



From Environmental Crisis to Peaceful Adaptation: Governance Capacity and Environmental Peace Governance in the Horn of Africa

James Ndinawe

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ABSTRACT

Environmental crisis is increasingly treated as a security and development concern, yet comparable ecological pressures do not produce uniform political outcomes. This article asks why recurrent drought, flooding, land degradation, water scarcity and pasture decline contribute to violent insecurity in some pastoral borderlands while being absorbed through negotiated adaptation in others. Drawing on a mixed-methods comparative study of Turkana County in Kenya, Fantalle District in Ethiopia and the Abyei Area on the Sudan–South Sudan border, the article develops environmental peace governance as a multilevel account of how institutions translate ecological pressure into political outcomes. The evidence combines key-informant interviews, focus-group discussions, a broader perception survey, field observations, institutional documents and process tracing. Across the three cases, environmental crisis disrupts livelihoods, redistributes mobility and concentrates claims on land, water and pasture. The decisive variation lies in governance: institutions are more effective where they can translate warning into action, regulate access and mobility, coordinate formal and customary authority, adapt rules and sustain local legitimacy. Turkana shows partial institutional buffering, Fantalle uneven implementation, and Abyei the effects of contested authority. The article argues that environmental policy in fragile borderlands should be evaluated not only by formal policy presence but by the practical capacity to convert environmental information and resource pressure into legitimate, coordinated and adaptive decisions.

Keywords: environmental crisis; governance capacity; environmental peacebuilding; pastoral mobility; policy implementation; Horn of Africa

INTRODUCTION

Environmental crisis is now embedded in debates about security, development and public authority. Droughts, floods, land degradation, unreliable rainfall and pressure on water or pasture can undermine livelihoods long before they appear in conventional security indicators. They alter where people and livestock move, which resources become politically valuable, and how frequently communities call on public institutions to allocate access or settle disputes. Yet the political effects of these pressures remain strikingly uneven. Similar ecological problems can be managed through negotiated access and adaptation in one setting and become entangled with violence, displacement or territorial conflict in another. That variation is the starting point of this article.

The climate conflict literature has increasingly moved away from simple scarcity explanations. Environmental change is rarely a sufficient cause of organized violence; its effects depend on livelihood exposure, political exclusion, economic conditions, conflict history and institutional arrangements (Barnett and Adger 2007; Koubi 2019; Mach et al. 2020). This shift has improved the field, but it creates a second-order problem that is still not adequately resolved: what, precisely, do institutions do when they mediate environmental pressure? Stating that “governance matters” is analytically incomplete unless the relevant functions, scales and mechanisms are specified.

Environmental policy and governance scholarship offers a useful route forward. Environmental problems are difficult not only because they are biophysical, but because they create implementation demands across administrative levels, policy sectors and social groups. Recent work shows that implementation outcomes depend heavily on resources, policy coherence, target-group attitudes and context (Von Pfister et al. 2026).



Research on climate adaptation likewise demonstrates that governance legitimacy can shape whether resource users trust institutions and adopt or resist adaptation measures (Rice et al. 2026). These findings direct attention from the existence of policy to the institutional work required to make policy operational under conditions of uncertainty.

This article brings that implementation perspective into environmental peacebuilding. It asks: why do comparable forms of environmental crisis generate different security and development outcomes across environmentally vulnerable pastoral and agro-pastoral settings? The empirical analysis compares Turkana County in Kenya, Fantalle District in Ethiopia and the Abyei Area in the disputed Sudan–South Sudan borderland. The three cases share dependence on climate-sensitive livelihoods, recurring pressure on land, water, pasture and mobility, and continuing demands for conflict management. They differ, however, in administrative reach, institutional coordination, political authority and the degree to which local rules can be revised and enforced.

The central argument is that environmental crisis operates as a risk multiplier by increasing what this article calls institutional load: the number, urgency and political sensitivity of decisions that governance systems must make about access, mobility, compensation, infrastructure, early warning and dispute settlement. Whether that load produces escalation or accommodation depends on governance capacity, but capacity is not treated here as a single score. It is a relational bundle of practical functions: translating environmental information into timely local action; regulating access to shared resources and mobility corridors; coordinating formal, customary and regional actors; adapting rules as ecological conditions change; and sustaining enough legitimacy for negotiated decisions to be accepted.

I use environmental peace governance to describe the multilevel institutional architecture through which these functions are performed in settings where ecological vulnerability and conflict risk overlap. The concept links environmental peacebuilding with implementation and governance research. It emphasizes that peace is not produced by resource projects alone, nor by formal state institutions acting in isolation. It emerges, where it does, from the interaction of local authorities, customary institutions, community peace mechanisms, public agencies and regional organizations capable of converting environmental pressure into legitimate rules and coordinated responses.

The article makes three contributions. First, it specifies the institutional mechanisms that connect environmental crisis with security and development outcomes, moving beyond both environmental determinism and generic appeals to “good governance.” Second, it provides a structured comparison across three subnational cases rather than treating national governance averages as direct measures of local institutional performance. Third, it shows that regional systems such as IGAD, CEWARN and ICPAC matter most when their information and coordination functions are translated into decisions at the national and local levels. The wider implication is that environmental governance in fragile settings should be judged by implementation capacity across levels, not simply by the presence of policies, organizations or early-warning products.

