARY

The UK-funded Justice and Stability in the Sahel (JASS) programme—led by Mercy Corps in partnership with local NGOs—aims to enhance stability in Mali and Niger by promoting inclusive land governance, natural resource management, and access to justice for marginalised communities. Launched in central Mali in 2021 and expanded in 2023 to cover 24 communes across both countries, JASS will run through March 2026. The programme focuses on three interlinked outcomes: improving conflict management capacity and community–institution collaboration; building resilience to climate-related stressors; and strengthening the evidence base for advocacy and locally driven interventions.

While existing scholarship has long documented links between natural resources and conflict (e.g., Fearon & Laitin 2003; Homer-Dixon 1999), the mediating role of climate stress (Raleigh & Urdal 2007; Adger 2006) and the promise of participatory governance (Ostrom 1990; Tyler 2003), few studies have provided rigorous, causal evidence in fragile Sahelian contexts. In particular, there is a gap in experimental research that examines how institutional design shapes perceptions of legitimacy, conflict reduction, and climate resilience.

Using a survey experiment embedded in the programme's midline evaluation (conducted in December 2024 in Mali and Niger), this study addresses these gaps and tests JASS's Theory of Change. Specifically, it tests the assumption that communities with institutions that are more inclusive and that empower and mobilise citizens will be more resilient to climate-related challenges; have fewer conflicts over natural resources; have more effective institutions; view such institutions as legitimate and fair; and have better conflict resolution mechanisms.   It builds on efforts from donors, practitioners, and international organizations to develop interventions that explore community-driven, inclusive natural resource governance as a potential pathway to mitigate conflict and bolster climate resilience.

A total of 3,687 individuals from villages and communes in Koutiala, Ségou, Koulikoro, and San—in Mali—and Maradi and Tahoua—in Niger—participated in the survey. The survey experiment involved participants and non-participants of JASS activities in areas that were both exposed and not exposed to the programme. Respondents were randomly assigned to one of three vignette conditions: an inclusive community-based natural resource governance structure, a centralised natural resource governance structure, and the control condition, representing the current status quo, which in most cases represents a top-down community-centred system led by a mix of customary and state institutions. This random assignment facilitates causal determination of the respondents' preferences. Participants then answered questions regarding climate resilience, vertical social cohesion, legitimacy, and fairness. The analysis considers geographical (village-level) and personal characteristics (gender and age) as well as participation in specific JASS activities to estimate the effects of exposure to the different vignettes. The key findings are as follows:

Respondents presented with an inclusive resource management model consistently reported more optimistic assessments of their community's ability to reduce conflict and cope with environmental stress, compared with those in the status-quo and those in the centralised system. Specifically, respondents exposed to the inclusive and locally led vignette were more likely to trust the adjudication of land management issues, expect reductions in conflicts over natural resources, and believe in their community's capacity to withstand climate-related challenges.

Conflict intensity can dampen optimism across all systems. Given the wide dispersion in the levels of conflict events in areas where the survey took place, the report explores whether increased violence affects perceptions of governance systems. Indeed, respondents living in areas with higher reported conflict events demonstrate a consistent deterioration in their assessment of any natural resource

governance system. By contrast, this deteriorating effect is absent when analysing the participants' own perceptions of violent confrontations. The results indicate that although living in more conflict-prone areas can negatively affect perceptions of governance, actual exposure to violence may not have the same powerful effect.

Non-Indigenous (allochthonous) respondents—though under-sampled—displayed more variable, slightly less positive perceptions than indigenous (autochthonous) peers, yet still favoured community-led governance. [1] Female and male respondents showed no statistically significant differences in their responses, aligning with evidence that gender does not always predict governance preferences in non-Western settings.

Based on these findings, the report outlines five strategic recommendations to practitioners, donors, policymakers, and the broader ecosystem of stakeholders:

Institutionalise and scale up inclusive community-led governance structures and mechanisms. The findings show the importance of inclusion and empowering community members in natural resource governance. Such institutions should therefore be formally embedded in local governance frameworks and scaled across all JASS communes. The JASS programme and policymakers must collaborate to codify, resource, and expand these participatory structures to lock in the benefits of community-led decision-making.

Enhance Inclusive Representation. In the inclusive, community-driven governance scenario, local stakeholders—rather than external actors—lead decisions on resource management, which respondents linked directly to better conflict resolution, legitimacy, and climate resilience. However, practical barriers persist, as evidenced by more cautious attitudes among non-indigenous (allochthonous) households and other under-represented groups. Further research is needed to explore the obstacles and additional avenues to enhance inclusive representation of different groups. The JASS programme and relevant stakeholders must continue to weave inclusion in the fabric of governance structures and processes to deepen ownership, trust and fairness among community members.

Integrate climate-smart adaptation within governance systems. Climate shocks and resource scarcity are key drivers of violence in the Sahel, so governance structures must explicitly integrate climate adaptation alongside resource management. In the inclusive vignette, external support, such as training on sustainable practices and climate-resilient agriculture, boosted community confidence in their ability to withstand environmental stress. JASS's real-world investments in climate-smart farming, water infrastructure, soil restoration, and institutional capacity-building demonstrate how embedding adaptation into local governance can strengthen both resilience and social cohesion.

Empower inclusive governance systems with conflict resolution capacities. Inclusive community-led governance bodies like the Village and Land Commissions (COFOs) have provided legitimacy and a track record of reducing resource conflicts, so it is essential to further bolster their dispute-resolution capacities. JASS's support in Mali has already led to higher conflict-resolution rates, demonstrating the impact of targeted training in negotiation, mediation, land-law basics, and agreement documentation. To build on these successes, the programme should expand such capacity-building to additional local institutions and promote collaboration across all governance and judicial systems.

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[1] We use the terms non-indigenous, allochthones, and allochthonous interchangeably to refer to individuals who were not born into (or whose family lineage does not originate from) the local community in which they now reside. We also use the terms indigenous, autochthone, and autochthonous interchangeably to refer to individuals who were born in (and whose family lineage originates from) the local community were they now live.

Strengthen state-community coordination and accountability. Bridging the divide between grassroots governance and formal authorities is crucial for cohesive resource management at the climate–conflict nexus; donors and practitioners should facilitate joint forums to clarify roles, pathways, and community agreements, while policymakers formalise these mechanisms to ensure accountability and legitimacy. By institutionalising regular, structured dialogue between local governance bodies and state actors, the programme can foster mutual accountability and more effective collaboration in tackling climate shocks, resilience, and conflict.

By linking these attitudes to theoretical discussions on local governance, social cohesion, and climate resilience, our study contributes to the growing evidence base that inclusive decision-making can foster both peacebuilding and adaptation outcomes in fragile, climate-affected regions.
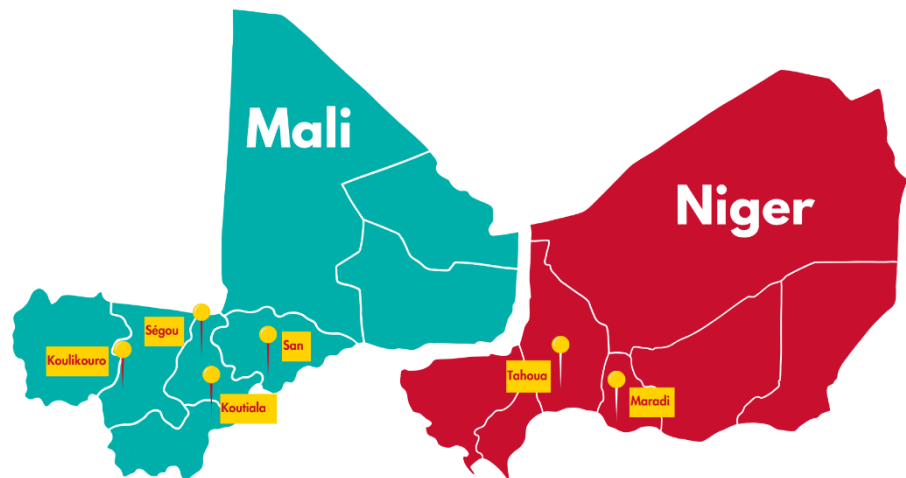
BACKGROUND AND OVERVIEW

Introduction

Countries in the Sahel region, including Mali and Niger, have suffered from a confluence of challenges stemming from climate variability, fragile governance systems, and recurring resource-related conflicts. Environmental stressors such as increasing droughts, floods, and land degradation have heightened competition over water and arable land, thereby straining traditional conflict-resolution mechanisms, and leading to more conflict and violence. To solve this, donors, practitioners, and international organizations have created interventions that explore community-driven, inclusive natural resource governance as a potential pathway to mitigate conflict and strengthen climate resilience. These are predicated on the idea that local and inclusive governance structures tend to foster higher levels of trust, legitimacy, and cooperation. For instance, seminal research shows that where community members are involved in creating and enforcing rules for resource use, they see governance structures as more legitimate (Ostrom 1990). Literature on peacebuilding and conflict resolution also underscores the role of inclusive governance in strengthening fairness and transparency, especially when decision-making processes are perceived as equitable. However, while the promise of inclusive governance has been explored in the peace-building literature, empirical evidence showing a causal link between inclusive governance of natural resources and peacebuilding outcomes like conflict prevention, legitimacy, and social cohesion in fragile contexts is relatively scarce. Furthermore, it is unclear whether local communities would be willing to consider this as a more optimal alternative over the current structures in place.

Yet, identifying effective natural resource governance structures is critical to mitigating some of the pressures that heighten conflict. Many fragile and conflict-affected situations (FCS) are highly vulnerable to climate change. In fact, 19 of the top 25 most climate vulnerable countries are FCS. Many of them are geographically exposed to extreme and persistent climate hazards, and the same characteristics that define them as fragile—weak institutions, poor governance, and conflict — also makes them struggle to cope with and adapt to these shocks.[2] It is widely recognised that climate change, environmental degradation and conflict are interconnected and can have consequences for disrupting peace, especially in fragile and resource-constrained settings (Burke et al. 2015). The COP 28 Declaration on Climate, Relief, Recovery and Peace highlights the need to strengthen the evidence base on what works for adaptation in FCS. It emphasises the need to leverage the experience and expertise of humanitarian, peace, and development actors, in concert with researchers and community and indigenous stakeholders to address this gap. Central to this is a need to understand what strengthens resilience to these climate-

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[2] See *Adapting in Adversity*

related challenges. Existing evidence suggests peacebuilding interventions may hold great potential for both conflict and resilience outcomes. However, there has been an inadequate focus on understanding **how common peacebuilding approaches can foster resilience and make communities more adaptable to climate-related challenges.** Specifically, what kind of governing institutions could improve natural resource management, and boost community climate resilience?

This study addresses these gaps by examining various resource governance structures and how they impact perceptions on resilience to climate-related challenges, conflict over natural resources, dispute resolution mechanisms, and state-citizen relations. We use a survey experiment embedded within the midline evaluation of the Justice and Stability in the Sahel (JASS) programme in Niger and Mali.

Drawing on the survey experiment implemented in Mali and Niger, we test the JASS theory of change to understand the effect of exposing communities to hypothetical institutional scenarios. We test whether those exposed to inclusive and consensus-driven governance structures will express greater trust in authorities, expect fairer conflict resolution, and perceive increased capacity to adapt to climate shocks. We find that respondents presented with an inclusive model of resource management consistently reported more optimistic assessments of their community's ability to reduce conflict and cope with environmental stress. By linking these attitudes to theoretical discussions on local governance, social cohesion, and climate resilience, our study contributes to the growing evidence base that inclusive decision-making can foster both peacebuilding and adaptation outcomes in fragile, climate-affected regions.

