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Briefing Paper

Early Warning and Disaster Response in Karamoja: The need to integrate local knowledge and formal systems

Indigenous knowledge and good practices for development and disaster management

In 2022 and under its emerging global localization agenda, United States Agency for International Development (USAID) conducted research with 25 multilateral and bilateral donors and local organizations to understand how organizations currently define, utilize, and incorporate local knowledge into their programs.[i] The researchers concluded that, "*There was resounding agreement that local knowledge led to more effective and successful programs*:

- *When programs are rooted in the lived experiences of the community and tailored to the local context, programs are more accessible, adaptive, and efficient.*
- *Using local knowledge built stronger relationships and trust between external organizations and local stakeholders, so that programs are jointly designed and more readily accepted by the community.*
- *When local ownership is cultivated, programs are more sustainable.*"[ii]

In the humanitarian sector, community participation and local knowledge are seen as central to effective livelihoods-based programming. For example, the third edition of the Livestock Emergency Guidelines and Standards, published in 2023, positions participation as Principle 2: Ensuring Participation and advises that, "*Participation includes respect for indigenous knowledge on the local environment, grazing management, livestock husbandry and diseases, and customary social systems and networks that depend on livestock transactions. This knowledge has substantial practical value when identifying appropriate emergency interventions.*"[iii] Similarly, the SEADS Standards for crop-related assistance in disasters has participatory approaches as its second Core Principle.[iv]

Indigenous early warning systems (IEWS)

Among the first detailed accounts of climate-related indigenous knowledge in East Africa was a study in northeast Kenya that documented how Somali pastoralists predicted and reacted to weather patterns and drought.[v] This work was very much framed around local drought management, pastoralist adaptation,

and livelihoods change. More recently, the increasing importance of global climate change and related research funding has led to a substantial body of information on indigenous early warning systems (IEWS) in pastoralist and farming communities, and frequent calls for greater integration with scientific climate forecasts. For example, under the first Priority Action of the UN's Sendai Framework for Disaster Risk Reduction (2015–2030) is the aim, "*To ensure the use of traditional, indigenous and local knowledge and practices, as appropriate, to complement scientific knowledge in disaster risk assessment and the development and implementation of policies, strategies, plans and programmes of specific sectors, with a cross-sectoral approach, which should be tailored to localities and to the context*."[vi]

However, despite a high level recognition of the value of traditional knowledge for disaster management and the need for integrated approaches, a study in Ethiopia, Tanzania, and Uganda in 2019 reported that pastoralists and farmers continued to rely heavily on IEWS, based on local meteorological, biological, and astrological indicators, and "*especially in the absence of downscaled location-specific (official) forecasts*."[vii] While local users had much confidence in IEWS, there were also concerns about the gradual and generational loss of traditional knowledge, and continuing gaps between local and formal systems: "*The challenge ahead is finding ways of integrating IK*' [indigenous knowledge] *forecasting with scientific forecasting to improve the accuracy of climate and seasonal weather forecasts, which is likely to increase trust and willingness of farmers and pastoralists in East Africa to use scientific forecasts*."[viii]

Early warning and disaster management in Karamoja

In common with many other dryland areas of East Africa, Karamoja is prone to droughts that cause excess livestock mortality and so contribute to chronic poverty and food insecurity. Drought also reduces or wipes out crop harvests, with further impacts on local livelihoods. It follows that long-term development programs in the drylands should include efforts to manage drought and contingency funds to enable early drought response. More broadly, disaster management systems in these areas also have to plan for other hazards such as livestock and crop diseases, and floods.

In 2021 a review of drought management systems and capacities in Karamoja reported a range of important institutional and financial weaknesses, as well as limited understanding of good practices such as drought cycle management or livelihoods-based drought response.[ix] Although large-scale development programs were operating in the region, flexible funding for emergency response was evident in only one program, and this program has limited coverage. In 2022 Karamoja experienced a humanitarian crisis due to multiple combined hazards, and the late and limited response to this crisis was a reminder that existing formal early warning systems were insufficient.[x]

Karamoja's IEWS

In late 2022 the Karamoja Resilience Support Unit collected information on IEWS in Moroto, Napak, and Amudat Districts, including the use of participatory methods and key informant interviews with government and nongovernmental organization (NGO) staff working on disaster risk management in Karamoja.[xi] Some of the key findings from this assessment are summarized below.