LITERATURE REVIEW AND ANALYTICAL FRAMEWORK

From environmental scarcity to conditional climate–conflict pathways

Early environmental-security debates often foregrounded scarcity and resource competition. Subsequent research has made the relationship more conditional. (Barnett and Adger 2007) place human security and livelihood vulnerability between climate change and violent conflict; Koubi (2019) shows that political and socioeconomic conditions shape whether climatic change becomes conflict-relevant; and (Mach et al. 2020) call for closer attention to mechanisms, research-design integration and the conditions under which climate–conflict links emerge. Evidence from East Africa similarly indicates that climate variability may influence conflict patterns, but not through a uniform causal effect (Raleigh and Kniveton 2012).

This conditional approach is particularly important in pastoral systems. Mobility is often misread as evidence

of instability when it is, in fact, a long-standing strategy for managing uncertainty. Dryland pastoralism depends on moving livestock across uneven and seasonally changing resource landscapes (Catley, LIND, and Scoones 2016; Krätli and Schareika 2010). Environmental crisis becomes politically consequential when established mobility arrangements are disrupted: routes close, dry-season access begins earlier, herds remain longer, or multiple users converge on fewer water or grazing points. The relevant question is therefore not whether movement occurs, but whether institutions can govern changing movement without converting adaptive mobility into a security threat.

This insight complicates scarcity-based policy responses. Building a borehole can increase water availability but may also redirect livestock movements and create new concentrations of users. Irrigation can improve agricultural production while narrowing access to grazing land. A road can expand market access while increasing settlement pressure around strategic nodes. Environmental interventions are therefore distributive and political. They change who gains access, who bears costs and which institutions are expected to resolve new disputes. For that reason, environmental policy cannot be separated from the governance of access and mobility.

Governance capacity, legitimacy and implementation

Institutional approaches provide a vocabulary for analysing these processes. Ostrom's work on common-pool resources shows that durable resource governance depends on locally meaningful rules, monitoring, conflict-resolution arrangements and the capacity of users to participate in collective decision-making (Ostrom 2015). Collaborative governance scholarship likewise emphasizes that complex public problems are often handled through interaction among state and non-state actors rather than through hierarchical administration alone (Ansell and Gash 2008). These insights are especially relevant in borderlands where customary authorities, local administrations, security actors, humanitarian organizations and regional institutions share overlapping responsibilities.

Recent environmental policy scholarship adds an implementation perspective. Von Pfister et al. (2026), in a systematic comparison of environmental policy implementation, identify implementer resources, political salience, policy coherence and target-group attitudes among the most recurrent determinants of implementation performance. Their broader argument that context shapes which implementation determinants become salient helps clarify why formal policies can perform differently across localities. In fragile pastoral settings, the same nominal policy may encounter very different administrative reach, authority structures, mobility systems and levels of political contestation.

Legitimacy is equally important. Rice et al. (2026) show in the Lake Victoria Basin that perceived governance illegitimacy can undermine adaptive capacity, trust and cooperation. This finding resonates with the cases examined here. Rules governing grazing, water, migration or compensation are effective only if affected groups recognize the authority of those who make them and perceive the procedures as sufficiently fair to comply. Capacity without legitimacy can produce coercive implementation; legitimacy without resources can produce agreements that cannot be enforced. Environmental peace governance therefore depends on both operational capability and accepted authority.

Implementation is also a problem of fit across scales. Environmental hazards are often monitored at regional or national level, while the decisions that determine exposure and conflict risk are made around particular wells, corridors, flood zones, grazing areas and markets. This creates a recurrent vertical coordination problem. Technical agencies may identify a deteriorating seasonal outlook, but local authorities still need mandates, finance, information channels and trusted interlocutors to change access rules before competition intensifies. Conversely, locally legitimate arrangements may identify an emerging problem but lack the resources or political backing needed to respond. Environmental governance capacity should therefore be understood as a chain rather than a stock: its effectiveness depends on whether information, authority, resources and accountability remain connected from one level to the next.

This multilevel perspective also clarifies the distinction between resilience and institutional endurance. A



community may repeatedly cope with drought through mobility, mutual assistance or temporary negotiation while the organizations responsible for water, land and conflict management become progressively overloaded. Apparent social resilience can therefore conceal deteriorating public capacity. The opposite is also possible: repeated environmental shocks can generate learning, clearer procedures and more durable inter-organizational relationships. What matters for policy is not simply whether a system survives a particular drought or flood, but whether the institutional arrangements that manage the shock become more capable, legitimate and coordinated over time.

Environmental peacebuilding and hybrid authority

Environmental peacebuilding scholarship shifts attention from resource scarcity as a source of conflict to the possibility that resource governance can support cooperation, institution building and peace (Dresse et al. 2019; Krampe 2017). Krampe, Hegazi, and VanDeveer (2021) identify intergroup contact, institutional development and service provision as mechanisms through which better resource governance may sustain peace. (Ratner et al. 2013) similarly connect collective action in natural resource management with conflict prevention and social-ecological resilience. At the same time, the literature warns against assuming that environmental cooperation is automatically pacifying. Projects can depoliticize disputes, reproduce unequal access or strengthen already powerful actors if distributional effects and rights are ignored (Ide 2020; Ide et al. 2023).

In fragile and contested settings, environmental governance is also frequently hybrid. Boege et al. (2009) argue that public authority in post-conflict contexts may be distributed across formal and customary orders rather than monopolized by the state. Krampe et al (2024) extend the climate peacebuilding research agenda by highlighting local and hybrid peacebuilding as central themes. Hybrid arrangements should not be romanticized: customary institutions can be exclusionary, community committees can lack resources, and external actors can create parallel structures that weaken local accountability. Nevertheless, treating non-state authority as mere institutional absence can obscure the practical arrangements through which access and disputes are actually managed.

