

# The USAID Famine Early Warning System as an “information system”

William NALL\* and Henri JOSSERAND\*\*

## INTRODUCTION: THE ORIGINS OF FEWS

According to the dictionary (*Webster's New Universal*) a system is “a set or arrangement of things so related or connected as to form a unity or organic whole”. In common usage, it is further assumed that a system unites a set of different components to serve a common, identifiable, purpose. Based on this understanding of the term, the Famine Early Warning System (FEWS) can be seen as a system at two levels.

First, FEWS is a system for collecting, organizing and analyzing information relevant to food access and availability, in a number of African countries, in order to promote informed decision making by policy makers. This system includes FEWS' field representatives in the various countries and the FEWS/Washington office, and collaborators in other organizations which are part of the FEWS project.

At the same time, FEWS is one component of a larger system linking changes in food security conditions to a response. FEWS role within this system is to bring together information relevant to the food security situations in each of the countries in which it operates, in order to strengthen the linkage between problems and response. This larger system includes all of the sources of food security information used by FEWS, as well as the eventual users of the information and analysis which the project generates.

The FEWS activity began in the mid-1980s, in response to the drought in the Sahel. The activity originally focused on monitoring food security in the countries of the Sahel and East Africa. Geographical coverage has since expanded to southern Africa in response to the 1991/92 drought in that area.

\* *Économiste agricole, Famine Early Warning System (FEWS), 1611 North Kent Street, Suite 1002, Arlington, VA 22209, USA.*

\*\* *Économiste, Associates in Rural Development (ARD), 110 Main Street, Burlington, VT 05402, USA.*

In the disastrous Sahel drought, previously established early warning activities failed to lead to a timely response to what was clearly a slow onset phenomena. The delayed response led to substantial costs in terms of human suffering, donor and host government resources, and economic and social disruption. The countries of the region and donors eventually had to mount emergency responses to address food needs. These emergency responses were extremely expensive and problems with targeting, and with mismanaged and wasteful distribution, hampered the effectiveness of relief efforts. Although food aid programs were put on an emergency footing, the inevitable transportation and delivery lags at times made food aid counterproductive—as when large shipments arrived during the following cropping season, depressing producer prices and incentives.

It was understood at the time that while generalized drought was not preventable, it was, at a relatively early point in time, foreseeable. The countries of the Sahel, and the United States and other donors, responded to the 1984/85 experience by taking measures to avoid finding themselves in the same position in the future.

In the United States, the Congress mandated the United States Agency for International Development (USAID) to take steps to ensure that the United States would be better forewarned of future large-scale crop failure and the resulting food aid requirements. USAID established and funded FEWS as its primary mechanism for monitoring food security conditions in Africa.

## FEWS AS AN INFORMATION SYSTEM

### **FEWS organizational structure**

FEWS is unusual in that it can be considered both as a project—defined primarily in terms of its own employees and their activities—and as a broader activity which includes formal relations with other institutions and a set of joint activities. For purposes of clarity, these aspects of FEWS will be considered separately.

The FEWS project consists of a central office—located in the Washington, DC, area—and a number of field offices located in different countries in sub-Saharan Africa. The Washington office is made up of technical specialists - who provide support to the field offices in their own specialty areas—and technical and administrative support staff. FEWS field staff are drawn from a variety of different backgrounds, and are expected to take a generalist approach to project work in their geographical areas of assignment.

The larger FEWS activity is a collaborative effort, involving several other governmental and research organizations in addition to project staff. FEWS is financed by USAID, which oversees all aspects of the project. Other partner institutions are involved in all phases of the project, in their areas of technical expertise.

FEWS—which is now in its third phase—continues to be an evolving and changing system. In perhaps the most significant change from earlier phases of the project, FEWS field offices are now organized on a regional basis. Previously, each of the field offices was independent of the others, being linked to the local USAID mission or United States Embassy, and to the FEWS/Washington office. Now, most individual country offices fall within a regional structure.

Regional FEWS representatives in the Sahel, the Greater Horn and Southern Africa are responsible for coordinating coverage of conditions in several countries, rather than focusing on a single country. This structure of regional coordination with national-level representation should enable to improve the quality of its coverage of food security issues. FEWS regional representatives have access to a variety of food security information from the countries within their region, allowing them a broader perspective. At the same time, FEWS representation at the national level puts it in a position to inform a decentralized response to localized food shocks.

## **Information Flows in FEWS**

The collection and analysis of data, and the dissemination of information and analysis, are at the core of the FEWS activity. Data is collected—directly and from secondary sources—by FEWS staff in Washington and in the field, and by FEWS' institutional partners. This information is analyzed by FEWS staff and incorporated into various reporting products—including the monthly FEWS bulletin, periodic vulnerability assessments, and other reports and briefings. FEWS' institutional collaborators have assisted in developing tools for the organization and analysis of data, and in the storage and dissemination of information generated by the activity.