- Both government and NGO staff recognized the role of IEWS and that communities had relied on their traditional knowledge and practices for generations to guide their livelihood decisions. The IEWS relied on a combination of local people's long-term observations and close interaction with their environment, and real-time monitoring of their surroundings. Communities trusted the forecasts from their own experts because these forecasts were generally seen as reliable. However, they also agreed with government and NGO staff that their own system was, like the conventional system, not always reliable.
- Communities used various indicators to predict weather: they studied plant phenology, animal behavior, the position and movement of stars, the position of the sun, and the direction of the wind. In addition, local experts "dream" to foretell the future, while other local specialists read intestines and shoes, and speak to the gourd to foretell climatic conditions and other forms of misfortunes or fortunes. These indicators can be grouped into four main categories, namely: meteorological indicators; biological indicators (both plant based and animal based); astrological indicators; and supernatural/animistic indicators.
- A salient feature of the IEWS is its multihazard nature as it not only comprises hydrometeorological indicators, but also indicators for conflict and insecurity (e.g., cattle raids), among a myriad of other misfortunes. Whereas knowledge about meteorological indicators, biological indicators, and astrological indicators is common among the community members and can be learnt from the older generation by anyone, interpretation of some of the supernatural/animistic indicators requires special expertise that is only passed down generations through particular families or clans.
- Traditional early warning information is subjected to verification by local experts before forecasts and advice are released to communities. Likewise, forecasts from the government are subjected to corroboration by the foretellers. Indigenous

knowledge and practices were however seen to be under threat from the influence of Christianity, formal education, lack of systematic documentation, environmental degradation and loss of habitat for both plant and animal indicators, and a clampdown on foretellers by the government because of their apparent involvement in facilitating cattle raids.

- At community level, there are mixed views on the forecasts from government, with most informants treating the information with contempt. However, they respond to the government advice by planting at the right time (when rain delays are expected), planting the right type of crop (if little rain is predicted), as well as preparing for migration to track pasture in case of an extended dry season or drought; they also plan grazing management when plenty of rain is expected. Whereas both the government and NGO staff considered conventional forecasts to be more reliable than the indigenous weather forecasts, they too acknowledged the inaccuracy in the EWS; this inaccuracy was mostly attributed to poor downscaling and distribution of weather monitoring stations.
- Indigenous and conventional early warning systems exist side by side in Karamoja. Discussions with government and NGO staff, as well as with the communities, reveal that both the indigenous and conventional early warning systems have their strengths and weaknesses, and that while communities may accept government advice to some degree, they still subject the conventional forecasts to verification by their own foretellers. This points to the potential for complementarity between the two systems, probably in the form of a hybrid early warning information system that is more acceptable, accurate, actionable, and effective. However, the current attempts to integrate the two systems appear to focus more on community validation of the conventional forecast rather than on cogeneration of early warning information and joint verification before dissemination of forecasts and advice. It was not clear from the assessment participants which aspects of the two systems are targeted for integration.

Conclusions and recommendations

Currently, the processes in Karamoja that aim to integrate indigenous and conventional early warning systems are "top-down" in nature and seek validation and acceptance of the conventional forecasts by communities rather than involving them in cogeneration. A genuine localized approach to early warning should shift the approach to more of a partnership and co-acceptance of the strengths and weaknesses of indigenous and conventional systems. For example, the Karamoja Resilience Support Unit (KRSU) assessment calls for joint review—by communities and scientists—of the accuracy of both conventional and indigenous weather prediction indicators to identify the common, most accurate, and compatible indicators for integration. In addition:

- Strengthening the existing district disaster risk management institutional framework and decentralizing government disaster structures further to village level are vital in facilitating integration of the IEWS with conventional early warning systems.
- There is also a need to improve the distribution of weather stations and capacity of meteorological personnel in data generation, modelling, and downscaling to provide location-relevant information to enable integration with IEWS.
- Integration of the two systems should focus on cogeneration of early warning information, and joint verification involving the community elders/experts and government experts before dissemination of forecasts and advice.
- An effective EWS should not only focus on efficient generation, analysis, and dissemination of timely and accurate information, but also on actionable and user/sector-specific warning to communities, accompanied with support and anticipatory action rather than emergency response.

Acknowledgements

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Endnotes

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