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TOWARDS ESTABLISHING EARLY WARNING SYSTEMS FOR FOOD SECURITY IN THE HORN OF AFRICA

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A PRESENTATION

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1.0 Introduction

THE HORN OF AFRICA includes the countries of Burundi, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, and Uganda. This sub-region covers an area more than 6million km^2 with a population in excess of 160 million people. Greater parts of a number of some of the countries in the sub-region are either semi-arid or arid. The principal agricultural countries are Burundi, Ethiopia, Kenya, Rwanda, Sudan Tanzania and Uganda, countries whose main economic activities are dependent on agriculture.

The environmental and weather conditions in a number of these countries are highly precarious. Environmental degradation is highly documented in this Sub-Saharan region that experiences frequent droughts and crop failures that lead to famines. It is believed that famines due to droughts and crop failures could be most frequent here than anywhere else in the world. The sub-region, therefore, requires a reliable and effective early warning system for food production and monitoring to ensure food security in the sub-region.

2.0 Early Warning Activities at the Regional Centre for Mapping Resources for Development (RCMRD)

The Regional Centre for Mapping Resources for Development (RCMRD) has, for a long time, been the only source of early warning information for food security covering the entire sub-region. The first early warning project for the IGAD countries was initiated at the Centre in 1988 with financial assistance from the Government of Japan through the Food and Agriculture Organization (FAO) of the United Nations. The project used METEOSAT Cold Cloud Duration (CCD) data that is used to estimate rainfall. This project ended in 1993. A similar project was started in 1996 when FAO secured funding from the French Government. This project incorporated National Oceanic Atmospheric Administration Normalized Difference Vegetation Index (NOAA-NDVI) data used for assessing the greenness of vegetation.

In 1995 the RCMRD in collaboration with the Environmental Analysis and Remote Sensing (EARS) Consultants of Delft, the Netherlands secured funding from the Netherlands Government through Beleids Commissie Remote Sensing (BCRS) – the Netherlands Remote Sensing Board to carry out an early warning system project in eastern Africa. The project known as the Regional Famine Early Warning System (REFEWS) has been conducted in two phases – the first phase between July 1995 and October 1996, and the second phase between October 1997 and April 1999.

3.0 STATUS OF THE EARLY WARNING SYSTEMS IN THE HORN OF AFRICA COUNTRIES

Early warning systems in the Horn of Africa vary from country to country. The activities are not centralised in one organization.

Ethiopia

Ethiopia has the most elaborate early warning activities system in the sub-region. Her early warning activities are organised under:

- The Disaster Prevention and Preparedness Commission.
- The National Early Warning Committee that comprises line departments.
- The national Early Warning Working Group comprising government departments, donor organisations, NGO's and other interested organisations.

The various types of early warning information are:

- Agricultural information generated by the Ministry of Agriculture.
- Weather information provided by the National Meteorological Services Agency (NMSA)
- Satellite Information (CCD, NDVI, METEOSAT ET and Crop Yield products) provided by the NMSA, Food Early Warning Systems (FEWS) and REFEWS.

Sudan

Sudan has some early warning activities, which are not quite elaborate. Most of the reliable information is based on the irrigated agriculture commonly found in central Sudan. Rain-fed agriculture is mainly in the south of the country. This is an area highly affected by the civil war hampering data collection.

Kenya

There is no established and functional early warning system in Kenya. What exists is an Inter-Ministerial Early Warning Committee coordinated from the Office of the President. The committee basically meets whenever there is need to do so. Crop yield forecasts were based on the Ministry of Agriculture estimates. The information tends to be unreliable.

The Kenya Meteorological Department (KMD) which provides weather data and the Famine Early Warning System (FEWS) project of the United States Agency for International Development (USAID) that bases its analysis on the NOAA-NDVI in combination with some ground collected information are the only sources of early warning information.

Uganda

There is no functional early warning system partly because Uganda rarely suffers frequent droughts. For example, in Kenya about three-quarters of the country is semi-arid or arid.

Only about 20% of the country is good for agricultural production. Nevertheless Uganda still needs an early warning system for two major reasons:

- The northern and eastern parts of country that experience drier climatic/weather conditions require to be properly and adequately monitored.

- A regional Horn of Africa Early Warning System will be very useful for Uganda so that it can monitor food conditions in the neighbouring countries for export trade in case of deficits.

Eritrea

The system in Eritrea is composed of various relevant Government Ministries and Departments coordinated by the Ministry of Agriculture. The following data sets, among others, are considered in the system.

- Hectarage under main cereal crops (Ministry of Agriculture)
- Grain and livestock prices from major market centres in the country (The Eritrean Grain Board)
- Satellite NDVI (The Meteorological Services of Civil Aviation Department)
- Rainfall data (The Meteorological Services of Civil Aviation Department)

Currently we do not have information about the other countries of the Horn of Africa such as Djibouti, Burundi and Rwanda. It can, however, be assumed that the early warning situations in those countries are no better than in the others discussed above.

4.0 THE REGIONAL FAMINE EARLY WARNING SYSTEM (REFEWS) PROJECT

The Regional Famine Early Warning System (REFEWS) Project has revolutionised early warning activities in eastern Africa because, other than precisely monitoring vegetation growth conditions, it introduced an aspect of estimating crop yields. The results have been found to be fairly accurate.

The main results and achievements of the Regional Famine Early Warning System Project in the IGAD countries were mainly the improved METEOSAT Derived products, a monthly bulletin and training.

