

## Session 3: Crisis mitigation in livestock dependant systems

# Crisis mitigation in livestock dependant systems: The role and limitations of current initiatives for livestock systems in South Africa

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## Abstract

Livestock are central to the livelihoods of livestock-dependent systems in Africa, particularly pastoralists and agro-pastoralists. Over the years, however, climatic extremes in this sub-region have impacted the agricultural production systems including livestock-dependent systems and hence the livestock owners. In recognition of this problem, the SADC member states have elaborated a Sub-Regional Action Programme (SRAP) to Combat Desertification in Southern Africa under the umbrella of the SADC Environment and Land Management Sector. In addition, the sub-region has, with the assistance of collaborating partners, established early warning systems (EWS) to assist farmers anticipate and prepare for climatic extremes such as drought. This paper discusses these initiatives focusing on their role and limitations to serve the livestock sector and suggests opportunities to enhance their effectiveness to support and improve the management of livestock and drought.

Keywords: livestock; climatic extremes; drought; early warning systems; ESA

## Introduction

Livestock are central to the livelihoods of the livestock-dependent production systems in Southern Africa, accounting for about 25% of the total agricultural output of the member states. In particular, livestock are central to the well-being of the pastoralists and the agro-pastoralists.

Climatic extremes are a critical phenomenon in the pastoral and agro-pastoral communities largely because of the extreme dependence of these communities on the natural environment for their livelihoods and the welfare of their animals. In most parts of the arid and semi-arid areas of southern Africa, a common feature is unreliable rainfall and periodic droughts. This climatic phenomenon is known to impact biodiversity, human health, the productivity of the systems and hence the well-being of the livestock owners (Ford 1971; Lewis 1975; Hussein 1976; Swift 1976; Horowitz and Little 1987). For the Southern African Development Community (SADC) region, drought can no longer be regarded as a catastrophe but rather accepted as a recurrent feature of the environment. (Pereira 1968)

This and other climatic phenomena have been recognised as crucial to the development of the sub-region at the highest political levels. In direct response to this concern, the SADC member states have elaborated a Sub-Regional Action Programme (SRAP) to implement the UN Convention to Combat Desertification under the umbrella of the SADC Environment and Land Management Sector. At the same time, a network of early warning systems (EWS) has been established in the sub-region addressing regional as well as national perspectives.

In order to contribute to these efforts, the SADC Regional Animal Agriculture Research Network (SAARNet) has also started an initiative to undertake studies on "Crisis Mitigation in Livestock-Dependent Systems" to understand the risks associated with climatic variability and to provide policy options, technologies and knowledge products that will make the livestock sector more resilient in times of drought and thus promote food security, poverty alleviation and sustainable natural resource conservation.

## **The SADC initiatives for drought crisis mitigation**

**The SADC Sub-Regional Programme to Combat Desertification (SADC-SRAP):** Following the SADC Council of Ministers approval of the "SADC Policy and Strategy for Environment and Sustainable Development - Towards equity-led growth and Sustainable Development in Southern Africa", in August 1996, the Council established the distinct Policy and Strategy Co-ordination Unit called the SADC Environment and Land Management Sector (SADC-ELMS) under the SADC Committee of Ministers of Environment.

The overall aim of SADC-ELMS is "to achieve sustainable utilisation of the natural resources and effective protection of the environment" (SADC 2000). To achieve this overall goal, SADC-ELMS will co-ordinate activities at the level of three programmes, namely the Land Management Programme, the Environment Management Programme and the Information Management Programme.

Within this framework, the SADC Council of Minister approved and adopted a *Sub-Regional Action Plan (SRAP)* in August 1997 to combat desertification in Southern Africa as the key operational instrument for implementing the United Nations Convention to Combat Desertification (UNCCD) in the sub-region. One of the priority programme areas identified and agreed upon to be implemented by SRAP is the "Strengthening of Early Warning Systems".

SADC-ELMS is evolving and has already undertaken an assessment of institutions in SADC countries that could assist it in leading the co-ordination and implementation of activities in the SRAP priority programme areas. Thus far the Desert Research Foundation of Namibia (DRFN) has been selected and approved by Council as the Lead Institution for SRAP's Capacity Building and Institutional Strengthening priority programme area. DRFN will, among other things, establish a network of institutions to build capacity to combat desertification and mitigate the effects of drought as well as provide leadership in the various aspect of research on desertification and drought.

## The early warning systems (EWS)

A number of EWS have been established in SADC over the past decade or so, with focus on the communities that are extremely vulnerable to climatic variability. Following is a brief review and evaluation of the most successful EWS in SA so far, highlighting their strengths and weaknesses.

The major objective of most EWS is to rapidly provide decision makers with timely and accurate information to quickly take informed decisions on food security and environmental management planning (Walker 1989; Wakesa 1997; Agastiva 1997). Largely, these EWS essentially collect, process, analyse and disseminate observational data on a number of interrelated variables and depend very little on predictive models.

