



POLICY PAPER

Traditional Climate Early Warning: Enablers and Opportunities for Its Application of Weather Forecasting Practices in Pastoral Kenya

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Summary

Pastoral communities are confronted with variety of challenges which undermine their resilience to stresses and shocks. For these communities to maintain their coping and adaptive capabilities and assets, accurate early warning information is required to cope with and recover from the adverse natural events witnessed in arid and semi-arid areas. For early warning system to be effective, the community at risk should be actively involved and educated on the risks to ensure there is constant state of preparedness. This brief reviews various

traditional early warning systems among communities in northern Kenya highlighting the challenges faced in its application by the current generation, as well as the opportunities available for its use and promotion by future generations. The paper concludes by exploring possible ways of preserving the use of traditional knowledge for early warning. The recommendations are targeted at ensuring that current young generations understand, appreciate and benefit from traditional early warning systems.

Pastoralism and Early Warning Systems

According to Wasonga (2009), pastoralism is based on strategic utilization of landscapes that conforms to the asymptotic distribution of resources in space and time. Pastoral communities that inhabit these areas are

oftentimes the victims of natural events such as droughts and floods. In order for pastoral communities to access and use resources to deal with the challenges they face, pastoral communities should be well aware and



informed of the impending disturbances (Mauro et al. 2000) so as to prepare and put in place coping mechanisms. Accurate early warning information therefore is a prerequisite to coping with and recovering

from natural disasters that have now become common place in pastoral systems of Africa.

Why Early Warning?

It may not be possible to prevent the droughts from reoccurring but their impacts such as famine, disease outbreak and loss of assets such as livestock can be greatly influenced by the timely and effective early warning. Indigenous early warning systems as defined in box 1 have the following advantages to the communities in:

- Timely detection and monitoring of an imminent hazard;
- Resource mobilization to deal with disasters;
- Forecasting impending floods, droughts and any other natural events;
- Detecting disaster related stress on livelihoods of pastoral communities
- Identifying the needs with regard to the impending disaster;
- Provide information to decision makers for effective intervention.

Definition 1

Early warning systems are means by which people receive relevant and timely information in a systematic way prior to a disaster in order to make informed decisions and take action. The word system is used to refer to the interplay between an array of elements aimed at facilitating communication and prompt response to protect and aid those in need (Figure 1).

There are four basic elements of an early warning system:

- *Risk knowledge*
- *Monitoring*
- *Response capability*
- *Warning communication*

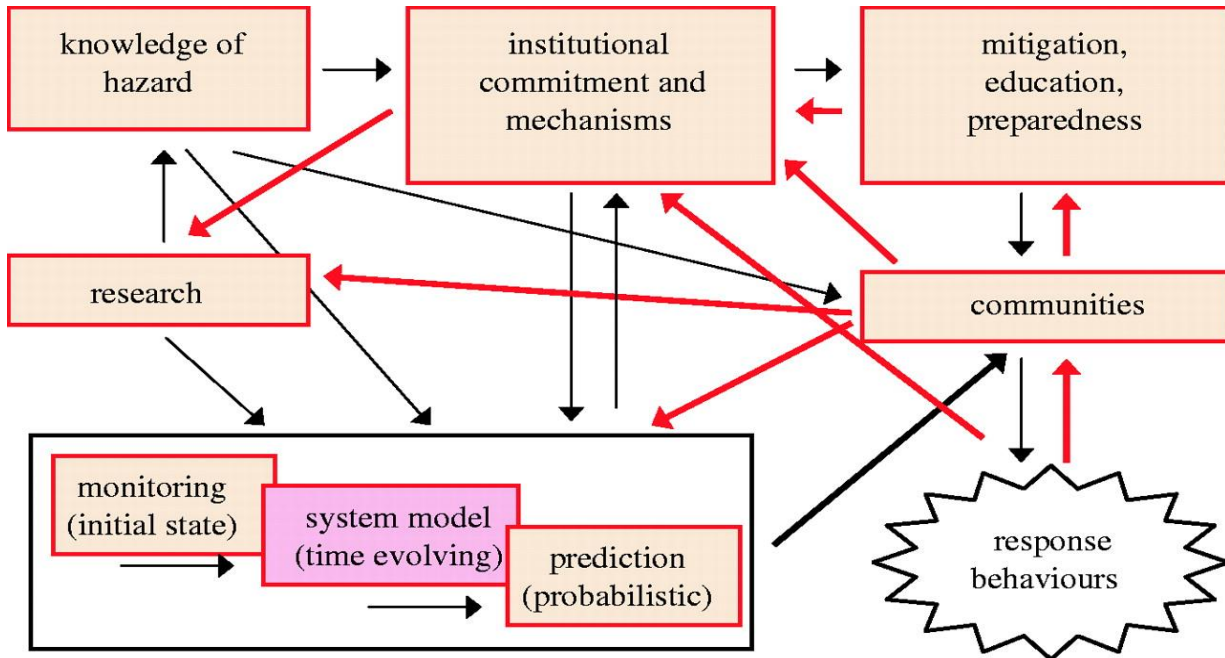
Adopted from Global Disaster Preparedness

Centre (Source:

<http://preparecenter.org/topics/early-warning-systems>)



Table 1: Figure 1: Global early warning systems for natural hazards: systematic and people-centred



Source: <http://rsta.royalsocietypublishing.org/content/364/1845/2167>

Indigenous Early Warning Signs

Pastoral communities possess indigenous knowledge used in prediction of climatic

patterns which have been developed and perfected in close contact with nature over generations. These skills and knowledge have been developed through keen observance of behaviors of animals, birds, insects, plants, human feelings, atmospheric humidity, and temperature.

