



Powered by Variability: Rethinking Climate Policy for Pastoralism

Policy brief prepared by the IYRP Working Group on Pastoralism & Climate Change

October 2025

This brief calls for climate policies and finance that recognise pastoralists' specialisation to manage climate risk as the foundation of their productivity, sustainability, and adaptive strength.

Introduction

From high-altitude mountain ranges to dry savannahs and arctic tundra, pastoralism has evolved as part of ecosystems characterised by high levels of climatic and ecological variability. The brief focuses on pastoralism as an ecologically integrated system — one that works with variability rather than sheltering from it, distinct in its logic from forms of extensive livestock production reliant on fossil fuels and artificially stable environments.

In this brief, *pastoralism* refers to the livelihood system as it functions according to its ecological and economic logic. While most expressions of pastoralism today bear the mark of the decades of policies and interventions aimed at radically reshaping its social organisation and its relationships with the environment, keeping its underlying logic in view remains vital to understanding how the system works — and why it matters today more than ever. Global warming is intensifying climate variability, yet the greater challenge stems from the economic and institutional pressures that restrict pastoralists' capacity to work with it.

While the agriculture of globalisation depends on control and predictability — seeing climate variability merely as an obstacle — pastoralism specialises in aligning with variability while managing climate risk. Other livelihoods in variable environments, such as smallholder farming, have also developed ways to accommodate uncertainty, but pastoralism stands apart in making variability itself the foundation of production and social organisation. Without climate variability there would be no pastoralism. Pastoralism is inherently climate-adapted, with mobility as its primary means of aligning herds with shifting patterns of grazing opportunities. Therefore, climate adaptation pathways cannot be the same for pastoralism as for systems that depend on stability.

Recognising this difference is critical for climate adaptation policy and finance. When interventions treat climate variability as inherently disruptive and pursue stability as the only route to resilience, they undermine pastoralism, dismantling the ecological fit that makes it one of the few food production systems adapted to climate extremes — and in doing so, weaken the wider ecological and economic context that pastoralism helps sustain. These pressures add to the historical burden of misguided policies that have constrained pastoral mobility and governance — enabling speculative capture of rangelands and extending the frontiers of the globalised economy that drives climate change.

Global data on pastoralism remain poor, inconsistent and relying on methods anchored in

economic and ecological perspectives that overlook the adaptive and dynamic nature of these systems. National statistics rarely disaggregate pastoralism from other extensive or even intensive livestock systems. Even so, because of these systems, at least a quarter of the planet's land surface, mainly non-arable, generates economic value while maintaining ecological functions — providing meat, milk, fibre and organic fertilizer.

In contrast to fossil-fuel-dependent models of adaptation, which cope with climate change by worsening the problem, pastoralism offers long-term sustainability because it is already aligned with the realities of the incumbent climate.

Challenges

1. The cost of misunderstanding pastoralism. Pastoralist livelihoods have long been constrained by policies and investments rooted in outdated assumptions of inefficiency, fragility and ecological harm. From colonial land governance to neoliberal development planning, these narratives have justified interventions that fragment rangelands, restrict mobility and undermine collective institutions — concentrating power and resources elsewhere. The multiplication of fixed water points in drylands, for instance, has fostered settlement, disrupted seasonal grazing patterns, fuelled social friction and triggered land degradation. Pastoralists' efforts to protect their livelihoods amid shrinking options have also triggered maladaptive strategies that increase pressure on the system. The result is not a failure of pastoralism, but a failure of policy and planning to understand these systems. Today, stability-oriented models, heavy in external inputs, are repackaged as climate adaptation, diverting funds and attention away from flexible alternatives grounded in pastoralists' own adaptive strategies.

2. New dimensions of pastoral risk. Pastoral environments are also reshaped by climate change. In high-altitude rangelands of the Andes and Himalayas, herders are witnessing shifts in snow cover, glacier retreat and earlier spring thaws that affect forage availability and livestock health. In the Arctic, shifting snowmelt and vegetation cycles alter migration patterns. Sahelian herders experience rainfall in new sequences and intensities. Despite pastoralists' familiarity with climate variability, the compounded effects of policy restrictions, land fragmentation and insecurity, force them into these unfamiliar dimensions of risk with little room to manoeuvre.

3. New frontiers of dispossession. Across the world, states, corporations and multilateral institutions are reimagining rangelands as spaces for their own mitigation and adaptation goals — from renewable energy megaprojects and carbon-offset schemes to mineral extraction and infrastructure corridors. Most of these initiatives overlook pastoral land use, mobility and collective governance systems, driving new waves of dispossession and territorial fragmentation while fuelling land speculation. Pastoralist regions are also targets of narratives that portray herders as drivers of violence or even as security threats, justifying coercive control and exclusion. In the Sahel, these portrayals interact with governance vacuums and expanding zones of insecurity, where long-standing local grievances are often instrumentalised within strategies of territorial control at higher scales.

