

Technology Fact Sheet for Adaptation

EARLY WARNING SYSTEMⁱ

6. EARLY WARNING SYSTEM	
Introduction	• Climate in Kenya is influenced by topographical features and the large water bodies such as Lake Victoria, Indian, Atlantic and Pacific Oceans. • The country also lies along the Equator and therefore the annual rainfall is influenced by the movement of the Inter- Tropical Convergence Zone (ITCZ) which passes over the country twice annually. • The Sub- Tropical pressure patterns over the Indian and Atlantic Ocean have a strong influence on the seasonal rainfall because they control the movement and strength of the ITCZ. • Indian Ocean is the main source of moisture that provides rain over most of the country • The warming (El- Nino) or cooling (La- Nina) of the Pacific Ocean have influence on the rainfall patterns in the country causing floods in some areas and droughts in others. • Tropical cyclones over the South- Western Indian Ocean have influence on the long rains season because of their Perturbation Circulation Systems. • Sea surface temperatures of the oceans change relatively slowly. Their monitoring is able to provide information that can be used to make assessment of the performance of the seasonal rains in good time for early warning and preparedness. • In order to develop effective information products for early warning the country needs to: a) Establish and strengthen International cooperation in climate data exchange b) Strengthen the climate monitoring systems in the country c) Strengthen Climate information dissemination to the users. The information can be disseminated through innovative ways such as specially prepared bulletins and community based radio networks. Some of the intervention options involve undertaking: • Increase the density of surface observation network that will fit into the Global Climate Observing System (GCOS). • Strengthen the network of Automatic weather stations AWS) especially in remote areas. • Establish an effective system for disseminating climate information to the user communities, For Example: Community Radio Networks. • Prepare the information in a way that different communities will understand and be able to use in order to enhance their different socio- economic activities.
Technology Characteristics	The surface conditions are the most straight forward of the essential climate variables to measure for an Early Warning System. Early Warning System is a set of co-ordinated procedures through which information on foreseeable hazards is collected and analysed for predicting possible future occurrence of a natural phenomenon such as drought and disasters. Basically there, are two types of Early Warning Systems i.e. centralized systems implemented by

	national government bodies and a Decentralised community system operated by volunteer at community level. Some of the instruments for gathering climatic data include the following: • A thermometer for measuring air and sea surface temperature • A barometer for measuring barometric pressure/air pressure • A hygrometer for measuring humidity • An anemometer for measuring wind speed • A wind vane for measuring wind direction • A rain gauge for measuring precipitation • A pyranometer for measuring solar radiation Indigenous knowledge through the use of bio-indicators helps farmers to maintain productive farming practices to adapt to longer periods of suitable weather for crop cultivation or crop type selection. Local farmers do observe to enable them take decisions on their agricultural production. Observation of certain bio-indicators for several months to make weather forecasts and predictions to be able to adjust say planting and cultivation activities. In some communities, end of season can be predicted by migration of some birds or organisms or budding of some trees which alert the farmers to prepare the land.
Country Specific applicability and potential	The Early Warning Systems are developed and operational especially by the Kenya Meteorological Department and Ministry of Special Programmes not only for weather forecasts but also disaster preparedness for farmers, pastoralists, and community members especially in Arid and SemiAridLands. Indigenous Knowledge by communities is also very important
Status of Technology in the Country	The technology is very well developed especially in the Kenya Meteorological Department for agricultural information to farmers. The disaster preparedness may not be as fully involved. There is a draft(Disaster Management Policy which caters for all disasters including drought)
Benefits to Economic/Social and Environmental development	A reliable, accurate Early Warning System is very important for the Agricultural Sector to assist farmers and pastoralists take better decisions on agricultural operations and activities with the following possible resultant benefits: • Reduction of agricultural losses due to adverse climatic events • Increasing productivity that in some cases can guarantee profits for the producer • Availability of data that can be useful to help the official agricultural planning • Reduction of official budget used to cover the agricultural losses is about USD 150 million per year
Climate Change Adaptation Benefits	Weather data is important for advance information say crop calendar i.e. when to prepare land, when to plant, when to expect to harvest and possible yield levels. The climate Impact on Agriculture and System of Agricultural Impacts of Climate Systems developed by FAO do assist in developing adaptation strategies.
Financial Requirement and Costs	This is estimated at US \$ 1000 for a rural weather station. The cost relates to equipment and construction of a station

ⁱ This fact sheet has been extracted from TNA Report – Technology Needs Assessment Reports For Climate Change Adaptation – Kenya. You can access the complete report from the TNA project website <http://tech-action.org/>