



Policy Brief

Blending multiple knowledges for action: Weather and climate information services in pastoralist contexts

Summary

Weather and Climate Information Services (WCIS) and Early Warning Systems (EWS) provide forecasts, alerts, advisories, and other information that can help protect the lives, livestock, mobility, and livelihoods of dryland communities.

Many policies and interventions around WCIS and EWS organize knowledge along a familiar divide: Indigenous knowledge on one side and scientific knowledge on the other. While this can help structure activities, identify knowledge holders, and create spaces for engagement, it also makes knowledge seem more divided than it is in practice.

Propagating such divides leads to mistrust, excludes expertise and insights and weakens the potential for successful anticipatory actions.

This brief challenges this approach and its associated integration agenda. It offers guidance to better reflect how pastoralist communities navigate climate uncertainty and other shocks.

Key messages

- Pastoralist forecasting knowledge is dynamic, adaptive and continually revised through practice.
- When navigating uncertainty, pastoralists use multiple sources of information, including environmental indicators, livestock behaviour, social networks, market information, local communication, and formal forecasts.
- The Indigenous/scientific knowledge divide does not reflect how pastoralists actually make decisions and how they continually weigh different sources of information, assessing how they support, question, complement or contradict one another.
- Weather and Climate Information Services and Early Warning Systems are more useful when they connect with the ways that pastoralists already make decisions under uncertainty, strengthening their existing practices of interpretation, validation, and early action.

Opportunities to act

- Researchers to support a move beyond the Indigenous/scientific knowledge divide by generating evidence on how pastoralists compare, test, debate, and adapt multiple sources of information in practice.
- Practitioners, humanitarian and development actors to reframe integration beyond the simple addition of local indicators to scientific forecasts by designing climate services and early warning systems around pastoralist forecasting practices, trusted messengers, mobility patterns, and decision-making realities.
- Governments and policymakers to advance grounded, pluralist approaches to policy and implementation by ensuring that pastoralist knowledge, scientific forecasts, and dryland realities jointly shape early warning, climate services, and pastoralist development policies.

Multiple sources of knowledge in pastoral settings

WCIS and EWS are increasingly vital in pastoral drylands. Droughts, erratic rainfall, disease outbreaks, market disruptions, and conflict-related shocks are becoming more difficult to anticipate and manage.

Timely and reliable information enables earlier action, reduces losses, and helps protect lives, livestock, mobility, and livelihoods.

In pastoralist regions, climate risk exists within a broader context of uncertainty. Decisions regarding movement, grazing, water access, livestock sales, herd health, and household needs are influenced not only by rainfall and pasture conditions but also by markets, conflict, infrastructure, borders, local institutions, and social relations. Forecasts become actionable when they address this complex decision-making environment.

Pastoralists' decision-making shows a grounded picture. They manage uncertainty through diverse and adaptive knowledge practices. They observe environmental indicators, livestock behaviour, pasture and water conditions, and disease patterns. Information is exchanged through relatives, traders, scouts, elders, local leaders, and broader social networks. Additionally, they use radio, mobile messages, market information, advisories, and government or NGO warnings.

These sources are evaluated, compared with experience, and adapted as conditions evolve. A herder may compare pasture conditions with a radio forecast, read livestock behaviour alongside reports from relatives or scouts, or weigh a drought warning against market prices and memories of previous dry years. No single source gives the full answer.

Each is judged in relation to timing, trust, access, changing conditions, and the decision at hand. Some sources may help with decisions about movement; others may matter more for livestock sales, water access, herd health, or household planning.

Multiple knowledges and false dichotomies

In many WCIS and EWS programs, knowledge is described through the familiar distinction between Indigenous and scientific knowledge.

This distinction helps to identify knowledge holders, organize activities, and create spaces for climate scientists, communities, government agencies, and practitioners to speak to one another.

But it can also make knowledge systems seem more separate than they are.

