

POLICY BRIEF

FROM RISK TO RESILIENCE

Grounding innovation in pastoralist realities

Wendy Chamberlin, Tigist Kebede and Carmen Jaquez

Key findings

- **Pastoralists in arid and semi-arid areas (ASALs) prioritise locally developed adaptation strategies to support their own resilience to climate shocks and stresses.** Despite good intentions, innovative solutions introduced by external actors to help pastoralists manage risks typically address a single issue without accounting for the complex overlapping challenges pastoralists face. Such narrow focus frequently results in limited adoption by intended end users.
- **Before developing effective innovations, it is essential to first understand how pastoralists perceive, interpret and prioritise the risks they encounter.** This includes how individuals and households make sense of why these risks are occurring and how they estimate their own ability to adapt, absorb or recover from threats. Equally important is recognising what priorities pastoralists set regarding what they need to protect or keep safe from these threats. Doing so can give insight as to what their adaptation priorities are and what resources they may need to leverage.

Woman travelling to market to sell a goat. Degehabur, Somali Region, Ethiopia, 2024 © E. Millstein



A context increasingly defined by variability and uncertainty drives endogenous approaches to adaptation

Pastoralists in ASALs are considered some of the world's populations most affected by climate shocks and stresses. Increased exposure to climate-related events and their magnitude in ASALs, coupled with historic underinvestment in broad-scale infrastructure that connects pastoralist communities to markets and essential services, is further exacerbated by the lack of access to formal education, and the fact of natural resource-based livelihoods. Such compounding factors lead to the reduced capacity of pastoralists to mitigate or manage climate risks.

Drought remains a constant threat. Despite such climate risks, recent research recognises that pastoralism is in fact well adapted to cope with climate variability, including drought, rainfall variations, rising temperatures and extended conflicts (Stites et al., 2023; de Jode and Flintan, 2020; Maru et al., 2022; Shikuku et al., 2025). However, while the resilience of pastoralism is acknowledged, much is assumed about pastoralists' capacity to respond to climate shocks and stresses. Prevailing assumptions often fail to look at the reality of existing practices and approaches to risk management (Debela et al., 2015).

All too often, technological and process solutions are designed from outside and respond only to the immediate challenges pastoralists face. As a result, innovations reflect a limited understanding of and integration with the existing adaptation approaches of households and communities. For example, adaptation strategies such as herd diversification, mobility and reliance on social networks are risk mitigation and management strategies often used in the pastoralist context.

Such indigenous approaches address the immediate threat as well as the cumulative challenges that arise over time and in the ASAL context. As climate risks increase and pastoralists experience growing variability and uncertainty, there is a need for innovative solutions (i.e. technologies, products and practices) to support – not replace – pastoralist adaptation. To be effective and sustainable, the design and implementation of innovations must be grounded in the lived experience of pastoralists.

From 2021 to 2025, SPARC identified and assessed the breadth and impact of innovations targeting pastoralists and agro-pastoralists. Approximately 150 such innovations were identified through internet searches and professional networks. This brief is based on a systematic review and summation of the findings of SPARC's innovations research. Validation

of the synthesis in literature and through expert interviews followed.

SPARC researchers found that the lack of contextualisation and a failure to meet end users where they are and take account of their lived realities was the most consistent finding across SPARC innovation studies. This brief details how perceptions of risk influence pastoralists' adaptation decisions and thus the types of innovations used to support their adaptation needs. Moreover, it investigates differences in perceptions of risk according to gender, social norms and geographical contexts, and how these factors can lead to varying adaptation decisions. Lastly, the authors provide recommendations for relevant innovation approaches that are built from pastoralists' perception of risks and their existing approaches to adaptation.

How insights into risk perception improve de-risking interventions

Development actors have played a significant role in developing innovative solutions to support pastoralist adaptation approaches (e.g., index-based livestock insurance for drought, and digital information systems for technical advice and decision-making). Many of these innovations are designed and implemented without understanding how people perceive the climate risks to which they are exposed and why this understanding is necessary to support innovation design.