4. Misguided mitigation/adaptation and conservation responses. Climate mitigation frameworks often portray pastoralism as a contributor to climate change because of inefficiency, reviving outdated narratives of ecological harm. This framing ignores pastoralism's regenerative contribution to carbon cycling and, even today, its minimal reliance on fossil fuels. The result is policies that displace herders or promote intensification, misunderstanding both the value and

logic of these systems. Adaptation measures too, often locate the problem in pastoralism itself, repeating past 'solutions' that restrict mobility and promote exit from pastoralism rather than addressing the socio-economic stressors that hamper its adaptive functioning. Similarly, biodiversity and nature-based initiatives, while claiming to include pastoralists, often impose restrictive rules and access controls that fragment rangelands and criminalise mobility. Paramilitary enforcement mirrors fortress conservation models — disregarding pastoralists' long-standing coexistence with wildlife — and sometimes crossing lines that raise human rights concerns. Such restrictions damage both livelihoods and ecosystems, producing degradation just outside protected areas as herders lose access to vital resources.

Shifting the perspective

1. Misalignment between policy and pastoralist reality. Many policies and projects start from the assumption that pastoralism is defined by deficit — of water, pasture, services, infrastructure and stability. From this perspective, the solution seems obvious: build more wells and service centres, and reduce — if possible eliminate — mobility. But in contexts where livelihoods are built on making use of climate variability, these interventions backfire. What stability-based models see as deficiencies can, in fact, be functional elements of an adaptive system built to work with variability.

2. Climate variability is pastoralism's ecological niche. Pastoralism evolved in ecosystems where rainfall and vegetation fluctuate sharply, and where nutrients in forage peak only for short periods. Herders track these windows of opportunity, moving their animals from one nutrient burst to the next. This strategy keeps livestock on high-quality grazing far longer than would be possible if pastures matured all at once — or if herds stayed in place. Resilience in pastoralism is built by strengthening this specialisation to use climate variability, rather than by seeking stability.

3. Policy, not climate, drives vulnerability in pastoral systems. Climate narratives often present pastoralists as helpless victims of environmental change, obscuring the deepest cause of their vulnerability: policy failures. While pastoralists face shifts in climate-related risk like everyone else, they are among those best equipped to manage them. Their exposure to risk rises when mobility is curtailed, resources are commodified and customary institutions are weakened. These barriers — especially when reinforced by social inequalities, including in gender dynamics — hinder both adaptation and productivity. Even without climate change, such constraints prevent pastoralists from thriving.

4. Adaptation is not a blank slate. Not all agricultural systems depend on fixed calendars and assumptions of stability, so not all are equally disoriented by climate change. Pastoralists' specialisation in navigating climate variability makes their knowledge uniquely relevant. Framing climate change as a total rupture casts their adaptive intelligence as irrelevant, just when it is most needed. Adaptation must start from re-legitimising the systems of knowing already attuned to uncertainty — not by discarding them.

5. Resilience cannot run on fossil fuel. Climate responses in pastoral areas rely on high-external-input, fossil-fuel-based technologies — irrigation, fodder production, feed transport — that create new dependencies while fuelling the very crisis they seek to manage. By contrast, available evidence from West Africa shows that pastoralism can be carbon-neutral — or even carbon-negative — offering a model grounded in ecological fit. Sustainable resilience cannot depend on the systems that are causing the problem.

6. Not all emissions are equal — and conflating them undermines climate justice. Climate policy often treats all anthropogenic greenhouse gas (GHG) emissions as equally responsible for climate change. Yet, overlooking emissions’ ecological relations hides a crucial distinction. Burning fossil fuels brings ancient carbon into the present — releasing into the atmosphere carbon long locked underground — creating a one-way and therefore unsustainable addition. In contrast, emissions from biological systems, including pastoral livestock, wild herbivores and decomposing organic matter, are part of short-term natural cycles in which carbon continually circulates between soil, vegetation and air. Even when ecosystems are degraded, and their cycles become unbalanced, turning them into temporary net sources of carbon, their emissions remain within the living carbon system and can be rebalanced through restoration within years. Fossil-fuel emissions, by contrast, expand the total atmospheric pool for centuries. Although all greenhouse gases contribute to warming, only fossil-fuel emissions are responsible for the additional, unwanted global heating that has led to climate change. Emissions from biological systems help maintain the planet’s heat balance, while fossil-fuel emissions push it beyond that balance — more like a fever than a warming blanket. Failing to keep this distinction in focus misrepresents pastoralism and penalises low-emitting communities, while fossil-fuel-based systems escape full accountability.