Objectives of the Study

Background and Context

Over the past decade, **Mali** has experienced **worsening security due to escalating violence in the northern and central regions**, driven by ethnic tensions, armed groups, and competition for resources like land and water. Political instability has played a prominent role in the country. The country has experienced three coup d'états since 2012 and has a long history of underrepresentation of certain groups, grievances, and political upheaval amidst geopolitical changes. However, while extremist groups are present, most conflict-related deaths stem from long-standing local grievances. Traditional conflict resolution mechanisms have weakened, and state structures are fragmented, especially in rural areas. Beyond political tensions, Mali's climate variability further strains resource management (SIPRI 2021). Periodic droughts, erratic rainfall patterns, and advancing desertification exacerbate competition for scarce land and water resources. Conflict over the control, allocation, and use of these resources has become more frequent, intensifying existing communal rifts. As a result, many local conflict resolution mechanisms have come under pressure revealing gaps in both capacity and legitimacy (UNDP 2023).

In neighbouring **Niger**, the Tahoua and Maradi regions face **similar challenges**, particularly over **natural resources like land and water**, exacerbated by rapid population growth, climate change, and weak governance. The Tarka Valley, a vital resource area, is under increasing strain, contributing to conflicts and migration pressures. At the same time, rapid population growth place additional pressure on natural resources, intensifying competition within and between communities. Like Mali, Niger has experienced recurring governance challenges (OECD 2020). It has undergone a series of political transitions and at the same time continues to grapple with weak formal institutions and limited state presence (ICG 2017). Whether with its formal or informal arrangements, a lack of inclusive leadership or transparent decision-making around resource use fuels mistrust between authorities and the broader population. Both

countries face **demographic and environmental challenges** that intensify resource-based tensions, but the situation remains manageable in central Niger and southern Mali if rapid interventions are made.

Programme Context and this Report

In response to the instability and similar challenges in Mali and Niger, the United Kingdom (UK) government is funding the Justice and Stability in the Sahel programme. Following an initial phase from September 2021 to March 2023 in central Mali, the programme expanded in April 2023 to include twenty communes in Mali and four in Niger. As a three-year initiative, the programme is set to conclude in 2026. Managed by Mercy Corps in partnership with local NGOs AMEDD in Mali and Cercle Dev in Niger, JASS aims to enhance security and stability in the Sahel region by promoting equity and inclusion in land governance, natural resource management, and justice for marginalised communities. The JASS programme has a robust evidence and learning agenda with key priority areas and questions, one of which specifically focuses on conflict mediation and natural resource governance. Within this framework, the JASS programme is conducting research to understand what works for inclusive conflict mediation and natural resource governance that also supports climate adaptation. This requires understanding people's preferences and perceptions about the potential effectiveness of different governance systems, particularly in areas where the status quo appears to have lost legitimacy because it does not seem to promote structures that foster the participation of multiple groups or where conflict prevents the current system from working properly. This report is part the broader quasi-experimental study that aims to support learning, adaptive management, and advocacy by generating robust evidence on effective strategies for reducing climate-related conflicts and strengthening community resilience.
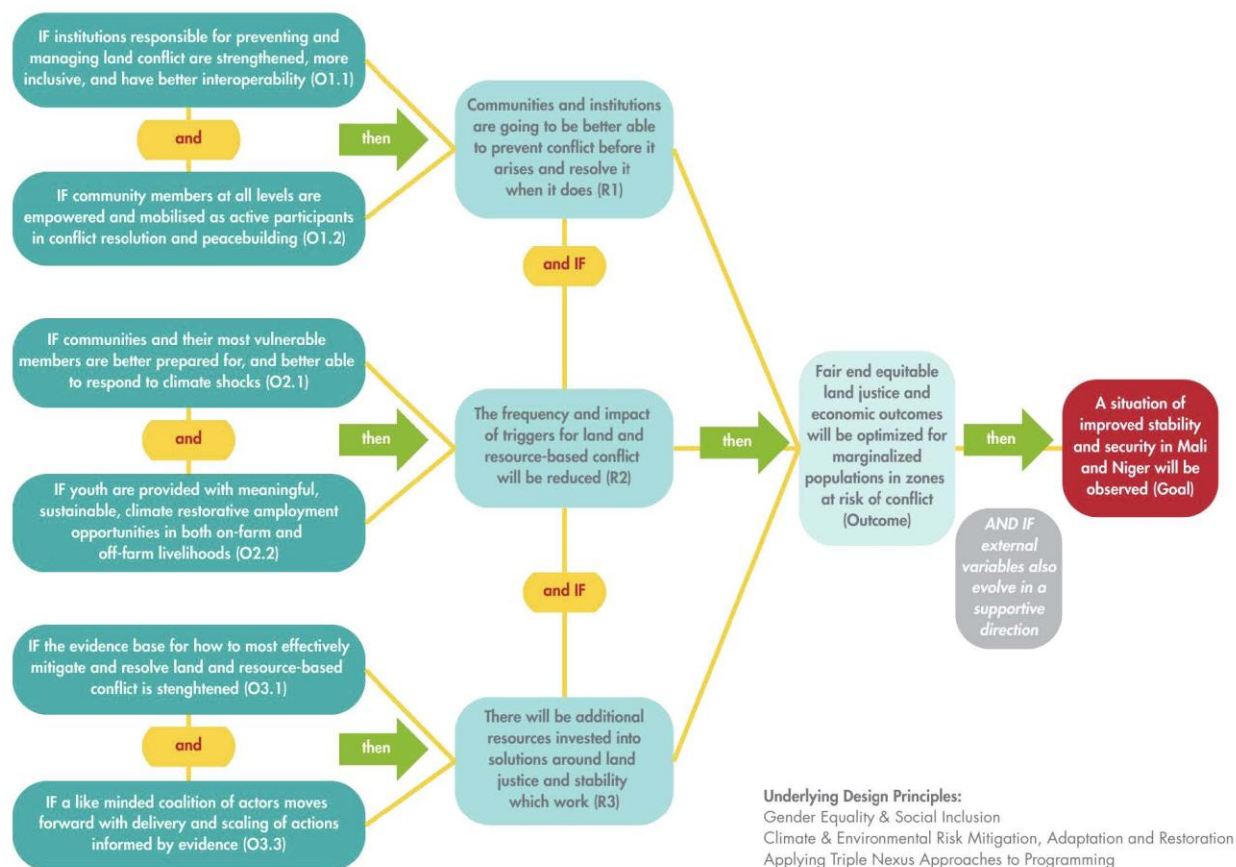
Figure 1. JASS' Theory of Change

The JASS Theory of Change (TOC) is complex and complexity-aware, acknowledging that promoting security and stability requires addressing challenges posed by violent extremism, as they are causes and effects of the instability in the region. The TOC posits that *if* institutions responsible for preventing and managing land conflict are strengthened, more inclusive, and have better interoperability *and if* community members at all levels are empowered and mobilised as active participants in conflict resolution and peacebuilding – *then* communities and institutions are going to be able to prevent conflict before it arises and resolve it when it does. The underlying assumption of this TOC is that communities with institutions that are more inclusive and that empower and mobilise citizens will be more resilient to climate-related challenges; have fewer conflicts over natural resources; have more effective institutions; view such institutions as legitimate and fair; and have better conflict resolution mechanisms.

This report examines and tests the TOC assumptions and directly serves Results 1 and 3 (see Figure 1; R1 and R3) while promoting a context in which Result 3 can be generated. It presents preliminary results from a research design that uses randomly assigned vignettes to examine varying institutional and governance structures and perceptions of these systems to build evidence about key elements of the JASS programme's theory of change. Future products will present additional findings from the broader quasi-experimental study, including the comparison group of communes where JASS is not active.

NATURAL RESOURCE GOVERNANCE, CONFLICT, AND CLIMATE RESILIENCE

Previous Research and Existing Gaps

Disputes over land and other resources can contribute to broader conflict, particularly in contexts marked by social divisions, violence, and instability. A range of scholarships has emphasised the role of natural resources in both triggering and sustaining internal armed conflict (Fearon and Laitin 2003). Resource scarcity may also amplify violence, especially when weak institutions fail to manage competition fairly (Homer-Dixon 1999). Another seminal explanation suggests that conflict arising from natural resource could be traced to either greed or grievance (Collier and Hoeffler 2000) and Rustd and Binningsbø (2012) posit that conflicts can resurface when disagreements over natural resource distribution motivate renewed rebellion. Challenges to these perspectives highlight alternative mechanisms, such as perceptions of unfair access to resources (Humphreys 2005). In many cases, conflict over land ownership or the spoils of natural resource extraction reveal deeper tensions linked to governance shortfalls, elite capture, and weak state-society linkages. A variety of studies have attempted to test the different theoretical pathways, using varying econometrics methods, to understand how fragile contexts may be particularly susceptive to resource-related disputes. Although these works offer compelling macro-level correlations, fewer studies provide **micro-level causal evidence** on how resource governance shape conflict dynamics. **This study** addresses this gap by using a **survey experiment** to measure how different governance models influence individuals' expectations of conflict reduction and fairness in resource allocation.

As precarious climate variability and scarcity in fragile regions continue to be a concern, there have been even more concerted efforts to understand what works to prevent conflict and build resilience. Yet, climate stressors alone do not invariably lead to conflict (Adger 2006; Raleigh and Urdal 2007). While they may exacerbate existing social tensions, the type of governance structures is instrumental in the outcomes from climate stressors. Therefore, the institutional contexts in which climate pressures unfold and the local capacities for conflict resolution often determine whether competition escalates into

violence. For instance, there is empirical evidence that local institutions can prevent resource competition from escalating into violence, indicating that the capacity for conflict resolution often determines communities' resilience (Adano et al. 2012). This suggests that while natural resources and scarcity from climate-related challenges may magnify the potential for unrest, institutional contexts, especially state capacity and equitable rule enforcement, can mitigate or heighten conflict risk. Weak or absent government oversight can leave room for local elites or armed groups to dominate resources, fuelling grievances and perpetuating cycles of violence. Conversely, more effective governance structures may channel tensions into negotiation or mediation rather than violence. While it is increasingly clear that robust local institutions matter, there is **limited empirical work** isolating the specific governance features (such as inclusivity, transparency, or decision-making authority) that are most effective in mitigating conflict. **Therefore, this study** systematically tests whether **inclusive** natural resource governance prompts more confidence in conflict resolution and resilience to climate shocks.

Governance of natural resources is thus increasingly viewed as an opportunity for cooperation and institution-building. In their examination of resource conflict and collective action, Ratner, Meinzen-Dick, May, and Haglund (2017) propose that inclusive management practices can build resilient institutions, facilitating not just conflict prevention but also post-conflict reconciliation. This echoes seminal work on common-pool resource governance that communities with robust, locally crafted rules and enforcement mechanisms are better able to manage shared resources in a sustainable way (Ostrom 1990). More recent research expands these insights to conflict-affected states, showing that local ownership of decision-making fosters compliance, procedural fairness, and trust—key factors for conflict-affected states where top-down governance may be discredited (Tyler 2003). Decades of political instability in countries like Mali and Niger have left customary authorities to fill governance gaps, yet these traditional mechanisms can prove insufficient if they exclude certain groups or lack broader legitimacy (International Crisis Group 2021). In some cases, the system supported by traditional authorities, although perceived as emerging from the communities, is not necessarily inclusive, either by design or because of the local context prevents these traditional authorities to represent different groups of the local population.