A person's **perception of risk is their own subjective evaluation of the potential dangers and uncertainties** they face. Perceptions of risk are determined by a variety of contributing factors, including tacit knowledge, access to formal education, frequency and magnitude of recent natural events, social connections, gender and social norms, and the attributes of where they live (Habtemariam et al., 2016). How someone perceives or understands risk determines whether they experience an unpredictable weather event as something unusual, or as something that is part of a longer pattern of events linked to climate change.

Differences in individual and household-level perceptions lead to a difference in responses: if an event is a one-off occurrence, an adaptation decision may focus only on immediate recovery, such as replenishing livestock. If an atypical event is part of a longer pattern of events linked to climate change, a person may pursue a different type of adaptation strategy, such as migration. Only by understanding how pastoralists interpret climate events can development actors truly understand the priorities and decision-making of the communities after these events. As a result, external assumptions of what pastoralists need to do to respond and adapt, and



Community member engaged in peace-building and conflict mitigation, Kakuri, Nigeria, 2024 © E. Millstein

the solutions that are consequently designed, may not match the lived reality and priorities of those who are most affected. Hence, new interventions and innovations may be rendered incongruent with pastoralists' self-determined needs.

What factors influence perceptions of risk?

Indigenous modes of deciphering climate risks inherently include risk management features that build on pastoralists' prioritisation of community networks and lived experience. For example, observations drawn from the natural environment have long been trusted, consistently helping people interpret the causes and anticipate the patterns of weather events (Silvestri et al., 2012; Reid, 2024; Bedelian, 2024). This reliance on meteorological insights as informed by the natural environment also fills a chronic gap in access to meteorological information, especially as many modern technological forecasting tools still struggle to reach rural areas (Guye et al., 2022; Vincent et al., 2025).

In pastoralist communities, community leaders, including religious leaders or traditional diviners, are relied upon as a source of expertise and to disseminate key information (Roy et al., 2021; Reid, 2024). A similar experience can be found with communities themselves. Sloan, et al. (2025) claim that community perceptions of drought effects and their impacts include a complex understanding and analysis of dynamic and causal

relationships related to the environment, livelihoods, economic, physical and social well-being, and insecurity. A person's position in the community and their traditional role also influences their threat exposure. For example, pastoralist children will bear a significant burden of drought due to familial loss of income which leads to reduction in household nutrition and an increase in malnutrition.

Similarly, women have less access to resources and experience increased insecurity (Sloan, et al., 2025). The lived experience unique to women and children informs their responses as well as their future perceptions of their own risk and risk mitigation or management practices.

Gendered perceptions of risk

While both pastoralist men and women rely on indigenous resources for climate insights and de-risking strategies, they perceive climate risks differently. Outsiders also perceive threat exposure, need and opportunity of women and men pastoralists differently, the variations shaped by the distinct, longstanding roles and responsibilities of each. Such perceptions or biases impact women's and men's access to resources and information (Djouidi and Brockhaus, 2011; Habtemariam et al., 2016; Anbacha and Kjosavik, 2019).

Within pastoralist communities there are explicit and implicit views of women's roles in managing climate shocks, which begin with the role they play in terms of their income generation and household/caregiving responsibilities. So for example, if women are seen as being primarily responsible for managing the household, their role in livestock activities is perceived to be secondary (Carr et al., 2016). As a result, the distinct and specific needs and responsibilities of women and men are not taken into consideration when de-risking and adaptation solutions are designed. Furthermore, extension services that are gender-blind in design primarily reach male livestock keepers, reinforcing male-dominated decision-making and side-lining women from climate response processes (Gannon et al., 2022; Kamel et al., 2025).

The gendered perceptions of capability and risk shape how the implications of threats are understood. Men often frame risk in terms of lost assets or disrupted livelihoods in the face of climate risks and events. Women focus on immediate scarcities, such as lack of water or food, or the health impacts on children and the elderly (Djouidi and Brockhaus, 2011). These contrasting but complementary viewpoints reflect the lived realities of each gender and highlight the need for adaptation strategies and associated innovations to recognise women not just as vulnerable, but as active and knowledgeable, resilient agents.