In contrast to the dominant model that equates resilience with bouncing back from a disturbance, pastoralism derives resilience from its plasticity — the capacity to absorb and redirect variability while continuing to function, indeed *as its way of functioning*.

Common assumption	Pastoralist reality
Variability is a constraint	Variability is a resource
Mobility is disorder	Mobility is ecological alignment
Stability brings resilience	Plasticity brings resilience
Climate risk must be avoided	Climate risk is to be managed
GHG emissions from pastoral livestock contribute to climate change	Healthy rangelands-pastoralism ecosystems have neutral or negative carbon balance

Calls to action

Turning perspective into action requires shifting power: from centralised control to locally rooted systems of governance. The following calls to action outline the policy, financial and institutional changes needed to make that shift possible.

1. Fund mobility and pastoralist systemic plasticity more broadly. Reorient climate resilience programming around the fact that variability, although posing risks, is also what powers pastoralism—working with variability rather than trying to eliminate it, is therefore fundamental to pastoral sustainability. Strengthening resilience in pastoral systems requires supporting the core strategies that enable them to harness variability: mobility, herd diversity, flexible tenure, and responsive collective governance.

2. Improve GHG accounting to reflect ecological integration. GHG assessments must recognise the full ecological role of pastoral systems — including contributions to soil health, biodiversity, long-term carbon storage and avoided emissions through maintained ecosystem functions. Accounting methods should not penalise climate-compatible practices. Regulators and

policy frameworks must distinguish biologically embedded emissions from fossil-fuel emissions.

3. Recognise and protect pastoralist knowledge as climate expertise. Pastoralists' knowledge systems are already tuned to environmental unpredictability. Adaptation policies should be co-designed strategies that centre this observational, navigational and institutional intelligence — ensuring that pastoralism's ecological role is reflected in climate and development planning.

4. Remove barriers to pastoralist resilience. Lift the social and economic constraints on pastoral mobility, access to grazing opportunities, and the functioning of customary institutions. Ensure pastoralists' inclusion in climate finance through instruments that recognise and support pastoralist ecological strategies — without conditionalities requiring system conversion or sedentarisation. Resilience begins with governance reforms that enable pastoralists to use their specialisation.

5. Enable access to Loss and Damage finance for pastoralist systems. Even climate-adapted systems face losses when adaptation pathways are blocked. When mobility or resource access is disrupted, pastoralists suffer both economic (livestock, assets) and non-economic (knowledge, culture) losses. Mechanisms under the Loss and Damage Fund should recognise these systemic constraints and ensure fair access to recovery support for both slow-onset and rapid-onset events.

6. Align climate and security agendas to protect pastoral mobility. Climate and security policies often work at cross-purposes, blocking mobility and deepening risk. Coordination must start from a differentiated understanding of local realities — including the entrenched exclusion, corruption and mistrust that weaken governance. Joint planning should include pastoralist organisations in both climate and peacebuilding frameworks. In crisis-affected regions, restoring trust and safeguarding mobility are essential for sustainability and peaceful coexistence.

7. Advance procedural, distributive and recognitional justice. Ensure that pastoralist men and women participate meaningfully in the design, implementation and evaluation of climate responses. Guarantee equitable access to climate funds and ensure free and prior informed consent.

8. In case of green transition, ensure justice for pastoralist communities. Climate projects must include safeguards to prevent displacement, dispossession and marginalisation. Introduce legal and policy protections to stop afforestation, conservation and energy projects from dispossessing or displacing pastoralist communities. Ensure that climate investments do not exacerbate conflict or undermine pastoral systems. A just transition means that pastoralists are not collateral damage in the name of mitigation, but are recognised as key allies in regenerative, ecologically integrated land stewardship.

***Acknowledgements:** This brief was prepared by the Working Group on Pastoralism and Climate Change in the Global Alliance for the International Year of Rangelands and Pastoralists (IYRP). Written by Saverio Krättli, Claire Bedelian, Jackson Wachira, Florence Crick, Michelle Venter, Edwige Marty, Blamah Jalloh, Ced Hesse and Ann Waters-Bayer. It is intended as both an advocacy tool and a resource for rethinking climate responses in pastoral areas.*

***Suggested citation:** IYRP Working Group on Pastoralism and Climate Change 2025. Powered by Variability: Rethinking Climate Policy for Pastoralism. Published by IYRP 2026 Global Secretariat (iyrp2026@gmail.com).*