The policy community has thus turned its attention to how inclusive governance approaches might reinforce resilience, particularly under conditions of climate variability and resource scarcity. As natural resources, including but not exclusively land, become scarcer, it is imperative to explore how different systems fare at supporting the needs of different sectors of the population. This is even more crucial in fragile contexts, where this scarcity creates additional pressures that add up to an already complex environment. This requires thinking outside of this dichotomy and exploring whether communities think that governance systems that promote a more centralised (top-down) governance system, either emerging from the state or the communities, or one in which communities closely and actively participate, regardless of the formal or traditional structure of this system, offer a more effective and equitable way that benefits all members, reduces conflict and creates effective and trustable resolution mechanisms while promoting more resilience to climate-related challenges. **By focusing on Mali and Niger**, this study evaluates how varying degrees of community participation influence perceived fairness and social cohesion, shedding light on when and why inclusive governance can be transformative.

Local capacities for conflict resolution and resource management crucially shape outcomes when climate shocks strike (ICG 2021; OCHA 2021). When resource disputes erupt in areas already burdened by violence and displacement, the risk of escalation is high if mechanisms for equitable decision-making are absent. Evidence from community-based interventions in fragile regions suggests that integrated programmes (that combine inclusive governance structures with climate adaptation measures) can reduce conflict triggers and strengthen social cohesion (Mercy Corps 2017). But inclusivity alone may not be a panacea. Elite capture entrenched social hierarchies, and a lack of external support from state institutions can undermine even the most participatory initiatives (Sheely and Hakiman 2024). The

configuration of governance structures varies across geographies and largely depends on power structures (Boone 2018; Albertus 2025). Furthermore, different population groups may have different preferences around the type of governance they believe will best address their needs (Honig 2022a; 2022b). In Mali and Niger, for instance, local committees tasked with resolving land disputes may lack the formal authority to enforce decisions or the capacity to address cross-border dynamics in pastoralist communities.

Most of the research on governance systems, particularly in the African context, has explored the role of formal versus traditional structures for conflict resolution. For the most part, these analyses have centred on the importance of formal structures (Galiani and Schargrodsky 2010; Conning and Robinson 2007). In their absence, strong informal practices, and norms to govern disputes have also been suggested to create more peaceful contexts, and there have even been attempts to formalise them, particularly in conflict-prone areas (Blattman, Hartman, and Blair 2014).

Hence, although theory and practice increasingly point to inclusive natural resource governance as a catalyst for both conflict mitigation and resilience, the challenge lies in operationalising such models in contexts with limited infrastructure, weak rule of law, and historical patterns of marginalisation. Although the **peacebuilding-climate adaptation nexus** is widely acknowledged, there is **insufficient empirical data** on whether inclusive governance interventions can simultaneously reduce resource-related violence and increase resilience. By integrating both conflict and climate resilience outcomes within the same analysis, this study bridges this gap through examining how hypothetical inclusive versus non-inclusive governance scenarios affect individuals' trust in institutions and perceived capacity to withstand climate shocks, thus advancing evidence for both conflict and adaptation.

In sum, the literature indicates that natural resources can either inflame or alleviate conflict, depending on how governance institutions mediate competing claims. The "greed or grievance" framework remains relevant for explaining why actors engage in resource-based violence, but growing evidence underscores that local, inclusive governance structures can mitigate these pressures and foster social cohesion. In regions like Mali and Niger, such approaches may be particularly valuable for bridging climate adaptation with peacebuilding objectives, provided they address potential pitfalls such as elite capture and uneven representation. Building on this scholarship, the present study examines how different models of resource governance influence conflict dynamics and resilience in fragile Sahelian settings, shedding light on the broader nexus between climate stressors, institutional design, and community stability.

Data and Methodology

To ensure cost-effectiveness and build on existing Monitoring, Evaluation, and Learning (MEL) activities, this study draws on the midline survey data for the JASS programme, conducted in December 2024 in Mali and Niger. A total of 3,687 individuals (participants and non-participants in the JASS programme) located in villages and communes of Koutiala, Ségou, Koulikoro, San—in Mali—and Maradi, and Tahoua—in Niger—participated in the survey. Within each village, enumerators used a random walk technique to select households. Given the sampling strategy utilised, this design allows us to make inferences about the populations in these specific regions, but this study does not necessarily generalise to the broader populations of Mali and Niger.

For this study, we embedded a tool called a survey experiment within the midline survey. Survey experiments have been increasingly recognised for their ability to isolate causal relationships (Gerber and Green 2012). They allow researchers to randomly assign respondents to different informational treatments and thus to infer the causal impact of those treatments on expressed preferences and opinions. For this study, this method is particularly valuable because it enables a rigorous evaluation of how different governance narratives influence individuals' perceptions without the logistical complexities

and higher costs associated with field experiments (Aguinis and Bradley 2014). In this case, the study explores how participants reacted to a series of questions after randomly exposing them to a variation in a scenario linked to natural resource governance (Vignettes). These vignettes are further explained below.

Respondents were randomly exposed to one of three vignette conditions: an inclusive community-based natural resource governance structure with a probability of 0.25; a centralised natural resource governance with a probability of 0.25; and the control condition with a probability of 0.5. This random assignation allows to causally determine the respondent's preferences, where the reference (control) group is the status quo. The status quo reflects a real-world mix of customary traditions and state institutions in our study villages; essentially a top-down, community-centred customary system that lacks formal mechanism for broad participation and inclusivity. By contrast, the centralised vignette describes a hypothetical state-led system with formal procedures and enforcement mechanisms. This random assignment allows us to causally isolate how each governance model affect climate resilience, vertical social cohesion, institutional legitimacy, and fairness. The vignettes are described in more detail in Table 1.

The field research for the midline evaluation also encompassed 88 in-depth interviews (KIIs) and 38 focus group discussions (FGDs) across Mali and Niger. The KIIs included programme participants, implementing partners, programme management and coordination team, government actors, and donor staff. The FGDs were conducted with the targeted population in all programme regions. They allowed for engagement in an open dialogue and obtain diverse views. We draw from some of these data to help provide context for our findings below.

Table 1. Overview of Vignettes and Experimental Conditions

Vignette	Description
Inclusive Community-Based Natural Resource Governance	As you know, communities are facing challenges in managing natural resources (e.g., water, forests, land) due to the impacts of climate change, such as droughts, floods, and soil degradation. Imagine that to address these challenges, your community has established a **community-based natural resource governance system**. Under this system, local stakeholders, including farmers, community leaders, landowners, and resource users, meet regularly to make decisions about resource management. These meetings are inclusive, and decisions are made by consensus. The system emphasises cooperation, and conflicts are addressed through local mediation and dialogue. External organisations, such as NGOs, provide support by offering training on sustainable practices and climate adaptation strategies, but the community makes the decisions about resource use.
Centralised Natural Resource Governance	As you know, communities are facing challenges in managing natural resources (e.g., water, forests, land) due to the impacts of climate change, such as droughts, floods, and soil degradation. Imagine that to address these challenges, your community has established a **centralised, government-controlled natural resource governance system**. Under this system, decisions about resource management (e.g., water allocation, forest use, land management) are made by government agencies at the national or regional level. The government sets regulations and policies for how resources are used and enforces them with support from law enforcement. Local communities have little input in the decision-making process, though they may receive financial incentives or technical support from the government to help adapt to climate change. Conflicts over natural resources are resolved through legal channels or government-appointed arbitrators, rather than community dialogue.

Status-quo (control)	As you know, communities are facing challenges in managing natural resources (e.g., water, forests, land) due to the impacts of climate change, such as droughts, floods, and soil degradation. Imagine that your community continues to manage natural resources **in the same way it has been doing for years**.

Following the assigned vignette, all respondents answered five follow-up questions that serve as our outcome variables—these questions assess perceptions of conflict management, fairness in resource allocation, and climate resilience. This experimental manipulation is designed to produce causal inferences by comparing responses across these randomised groups, with the control group serving as the baseline for understanding the effects of the two distinct governance interventions.

The balance table in the Appendix (Table A1) shows the distribution of the variables analysed in the study across the different vignettes, showing that overall, the groups contain respondents with different personal and lived characteristics. Table A2, also in the Appendix, shows the response distribution to the different questions across vignette groups. These tables indicate that the groups are well-balanced in terms of personal and sociodemographic characteristics, thereby bolstering confidence that any observed differences in outcomes are due to the administered treatments rather than preexisting differences among respondents.

The choice to embed a survey experiment within this evaluation is methodologically significant. As mentioned above, survey experiments are widely used to elicit insights about causality in contexts where randomised field experiments might be cost-prohibitive or ethically challenging. Moreover, in fragile settings like those in Mali and Niger—where instability and other constraints can impede more intrusive forms of experimentation—survey experiments offer a practical and ethical means to generate robust causal evidence.

Table 2. Post-Treatment Questions

Theme	Question	Identifier
Climate Resilience and Conflict	1) Do you think there would be an increase in resilience to climate-related challenges (e.g., droughts, floods, land degradation) within the community? [yes/no]	**Resilience**
	2) Do you think the system will reduce conflicts over natural resources (e.g., water, land, forests) in the community? [yes/no]	**Reduce Conflicts**
Vertical Social Cohesion, Legitimacy, and Fairness	3) To what extent do you trust that land-related issues will be managed fairly and transparently? [Not at all/ a little/neutral/somewhat/completely]	**Trust**
	4) Do you believe that the resolution of conflicts/disputes will be equitable? [yes/no]	**Equitable**
	5) Do you believe that the authorities will voice concerns and make decisions that benefit all members of the community? [yes/no]	**Benefit All Members**

KEY FINDINGS: WHAT INSTITUTIONS WORK FOR NATURAL RESOURCE GOVERNANCE, MITIGATING CONFLICT, AND BOOSTING CLIMATE RESILIENCE

This section introduces the study's findings, highlighting how the introduction of a specific vignette influenced participants' perceptions of different issues. We use ordinary least squares (OLS) to estimate the parameters, unless otherwise specified. Standard errors are clustered at the village level since this is the level at which areas are clustered for the JASS activities. The status-quo serves as the control (comparison) group. All regressions use village-level fixed effects to control for any location-specific effect that may influence the results. Regressions with control variables include the following variables: the participant's age, age squared (since we expect that the relationship of age with the responses follows a curve), an indicator variable for whether a respondent is female and indicator variables for the JASS activities in which respondents participated (if any).

Perceptions of Vertical Social Cohesion, Fairness, and Inclusion

Vertical social cohesion and sentiments of inclusion are crucial in fragile contexts, as they can prevent violent extremism (Lichtenheld et al. 2022; 2021; Olawole, Lichtenheld, and Sheely 2022). Acknowledging what mechanisms could leverage this may support the efforts linked to it. Recognizing that the quality of governance plays a pivotal role, our survey experiment exposed respondents to different governance configuration, not necessarily juxtaposing state versus nonstate systems or formal versus informal arrangement, but rather highlighting variations in institutional quality and introducing different systems and the way in each system is designed to respond to current challenges that communities face.