## **Information Collection**

The FEWS approach to early warning is centered on field-based experts who have access to local physical and socio-economic information—primarily obtained from secondary sources—and near real-time satellite imagery—provided by FEWS collaborators. The fact that FEWS representatives are based in the field puts them in a position to obtain locally-generated data and—when appropriate—to observe conditions directly through field visits.

The National Air and Space Agency (NASA) provides satellite imagery, especially the NDVI imagery which relates to the condition of vegetation. The National Oceanographic and Atmospheric Agency (NOAA) has developed improved models for estimating rainfall based on satellite observations and data for other sources, which it uses to produce rainfall estimate (RFE) images. The United States Geological Survey (USGS) has developed specialized data management software for project use and has developed maps of intensity of cropland use.

## **Analysis and Reporting**

FEWS field-based representatives—with support from technical specialists in the FEWS Washington office—analyze the information which they have assembled, and share their conclusions with the local USAID mission and with other collaborators. Formal vehicles for reporting their conclusions include monthly reports to the FEWS/Washington office and periodic vulnerability assessments. Reports from field offices are used in preparing the monthly FEWS bulletin and for formal and informal briefings for USAID.

FEWS institutional collaborators have been involved in developing tools to facilitate the analysis of the data collected by the project. The USGS has developed specialized data management software for project use. The Office of Arid Lands Studies (OALS) of the University of Arizona collaborates with the FEWS project in research related to the development of vulnerability assessment methodologies.

## **Storage and Dissemination of Information**

The storage and dissemination of information absorb a significant share of project time and resources. The primary public vehicle for FEWS information is the monthly bulletin, which is published in English and French. Monthly monitoring reports and vulnerability assessments are circulated to a narrower audience. Data and other information generated by the project is archived and maintained by USGS. FEWS information is also available in electronic form: the FEWS bulletin is also “published” through the USAID Web page, while archived data is available through the USGS/EDC Web server.

### **FEWS AND FOOD SECURITY DECISION-MAKING**

#### **FEWS Information as an Input into Decision-making**

FEWS was originally designed to provide an early warning of approaching food security problems, to allow for a timely and efficient response to specific events. By having more time to prepare for large-scale crop

failures, the United States Government is better able to manage available food aid and other types of responses, in order to provide humanitarian assistance much more efficiently. Assistance can be delivered on a more timely basis and can be more accurately targeted to vulnerable populations. By acting before situations reach a crisis point, a broader range of response mechanisms are available, so that disruptions to local markets and institutions can be minimized.

Over time, FEWS has moved beyond simply providing an early warning of impending problems, to trying to understand the nature and causes of food security problems. Users of FEWS information and analysis are increasingly aware that this information can be useful in the programming of non-emergency interventions. Information about the susceptibility of different geographical areas to food shocks is clearly useful in identifying areas in need of assistance. Information about the conditions which contribute to food insecurity can help guide the design of development activities, and choices between alternative interventions. Increasingly, USAID missions have realized that FEWS data and expertise constitute a valuable programmatic resource, and are using FEWS information for planning and programming purposes.

### **FEWS Involvement in Decision-making**

FEWS participates in the process of food security decision-making by reporting on production shocks, and by identifying geographical areas of vulnerability and the factors contributing to food insecurity. FEWS representatives and the FEWS/Washington office are often asked to review and comment on proposed activities designed to address identified problems of food access or availability.

FEWS uses information on rainfall and the vigor of vegetation to monitor the agricultural season and expected levels of production. FEWS vulnerability assessments address the relative vulnerability of different areas or groups based on their usual levels of production and income (which are in turn linked to wealth and asset holdings), their access to alternative sources of income and food, and the magnitude of a given shock. This information identifies the geographical areas where the effects of a given shock are expected to be strongest. Assessments of current food security status identify sub-national areas in need of assistance and compare the intensity of need in different areas.

An area of current emphasis is to strengthen the linkages between FEWS information and analysis and responses to food security problems. One of the principal criticisms leveled against early warning systems is that the linkage between their reporting and response—in the form of transfers of resources—has been weak. Responses have not necessarily been more timely as a result of the existence of early

warning information. It is disingenuous to expect that this linkage should be established from the decision-making audience backwards to the early warning system. It is more reasonable for an early warning system to move towards providing actionable recommendations with regard to responses to food security issues.

#### DIFFERENCES BETWEEN FEWS AND OTHER APPROACHES TO FOOD SECURITY MONITORING

FEWS' approach to food security monitoring is not revolutionary, as it does not depart radically from previous approaches to this problem. Rather, it represents a more advanced stage of evolution, integrating useful features from previous approaches and extending the scale and scope of coverage and analysis. Differences between FEWS and other current systems for food security monitoring are more the result of differences in their mandates than of differences in conceptual approach.

Donors and host country governments had already been involved in collecting and analyzing food security information prior to the 1984/85 drought episode. In response to the 1972/73 famine in the Sahel, efforts had been made to develop some collaboration and coordination among the donors and the countries of the region. These early systems focused on questions of food availability, with the primary instrument of analysis being the national food balance sheet.