GENDER-BLIND APPROACHES REINFORCE WOMEN'S EXCLUSION AND REDUCE WOMEN'S ABILITY TO ADAPT IN THE FACE OF COMPOUNDING SHOCKS

Women's perceptions of climate change in the ASALs make them acutely aware of the need for adaptation strategies. But existing solutions are often less available to them due to the barriers they may face around access and use of critical information and services. Such barriers persist in terms of access and use of digital products and services, along with low levels of digital literacy and numeracy, rendering resources such as climate information or even digital financial services less available to women. This limits women's ability to act proactively (Bedeke, 2019; de Jode and Flinton, 2020).

Fundamental strategies but no singular strategy

Adaptation and anticipatory action, as central to risk management and risk mitigation, involve active interaction with the environment, and they leverage existing indigenous approaches. Hassan et al. (2024: 4) note that, 'the ability of pastoralists to draw on flexible land access arrangements, social arrangements that support their livestock production, and strong collective social relations reflects their adaptive management and orientation for practical solutions'. Pre-existing forms of social resilience embedded in community norms are foundational to longer-term resilience strategies at the individual, household and community levels, especially in response to drought (Shariff, 2020).

De-risking approaches are not 'one size fits all'. They rely heavily on the resources that are available to individuals and families. How seamlessly externally introduced innovations integrate with traditional approaches depends on whether a specific innovation supports or detracts from prevailing priorities and the wider risk portfolio. For example, the widespread adoption of mobile phones by pastoral populations means that informal social support networks remain largely intact. In this scenario, women in villages contact male relatives in the urban areas when assistance is needed (Stites et al., 2023). Specific approaches to de-risking include, but are not limited to, the following factors.

- **Mobility:** Mobility and seasonal migration of pastoralists are critical adaptation strategies to changing environmental conditions. They provide pastoralists with a flexible and dynamic response

which helps minimise losses and maintain and smooth productivity over time (ibid.). This can include, but is not limited to, movement of livestock to manage access to grazing areas and water, but also temporal mobility to other locales for further income-generating opportunities.

- **Social networks and community:** Social networks and community play a central role in influencing the decision-making of pastoralists and how they respond to events ex-ante and ex-poste (Yihun et al., 2023). A practical example of leveraging social networks includes pastoralist approaches to risk mitigation through herd redistribution, rangeland management and mutual aid (Sharif, 2020).

Gendered dimensions to adaptation

Just as women and men may perceive risks differently, so they may prepare for climate risks in different though complementary ways. This will depend on their roles in livestock care, resource management and household responsibilities, as well as access to resources (Djoudi and Brockhaus, 2011). For example, in pastoralist households, men take livestock to graze, sometimes at long distances from home. Women also take care of livestock but this may be smaller ruminants or animals that are lactating or cannot migrate. Women, with support from children who remain behind, are responsible for the day-to-day care of livestock. In addition, they also manage childcare, food preparation, water collection and numerous other chores (ILRI, 2021). These differences in roles inform the types of adaptation decisions men and women make and the subsequent innovation solutions they have access to and prioritise to support those decisions (Djoudi and Brockhaus, 2011).

What this means for innovation uptake and why

Pastoralists draw on multiple sources of knowledge, use networks and learn through experience in response to uncertainty and crises (Hassan et al., 2024). Yet to date, most of the conventional early warning systems and tools of rational risk management rely on the likelihood of expected outcomes and do not consider this dynamic and integrated adaptation approach (Flachs and Richards, 2018; Vincent et al., 2025). As a result, externally developed, sector-focused innovations run the risk of overlooking or, worse, minimising pastoralists' perceptions, and therefore fail to understand the approaches pastoralists may want to take to respond to climate shocks and stresses. The consequence of failing to prioritise or understand how

SOCIAL NETWORKS ARE A CRITICAL MECHANISM TO SUPPORT ADAPTATION

Community groups, village savings and lending associations (VSLAs) and other social networks have proven to be an important vehicle both for sharing information on risks, and in providing support for decision-making around adaptation to risks.