Table 3 below shows the results. Columns (1) and (2) show the response to post-treatment question 3, which asks respondents about their trust in the fair and transparent management of land-related issues; columns (3) and (4) show the results to post-treatment question 4 regarding equitable conflict resolution; and columns (5) and (6) include the results to post-treatment question 5 on whether authorities can be trusted to introduce decisions that benefit all community members. Columns (2), (4), and (6) are the preferred specifications as they include the control variables.

Table 3. Natural Resource Governance and Perceptions of Vertical Social Cohesion and Inclusion

	(1)	(2)	(3)	(4)	(5)	(6)
	Q3. Trust System		Q4. Equitable		Q5. Benefit all members	
Community-led	0.541***	0.547***	0.195***	0.198***	0.185***	0.188***
	(0.063)	(0.064)	(0.019)	(0.019)	(0.021)	(0.021)
State-led	0.036	0.029	0.035**	0.031**	0.044**	0.040**
	(0.056)	(0.054)	(0.015)	(0.015)	(0.017)	(0.016)
Observations	3565	3565	3470	3470	3320	3320
Adj. R-squared	0.136	0.143	0.138	0.154	0.152	0.175
Village Indicators	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes	No	Yes
Mean	3.016	3.016	0.797	0.797	0.802	0.802
SD	1.396	1.396	0.402	0.402	0.802	0.802
δ Community-led	1.422	1.605	1.777	2.265	1.680	2.098

| δ State-led | 1.659 | 0.663 | 1.150 | 0.699 | 1.650 | 1.073 |

Standard errors clustered at the village level in parentheses.

Control variables are: Age, age squared, female, and which (if any) JASS activities the respondent participated.
* p<0.10 ** p<0.05 *** p<0.01

Overall, respondents introduced to the vignettes that present the scenario of an inclusive community-led governance system responded more favourably to the questions. Specifically, respondents exposed to the inclusive community-based governance vignette were almost 20% more likely than respondents in the status-quo condition to indicate that conflicts would resolve equitably in this system, and 19% more likely than the status-quo group to indicate that, within this system, authorities would make decisions benefitting all members. These results are statistically significant at the 1 percent level. Participants in the state-led/centralised group showed smaller gains; they were more likely to express their belief in more equitable solutions to conflicts (4.4%) and optimism that decisions from authorities would lead to benefits to all (4%) than the status quo.

These findings are complemented by the qualitative data. Participants in focus group discussions described the JASS's project impact on fostering a more inclusive approach to land and resource management, with particular improvements in women's access to land for market gardening.[3] In M'Pessoba, Mali, focus group participants reported a decrease in conflicts over land, with several respondents specifically noting fewer disputes between farmers and herders.[4] The reduction in disputes suggests an emerging sense of legitimacy in the system. Participants also mentioned that the community now has a better understanding of their rights to land and resources; a change that they attribute to the JASS project's interventions. The reported reduction in conflicts, coupled with enhanced awareness of land rights, suggests that the interventions may be contributing to more stable resource management practices.

Post-Treatment Question 3 asks participants to indicate the extent they would trust that land-related issues would be managed fairly and transparently in the system introduced to them in the vignette. Participants were provided with a scale that goes between "Not at all" and "Completely". Figure 2 shows the probability that respondents would select one of the five options included. This is, it shows how likely it is for a respondent introduced to either the community-based governance vignette or the state-led governance vignette to select one of these options when asked about their trust in the system to equitable manage land-related issues. Table A3 in the Appendix shows the marginal change in response selection across participants assigned to different vignettes.

[3] Ma1_FGD_J_NGolonianasso_GIC
[4] *Ma1_FGD_J_MPessoba_CRC*

Figure 2. Predicted probability of respondents selecting each response option to Q3: "To what extent do you trust that land-related issues will be managed fairly and transparently?"
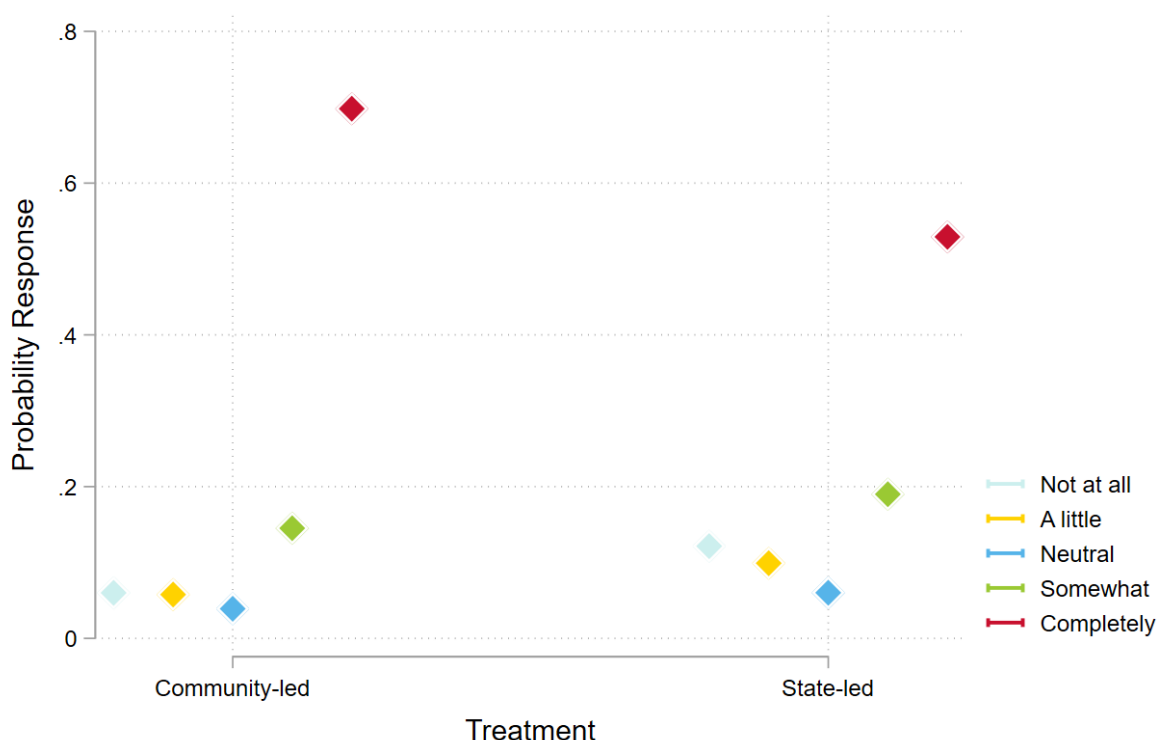
Note: Respondents had to select one of the following options when answering the question, "To what extent do you trust that land-related issues will be managed fairly and transparently?": (1) Not at all; (2) A little; (3) Neutral; (4) Somewhat; (5) Completely. Figure 2 shows the probability of a respondent selecting one of these answers based on the vignette read to them.

To better interpret Figure 2, note that 52.08% of respondents in the status-quo group selected "completely" when asked how much they trust that land-issues would be managed fairly and transparently within their assigned vignette (which is the current governance system they have). However, for those respondents exposed to the inclusive community-based governance vignette, that share increases by 18 percentage points to 70%, indicating much stronger trust that this system would yield equitable conflict resolution. By contrast, participants introduced to the state-led governance vignette did not show a statistically significant difference from the status quo in their response selection to this question, with about 53.20% of the respondents in this group responding "completely" to the question.

The findings show that natural resource governance characterised by inclusivity, responsiveness, and transparency holds high potential to foster higher levels of vertical social cohesion, fairness, and legitimacy among community members.

In one of the FGDs in Koutiala, Mali, participants highlighted the importance of managing shared land and natural resources equitably and transparently with inclusive community meetings involving youth, women, and other members.[5] This further suggests that institutions with this quality will be perceived as fair and legitimate amongst community members. In yet another focus group, when describing JASS programme's

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[5] *Ma1_FGD_NJ_Koutiala_Cons_YM*

impact on resource access and management in Adje Koria village, in Niger, participants described an improved management of natural resources as "just and equitable".[6] One respondent within this focus group noted that harvests occurred without conflict this year, a stark contrast to previous years. The participants also highlighted the equitable distribution of resources, with all knowing their rights and responsibilities regarding natural resource management.

Perceptions of Climate Resilience and Conflict

A central element in the experimental design was to address the stress communities face as natural resources deplete; a challenge that, as the literature suggests, can lead to increased conflict because of its effects on livelihoods (Nassef et al. 2023; Tucker 2023), access to limited natural resources (Borras, Franco, and Nam 2020; Samhouri et al. 2024; Barnett 2000), and other behavioural and context-specific mechanisms (Burke, Hsiang, and Miguel 2015a; 2015b).

After reading the vignettes, we asked participants whether they thought the governance system presented to them would lead to more climate resilience and reductions in conflict. The results are below in Table 4, with columns (2) and (4) as the preferred specifications, as they account for the influence of other covariates.

Table 4. Natural Resource Governance and Perceptions on Climate Resilience and Conflict

	(1)	(2)	(3)	(4)
	Q1. Climate Resilience		Q2. Reduce Conflicts	
Community-led	0.180***	0.184***	0.223***	0.226***
	(0.023)	(0.023)	(0.022)	(0.023)
State-led	0.015	0.009	0.036**	0.033*
	(0.018)	(0.019)	(0.018)	(0.017)
Observations	3385	3385	3455	3455
Adj. R-squared	0.109	0.130	0.154	0.163
Village Indicators	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes
Mean	0.728	0.728	0.767	0.767
SD	0.445	0.445	0.423	0.423
δ Community-led	1.374	2.255	2.383	3.156
δ State-led	0.502	0.204	0.748	0.609

Standard errors clustered at the village level in parentheses.

Controls included are: Age, age squared, female, and which (if any) JASS activities the respondent participated.
* p<0.10 ** p<0.05 *** p<0.01

Participants in the inclusive community-based governance system vignette were18.4% more likely than those in the status quo to believe that the system would enhance resilience to climate shocks, and they

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[6] *Ni2_FGD_J_AdjeKoria_GIC*

were almost 23 percent more likely to report that the system would reduce conflict. These results are statistically significant at the 1 percent significance level. This means that most respondents in this group felt more confident about the possibilities of an inclusive community-based governance system in providing a framework that would support them in navigating the challenges linked to the depletion of natural resources. In contrast, while the state-led vignette effects are statistically significant at the 5 percent significance level, they are notably smaller, indicating that respondents perceived limited benefits from such an approach.

These quantitative findings find strong support in the qualitative data, showing how inclusive and community-based structures may increase resilience. For instance, the focus group discussions from Adje Koria show that community members credit the JASS programme with bolstering their community's resilience through targeted interventions.[7] Participants discussed how improved seed distribution, agricultural training on climate-smart practices, and cash-for-work initiatives have helped stabilise food production and reduce vulnerability to drought and extreme weather events. Respondents' emphasis on improved agricultural productivity and reduced conflict between farmers and herders provided a window into their growing confidence in more inclusive systems measures. Similarly, in Golondi, Niger, focus group participants detailed how the project's training on livestock feed and the implementation of strategies (such as demarcating transhumance corridors and establishing seed banks) have contributed to mitigating the adverse effects of climate change.[8] They reported higher crop yields and a more systematic approach to resource management, which the participants interpreted as tangible indicators of improved climate resilience and conflict reduction. These accounts of adaptive measures and practical changes in agricultural practices support the conclusion that community-led governance enhances both adaptation and stability.