Environmental peace governance and translation capacity

Building on these literatures, environmental peace governance is defined here as the multilevel set of formal, customary, community-based and regional institutions through which environmental pressures are translated into decisions concerning resource access, mobility, adaptation and conflict prevention. The concept is narrower than environmental governance in general because it focuses specifically on settings where ecological pressures interact with livelihood vulnerability and insecurity. At the same time, it is broader than environmental peacebuilding projects because it encompasses the routine institutional, administrative and community-level functions through which adaptation, resource management and conflict prevention are made operational.

Five interrelated governance functions are central to the concept. The first is information to action translation, referring to the ability of institutions to convert environmental information such as drought forecasts, flood warnings, pasture conditions, water shortages or observed resource decline into timely decisions. This dimension is assessed through observable evidence of whether warnings reach relevant actors and lead to preparedness measures, resource allocation, mediation, mobility planning or other preventive responses. The second is access and mobility regulation, referring to the rules and negotiated arrangements governing the use of water, pasture, land, migration corridors and related livelihood resources. It is assessed through the existence and implementation of formal or customary access rules, seasonal grazing arrangements, mobility agreements, compensation mechanisms and procedures for resolving resource-related disputes.

The third function is institutional coordination, defined as the capacity of relevant actors to exchange information, clarify responsibilities and undertake complementary or joint action. Observable indicators include coordination among local administrations, customary authorities, community peace structures, technical agencies, security actors and regional institutions, as reflected in information sharing, joint planning,



referral arrangements, coordinated mediation and collective responses to environmental pressures. The fourth function is rule adaptation, referring to the ability of institutions to revise existing arrangements when ecological conditions change. This is assessed through evidence that rules governing grazing, water access, mobility routes, resource sharing or preparedness are adjusted when drought, flooding, displacement or changing resource availability makes established arrangements less workable.

The fifth function is legitimacy and inclusion. This refers to the extent to which affected communities recognize the authority of institutions, participate in decision-making and regard governance procedures as sufficiently fair to justify compliance. Observable indicators include community participation, recognition of formal or customary authority, perceived procedural fairness, acceptance of negotiated agreements and compliance with resource-management or conflict-resolution arrangements. These five dimensions are applied consistently across Turkana County, Fantalle District and the Abyei Area, while allowing their institutional expression to vary according to differences in political authority, administrative structures and local governance arrangements. Together, they constitute what this article terms translation capacity: the practical ability of governance systems to convert environmental information and resource pressures into coordinated, adaptive and socially accepted action. Table 2 summarizes the observable indicators used to assess these five dimensions across the three cases.

The proposed mechanism is conditional rather than deterministic. Environmental crisis can disrupt livelihoods, alter mobility patterns and concentrate competing claims on water, pasture, land and other critical resources. These changes increase institutional load by raising the number, urgency and political sensitivity of decisions that governance systems must make. Whether such pressure results in negotiated adaptation, contained tension or conflict escalation depends on the ability of institutions to perform the five governance functions identified above. Process evidence is therefore assessed through the sequence environmental pressure → livelihood disruption → altered mobility or resource competition → institutional response or strain → political outcome, rather than by assuming that the coexistence of environmental stress and conflict establishes causation.

Regional institutions form a wider enabling environment for these processes. Organizations and mechanisms such as IGAD, CEWARN and ICPAC can provide climate information, early warning, policy frameworks, coordination and opportunities for cross-border dialogue. Their contribution, however, depends on whether national and local institutions possess the authority, resources, coordination mechanisms and legitimacy required to translate regional inputs into practical action. The framework therefore expects cases exposed to broadly comparable forms of environmental crisis to produce different outcomes where translation capacity, institutional legitimacy and the organization of authority vary.

METHODOLOGY

Comparative research design

The article is derived from a broader mixed-methods doctoral study of environmental crisis, governance capacity and peacebuilding in the Horn of Africa. The primary units of analysis are Turkana County in Kenya, Fantalle District in Ethiopia and the Abyei Area on the Sudan–South Sudan border. National settings provide political and institutional context, but the article does not treat national governance indicators as direct measures of locality-level capacity. This distinction is important because administrative reach, institutional legitimacy and conflict-management arrangements can vary sharply within states.

Case selection was purposive and informed by a most-similar-systems logic. All three localities depend substantially on pastoral or agro-pastoral livelihoods; experience recurrent environmental pressures affecting water, pasture, land and mobility; and face continuing demands for resource governance and conflict management. They differ, however, in political authority, administrative consolidation, institutional coordination and the availability of mechanisms for negotiating mobility and resource access. The design is therefore suited to identifying mechanisms that may help explain variation in outcomes across settings exposed to related categories of environmental pressure.



Turkana County represents a devolved subnational setting in which county institutions coexist with customary authority and cross-border pastoral systems. Fantalle District represents a more uneven institutional setting where formal territorial administration, land-use change and mobile pastoral livelihoods intersect. Abyei represents a contested borderland where final political status remains unresolved and where local, customary and international actors perform overlapping governance functions. The cases are not treated as statistically representative of Kenya, Ethiopia, Sudan or South Sudan; the aim is analytical generalization about institutional mechanisms.

Table 1 summarizes the comparative analytical framework applied across the three cases. It distinguishes environmental pressures from their livelihood effects and identifies the institutional responses, governance conditions, intervening factors and political outcomes examined in each locality. The framework provides a common basis for structured comparison while retaining the political, historical and institutional differences that shape how environmental pressures are governed.

Data, Participants and evidence

The empirical evidence is drawn from the broader mixed-methods study and combines structured questionnaires, Key Informant Interviews (KIIs), Focus Group Discussions (FGDs), field observations, institutional and policy documents, administrative reports, relevant environmental and conflict datasets, and secondary academic literature. These sources were used together to capture both institutional perspectives and community-level experiences of environmental pressure, livelihood disruption, resource access, mobility, governance response and conflict management.