- Groups are found to support the confidence-building of women, providing social cohesion and support for adaptation decisions (Yihun et al., 2023).
- Women's community groups and men's clan leaders are key influencers within their gender domain (Anbacha and Kjosavik, 2019).
- Elder councils comprising male and female elders help mediate resource conflicts and validate adaptation measures (Anbacha and Kjosavik, 2019; de Jode and Flintan, 2020).

people perceive climate shocks and stresses and how this therefore informs their adaptation strategies means a number of things:

- While pastoralists rely on existing systems to support their adaptation, their ability to rely on external innovations depends on the relevance of these products to meet their adaptation needs (Djoudi and Brockhaus, 2011; Gannon et al., 2022; Yihun et al., 2023; Dalberg Advisors, 2022).
- Innovations that are developed to respond to climate risks, such as index-based livestock insurance, are often highly individualised and do not reflect existing informal and formal coping or planned adaptation strategies that rely on communities and social networks (Sharif, 2020).
- Traditional barriers that impede uptake of digital products and services persist. Rural women may face specific barriers – lower levels of digital and financial literacy, limited mobility and access to digital technologies, and very low levels of land ownership (Vincent et al., 2025). This is especially true when considering programmes that only target 'heads of household', as they risk overlooking the deeply embedded and proactive strategies women already employ to protect their families and communities.

Features innovations should include for pastoralists to effectively address risk

Despite the innate resilience of pastoralism, more frequent and severe climate risks are threatening the viability of pastoralists' ability to adapt, rendering traditional risk mitigation practices increasingly inadequate. This is, moreover, in the face of growing uncertainty and unpredictability related to climate change. Pastoralists' perception of their own risk and ability to de-risk their circumstance changes as each drought becomes more severe or longer than the previous event. Solutions in the form of technological innovations and expanded approaches to de-risking are needed. To have a relevant and sustainable impact, these solutions need to consider several factors:

- **Understand the end user by listening to them.**
The adoption and sustained use of new technologies, partnerships or approaches requires trust and value generation from the outset. For example, there is no shortage of digital solutions to disseminate weather and climate information, but uptake remains low. Issues of lack of trust in information and integration into social systems are often cited as barriers to adoption (Reid, 2024). Increasingly, digital tools and information systems are being co-created with communities or integrated into their traditional decision-making processes (see box below).

PARTICIPATORY APPROACHES TO INNOVATION DESIGN DRIVE ADOPTION

AfriScout Regen and AfriScout Steward, innovations borne through the [AfriScout programme](#), are examples of socio-technological innovations developed using crowd-sourced insights from pastoralist communities to identify locations of disease outbreak, conflict, restricted grazing, etc. From 2023 to 2025, SPARC conducted studies of adoption and impact of AfriScout Regen and AfriScout Steward by pastoralist communities in Ethiopia and Kenya. A critical driver of uptake, spillover and use for community decision-making includes a design approach that prioritises the understanding of community needs and concerns. This is done through the integration of feedback loops, participatory approaches and iteration to make sure the final design is relevant for the end user and for the intended outcome (Bedelian, 2024; Turnbull and Harrison, 2024).

- **Allow for localised adaptation of innovations.**
Pastoralists are not a monolithic group. Gender and social norms, and how these evolve, need to be considered in product design. Even within the same ethnic group, pastoralist households and communities are socioeconomically diverse. Perceptions of risk and de-risking priorities are influenced by resource availability and the relative costs of accessing or using resources at individual and household level. Additionally, men and women have different perceptions of risk related to their lived experience, social networks, domains of control and different priorities in decision-making (Bedelian, 2024; Kenbridge Consulting Limited, 2023). Generic one-size-fits-all solutions or solutions that do not align with traditional strategies or don't allow the end user to further adapt the innovation limits practical application.
- **Make sure products reflect the interconnected social realities of pastoralist networks.**
Increasingly, attention is being given to the role of social media as a tool to build on and expand pastoralists' community and productive social networks. In 2023, SPARC researchers investigated how pastoralists in the drylands of Kenya, Uganda, Tanzania and Nigeria use different digital platforms. Much like their online peers in cities, or in other countries, they have taken advantage of improved smartphone affordability and connectivity to increase their engagement in issues such as politics and local entertainment. Such societal shifts create opportunities for public and private providers of goods and services to connect with previously expensive and hard-to-reach pastoralist groups. Customising social media influencer marketing for pastoralists demands a nuanced approach that considers the unique aspects of their communities.