Indeed, a key informant in Niger working as an early-warning conflict monitor explained that after JASS helped to build the capacity of community-based conflict resolution committees and an early-warning mechanism (SCAP-RU) that internally resolved conflicts within intervention communities fell by "about 50%".[9] This underscores the real-world impact of localised and inclusive governance structures on conflict reduction. In Galba, Niger, focus group members highlighted the establishment of local committees as key to peacefully mediating farmer-herder disputes. They noted that these bodies convene regularly, enabling dialogue and preventing violent escalation over water and grazing rights.[10]

Heterogeneous Effects

Although the results showed above provide an overview of the respondents' preferences and perceptions of the possibilities of different governance systems in addressing the challenges that these communities face, these results might not be homogeneous across the respondents but may vary according to individual and household characteristics, lived experiences, and context.

This section explores these potential heterogeneous effects. First, we look at the influence of individual characteristics on the responses to the questions introduced above. Then, we explore how contexts with distinct levels of violence may affect the respondents' perceptions. All regressions in this section include covariates.

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[7] *Ni2_FGD_J_AdjeKoria_GIC*
[8] (*Ni2_FGD_J_Golondi_H*)
[9] *Ni2_KII_J_Ourno_EWCO_M*
[10] *Ni1_FGD_J_Galba_PF*

A. How Individual Characteristics Shape Preferences for Natural Resource Governance Institutions

1) Non-Indigenous Respondents

The literature on governance systems has showed the role of identity in shaping people's preferences. Notably, in the case of Africa, ample evidence has highlighted the differences in institutional preferences between indigenous (autochthonous) and non-indigenous (allochthonous) populations (Winters and Conroy-Krutz 2021; Honig 2017; Ferree et al. 2023).

The analysis presented in this report further explores this question. It is important to note that due to a limitation with the enumeration process and the characteristics of the context, in which people may prefer not to self-identify as non-indigenous (an allochthone), there are only seventy self-reported allochthonous respondents in the sample. As allochthones usually live in areas farther away from the centre of the villages, it may also be the case that the enumeration strategy prevented us from attaining these populations. Yet, these results provide some initial insights that might be useful to further explore in future research.

Figure 3 shows the responses to the five post-treatment questions, disaggregated by respondents' self-identification as autochthones and allochthones. Under the community-based vignette, both autochthones and allochthones reported uniformly positive responses to the questions, but allochthones' estimates are noticeably less precise.[11] Moreover, allochthones in our sample generally seemed to have more negative perceptions overall, even if they still seemed more inclined to perceive a community-led governance system as better than the status quo. These results are statistically significant at the 1 percent significance level. Table A4 in the Appendix contains the regression results.

When exposed to the state-led vignette, allochthones' estimates are again imprecise and they generally provided less responses to the questions than autochthones, and none of these differences reach statistical significance.

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[11] This is evident by the wider confidence interval, which represents a larger range that a response is likely to fall in 95% of the time.

Figure 3. Predicted Responses of Non-Indigenous (Allochthone) Respondents by Vignette
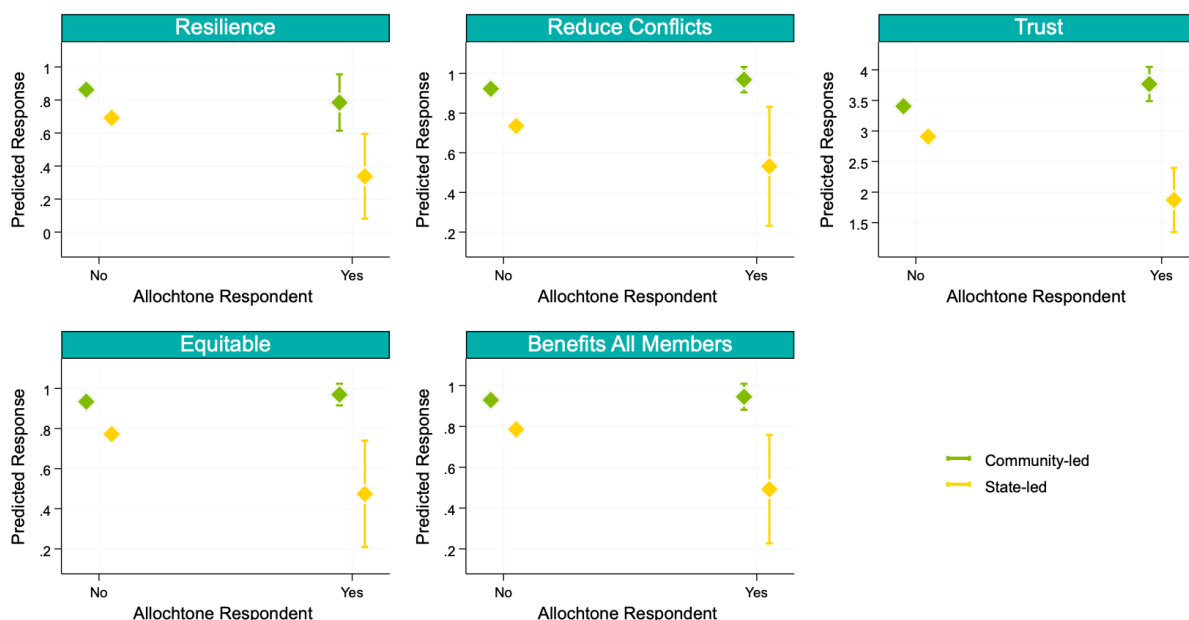
This Figure shows the predicted response of participants to post-treatment questions, conditional on whether they considered themselves as part of the autochthonous (indigenous) or allochthone(non-indigenous) population.

2) Female Respondents

Another potentially salient characteristic that we believed ex-ante could differentiate respondents' perceptions is their sex. Some evidence signals women's more acute preference toward community-based structures that promote empowerment and inclusion (UNDP 2016). Although we did not include a sex-specific question in the analysis, they are framed to elicit preferences toward systems that promote equitable responses that benefit all members. Figure 4 shows the results of this analysis.

Interestingly, we find no statistically significant differences between women and men's responses across any of our post-treatment questions (see Table A5). For instance, female respondents were 1.4% more likely than men to say the introduced system would resolve conflicts, regardless of their assigned condition, but this difference is not statistically different from zero. Conversely, female respondents were less optimistic than men that the system would deliver benefits to all community members. Again, this is not statistically significant. These findings align with previous literature in non-Western contexts that assert that women's governance preferences do not necessarily differ from those of men and may even be more conservative in other areas due to traditional gender norms (Logan and Bratton 2006; Gottlieb, Grossman, and Robinson 2015; Inglehart and Norris 2000).

Figure 4. Predicted Responses of Women Respondents Based by Vignette
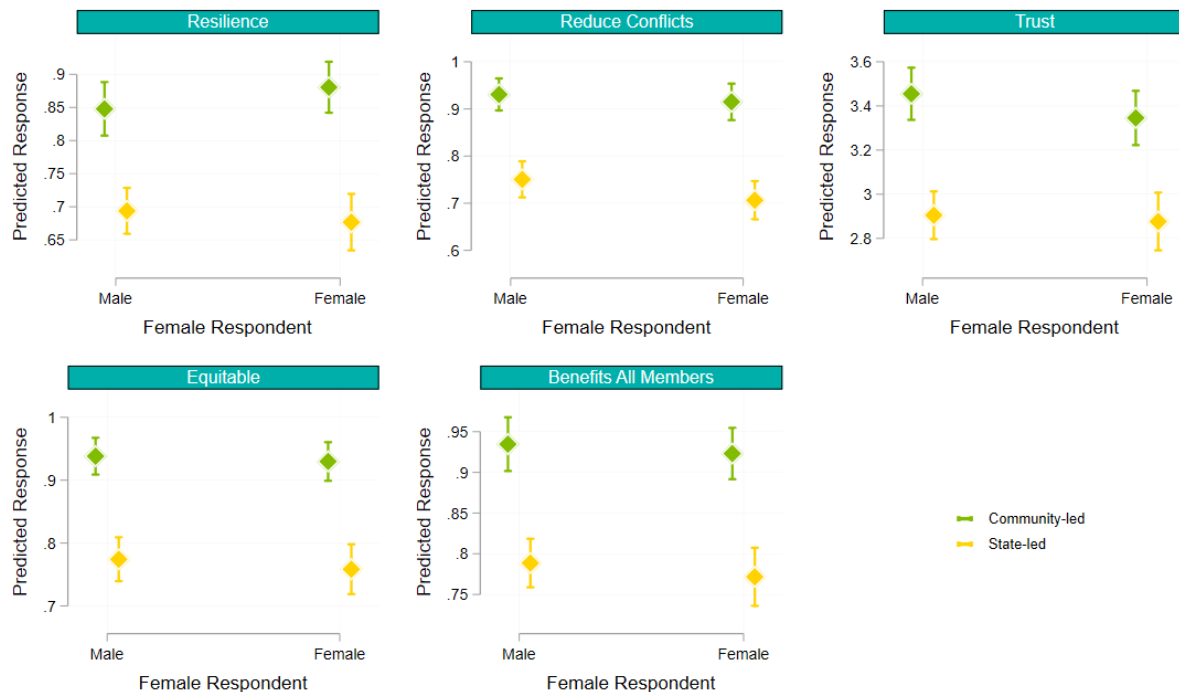
This Figure shows the predicted response of participants to post-treatment questions, conditional on gender

B. The Role of Existent and Perceived Violence in Shaping Preferences for Natural Resource Governance Institutions

This section explores how violent contexts may affect governance preferences and perceptions. We acknowledge the presence of violence in two ways. First, we link the data with conflict data from the Armed Conflict Location and Event Data (ACLED) for the areas where the study occurred (Raleigh, Kishi, and Linke 2023). For this analysis, we rely on conflict events (non-protests or riots) that took place the previous year before the survey started in a 25-km radius around the centre of the surveyed village. To facilitate the analysis, we transform this variable using the inverse hyperbolic-sine function; that is, we converted the raw counts of conflict events into a scaled measure.

The second way we explore the effects of violence on governance system preferences and perceptions is by relying on one of the survey questions, which asks participants whether they know of the presence of violent confrontations in the six months before the survey.[12] To measure the effects of people's knowledge, these regressions control for the impact of actual conflict events based on ACLED data in the year before the survey. All regressions in this section use commune-level fixed effects, which helps us account for specific regional effects. Standard errors are clustered at the village level.

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[12] The question reads: "Based on your knowledge, have there been any violent confrontations in your community in the last six months?"

Before turning to the results, however, it is important to highlight that although ACLED is one of the most widely used resources to track conflict events and protests, it does have limitations. First, the data relies on media reports, NGO publications, and other secondary sources.[13] This potentially creates biases as this information is more prevalent in urban rather than in rural areas. Moreover, in areas with high levels of conflict, these reports may be non-existent due to contextual challenges. Finally, although ACLED triangulates information, its dependence on secondary sources may limit its accuracy, particularly when only one source is available or when language barriers prevent obtaining more accurate information. The inclusion of commune-level effects accounts for the regional underlying characteristics and dynamics that can influence differences in data availability. By including fixed effects for each commune, we acknowledge any local factors unique to each commune (such as reporting capacity, security conditions, leadership norms, media access) that could affect how much conflict events are recorded.

Overall, the results shown here can be considered suggestive, particularly for the case of Mali, where information is more highly available. These patterns are also helpful as a starting point and may be enriched by access to more grain level data in the future.