A total of 562 respondents participated in the broader perception survey. The survey examined perceptions of environmental crisis, governance effectiveness, institutional coordination, regional cooperation, mobility and conflict dynamics. Structured items included Likert-scale and ranking measures to support standardized comparison across respondents. The survey instrument was pilot-tested before full implementation to assess clarity, coherence and response stability. Because respondent coverage was not designed to produce equally representative locality-level samples for Turkana, Fantalle and Abyei, the survey is used in this article primarily as pooled descriptive context rather than for case-specific statistical inference. The sample included both institutional and community perspectives; 67.1% of respondents were male and 32.9% female, while major respondent categories included government officials, pastoralists, NGO workers, community leaders and farmers.

Key Informant Interviews were used to obtain institutional and operational perspectives on environmental governance, climate adaptation, early-warning systems, resource management and conflict prevention. Informants were drawn from regional security institutions, environmental agencies, peacebuilding organizations, border-administration structures, humanitarian agencies and policy institutions. Security personnel, NGO practitioners and local administrative actors were also included to capture operational perspectives on institutional coordination, early warning, conflict prevention and cross-border governance. Where insecurity, political sensitivity or logistical constraints limited direct access, interviews were conducted remotely through Zoom, encrypted telephone consultations and structured email engagement.

Focus Group Discussions complemented institutional interviews by capturing community-level experiences of environmental pressure, mobility, resource competition and local conflict-management practices. Participants were drawn from environmentally vulnerable pastoral and agro-pastoral communities affected by drought, displacement, resource competition and changing mobility patterns. In Turkana, discussion groups included elders, women, youth groups and other community members directly affected by drought, insecurity and changing livelihood conditions. FGDs were used particularly to examine how environmental pressures were experienced at household and community level and how customary and community-based institutions responded to emerging resource tensions.

Documentary evidence was used to contextualize and corroborate primary evidence. Sources included environmental and climate assessments, early-warning reports, institutional and policy frameworks, local

administrative reports, regional governance documents, conflict-event records and relevant academic research.

Particular attention was given to materials produced by institutions directly involved in environmental governance, climate information, conflict prevention and regional coordination, including IGAD, CEWARN, ICPAC and relevant African Union frameworks. Documentary sources were selected according to their relevance to the study's analytical pathway, including environmental pressure, livelihood effects, resource access, governance response, institutional coordination and conflict-management outcomes.

Triangulation was applied across survey findings, interviews, FGDs, field observations, institutional documents and secondary datasets. Participant accounts were compared with institutional practice, documentary evidence and relevant environmental or conflict information rather than interpreted in isolation. Where multiple forms of evidence converged on the same pattern or sequence, confidence in the interpretation was strengthened; where evidence diverged, the difference was retained as part of the contextual analysis. This approach reduced reliance on any single source and strengthened comparison of institutional practices and community experiences across the three cases.

Analytical strategy

The analysis proceeded in three stages. First, thematic coding identified recurring evidence on environmental crisis, livelihood reliability, mobility and displacement, resource access, institutional coordination, early warning, customary authority, participation, legitimacy and conflict resolution. Second, structured comparison examined how the same governance functions operated across Turkana, Fantalle and Abyei. Third, process tracing reconstructed the sequences through which environmental pressures became politically consequential.

The process-tracing analysis followed a common sequence:

Environmental pressure → livelihood disruption → altered mobility or resource competition → institutional response or strain → political outcome.

The analysis first identified environmental pressures such as drought, flooding, water scarcity, land degradation and pasture decline. It then examined whether these pressures affected livelihoods through livestock losses, food insecurity, declining production, displacement or other forms of vulnerability. The next stage assessed whether livelihood disruption altered mobility or intensified competition over land, water, pasture and migration corridors. The analysis then examined how institutions responded through early warning, access regulation, coordination, rule adaptation and dispute resolution. The final stage assessed whether these interactions resulted in negotiated adaptation, contained tension, recurring dispute or conflict escalation.

Triangulation reduced dependence on any single source. Interview and FGD accounts were compared with field observations, institutional documents, administrative reports, environmental information and relevant secondary evidence. A proposed pathway was considered more credible where different sources converged on the same sequence. Where evidence diverged, the difference was retained as part of the contextual analysis. National governance indicators were used only to characterize the broader political and institutional setting and were not treated as direct measures of governance capacity in the three localities.

The cases were compared through a common analytical template focusing on livelihood effects, resource access, early warning, institutional coordination, dispute mediation and rule adaptation. This improved comparability while preserving differences in political authority, administrative structure and conflict history.

Inference was therefore mechanism-centred rather than deterministic. The article does not assume that all conflict was environmentally caused. Territorial disputes, historical grievances, arms, political exclusion, market conditions and wider national conflicts remain important influences. Environmental crisis is treated as an additional pressure whose effects depend on how institutions manage resource competition, mobility and conflict.



Ethics and limitations

Participation in the research was voluntary, the academic purpose of the study was explained before participation, and consent was obtained verbally or in writing according to contextual feasibility. Identifying details were removed from analytical material and conflict-sensitive procedures were used where disclosure could create risks for participants or communities. The article paraphrases sensitive testimony and does not identify individual respondents.

The design has important limits. It cannot estimate a single causal effect of environmental crisis or governance capacity, and the cases differ in political history, exposure intensity, external intervention and conflict dynamics. The analysis therefore treats these factors as contextual conditions rather than assuming that governance alone explains outcomes. The value of the comparison lies in identifying plausible, recurring institutional mechanisms and examining how they operate under different configurations of authority.