The Project demonstrated the use of satellite data to develop a decision support system for the Horn of Africa. The development of the methodology marked a step further in providing the usefulness of the METEOSAT derived data products. These products included among others the Relative Evapotranspiration products for crop growth conditions assessment and the Relative Yield forecasts simulated by the Exponential Linear Model in combination with other crop models on the basis of biomass development for crop yield forecasting

The Monthly Regional Famine Early Warning Bulletin produced contained the analysis carried on the Relative Evapotranspiration and Relative Yield forecasts. The bulletin was structured to show the highlights (major/conspicuous changes) in vegetation growth and yield

expectations of the previous month, a brief analysis of the growth conditions and yield forecasts, Relative Growth and Yield forecasts images and a brief explanation of the project and the methodology

The project involved the end-users through workshops and support visits. High emphasis was put on the actual involvement and experience of the end users from the collaborating countries. Two workshops were organised to train the participants in the methodology and evaluate the results of the project respectively. The national participants also received support visits meant to evaluate their usage of the project products.

Other products derived from the project included the following:

- An elaborate raw data and early warning information archive at the RCSSMRS available to the public.
- Training personnel at the RCSSMRS in the methodology.
- An intensive evaluation of the methodology and its products by the end users

5.0 FOOD EARLY WARNING SYSTEMS (FEWS)

Food Early Warning Systems (FEWS) is a well organised project funded by the United States Agency for International Development (USAID). Although it is based in New York, USA, it provides information on food security and other environmental matters on a regular basis.

Many countries in Africa rely on the estimates given by FEWS as up to date information regarding food security in the region. However, it should be known that this system serves the USA more than Africa.

There is the danger of the system being stopped arbitrarily. Also it does not enhance the capacities of the member states to establish their own early warning systems.

6.0 REQUIREMENTS AND PROSPECTS OF ESTABLISHING A REGIONAL EARLY WARNING SYSTEM FOR THE HORN OF AFRICA COUNTRIES

As indicated earlier, early warning activities are not so elaborately developed in the eastern Africa countries. The requirements and prospect for each country is as follows:

Ethiopia has the most developed and well-coordinated early warning system of all the countries in the Horn of Africa. It can benefit from an elaborate project like the REFEWS Project data and information since there is no other organisation in Ethiopia generating information that is similarly unique and important. The generated information was quite representative of the actual situation on the ground implying, therefore, that Ethiopia still greatly needs more re-enforcement to their early warning system.

The activities of early warning systems in Sudan are not well developed although there is reporting on early warning activities. However, the country can greatly benefit from satellite data, which minimizes the lack of machinery to collect information away from the towns.

There is no operational early warning system for food monitoring in Kenya except the Inter-Ministerial Early Warning Committee coordinated from the Office of the President. The committee needs to be strengthened. Yield records are based on the estimates of the Ministry of Agriculture.

The assessment by the Kenyan national participants at the REFEWS workshop was that the information generated by the REFEWS project on crop growth conditions and yield expectations correlated quite well with the actual situation on the ground and also with the predictions made by the Kenya Meteorological Department. The project had quite correctly predicted the short rains crop failure in Kenya in 1998 hence enhancing the methodology's reliability.

Although Uganda, to a greater extent, is self-sufficient in its food requirements, there are some parts in the north and east that experience frequent crop failure. Satellite data generated from the REFEWS project was the only major source of early warning information in Uganda and also due to the accuracy with which it made crop production forecast.

7.0 POLICY FOR FOOD SECURITY FOR THE HORN OF AFRICA

The true food security can only be facilitated by an early warning system (EWS) that is closely linked to the policy making and the response arms of governments, as well as potential donors and outside assistance sources. A regional EWS gives all countries access to similar timely and accurate early warning products at the scale of the region and this would provide a good tool for decision making. Depending on national requirements, the countries can then decide whether the regional products provide sufficient information or if they want to include these products in their national EWS for more detailed analysis. The need for a policy framework to encourage the member States of the Horn of Africa to establish, an operational Regional Early Warning Systems for food security is, therefore, over due.

The countries of the Horn of Africa can benefit from the fast developing information technologies in establishing satellite-linked networking for faster communication and linkages. Such exchange of information will assist to alleviate disasters, famine and poverty.

8.0 CONCLUSION

- There is lack of or inadequate early warning systems in nearly all the countries of the Horn of Africa sub-region. Efforts should, therefore, be made to establish and strengthen policies and mechanisms aimed at establishing early warning systems and activities in these countries as well as in the entire continent of Africa to assist counter the negative impacts of the frequent droughts and crop failures.

- The Horn of Africa countries are highly inter-linked hence occurrences in one country has direct influence in the other. It should also be realized that the greater part of eastern Africa is semi-arid or arid hence there is need for a proper food situation monitoring system to help avoid situations where there are food deficits in some parts whereas there is food abundance in others. The sub-regional food monitoring system will also be of great

use to countries like Uganda that could use their surplus food for regional trade within the sub-region.

- The REFEWS methodology and other geo-information systems have proved to be highly accurate in their food yield forecasts while operating at fairly minimal budgets. It is, therefore, a very useful and cost-effective methodology whose implementation is likely to positively influence food situations in the sub-region.

- ECA, and, the donor and international communities should assist the sub-region in a number of ways.
  - Assist in financing the decision-makers awareness as to the need for an early warning system in eastern Africa.
  - Assist in financing the operational implementation of such projects as the Regional Famine Early Warning System (REFEWS) that has proved to be effective in monitoring crop growth and yield predictions.

- If called upon, the RCSSMRS is well placed to bring together the stake-holders in deciding the establishment and implementation of the operational Regional Famine Early Warning System and also in establishing the mechanism of early warning data collection, collation and management and, in data's dissemination and distribution.