## 1) Conflict Events (ACLED Data)

Based on the data from ACLED, there is a wide dispersion in the levels of conflict events in the areas where the survey took place. This is notably the case in Mali, where villages in the commune of Niono experienced more than forty conflicts on average, whereas other places, such as Niamana, did not present any conflict. In Niger, other than Azarori, in Madaoua, where one conflict event was reported, there were no conflict events reported by ACLED.

This widespread variation in conflict leads us to explore whether the presence of more violence affects the perceptions and preferences on governance systems. Figure 5 plots how predicted positivity towards each governance system changes as reports of violent events increase. In areas with more reports of violence, people were less positive about the potential effects of a governance system. This is notably the case for participants exposed to the inclusive community-based governance vignette, for whom the probability of a more positive response decays as we move from areas with fewer reported violent events to areas with higher counts of reported violent events (as seen by the steeper green slope that depicts the trend mapping the changes in probability of providing a positive response as we move to areas where reports of conflict are more prevalent). The results for those exposed to the state-led vignette remain more or less the same, although they become less precise as reports of conflict increase, as seen by the wider confidence intervals (e.g. wider yellow areas).

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[13] While ACLED was deemed too sparse for Monitoring and Evaluation indicators in Niger within the JASS programme, its geocoded event data can still be a useful research proxy for exploring broad patterns of violence. To account for this, we supplement that data with participants' own perceptions of violence in their communities as well as including commune-level effects to account for the varying regional underlying characteristics and conflict dynamics.

Figure 5. Effect of the Increased Violence
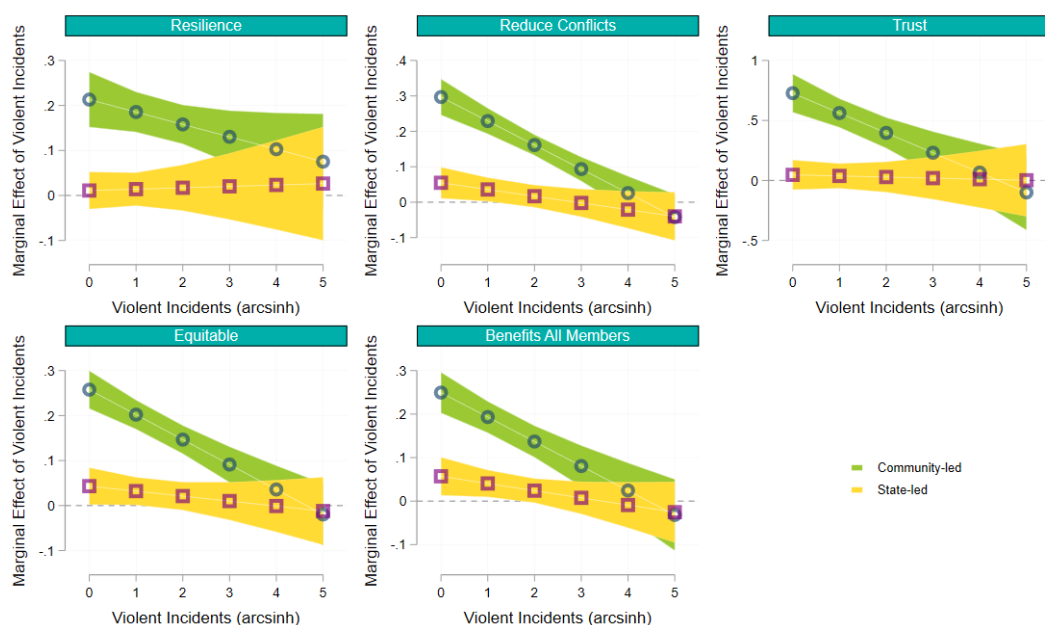
2) Community Violence

After we perceived a clear effect of communal violence on people's perception of effective governance (measured through the different questions introduced above), we also explore whether actual knowledge of violent confrontations affected people's responses. As Figure 6 shows, this is not the case. In fact, there is no clear pattern with respect to people reporting recent violent confrontations in their community and their perceptions. Across all the questions introduced after a vignette was read to them, the results become less precise for these participants, and there is no clear pattern in their responses, and they are not statistically significant at the usual levels of significance.

The results shown in this section align with the literature, showing that security perceptions are relevant to shape trust in governance structures (Nomikos and Stollenwerk 2024). At the same time, although limited, some evidence also exists indicating that actual exposure to violence may not have the same powerful effect (Deglow and Fjelde 2024). In addition, the divergent effects of ACLED events versus perceived community violence further highlight important measurement differences. ACLED captures more substantial, reported events, whereas the survey records individuals' direct knowledge of local confrontations (even small-scale or informally resolved ones). Consequently, villages with high ACLED counts reported slightly less optimism about inclusive governance, yet personal exposure to violence did not dampen positive perceptions. It is worth noting that even in the areas with most reported violence by ACLED, respondents shown the community-led vignette still exhibited substantial gains in the measured outcomes relative to the status quo. The sharper drop-off in ACLED-high-violence villages may reflect reporting biases or the overwhelming daily stresses that make it harder to imagine "ideal" governance in the abstract. Taken together, these findings suggest that community-driven governance structures build trust and resilience across the full spectrum of local security situations. We further explore the implications of this divergence in the recommendations below.

Figure 6. Predicted Value When Acknowledging Perceived Violent Confrontations
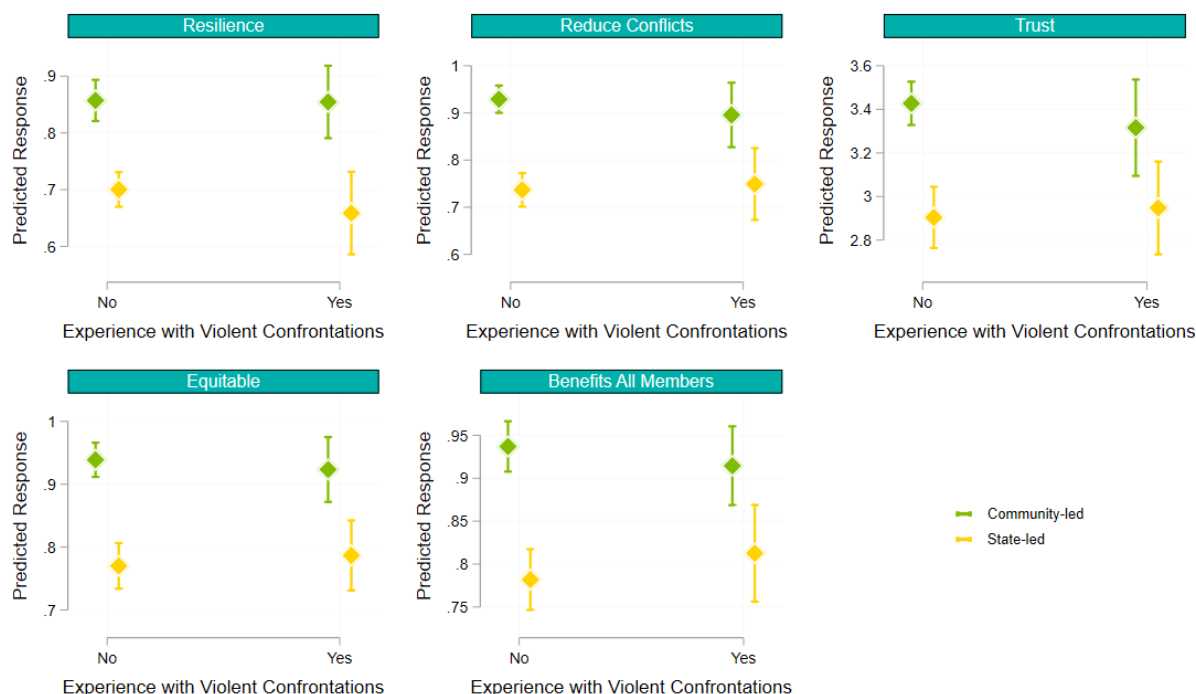
RECOMMENDATIONS AND IMPLICATIONS

This report has shed some light on governance preferences and perceptions in regions of Mali and Niger where the JASS programme is being implemented.[14] The findings from this report provide support to the idea that exposure to inclusive community-led governance systems generates higher levels of trust, more equitable conflict resolution, and stronger resilience to climate shocks than centralised state-led and status-quo arrangements. They reinforce a central premise of JASS's theory of change that if institutions responsible for preventing and managing land conflict are more inclusive, and if community members at all levels are empowered and mobilised as active participants in conflict resolution and peacebuilding – *then* communities and institutions are going to be able to prevent conflict before it arises and resolve it when it does before it becomes violent. They also validate the underlying assumption of the theory of change that communities with institutions that are more inclusive and that empower and mobilise citizens will be more resilient to climate-related challenges; have less conflicts over natural resources; have more effective institutions; view such institutions as legitimate and fair; and have better conflict resolution mechanisms.

Survey experiment data show that respondents exposed to inclusive, locally managed vignettes are significantly more likely to trust the adjudication of land management issues, expect reductions in conflicts

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[14] This study included participants and non-participants in JASS activities. The survey experiment employed in this study does not rely on participation in the JASS programme. Random assignment of the vignettes and controlling for participation in JASS means these findings are not directly focused on the programme itself. Future quasi-experimental research within JASS will include a more robust assessment of the programme using a comparison between JASS zones of intervention and neighbouring areas where JASS is not working.

over natural resources, and believe their community's capacity to withstand climate-related challenges and shocks. The random assignation and balance across different covariates allow us to causally identify these linkages. Qualitative data from Mali and Niger corroborate the findings, highlighting that empowering local committees and clarifying rights are perceived as just and transparent.

We also examined how individual and contextual characteristics shape these findings. Although the self-identified non-indigenous respondents are under sampled and generally held slightly more negative views across all vignettes, they nonetheless preferred the community-led model over the status quo. Men's and women's responses did not differ in any statistically significant way, underscoring that gender did not meaningfully alter governance preferences in this setting. The findings on violence are a bit more nuanced. ACLED data revealed a moderate erosion of positive perceptions in higher-conflict villages, even though the inclusive vignette remains significantly more trusted than the status quo in areas with limited reported violence. In contrast, respondents' own reports of recent confrontations had no significant effect on their views of any system. Together, these patterns indicate that inclusive governance structures maintain their benefits across violence levels. This means that programme teams should lean on community perceptions but also be informed by large-scale incident data.

Yet, the results are not without limitations. As previously mentioned, the share of non-indigenous respondents in the sample is rather small, which prevents a full understanding of the preferences of this sector of the population in the areas where the survey was implemented. However, the responses show a clear trend across the questions introduced to the participants. It will be relevant to further explore these patterns in future research.

These insights carry urgent implications for programme design; recommendations to donors, governments, and policymakers; and lessons for policy formulation. Going forward, the JASS programme—and similar programmes—should leverage these lessons to build durable institutions that can adapt to shocks and stresses affecting communities. They must strengthen and scale governance innovations that centre local agency, inclusivity, and adaptability. Below, we outline five strategic recommendations tailored to the JASS team, FCDO, and the wider ecosystem of civil society, practitioners, governments, donors, and stakeholders working on the intersection of climate, conflict, and governance.