RESULTS: COMPARATIVE PATTERNS OF ENVIRONMENTAL PEACE GOVERNANCE

A shared pathway: environmental crisis increases institutional load

Across the three cases, environmental crisis first appears as a problem of livelihood reliability. Recurrent drought, changing rainfall, water scarcity, land degradation, flooding and pasture decline affect agricultural production, livestock survival, food security and access to markets or services. Households respond through a range of strategies: moving livestock, changing grazing routes, seeking alternative water sources, diversifying income, temporarily relocating or depending more heavily on assistance. These responses redistribute people, animals and claims across space.

Mobility is therefore a critical intermediary rather than a residual outcome. In pastoral systems, movement can reduce ecological pressure by allowing flexible access to dispersed resources. But when routes narrow, seasonal calendars change or several groups reach the same water and grazing zones at the same time, governance demands increase. Authorities must decide who may move, where access is permitted, how long use can continue, how crop or livestock damage is compensated, and which actors have jurisdiction when disputes cross administrative boundaries.

The comparative evidence repeatedly shows that resource competition is most dangerous when it overlaps with weak or contested authority. Environmental crisis does not create historical grievances, territorial claims, political exclusion or armed actors. It raises the stakes and frequency of encounters in which those pre-existing tensions must be managed. The relevant mechanism is therefore institutional load: environmental pressure increases the number and urgency of allocation and conflict-management decisions. Where institutions can coordinate and adapt, pressure can be absorbed. Where authority is fragmented or legitimacy is weak, everyday livelihood decisions can activate wider political grievances.

Turkana County: partial buffering through connected institutions

Turkana presents the strongest evidence of partial institutional buffering among the three cases. Environmental pressures remain severe. Recurrent drought, water scarcity, pasture decline and cross-border mobility continue to affect livelihoods and contribute to insecurity. Research on northern Kenya similarly shows that pastoral communities confront both long-standing and emerging risks, and that resilience depends on combining livelihood flexibility with institutional support (Schilling and Werland 2023).

What distinguishes Turkana in the comparative evidence is not environmental abundance but a relatively denser governance architecture. County institutions, customary authorities, community peace structures, drought-response arrangements and regional mechanisms provide multiple channels through which environmental information and local disputes can be processed. County devolution creates administrative entry points for response, while customary institutions retain practical authority over grazing relations and local



mediation. Neither system is sufficient on its own, but their interaction provides more opportunities for information sharing and negotiated access.

This does not amount to institutional success in an absolute sense. Cross-border mobility often exceeds county jurisdiction, cattle raiding and insecurity persist, and public resources remain constrained. However, the case indicates that environmental pressure is less likely to become an unmediated security problem when warning, local knowledge and conflict-management institutions are connected. The buffering effect is cumulative: technical drought information, public administration, customary mediation and peace committees perform different but complementary functions.

Turkana therefore illustrates translation capacity in practice. Environmental information becomes useful when it reaches institutions that can act on movement, water access, preparedness or mediation. The lesson is not that devolution automatically produces resilience, but that institutional density and local legitimacy create more points at which ecological pressure can be converted into preventive decisions before it escalates.

Fantalle District: institutional mismatch under land-use and mobility change

Fantalle displays a more uneven pattern. Pastoral and agro-pastoral livelihoods are exposed to drought, water pressure, changing land use and constraints on grazing. Here the governance problem is shaped by the interaction between mobile resource use and fixed administrative or land-use arrangements. Research on Ethiopia's lowlands has long noted tensions between pastoral mobility and state-building processes organized through territorial jurisdictions (Hagmann & Mulugeta, 2008). The case evidence indicates that these tensions remain important when environmental crisis increases the need for flexible access.

Formal and customary institutions do not always operate as complementary layers. Administrative boundaries can limit the room for negotiated mobility; land-use changes can alter access to routes or resource zones; and development interventions can redistribute access among pastoral, agricultural and other users. The result is not simply a shortage of resources but an implementation problem. Policies and projects may exist, yet their effects depend on whether institutions can reconcile formal land and jurisdictional rules with the adaptive requirements of pastoral livelihoods.

Fantalle therefore illustrates a form of institutional mismatch. Environmental crisis increases demand for flexible, rapidly revised access arrangements, while territorial administration and sectoral development may produce more fixed rules. Where coordination is weak, users experience policy as fragmented: one institution promotes development, another regulates land, a customary authority negotiates mobility, and conflict-management bodies intervene only after tensions rise. The capacity to translate environmental pressure into coherent decisions is consequently uneven.

This finding has a broader environmental-policy implication. Technical development projects are not neutral additions to a social landscape. Water points, irrigated agriculture, conservation measures or infrastructure can change the geography of access and the relative power of users. Implementation quality therefore depends on whether distributional effects are anticipated, participation is meaningful and conflict-resolution arrangements are built into project design.

Abyei: contested authority and high-cost governance

Abyei shows the limits of environmental peace governance where political authority itself is contested. The Area is both a pastoral resource zone and an unresolved territorial question between Sudan and South Sudan. Resident Ngok Dinka communities and seasonally mobile Misseriya pastoralists depend on overlapping systems of water, pasture, trade and movement, while questions of residence, land rights and final political status remain politically sensitive (Saeed 2015; Salman 2013). Under these conditions, environmental disruption can alter not only livelihood decisions but the political meanings attached to movement and access.