In pastoralist settings, people rarely work with knowledge in neat categories. They draw on what is available, what is trusted, what has worked before, and what makes sense for a specific decision. Boundaries between Indigenous and scientific knowledge are fluid (Agrawal, 1995).

This matters as many agencies pursue 'integration' – incorporating selected local indicators into scientific forecasts. This can be helpful, especially when it improves communication, trust, and local relevance. But it is less useful where pastoralist knowledge loses its context and meaning and is only valued when translated into scientific terms or to support an existing forecast (Nadasdy, 1999).

Rather than working with two separate knowledge systems, evidence shows that pastoralists employ both local indicators and external forecasts, but not in the same way or with the same level of confidence (Kagunyu et al., 2016; Luseno et al., 2003).

This suggests that pastoralist knowledge is active and responsive, inclusive, and neither fixed nor closed.

The idea of blending, or braiding, diverse knowledges together captures this approach. It recognizes that different sources of information can be both distinct and used in combination. They may support or contradict one another.

Case studies

Kenya: Indigenous indicators are important but are interpreted flexibly. Research with Borana pastoralists in Isiolo shows that herders draw on many signals to anticipate rain, floods, and drought, including animal and bird behaviour, insects, clouds, flowering plants, dreams, and star patterns. As droughts are more frequent and severe, community members observed that some of these indicators have become less dependable and additional indicators are being incorporated through continuous testing, revision and interpretation.

Ethiopia and Kenya: Pastoralists work across Indigenous and external forecasts. Research in southern Ethiopia and northern Kenya found that pastoralists use both Indigenous and external climate forecasts. While Indigenous forecasting dominated overall, the study noted considerable interest in external forecasts, especially among people with access to radio, formal education and stronger links to towns and markets.

Horn of Africa: Formal climate information is most useful when it is socially embedded. Recent work suggests that uptake depends on factors like mobility, remoteness, infrastructure, literacy and gendered inequalities. Forecasts are more likely to be used when they travel through trusted channels and connect with existing interpretive practices.

A seasonal forecast may indicate normal rainfall, while local signs indicate stress in pastures or water conditions. Elders' interpretations may differ from radio forecasts. Market signals may encourage livestock sales, while rainfall forecasts suggest waiting.

These differences are not obstacles to be removed. They are part of how pastoralists work through uncertainty: comparing signals, discussing different interpretations, testing information against experience, and deciding what is useful in that moment.

Recognizing the need to blend and come together, platforms such as [Participatory Scenario Planning](#) and the [Greater Horn of Africa Climate Outlook Forum](#) bring together pastoralists, climate scientists, government agencies, and practitioners in conversation about seasonal outlooks, local conditions, risks, and possible responses.

Their value is strongest when they allow different forms of knowledge to be discussed on their own terms, rather than reducing pastoralist knowledge to a small set of indicators accepted only when they match scientific forecasts.

Such a blended approach keeps disagreements visible, protects contexts that give pastoralist knowledge meaning, and make scientific information more useful for real decisions about mobility, grazing, water, livestock, markets, and early action.

Conclusion

The potential for WCIS and EWS lies in transcending the conventional divide between Indigenous and scientific knowledge. This divide often unhelpfully frames pastoralist knowledge as either local and traditional or technical and authoritative.

Both modern and traditional sources of information are important in pastoralist settings and, in practice, pastoralists work across multiple forms of knowledge, drawing on and blending environmental observations, experience, social networks, and formal forecasts in ways that are practical, selective, and context-dependent.

Policies and interventions should therefore be designed to support, rather than replace, the interpretive practices that enable pastoralists to navigate uncertainty. Such approaches are more likely to yield context-sensitive responses that align with the realities of dryland environments.

More

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In April 2026, the Jameel Observatory for Food Security Early Action convened an ‘evidence capitalization workshop’ with partners to synthesize insights and key messages on issues and opportunities that can advance early action for dryland resilience and prosperity in the Horn of Africa. This brief and accompanying short video are products of this exercise.

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