Institutionalise and scale up inclusive community-led governance structures and mechanisms. The findings show the importance of inclusion and empowering community members in natural resource governance. These further suggest the need to lock in these benefits of community-driven decision-making. The JASS programme already has some promising models along these lines such as the programme's work with institutions focused on land management, Land Commissions (COFOs at various levels in both countries) and conflict management/prevention (CRCs in Mali and SCAP/RU in Niger) that helps to promote equitable access to decision-making by women, young people, and people with disabilities, and contributes to the perception of resource management as inclusive. These mechanisms should be enshrined in local governance frameworks and other status quo institutions. The data and evidence point to a significant difference between the status quo and an inclusive community-led system. It is imperative to shore up the status quo with more inclusive features such as those in the hypothetical system established in this report. This means further expanding and scaling up these efforts where possible. JASS should work with communities to codify these features. In addition, at the policy level, policymakers and governments should codify these institutional features and structures and ensure they have the resources to anchor these frameworks.

Enhance Inclusive Representation. Within the inclusive community-driven governance system exposed to respondents in the vignette, local stakeholders were directly involved in decision-making, and even where external NGOs provided support and training, decisions about resource use emerged from the

community. As mentioned above, respondents saw a direct link between such a system and conflict resolution, legitimacy, and climate resilience. Nonetheless, in reality, participation might be hindered by some practical obstacles. For instance, our data showed (with limitations) that non-indigenous (allochthonous) households expressed more cautious views even within this system. Consequently, it is important for programme teams and other stakeholders to work on eradicating barriers to access, such as offering incentives to increase broader participation. Broadening participation remains essential to legitimacy and effectiveness. The JASS programme is cognizant of this and notes an increase in participation in decision-making bodies from 16% to 34% in Niger in 2024. JASS and other stakeholders must continue to ensure representation in local governance, and this could also look like issuing guidelines on inclusive outreach and mandating representation where possible. Policymakers should mandate inclusive membership in charters and guidelines. By weaving inclusion into both the fabric of governance structures and processes, stakeholders can foster a deeper sense of ownership, trust, and fairness among community members.

Integrate climate-smart adaptation within governance systems. Climate shocks and resource scarcity are key drivers of violence in the Sahel. The convergence of resource scarcity, climate shocks, and conflict demands that governance structures include climate adaptation in their platforms. The findings reiterate the need for natural resource governance in building resilience to climate-related challenges. Within the hypothetical inclusive community-led system presented in the vignette, external organizations, such as NGOs, provided support by offering training on sustainable practices and climate adaptation strategies. This underscores that communities exposed to governance systems that incorporate adaptation practices will have higher confidence in resilience. JASS is already on the right path with the efforts on climate-resilient agriculture interventions, which yield substantial advantages of adapted practices. The programme's expansion of water infrastructure also represents a strategic intensification of efforts to address climate-smart adaptation and conflict prevention needs. JASS's institutional strengthening approach which includes physical capacity and knowledge management allows for building this capacity. Governance systems must continue to adapt these mechanisms, including allocating time and budget to train members on climate-smart techniques. The programme should build on these proven successes in climate-smart adaptation, conditioned on local decision-making. Over time, integrating climate adaptation into inclusive resource governance will further strengthen resilience and vertical social cohesion.

Empower inclusive governance systems with conflict resolution capacities. Given the legitimacy that inclusive community-led natural resource governance structures command, it is imperative to capitalise on this and strengthen their conflict resolution capacities. Evidence shows that certain institutions are instrumental in reducing conflicts over natural resources and making conflict resolution more equitable, so equipping these systems with negotiation skills, mediation training, land-law basics, and documentation of agreement practices is essential. JASS's work with COFOs in Mali has driven measurable increases in conflict-resolution rates, demonstrating the value of investing in local institutions. These gains reflect the success of the programme to strengthen local institutions in navigating resource-based tensions. Accordingly, JASS should deepen conflict resolution training and expand support to additional dispute-resolution institutions and foster collaboration across systems and institutions. Embedding such support and skill-building components in resource management remains core to success. At the same time, the analysis in this study highlights that large-scale incident data (ACLED) can mask the smaller, everyday frictions that residents face. To bridge this gap, JASS should integrate community-reported violence indicators alongside ACLED counts, tailoring support to the villages' specific needs. Practically, this could mean piloting interventions first in areas with relatively less violence to generate local "proof points," then scaling these same structures into higher-conflict zones with dedicated safety and mediation measures informed by community feedback. By embedding robust conflict-resolution capacity within inclusive governance frameworks (and harmonizing broad and ground-level

data) programmes can ensure these institutions remain equitable, trusted, and resilient under even the toughest local pressures.

Strengthen state-community coordination and accountability. This study has revealed an important need for breaking the walls between the state and the community for cohesive resource management. Although inclusive, community-led systems generated the largest trust and resilience gains, respondents exposed to the state-led vignette still reported modest improvements in their belief in equitable conflict resolution compared to status quo. This suggests that where state institutions are functional and responsive, they can bolster locally negotiated agreements by providing enforcement capacity and legitimacy. For example, members of the commune-level land commission (COFOCOM) in Niger highlighted how JASS's support in issuing official land deeds and conducting follow-up monitoring visits anchored locally negotiated pacts within existing legal frameworks, boosting both enforcement and long-term compliance. Bridging the existing divide between grassroots governance and formal authorities is vital to tackling challenges at the intersection of climate shocks, resilience, and conflicts. While it continues to be imperative to work with communities, donors and practitioners must also facilitate improved collaboration between the state and communities. This could look like join forums to clarify pathways and roles and shedding light on community agreements. Policymakers must formalise these mechanisms given the importance of accountability to legitimacy. By fostering regular, structured dialogue, there will be mutual accountability between local and community-led governance bodies and the state apparatus.

REFERENCES

Adger, W. N. 2006. "Vulnerability." Global Environmental Change 16 (3): 268–281. https://doi.org/10.1016/j.gloenvcha.2006.02.006.

Adano, W. R., T. Dietz, K. Witsenburg, and F. Zaal. 2012. "Climate Change, Violent Conflict, and Local Institutions in Kenya's Drylands." *Journal of Peace Research* 49 (1): 65–80.

Albertus, Michael. 2025. *Land Power: Who Has It, Who Doesn't, and How That Determines the Fate of Societies*. First edition. New York: Basic Books.

Aguinis, Herman, and Kristopher Bradley. 2014. "Best-Practice Recommendations for Designing and Implementing Experimental Field Studies." *Journal of Applied Psychology* 99, (2): 230–247.

Barnett, Jon. 2000. "Destabilizing the Environment-Conflict Thesis." *Review of International Studies* 26 (2): 271–88.

Blattman, Christopher, Alexandra C. Hartman, and Robert A. Blair. 2014. "How to Promote Order and Property Rights under Weak Rule of Law? An Experiment in Changing Dispute Resolution Behavior through Community Education." *American Political Science Review* 108 (1): 100–120. https://doi.org/10.1017/S0003055413000543.

Boone, Catherine. 2018. "Shifting Visions of Property under Competing Political Regimes: Changing Uses of Côte d'Ivoire's 1998 Land Law." *Journal of Modern African Studies* 56 (2): 189–216. https://doi.org/10.1017/S0022278X18000198.

Borras, Saturnino M., Jennifer C. Franco, and Zau Nam. 2020. "Climate Change and Land: Insights from Myanmar." *World Development* 129 (May):104864. https://doi.org/10.1016/j.worlddev.2019.104864.

Burke, Marshall, Solomon M. Hsiang, and Edward Miguel. 2015a. "Climate and Conflict." *Annual Review of Economics* 7 (1): 577–617. https://doi.org/10.1146/annurev-economics-080614-115430.

———. 2015b. "Global Non-Linear Effect of Temperature on Economic Production." *Nature* 527 (7577): 235–39. https://doi.org/10.1038/nature15725.

Collier, Paul, and Anke Hoeffler. 2000. "Greed and Grievance in Civil War." *Oxford Economic Papers* 56 (4): 563–595.

Conning, Jonathan H., and James A. Robinson. 2007. "Property Rights and the Political Organization of Agriculture." *Journal of Development Economics* 82:416–47. https://doi.org/10.1016/j.jdeveco.2005.08.001.

Deglow, Annekatrin, and Hanne Fjelde. 2024. "Violent Elections and Citizens' Support for Democratic Constraints on the Executive: Evidence From Nigeria." *Comparative Political Studies* 57 (4): 613–643.

Fearon, James D., and David D. Laitin. 2003. "Ethnicity, Insurgency, and Civil War." American Political Science Review 97(1): 75–90.

Ferree, Karen E., Lauren Honig, Ellen Lust, and Melanie L. Phillips. 2023. "Land and Legibility: When Do Citizens Expect Secure Property Rights in Weak States?" *American Political Science Review* 117 (1): 42–58. https://doi.org/10.1017/S0003055422000417.

Galiani, Sebastian, and Ernesto Schargrodsky. 2010. "Property Rights for the Poor: Effects of Land Titling." *Journal of Public Economics* 94 (9–10): 700–729. https://doi.org/10.1016/j.jpubeco.2010.06.002.

Gerber and Green 2012. *Field Experiments: Design, Analysis, and Interpretation*. New York: W. W. Norton & Company.

Gottlieb, Jessica, Guy Grossman, and Amanda Lea Robinson. 2015. "Do Men and Women Have Different Policy Preferences, and If so, Why? Determinants and Implications of 'Good' and 'Bad' Gender Gaps in Africa." *AfroBarometer* Working Paper No. 153 (February). https://www.afrobarometer.org/wp-content/uploads/2022/02/AfropaperNo153.pdf.

Hakiman, Kamran, and Ryan Sheely. 2024. "Participatory Planning in East Africa's Drylands, Take Two: From Chasing an Illusory Panacea to Practical Learning." SPARC.

Honig, Lauren. 2017. "Selecting the State or Choosing the Chief? The Political Determinants of Smallholder Land Titling." *World Development* 100:94–107. https://doi.org/10.1016/j.worlddev.2017.07.028.

———. 2022a. *Land Politics: How Customary Institutions Shape State Building in Zambia and Senegal*. Cambridge: Cambridge University Press.

———. 2022b. "The Power of the Pen: Informal Property Rights Documents in Zambia." *African Affairs* 121 (482): 81–107. https://doi.org/10.1093/afraf/adab034.

Homer-Dixon, Thomas. 1999. Environment, Scarcity, and Violence. Princeton, NJ: Princeton University Press.

Humphreys, Macartan. 2005. "Natural Resources, Conflict, and Conflict Resolution: Uncovering the Mechanisms." *Journal of Conflict Resolution* 49 (4): 508–537.

ICG. 2017. "Niger and Boko Haram: Beyond Counter-Insurgency." Africa Report No. 245. Brussels: International Crisis Group.

ICG. 2021. "Central Mali: Putting a Stop to Ethnic Cleansing." Africa Briefing No. 162. Brussels: International Crisis Group.

Inglehart, Ronald, and Pippa Norris. 2000. "The Developmental Theory of the Gender Gap: Women's and Men's Voting Behavior in Global Perspective." *International Political Science Review* 21 (4): 441–63.

Lichtenheld, Adam, Lisa Inks, Siaka Millogo, and Ryan Sheely. 2022. "Mobilizing Communities to Build Social Cohesion and Reduce Vulnerability to Violent Extremism." Mercy Corps.

Lichtenheld, Adam, Emilie Tankora, Lisa Inks, and Ryan Sheely. 2021. "Understanding the Links between Social Cohesion and Violence: Evidence from Niger." Mercy Corps.

Logan, Carolyn, and Michael Bratton. 2006. "The Political Gender Gap In Africa: Similar Attitudes, Different Behaviors."