Conclusion and recommendations

This brief is designed to help humanitarian and development organisations, policy-makers and private sector actors understand the importance of prioritising both pastoralists' perceptions of risk as well as their adaptation priorities as a foundational component of the design of innovative solutions.

Pastoralist approaches to adaptation are informed by the communities' perceptions of the risks they face and whether they believe available resources will be sufficient for them to adapt to, manage after, or recover from prevailing shocks. External adaptation and protection solutions (i.e. innovations) will only be relevant if they are designed to: (1) complement the many ways in which pastoralists already gather information; (2) prioritise pastoralists' needs and (3) leverage pastoralists' social networks.

By better understanding both how risks are perceived and what communities value most for their own protection, innovators and stakeholders can identify the types of solutions that will genuinely support pastoralists in their adaptation efforts. This approach has implications not only for innovation design but also for the stakeholders who invest in innovations to support adaptation.

Recommendations

- Investment in innovation requires timelines and financing that supports end-user feedback and product/process iteration. Without iteration and contextualisation, innovations struggle to reach target end-users beyond an initial pilot phase.
- Reconsider single purpose innovations. Innovations that have multiple uses or can be adapted by pastoralists and other end-users have the highest adoption rates.
- Build on existing de-risking approaches that are prioritised by pastoralists. For example, digital communications that support access to or expansion of social networks.
- Invest in activities that build end-user trust in innovations; especially innovations designed to improve access to information. End-users must trust the information before they continue to use an innovation.

References

- Anbacha, A.E. and Kjosavik, D.J. (2019) 'Gendered perspectives of climatic and non-climatic stressors in Borana, southern Ethiopia', *J. Arid Environ.* 166: 28–36 (<https://doi.org/10.1016/j.jaridenv.2019.02.012>).
- Bedelian, C. (2024) 'How climate information services (CIS) can help pastoralists in the Horn of Africa'. Policy Brief. London: SPARC (www.sparc-knowledge.org/sites/default/files/documents/resources/how-climate-information-services-can-help-pastoralists-in-the-horn-of-africa_policy-brief.pdf).