The case evidence links recurrent flooding, prolonged dry periods, changing rainfall, livelihood disruption and mobility pressures with increased competition over critical resources. Drought can lengthen or alter migration;



flooding can close routes or displace settled households; reduced access can concentrate livestock and people around fewer viable water and grazing areas. Recent evidence of precipitation and temperature variability in the wider South Sudanese Sudd reinforces the importance of climatic uncertainty for water-dependent livelihoods (Zelege et al. 2024).

Yet environmental crisis does not explain Abyei's territorial dispute. Rather, it increases the frequency with which institutions must make decisions inside a contested political order. A grazing disagreement can implicate livelihood security, communal identity and jurisdiction at the same time. Formal administrative consolidation is weak, and different actors may not recognize the same authority. This makes the costs of coordination and enforcement much higher than in settings where jurisdiction is settled.

Abyei nevertheless does not constitute a complete governance vacuum. Customary authorities, community peace mechanisms, migration conferences, markets and international actors maintain practical channels for communication and dispute management. Such arrangements resemble hybrid political orders in which governance is distributed across institutions with different sources of authority (Boege et al. 2009). Their presence helps explain why environmental pressure does not produce continuous violence. Their weakness is that they remain politically vulnerable and cannot resolve the underlying sovereignty dispute.

The comparative lesson is therefore not that local institutions can substitute for political settlement. It is that, even under contested sovereignty, functional governance can reduce the probability that livelihood shocks become immediate security crises. Where that governance is fragmented, however, environmental crisis generates unusually high institutional load because every decision about access or movement risks being interpreted through unresolved territorial claims.

Regional governance: the information-to-action gap

Environmental crisis in the Horn of Africa is intrinsically transboundary. Drought cycles, pastoral mobility, displacement, markets, river systems and conflict networks extend across national borders. Regional institutions have responded by developing climate forecasting, early-warning and coordination mechanisms. IGAD, CEWARN and ICPAC provide information and policy frameworks, while African Union strategies increasingly connect climate resilience with broader development and security agendas (African Union 2022; IGAD 2023a, 2023b).

The evidence suggests that the central regional problem is not information scarcity but translation. Forecasts and early-warning products have preventive value only when national and local institutions possess the resources, authority and procedures needed to act. (Aeby 2024) similarly shows that participation and institutional design affect conflict early-warning and response systems within African regional organizations. In the cases examined here, regional information is most useful when it changes a concrete decision: where to pre-position water, when to convene dialogue, how to revise migration arrangements, or which communities require anticipatory support.

This produces a nested model of environmental peace governance. Regional organizations supply information, norms and opportunities for coordination. National institutions provide legal authority, budgets and sectoral policy. Local and customary institutions govern access and disputes in everyday practice. Weakness at any level can interrupt the chain. Strong forecasting cannot compensate for absent local implementation; locally legitimate institutions cannot maintain infrastructure without resources; and national policies can remain symbolic if they are disconnected from borderland realities.

Cross-case synthesis: five functions, three institutional configurations

Placed side by side, the cases reveal that the five components of translation capacity do not move together automatically. Turkana performs comparatively better because several functions are distributed across connected institutions: drought information has clearer local entry points, customary authorities retain a role in access negotiation, and devolved structures provide channels for coordination and response. The system remains incomplete, especially where cross-border pressures exceed county authority, but no single



institutional failure necessarily collapses the entire response. This redundancy is an important form of governance resilience.

Fantalle illustrates functional mismatch. Formal institutions are present, but mobility, land-use change and territorial administration do not always fit one another. Environmental pressure therefore becomes difficult to govern when a rule that is administratively clear is ecologically inflexible, or when customary access arrangements have social legitimacy but weak recognition within formal planning. The problem is less an absence of institutions than an inability to align their jurisdictions, time horizons and resource-use assumptions. This is why technically successful development interventions can still generate distributional tension if implementation does not incorporate mobile users.

Abyei illustrates a different configuration: authority itself is contested. Local and hybrid institutions can negotiate specific tasks, but they operate beneath an unresolved political dispute that makes access decisions unusually sensitive. Translation capacity exists, yet it is fragile because coordination and legitimacy are divided across actors whose authority is not universally recognized. The cross-case lesson is therefore not that one institutional form is universally superior. Rather, environmental peace governance depends on whether a setting has enough functional complementarity to keep warning, access regulation, coordination, rule adaptation and legitimacy connected when environmental crisis raises institutional load.

DISCUSSION

Beyond “governance matters”: specifying translation capacity

The comparison supports the established view that environmental crisis is a conditional risk factor rather than an autonomous cause of violence. Its main contribution is to specify what institutional mediation looks like in practice. Governance capacity matters because environmental crisis creates recurring decisions that must be made under uncertainty: how to allocate scarce resources, how to permit mobility without undermining other users, when to change seasonal rules, how to connect warning to preparedness and which authority can legitimately settle a dispute. These are implementation problems as much as security problems.

The concept of translation capacity helps connect environmental peacebuilding to contemporary environmental policy research. (Von Pfister et al. 2026) show that implementation performance depends on context, resources, coherence and target-group attitudes. The Horn of Africa cases add a conflict-sensitive dimension: implementation failures can alter the probability that ecological pressure becomes politically destabilizing. An early-warning system that does not trigger action, a water project that lacks access rules, or a mobility policy that ignores customary institutions can increase institutional load rather than reduce it.

Institutional load and translation capacity should be considered together. A governance arrangement may function adequately under normal seasonal conditions yet fail when drought, flooding or displacement increases the number of simultaneous decisions it must process. This is analogous to a capacity threshold: not a fixed numerical point, but a relationship between demand and institutional ability. Environmental crisis matters partly because it changes that relationship. A small decline in water availability can have limited political consequence where alternative sources, clear rules and trusted mediators exist; the same decline can be destabilizing where several groups arrive at once, authority is disputed and no credible compensation mechanism is available. This helps explain why hazard severity alone is a poor predictor of conflict outcome.