***The Regional Centre for Services in Surveying, Mapping and Remote Sensing (RCSSMRS):*** This is a Food and Agriculture Organisation of the United Nations (FAO) funded project. The overall objectives of the project are to strengthen EWSs for food security in east Africa by establishing satellite remote sensing capabilities in the sub-region and preparing and distributing monthly early warning information to users in the SADC member countries and is based in Harare. It uses satellite data from NOAA HRPT, Meteosat Artemis and Meteosat PDUS to generate and produce timely information on the status of agricultural and environmental resources to assist national and regional institutions concerned with food security and environmental monitoring. The information bulletins are distributed as both GIS-based maps and reports. End-users surveys have shown a general satisfaction with the quality of its products and considerable enthusiasm for EWSs to continue operation in the region.

***Famine Early Warning Systems (FEWS):*** These are two parallel regional initiatives operated and financed by the USAID Africa Bureau in both the Inter-governmental Authority for Development (IGAD) countries of eastern Africa and the SADC countries of southern Africa. They report on price status of food commodities as well as assess weather and growing season status. In addition they provide information on crop production outlooks. Based on these the systems provide quantitative estimates of food aid requirements as well as confirmed emergency food aid and pledges. They do not provide animal production estimates. They distribute their products electronically and by post, targeting national and sub-national level agencies and policy makers.

***Drought Monitoring Centres (DMCs):*** These are jointly operated by the United Nations Development Programme (UNDP) and the World Meteorological Organisation (WMO) with one based in Harare covering southern Africa and the other based in Nairobi covering eastern Africa. These generate quantitative data on the status of the weather and growing season on a monthly basis using monthly and seasonal rainfall forecast information produced by the Climate Prediction Centre (CPC) in Washington D.C., USA along with satellite-based Normalized Difference Vegetation Index (NDVI) and locally collected agro-meteorological data. They produce monthly bulletins which are distributed in hard copy only to national-level technicians through courier and normal mail for informing the relevant policy makers.

## The challenges for addressing livestock issues

SADC-ELMS and EWS provide many opportunities for a holistic approach to mitigating the effects of drought in the region. However, a number of constraints need to be addressed to enhance the value of these initiatives:

- With the exception of a few, the climate predictions or crisis indicators provided by most EWS are point forecasts and therefore are of limited value for livestock impact forecasts and long-range climate forecasts. The short-notice nature of these systems could

largely account for intervention failures, especially among the resource poor stakeholders, who are usually ill prepared to effectively mobilise the necessary resources to adequately respond to crisis situations.

- Information produced by most EWS tends to be oriented to short-range action time scales, drawing largely on locally available data (observational data) and very little use of data external to the region (satellite information). The systems are thus oriented to adverse shocks and hence demand ex-poste rather than ex-ante responses to shocks. They promote coping strategies oriented to relief operations and handouts rather than mitigation.
- There is a general inability to provide reliable and complete information. The satellite technologies currently used by the EWS are relatively new and therefore not well understood and appreciated by ground technical staff. Equally true is that the involvement of different players employing different methodologies to gather the same data creates problems for the harmonisation of data to produce integrated and accurate information and knowledge products for use in decision-making.
- Most EWS do not provide the required information rapidly and on time to enable end-users to make quick decisions to ameliorate prospective risks and exploit emerging opportunities. This is largely due to their use of courier and normal mails rather than electronic mail for the dissemination of the information they generate.

## Conclusions and recommendations

There is an urgent need to improve and strengthen the existing mechanisms for rapid and timely provision of reliable and relevant information for quick decision making. The relevant institutions in the region must therefore build capacity for use of electronic mail for information dissemination both for those that require the primary data to generate early information and those change agents that need to inform the communities to be affected.

There is also an urgent need to enhance the value of the existing EWS by increasing the capacity for extended range climate forecasting and livestock impact forecasting. This can be achieved by the use of emerging inter-seasonal and inter-annual climate forecasting capabilities. There also exist well-established models of animal diseases and growth, range ecology (for example at ILRI) and crop growth, that could be linked to climate forecasts to establish climate-driven forecasts for fodder, animal disease epidemiology and animal growth.

For decades now, development resources have been increasingly used up by relief operations necessitated by unsatisfactory anticipation and/or mitigation of drought. Enhancing the capacity of EWS to mitigate crises, but more importantly to cue opportunistic development interventions will break the cycle of dependence on external relief and the diversion of development or aid resources toward development. Increasing the capacity of EWS for long-range climatic forecasting will enhance the ability of the end-users of their forecast information to make timely decision to take advantage of emerging opportunities and or ameliorate prospective crises rather than depend largely on coping strategies.

As satellite technology is new, there is a need to train (in-service) the ground technical staff to make them more effective in data collection, processing and interpretation. This will improve the accuracy and quality of the forecast information.

EWS must ensure that the countries they serve, build the capacity for quick response to risks shocks as well as opportunities presented by the forecast information. The current lack of harmonisation and co-ordination of the activities of the EWS is counterproductive. Currently different EWS use different data sets to produce climatic predictions, thus tending to differ in the quality and accuracy of these predictors. In Kenya national EWS, for example, several institutions are involved in collecting the same data but using different methods thus putting in question the reliability of the results.

There is a need to bring satellite technology to those countries that do not have their own receiving facilities by the RCSSMR supplying satellite data to those countries.

The human and economic value of the forecast information must be estimated to rationalise the investment into EWS in the region. This will require regular end-user valuation of the information provided by the EWS and the level to which the use of the information has impacted food security.

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