The key difference between the FEWS approach and these earlier efforts is a result of changes in the way the causes of famine were understood. FEWS has attempted to operationalize advances in the understanding of the nature and causes of food security emergencies, by addressing factors which affect access to—as well as the availability of—food. Rather than relying on a national food balance sheet as the key indicator of food security problems, FEWS has drawn on indicators of problems of access to food as well as food availability.

#### FEWS AND THE DEVELOPMENT OF METHODOLOGIES

The FEWS project combines timely and accurate information—on factors which have a direct impact on many people in many different countries—with cutting-edge technologies and methodologies. As a result it has been a critical testing ground for the application of new approaches to critical problem solving. It has taken a number of research areas a bit further and, more importantly, has shown how they can be combined in an integrated approach to understanding food security conditions. In particular, the project has provided useful lessons on the value of multi-disciplinary approaches to complex problems.

One of the features which distinguishes FEWS from other early warning systems system is its reliance on reporting and analysis carried out by field-based experts. Another is that it attempts to use the information collected for the various countries in which it operates to make systematic inter-country comparisons and regional analysis on determinants of food security or vulnerability. Of particular interest is the extent to which FEWS has been able to integrate information linked to different “analytical scales”. FEWS works with information collected at a variety of different levels—from district-level indicators of household well-being to information on climatological or economic factors which influence conditions at the regional level.

In the early phases of the project, new tools and methodologies were used to monitor agricultural production, the main component of food availability. Satellite imagery was used to monitor rainfall and the status of vegetation. At the same time, FEWS chose to have representative located in each of the countries which it covered, in order to monitor conditions related to food access. Over time, FEWS has developed methods for assessing the vulnerability of different geographical areas to food security difficulties.

The FEWS activity has benefited from advances in remote sensing technologies and—through its partnership with NASA, NOAA and USGS—has contributed to the advances. The FEWS project has been an important user of remotely sensed information provided by NOAA and NASA. At the same time, it has provided feedback on the use of satellite data and information, which has been useful in satellite sensor calibration, and in the development of new agroclimatological models. Examples of this collaboration include work on improving models for estimating rainfall based on satellite and ground data. FEWS technicians have also made significant contributions to NDVI data management, analysis and interpretation.

## FEWS AND THE EXCHANGE OF INFORMATION AND IDEAS

Because of its use of satellite imagery analyzed in the United States or by expatriate experts in the field, FEWS in its first phase was initially perceived by some observers as an attempt by the United States to establish an independent and isolated system responding to its own technical requirements and political mandates. Over time, however, it has become apparent that the system is quite open, and is directly connected to national or regional institutions. USAID, having established FEWS in order to its own decision making on critical issues, is the principal client for which FEWS information and analysis is intended. At the same time, additional value is derived from the fact that this information is also available to the country and to other donor agencies or NGOs.

FEWS has become a center for information and technology flows. FEWS field representatives get information from national, regional and multilateral institutions and provide information and technical/methodological advice or assistance in return. Similar exchanges of information occur on an informal basis with non-governmental organizations (NGOs). This two-way flow of information has been a key element in establishing a basis for collaboration and cooperation between FEWS, its partners, and other entities with an interest in food security. At the same time, FEWS field representatives exchange information and analysis with the FEWS/Washington office—FEWS/Washington forwards satellite imagery and other information to the field offices, and receives locally collected information and reporting and analysis.

This flow of information is possible only because the FEWS field representatives are linked to FEWS/Washington and to each other through electronic communications. This linkage is crucial to the timely transfer of information.

The information used in the FEWS project is available to institutions and individuals not directly involved in the FEWS activity. The information collected is obtained from public sources, is used for relief and development purposes, and is placed in the public domain. FEWS does not charge for data, and it makes no attempt to market its expertise. FEWS does not “own” the data it works with—on the contrary, as much credit is given to data sources as possible. Since it is financed by the United States Government, all methodological advances (especially in the area of software) become US Government property and enter into the public domain.

## FEWS AND LOCAL INSTITUTIONS

FEWS views itself as part of a large integrated system for monitoring food security, in which national and regional institutions already play a role. FEWS field representatives maintain working relationships with national and regional institutions and with NGOs operating in the countries—including training and capacity-building efforts as well as the exchange of information. Capacity-building is an important objective of the FEWS project, and various types of FEWS activities have been transferred to national institutions, or turned over to regional ones. In the Sahel and in the countries of SADC (Southern African Development Community), national and regional institutions are using methods pioneered by FEWS activities to carry out their own analyses of food security conditions.

## REFERENCES

- BUCHANAN-SMITH (M.), DAVIES (S.), PETTY (C.), 1994 — Food Security: Let Them Eat Information. *IDS Bulletin*, 25 (2): 69-80.
- Webster's New Universal Unabridged Dictionary*. Second Edition, Dorset and Baber, 1983.