The framework therefore redirects evaluation from inputs to institutional throughput. Budgets, staff, strategies and warning systems remain important, but their value lies in whether they enable decisions that are timely, coordinated, revisable and accepted. This distinction is especially relevant for donors and regional organizations, whose programmes often measure production of plans, trainings or forecasts more readily than the downstream decisions those outputs are meant to improve. A translation-capacity approach asks whether an intervention reduces the distance between environmental knowledge and legitimate action.

Translation capacity is not synonymous with state strength. Turkana’s relative buffering reflects interactions



among county authorities, customary actors, local peace institutions and regional mechanisms. Abye demonstrates that some governance functions can persist even where sovereign authority is unresolved. Fantalle shows that formal administrative presence can still coexist with institutional mismatch. This relational view is consistent with collaborative and hybrid governance scholarship: what matters is whether actors performing different functions can coordinate around a shared problem, not whether one organization monopolizes authority (Ansell and Gash 2008; Boege et al. 2009).

Legitimacy is an operational resource

The findings also reinforce the importance of legitimacy. Environmental policies in fragile settings often ask communities to accept immediate distributional costs in exchange for longer-term resilience: restrictions on access, changed grazing rules, relocation from flood-prone areas, new water-allocation procedures or compliance with migration agreements. Such measures require trust and recognized authority. Rice et al. (2026) show that perceptions of governance illegitimacy can undermine adaptive capacity; the cases here suggest that legitimacy also shapes conflict prevention because rules that are not accepted are difficult to enforce without coercion.

This point cautions against equating institutional strengthening with simple formalization. Customary authorities may possess local legitimacy and ecological knowledge that formal agencies lack, especially in mobile pastoral systems. Yet customary institutions may also exclude women, youth, displaced people or minority groups. Sustainable environmental peace governance therefore requires neither wholesale replacement nor uncritical preservation of local authority. It requires institutional arrangements that combine local legitimacy with accountability, inclusive participation, technical information and public resources.

Mobility should be governed as adaptation, not presumed insecurity

Across all three cases, mobility is a central bridge between environmental and political processes. The policy implication is important: pastoral movement should not be securitized merely because it crosses administrative or national boundaries. Mobility is often the mechanism through which pastoralists manage ecological uncertainty (Krätli and Schareika 2010). Conflict risk increases when mobility becomes unpredictable, routes are blocked, users converge on strategic resources or political institutions interpret movement as a jurisdictional threat.

Effective policy therefore requires governance of mobility rather than suppression of mobility. This includes negotiated corridors, seasonal information sharing, procedures for compensation, cross-border communication and mechanisms for revising access as environmental conditions change. The principle is widely applicable beyond the Horn of Africa. Any environmental policy that changes the spatial distribution of resource users whether through drought, conservation, infrastructure or adaptation investment must account for the governance of movement and access.

Environmental peacebuilding as policy implementation

Environmental peacebuilding is often discussed in terms of projects or cooperation initiatives. The comparison suggests a complementary way to evaluate it: as implementation performance under environmentally induced institutional load. A peacebuilding intervention is more likely to have durable effects when it strengthens routine governance functions information exchange, access regulation, maintenance, participation, dispute resolution and rule revision rather than creating temporary project structures. (Krampe, Hegazi, and VanDeveer 2021) identify institutional development and service provision as peacebuilding mechanisms; the present findings suggest that their value lies partly in reducing uncertainty about how recurring environmental pressures will be governed.

This perspective also addresses a recurring problem in development practice. Infrastructure is often evaluated by outputs kilometers of road, numbers of water points, hectares irrigated without equal attention to the governance arrangements that determine access. In conflict-prone pastoral settings, the security value of



infrastructure depends on rules: who uses it, when, under whose authority, with what maintenance responsibilities and with what remedy when disputes occur. Environmental governance and conflict sensitivity should therefore be designed together rather than added sequentially.

What the Horn of Africa contributes to wider environmental governance debates

The cases are geographically specific, but the theoretical problem is broader. Environmental policy increasingly operates in contexts of compound risk, administrative fragmentation and social contestation. Climate adaptation, biodiversity protection, water allocation and disaster-risk reduction all require coordination across sectors and levels. The Horn of Africa makes these implementation challenges especially visible because ecological uncertainty, mobile livelihoods and conflict histories are tightly coupled.

The wider contribution is a shift from institutional presence to institutional performance. Policies, strategies and early-warning systems are necessary, but they are not equivalent to governance capacity. Environmental peace governance asks whether institutional arrangements can repeatedly translate pressure into legitimate decisions. That question is relevant to environmental policy well beyond conflict-affected borderlands, particularly where public authority is fragmented, resource users are mobile, or adaptation policies redistribute access and risk.

POLICY IMPLICATIONS

The comparative findings point to four priorities. First, environmental early warning should be designed around predefined action pathways. Forecasting systems should identify not only hazards but the institutions responsible for decisions on water provision, migration timing, preparedness, humanitarian support and conflict mediation. The performance indicator should be the timeliness and quality of action, not simply the production of information.

Second, resource and adaptation infrastructure should be treated as governance interventions. Water points, flood protection, irrigation, roads and livestock facilities change access patterns. Planning should therefore include host and mobile users, customary and formal authorities, maintenance responsibilities and dispute-resolution procedures before construction. Conflict sensitivity is not an external safeguard; it is part of effective implementation.