- Bedeke, S., Vanhove, W., Gezahegn, M., Natarajan, K. and Van Damme, P. (2019) 'Adoption of climate change adaptation strategies by maize-dependent smallholders in Ethiopia' *NJAS-Wageningen Journal of Life Sciences* 88: 96–104 (<https://doi.org/10.1016/j.njas.2018.09.001>).
- Carr, E.R., Fleming, G. and Kalala, T. (2016) 'Understanding women's needs for weather and climate information in agrarian settings: the case of Ngetou Maleck, Senegal', *Weather, Clim., Soc.* 8: 247–264 (<https://doi.org/10.1175/wcas-d-15-0075.1>).
- Dalberg Advisors (2022) 'CGAP strengthening climate resilience and adaptation through financial services'. Product scan. Washington, DC: CGAP (www.findevgateway.org/sites/default/files/publications/2022/221117_CGAP%20version_Climate%20resilience_Product%20scan.pdf).
- de Jode, H. and Flintan, F. (2020) *How to do gender and pastoralism*. How to Do Note. Rome: International Fund for Agricultural Development (IFAD) (<https://hdl.handle.net/10568/108874>).
- Debela, N., Mohammed, C., Bridle, K., et al. (2015) 'Perception of climate change and its impact by smallholders in pastoral/agropastoral systems of Borana, South Ethiopia' *SpringerPlus* 4: 236 (<https://doi.org/10.1186/s40064-015-1012-9>).
- Djoudi, H. and Brockhaus, M. (2011) 'Is adaptation to climate change gender neutral? Lessons from communities dependent on livestock and forests in northern Mali', *Int Forest Rev* 13(2): 123–135 (<https://doi.org/10.1505/146554811797406606>).
- Flachs, A. and Richards, P. (2018) 'Playing development roles: the political ecology of performance in agricultural development' *Journal of Political Ecology* 25(1): 638–646 (<https://doi.org/10.2458/v25i1.23089>).
- Gannon, K.E., Castellano, E., Eskander, S., et al. (2022) 'The triple differential vulnerability of female entrepreneurs to climate risk in sub-Saharan Africa: gendered barriers and enablers to private sector adaptation', *WIREs Clim. Chang.* 13(5): e793 (<https://doi.org/10.1002/wcc.793>).
- Guye, M., Legesse, A. and Mohammed, Y. (2022) 'Indigenous weather forecasting among Gujji pastoralists in southern Ethiopia: towards monitoring drought', *Pastoralism* 12(43) (<https://doi.org/10.1186/s13570-022-00258-0>).
- Habtemariam, L.T., Gandorfer, M., Kassa, G.A., et al. (2016) 'Factors influencing smallholder farmers' climate change perceptions: a study from farmers in Ethiopia', *Environ. Manag.* 58: 343–358 (<https://doi.org/10.1007/s00267-016-0708-0>).
- Hassan, R., Stites, E. and Howe, P. (2024) *Pastoralists' perspectives on early warning, anticipatory action, and emergency response: desk study 1 in the diverse perspectives on humanitarian action in the pastoral drylands series*. Boston: Feinstein International Center, Tufts University (https://fic.tufts.edu/wp-content/uploads/Desk_Study1_Pastoralist_Perspectives.pdf).
- ILRI – International Livestock Research Institute (2021) *Empowering women through participatory rangeland management*. Nairobi: ILRI (www.ilri.org/knowledge/publications/empowering-women-through-participatory-rangeland-management).
- Kamel, N., Buluma, C. and Foelster, J. (2025) 'Behavioural and norms-responsive animal health systems for pastoralists in Ethiopia and Kenya'. Policy Brief. London: SPARC (www.sparc-knowledge.org/publications-resources/behavioural-and-norms-responsive-animal-health-systems-ethiopia-kenya).
- Kenbridge Consulting Limited (2023) 'Adaptation Services for Action and Learning (ASAL Adapts): pastoralists climate services information needs assessment'. Nairobi: SPARC.
- Maru, N., Nori, M., Scoones, I., et al. (2022) 'Embracing uncertainty: rethinking migration policy through pastoralists' experiences', *Comp. Migr. Stud.* 10(5) (<https://doi.org/10.1186/s40878-022-00277-1>).
- Reid, E. (2024) 'Forecasts for pastoralists: increasing demand for weather forecasts to support adaptation in northern Kenya'. Policy brief. London: SPARC (www.sparc-knowledge.org/publications-resources/forecasts-pastoralists-increasing-demand-weather-forecasts-support).
- Roy, D., Datta, A., Kuwornu, J.K.M., et al. (2021) 'Comparing farmers' perceptions of climate change with meteorological trends and examining farm adaptation measures in hazard-prone districts of northwest Bangladesh', *Environ., Dev. Sustain.* 23: 8699–8721 (<https://doi.org/10.1007/s10668-020-00989-3>).
- Shariff, T. (2020) "I exist because you exist": The "moral economy" of pastoralists in response to COVID-19'. Pastoralism, Uncertainty and Resilience – PASTRES, 1 May. Brighton: Pastres, Institute of Development Studies (<https://pastres.org/2020/05/01/i-exist-because-you-exist-the-moral-economy-of-pastoralists-in-response-to-covid-19/>).
- Shikuku, K.M., Winowiecki, L., Twyman, J., et al. (2025) 'Smallholder farmers' attitudes and determinants of adaptation to climate risks in East Africa', *Clim. Risk Manag.* 16: 234–245 (<https://doi.org/10.1016/j.crm.2017.03.001>).
- Silvestri, S., Bryan, E., Ringler, C. et al. (2012) 'Climate change perception and adaptation of agro-pastoral communities in Kenya', *Reg Environ Change* 12: 791–802 (<https://doi.org/10.1007/s10113-012-0293-6>).
- Sloan, B., Lelenguyah, G., Radhakrishnan, B., et al. (2025) *Enabling adaptation: harnessing the power of participatory approaches to facilitate locally led climate adaptation in northern Kenya*. Washington, DC: Mercy Corps (www.mercycorps.org/sites/default/files/2024-02/prg-pace-report-lo-0224-finv2.pdf).
- Stites, E., Gargule, A., Iyer, P., et al. (2023) 'Mobility matters: the benefits of pastoralist mobility for nutrition in Marsabit and Isiolo counties, Kenya'. Washington, DC: United States Agency for International Development (USAID) (<https://fic.tufts.edu/publication-item/mobility-matters/>).
- Turnbull, S. and Harrison, C. (2024) 'Shepherd's eye in the sky: the potential for Afriscout digital grazing maps to improve pastoralists' grazing and migration decisions'. Technical Brief. London: SPARC (www.sparc-knowledge.org/sites/default/files/documents/resources/shepherds-eye-in-the-sky-the-potential-for-afriscout-digital-grazing-maps-to-improve-pastoralists-grazing-and-migration-decisions_brief.pdf).
- Vincent, K., Mercer, S., Reid, E., et al. (2025) 'Weather and climate information services for pastoralists: a review' *Climate Services* 40: 100628 (<https://doi.org/10.1016/j.cliser.2025.100628>).
- Yihun, K.L., Janoch, E. and Sriram, V. (2023) 'Centering women's voices and choices in COVID-19: learning from CARE's Women Respond Initiative', *Knowledge Management for Development Journal* 17(1/2): 127–144 (www.km4djournal.org/index.php/km4dj/article/view/529).