Mercy Corps. 2017. "Motivations and Empty Promises: Voices of Former Boko Haram Combatants and Nigerian Youth." Portland, OR: Mercy Corps.

Nassef, Magda, Eba, Bedesa, Islam, Kishmala, Djohy, Georges, and Flintan, Fiona. 2023. "Causes of Farmer-Herder Conflicts in Africa: A Systematic Scoping Review." SPARC.

Nomikos, William G., and Eric Stollenwerk. 2024. "More Security, More Trust? Security Perceptions as a Source of Government Trust in Post-Conflict Settings." *Journal of Intervention and Statebuilding*, 1–22.

OCHA. 2021. "Niger: Humanitarian Needs Overview 2021." New York, NY: OCHA.

OECD. 2020. "The Geography of Conflict in North and West Africa." West African Studies. Paris: OECD Publishing.

Olawole, Ifeoluwa, Adam Lichtenheld, and Ryan Sheely. 2022. "Strengthening Social Cohesion for Violence Prevention: 10 Lessons for Policymakers and Practitioners." Washington D.C.: Mercy Corps.

Ostrom. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press.

Raleigh, Clionadh, and Henrik Urdal. 2007. "Climate Change, Environmental Degradation and Armed Conflict." *Political Geography* 26 (6): 674–694.

Raleigh, Clionadh, Roudabeh Kishi, and Andrew Linke. 2023. "Political Instability Patterns Are Obscured by Conflict Dataset Scope Conditions, Sources, and Coding Choices." *Humanities and Social Sciences Communications* 10 (1): 74. https://doi.org/10.1057/s41599-023-01559-4.

Ratner, Blake D., Ruth Meinzen-Dick, Candace May, and Eric Haglund. 2017. "Resource Conflict, Collective Action, and Resilience: An Analytical Framework." *International Journal of the Commons* 11 (2): 877–903.

Rustad, Siri A., and Hanne M. Binningsbø. 2012. "A Price Worth Fighting For? Natural Resources and Conflict Recurrence." *Journal of Peace Research* 49 (4): 531–546.

Samhouri, Jameal F., Blake E. Feist, Michael Jacox, Owen R. Liu, Kate Richerson, Erin Steiner, John Wallace, et al. 2024. "Stay or Go? Geographic Variation in Risks Due to Climate Change for Fishing Fleets That Adapt in-Place or Adapt on-the-Move." *PLOS Climate* 3 (2): e0000285. https://doi.org/10.1371/journal.pclm.0000285.

Stockholm International Peace Research Institute (SIPRI). 2021. Climate, Peace and Security Fact Sheet: Mali. Stockholm: SIPRI. Available online at: https://www.sipri.org/sites/default/files/210526%20Final%20Mali%20Climate%20Peace%20Security%20Fact%20Sheet_EN.pdf.

Tucker, Luc. 2023. "Climate Vulnerabilities and Food Insecurity in Mali." International Monetary Fund (IMF). https://www.imf.org/en/Publications/selected-issues-papers/Issues/2023/07/19/Climate-Vulnerabilities-and-Food-Insecurity-in-Mali-536695.

Tyler, Tom R. 2003. "Procedural Justice, Legitimacy, and the Effective Rule of Law." *Crime and Justice* 30: 283–357.

UNDP. 2016. "Preventing Violent Extremism Through Promoting Inclusive Development, Tolerance, and Respect for Diversity." New York, NY: UNDP.

UNDP. 2023. "Mali Launches Project Aimed at Enhancing Climate Security and Sustainable Management of Natural Resources." Africa: UNDP. Available online: https://www.undp.org/africa/news/mali-launches-project-aimed-enhancing-climate-security-and-sustainable-management-natural-resources.

Winters, Matthew S., and Jeffrey Conroy-Krutz. 2021. "Preferences for Traditional and Formal Sector Justice Institutions to Address Land Disputes in Rural Mali." *World Development* 142 (June):105452. https://doi.org/10.1016/j.worlddev.2021.105452.

Table A1. Balance Table

Variable	(1) Control		(2) Community-led		(3) State-led		(1)-(2) Pairwise t-test		(1)-(3) Pairwise t-test		(2)-(3) Pairwise t-test	
	N/Clusters	Mean/(SE)	N/Clusters	Mean/(SE)	N/Clusters	Mean/(SE)	N/Clusters	Mean diff.	N/Clusters	Mean diff.	N/Clusters	Mean diff.
Age	1737	42.857	967	42.691	983	42.900	2704	0.166	2720	-0.043	1950	-0.210
	91	(0.591)	90	(0.592)	93	(0.573)	96		96		98	
Female	1737	0.425	967	0.392	983	0.419	2704	0.033*	2720	0.006	1950	-0.027
	91	(0.022)	90	(0.022)	93	(0.024)	96		96		98	
JASS 1	1737	0.388	967	0.363	983	0.369	2704	0.025	2720	0.019	1950	-0.006
	91	(0.048)	90	(0.049)	93	(0.047)	96		96		98	
JASS 2	1737	0.204	967	0.193	983	0.223	2704	0.011	2720	-0.018	1950	-0.029
	91	(0.022)	90	(0.026)	93	(0.025)	96		96		98	
JASS 3	1737	0.121	967	0.094	983	0.121	2704	0.027**	2720	0.000	1950	-0.027*
	91	(0.022)	90	(0.021)	93	(0.023)	96		96		98	
JASS 4	1737	0.203	967	0.185	983	0.212	2704	0.018	2720	-0.009	1950	-0.026
	91	(0.024)	90	(0.023)	93	(0.027)	96		96		98	
JASS 5	1737	0.138	967	0.118	983	0.149	2704	0.020*	2720	-0.010	1950	-0.031*
	91	(0.016)	90	(0.017)	93	(0.019)	96		96		98	
JASS 6	1737	0.245	967	0.225	983	0.249	2704	0.019	2720	-0.005	1950	-0.024
	91	(0.025)	90	(0.028)	93	(0.030)	96		96		98	
JASS 7	1737	0.103	967	0.100	983	0.128	2704	0.003	2720	-0.025*	1950	-0.028*
	91	(0.013)	90	(0.013)	93	(0.017)	96		96		98	
JASS 8	1737	0.100	967	0.103	983	0.095	2704	-0.003	2720	0.006	1950	0.009
	91	(0.017)	90	(0.018)	93	(0.016)	96		96		98	
JASS 9	1737	0.032	967	0.025	983	0.037	2704	0.007	2720	-0.004	1950	-0.012
	91	(0.006)	90	(0.006)	93	(0.007)	96		96		98	
Non-indigenous	1737	0.020	967	0.021	983	0.016	2704	-0.001	2720	0.003	1950	0.004
	91	(0.005)	90	(0.005)	93	(0.005)	96		96		98	
Confrontations	1669	0.160	929	0.143	946	0.161	2598	0.017	2615	-0.001	1875	-0.018
	91	(0.016)	90	(0.015)	93	(0.020)	96		96		98	
ACLED 25 (1 year)	1727	4.196	964	4.425	979	4.303	2691	-0.230	2706	-0.108	1943	0.122
	88	(1.151)	87	(1.284)	90	(1.184)	91		91		93	

Significance: ***=.01, **=.05, *=.1. Errors are clustered the village level.

Table A2. Response Distribution Across Vignette Group

	Q.1		Q.2		Q.3					Q.4		Q.5	
	No	Yes	No	Yes	Not at all	A little	Neutral	Somewhat	Completely	No	Yes	No	Yes
Status-Quo	525	1074	497	1126	228	168	108	301	875	438	1,195	409	1,144
Community-led	122	767	67	838	38	51	32	160	655	56	857	57	816
State-led	274	623	242	685	118	97	55	174	505	210	714	191	703
TOTAL	**921**	**2,464**	**806**	**2,649**	**384**	**316**	**195**	**635**	**2035**	**704**	**2766**	**657**	**2663**

Table A3. Ordered Logit Regression: Do you believe that the resolution of conflicts/disputes will be equitable?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Not at all		A little		Neutral		Somewhat		Completely	
Community-led	-0.066	-0.067	-0.044	-0.044	-0.022	-0.022	-0.047***	-0.047	0.179***	0.180***
	(.)	(.)	(.)	(.)	(-0.65)	(.)	(-2.65)	(.)	(12.66)	(9.55)
State-led	-0.006	-0.005	-0.003	-0.003	-0.001	-0.001	-0.002	-0.002	0.012	0.011
	(-0.68)	(-0.62)	(-0.72)	(-0.62)	(-0.49)	(-0.65)	(-0.71)	(-0.63)	(0.68)	(0.62)
Observations	3565	3565	3565	3565	3565	3565	3565	3565	3565	3565
Village Indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

t-statistics in parentheses

Controls included are: Age, age squared, female, and which (if any) JASS activities the respondent participated
* $p<0.10$ ** $p<0.05$ *** $p<0.01$

Table A4. Natural Resource Governance and Preferences Across non-Indigenous (Allochthones) and Indigenous Population (Autochthones)

	(1)	(2)	(3)	(4)	(5)
	Resilience	Reduce conflicts	Trust	Equitable	Benefit all members
Community-led	0.175***	0.218***	0.521***	0.189***	0.180***
	(0.023)	(0.023)	(0.065)	(0.019)	(0.021)

State-led	0.004	0.030*	0.027	0.028*	0.037**
	(0.018)	(0.017)	(0.054)	(0.015)	(0.016)
Non-indigenous	-0.561***	-0.364***	-0.947***	-0.449***	-0.414***
	(0.077)	(0.111)	(0.265)	(0.114)	(0.111)
Community-led + Non-indigenous	0.483***	0.410***	1.310***	0.485***	0.430***
	(0.129)	(0.119)	(0.309)	(0.118)	(0.119)
State-led + Non-indigenous	0.207	0.161	-0.091	0.151	0.121
	(0.148)	(0.164)	(0.344)	(0.157)	(0.136)
Observations	3385	3455	3565	3470	3320
Adjusted R-squared	0.145	0.169	0.149	0.165	0.185
Village Indicators	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes

Standard errors clustered at the village level in parentheses.

Controls included are: Age, age squared, female, and which (if any) JASS activities the respondent participated.
* p<0.10 ** p<0.05 *** p<0.01

Table A5. Natural Resource Governance and Preferences Across Gender (Male=0 and Female=1)

	(1)	(2)	(3)	(4)	(5)
	Resilience	Reduce conflicts	Trust	Equitable	Benefit all members
Community-led	0.182***	0.238***	0.575***	0.196***	0.187***
	(0.031)	(0.026)	(0.079)	(0.023)	(0.025)
State-led	0.028	0.058**	0.024	0.032	0.041*
	(0.024)	(0.026)	(0.071)	(0.022)	(0.022)
Female	0.026	0.014	-0.039	-0.012	-0.013
	(0.030)	(0.027)	(0.091)	(0.026)	(0.024)
Community-led + Female	0.006	-0.030	-0.070	0.003	0.002
	(0.037)	(0.032)	(0.111)	(0.029)	(0.027)
State-led + Female	-0.043	-0.058	0.011	-0.004	-0.004
	(0.034)	(0.037)	(0.111)	(0.032)	(0.029)
Observations	3385	3455	3565	3470	3320
Adjusted R-squared	0.130	0.164	0.143	0.154	0.174
Village Indicators	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes

Standard errors clustered at the village level in parentheses.

Controls included are: Age, age squared, female, and which (if any) JASS activities the respondent participated

* p<0.10 ** p<0.05 *** p<0.01