Third, local institutions require sustained rather than project-cycle support. Community peace committees, customary mediation, water-user arrangements and migration dialogue platforms can provide continuity where formal administration is thin. Support should strengthen documentation, transparency, inclusion of women and youth, links to public agencies and access to technical information without displacing locally legitimate authority.

Fourth, regional organizations should concentrate on the translation gap. IGAD, CEWARN and ICPAC already provide important regional functions. Greater impact requires interoperable channels connecting regional warning to national financing and locality-level action. Cross-border pastoral mobility should be treated as a governance issue that links climate adaptation, development and conflict prevention, rather than as a residual security concern.

LIMITATIONS AND FUTURE RESEARCH

The article does not claim that governance capacity alone explains peacebuilding outcomes. Environmental intensity, political history, economic marginalization, arms, identity-based mobilization and external intervention all affect the cases. Nor does the comparative design permit precise estimation of causal effect sizes. The pooled survey is used only as descriptive context because respondent coverage does not support equally representative case-level inference.

Future research should test the proposed translation-capacity mechanism across a wider range of pastoral and non-pastoral settings. Longitudinal designs could examine whether repeated environmental crises strengthen



institutional learning or progressively exhaust local capacity. Research could also combine geolocated mobility data, environmental indicators, policy-implementation records and ethnographic observation to identify when access arrangements succeed or fail. Finally, stronger subnational indicators are needed to measure administrative reach, legitimacy, coordination and implementation without relying on national governance averages.

CONCLUSION

Environmental crisis does not move mechanically from ecological change to political violence. Across Turkana, Fantalle and Abyei, recurrent pressure on water, pasture, land and livelihood systems changes mobility, concentrates resource claims and increases the demands placed on institutions. What differs is the ability of governance systems to process those demands.

Turkana demonstrates partial buffering where devolved, customary and peace institutions create multiple channels for response. Fantalle illustrates the consequences of mismatch between mobile livelihoods, territorial administration and changing land use. Abyei shows how unresolved authority magnifies the political cost of resource decisions, even while hybrid institutions continue to provide limited forms of governance. Regional organizations add important information and coordination, but their contribution depends on whether warning is translated into local action.

These findings refine the proposition that “governance matters.” Governance capacity is not simply the presence of agencies or a national score. It is the practical ability to translate environmental information and pressure into legitimate, coordinated and adaptive decisions about access, mobility, infrastructure and conflict prevention. Environmental peace governance names the multilevel institutional architecture through which that work is done.

For environmental policy, the implication is straightforward but demanding. Adaptation and development interventions in fragile settings should be evaluated not only by technical outputs but by the governance relationships they create or disrupt. Sustainable security depends on institutions that can anticipate environmental pressure, revise rules, preserve channels of negotiation and act before resource competition becomes violent. In that sense, environmental peacebuilding is not a separate agenda from environmental policy implementation; it is one of the conditions under which environmental policy becomes socially sustainable.

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Tables

Table 1. Comparative Analytical Framework for the Three Cases

Case	Environmental pressures	Livelihood effects	Institutional responses and governance capacity
Turkana County, Kenya	Recurrent drought, water scarcity, pasture decline and land degradation	Livestock stress, changing pastoral mobility, pressure on water and grazing areas, livelihood insecurity	County institutions operate alongside customary authorities, community peace structures, drought-response mechanisms and cross-border arrangements. Governance depends on coordination, early warning, negotiated access and local mediation.
Fantalle District, Ethiopia	Drought, water scarcity, pasture pressure, land degradation and changing land use	Reduced resource availability, pressure on pastoral mobility and increased competition over land and water	Formal territorial administration interacts with customary resource-management institutions. Coordination and adaptation are uneven where administrative arrangements do not fully correspond with mobile livelihood practices.
Abyei Area	Drought, recurrent flooding, changing water and pasture availability and disruption of migration routes	Seasonal migration, displacement, livelihood disruption and concentrated claims over grazing land, water and mobility corridors	Governance functions are distributed among customary authorities, community institutions, national actors and international mechanisms. Coordination is complicated by overlapping authority and unresolved political status.

Table 2. Operationalization of Environmental Peace Governance

Governance function	Operational meaning	Observable indicators
Information-to-action translation	Capacity to convert environmental and conflict information into timely institutional response	Environmental or conflict warnings reach responsible actors; preparedness measures are initiated; resources are mobilized; mediation, mobility planning or preventive decisions follow
Access and mobility regulation	Capacity to govern access to water, pasture, land and migration routes	Formal or customary access rules; seasonal grazing arrangements; mobility agreements; migration corridors; compensation mechanisms; procedures for resolving resource disputes
Institutional coordination	Capacity of relevant actors to exchange information, clarify responsibilities and act coherently	Information sharing; joint planning; referral arrangements; coordinated mediation; cooperation among formal authorities, customary institutions, community structures, technical agencies and regional actors
Rule adaptation	Capacity to revise governance arrangements as environmental conditions change	Adjustment of grazing rules, water access, mobility routes, seasonal arrangements or preparedness measures in response to drought, flooding, displacement or changing resource availability
Legitimacy and inclusion	Degree to which	Community participation; recognition of



	affected communities recognize authority and accept governance procedures	institutional authority; perceived procedural fairness; acceptance of negotiated agreements; compliance with resource-management and conflict-resolution arrangements
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Figure Legend

Table 1. Environmental peace governance pathway. Environmental crisis disrupts livelihoods and mobility, redistributes resource claims and increases institutional load. Governance translation capacity warning-to-action, access regulation, coordination, rule adaptation and legitimacy shapes whether outcomes move toward negotiated adaptation or insecurity. Regional institutions provide information and coordination, while national and local institutions translate these inputs into implementation.