Acknowledgments

This policy brief is published through the Supporting Pastoralism and Agriculture in Recurrent and Protracted Crises (SPARC) programme, which is supported by the United Kingdom's Foreign, Commonwealth and Development Office (FCDO).

The authors are grateful to Liz Stites, Tahira Mohamed and Sandra Hart for their review and feedback on the brief. Many thanks to the SPARC communications team, including Julie Grady Thomas, along with Rebecca Owens for copyediting, Lucy Peers for design and Jo Fottrell for proofreading.

About SPARC

Climate change, armed conflict, environmental fragility and weak governance, and the impact these have on natural resource-based livelihoods, are among the key drivers of both crisis and poverty for communities in some of the world's most vulnerable and conflict-affected countries.

SPARC aims to generate evidence and address knowledge gaps to build the resilience of millions of pastoralists, agro-pastoralists and farmers in these communities in sub-Saharan Africa and the Middle East.

We strive to create impact by using research and evidence to develop knowledge that improves how the FCDO, donors, non-governmental organisations, local and national governments, and civil society can empower these communities in the context of climate change.

© SPARC Knowledge 2025

How to cite: Chamberlin, W., Kebede, T. and Jaquez, C. (2025) 'From risk to resilience: grounding innovations in pastoralist realities'. Policy Brief. London: SPARC Knowledge (<https://doi.org/10.61755/LY008259>).

This work is licensed under CC BY-NC-ND 4.0.

Readers are encouraged to reproduce material for their own publications, as long as they are not being sold commercially. SPARC Knowledge requests due acknowledgment and a copy of the publication. For online use, we ask readers to link to the original resource on the SPARC Knowledge website.

Views and opinions expressed in this publication are the responsibility of the author(s) and should in no way be attributed to the institutions to which they are affiliated or to SPARC Knowledge.

Funded by



This material has been funded by UK aid from the UK government; however the views expressed do not necessarily reflect the UK government's official policies.