Definition 2

Early Warning (EW) is the provision of timely and effective information through identified structures that allows individuals exposed to hazards to take action to avoid or reduce their risk and prepare for effective response.

The indigenous early warning systems as defined in box 2 were based on detailed knowledge of events including the behavior and variations of stochastic a biotic factors



such as the direction of wind, temperature, and amount of water vapor in the atmosphere. Some of these signs common among the pastoral communities in Kenya are summarized in Table 1 below:

Table 1: Early Warning Signs and their meanings

Animal Warning Sign	Meaning
Livestock disturbance	Dry Season
Livestock reluctance to leave watering points	Drought
Goats, sheep having jovial mood at watering points	Rainy season
Livestock calmness in grazing fields	Rainy Seasons
Restlessness in the boma	Drought
Decline in milk production	Drought
Bulls are violent	Raining season
Camels urinate while sitting/ crossing of legs	Dry season
Bulls mounting on the females	Rainy Season
When goats, sheep use more than one route	Rainy Season
Birds making sounds at midnight and morning	Rainy Season

hours	
Birds are active, singing and busy nesting	Rainy Season
Presence of moles above the ground	Rainy season
Kid suckles while crouching	Drought
Goats panting	Rains
Livestock licking dry bones	Severe drought
Birds flying high in the sky	Drought
Red intestines of a goat	Rains
Acacia Trees flowering	Eminent rains
A solid ring-like circle in the moon	Dry season
Dark New moon	Gloom or death

Main Challenges

Every community is endowed with different resources and has its own social norms and cultural beliefs which influence their daily

activities, leading to unique challenges. The nature of the strategies taken by the communities therefore also depends largely



on their socio-cultural characteristics, as well as the physical environment. However, application of indigenous early warning systems faces challenges such as highlighted below:

- **Education and Indigenous Knowledge:** With the search for modern education, most youths are neither available nor willing to take up indigenous knowledge from the elders. Again, even if the elders foretell of an impending drought that would require the community at risk to migrate, they may not be able to move given that children may not be able to access education and the fact that there may be no adequate labour as children have to attend school and other social services and amenities which have been centralized.
- **Changing governance Systems:** External assistance through the interventions given by non-governmental organizations and County governments has supplanted other traditional drought coping strategies. The pastoral communities currently depend more on relief food and other short term benefits therefore have no much consideration for early warnings given to them by the elders since they know they will be assisted anyway.

- **Impacts of Centralization:** Centralization of the administrative services and important social amenities such as health centers has also made it difficult for the pastoral communities to use indigenous knowledge. This centralization renders mobility and opportunistic resource utilization which is the key for sustainable resource use in the semi-arid ecosystems untenable. The fragmentation of communal areas has also reduced the grazing fields and makes it difficult for pastoral communities to move in search of pasture and water.

Other Challenges

- Too late or inappropriate warning that exposes pastoralists to risks
- High climate variability resulting into meteorological droughts and stress
- Overreliance on foreign interventions
- Language barrier as some young people cannot converse in local languages.
- The adoption of formal education and new technologies.
- Centralization of basic facilities and administrative services impairing movements



Conclusion

In conclusion, it can be deduced that failure in anyone of the Early Warning Systems and associated elements discussed in this paper can mean failure of the whole early warning system. The current management of the risks and hazards such as droughts and floods is largely reactive and crisis driven and also lack social indicators to form part of a comprehensive early warning system which leaves the pastoral communities in worse states than before the hazards. The use of indigenous knowledge is therefore central to an integrated risk assessment, communication and decision support system of the various hazards the pastoral communities of northern Kenya face.

Recommendations

For traditional climate early warning systems to be effective, young members of the pastoral communities should be educated and sensitized on its importance. Other options are summarized in the box below:

Recommendations

- **Learning curriculum** to be modified to address the training needs and schedule of pastoral communities.
- **Formalize and strengthen traditional institutions** in management of natural resources. Specifically, the County governments and development partners should support emerging institutions such as resource users' associations. This will help the communities to respect the elders and be able to utilize the early warning knowledge in the sound management of natural resources.
- **Strengthen and enhance** social norms, rules and regulations in all local level development plans.
- **Increase social interaction** between elders and young people. There is need for more forums where elders share indigenous knowledge with young people
- **Exploit use of social media as a means to reach and appeal to young people**



Useful Links

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