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Foreword

"Famine" is an extremely complex human, socio-economic, and institutional phenomenon. There is as yet no theory to explain its unfolding nor to grasp the interrelationship of events. Though a substantial body of anecdotal material exists about its terminal phases and the devastation it wrecks on people, animals and social systems, there is little empirical data.

The late 19th Century produced the best work on famines. It was done in India and is known as the "India Bengalese Famine Codes". The use of the "Codes" however was not sufficient to prevent some of the most devastating famines in India and Bangladesh in the 20th Century. It is uncertain though whether the famines occurred due to poor administration or lack of the enormous resources needed to feed many millions of starving people. Still, the "Codes" represent a fairly thorough understanding of the most important visible and social signals that food availability and food access is a problem, and they specify what practical interventions should be taken to mitigate and head off a famine.

Curiously, in the last several decades the Western world has seemed to define famines almost entirely as the result of food shortages, whether ignoring or unaware of the extensive socio-economic basis of the India Codes. Fortunately, the West by its own devices, has recently discovered that a knowledge of these "other" factors is critical in understanding famines. The AFR FEWS program has been a leader in the donor relief community by its early efforts in investigating socio-economic conditions and signs of nutritional stress in six Sahelian countries.

AID and its AFR Bureau effort to establish a workable Famine Early Warning System (FEWS) for most of the Sahel is an act of faith and "grit".

This report is an effort to shed some light on the difficulties FEWS faces; to try to distinguish between what is desirable as opposed to what is appropriate, and to help in the ongoing dialogue on the direction and future of FEWS.

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I. Introduction and Background.

A. Introduction.

Drought induced famine has a very long history; such famines have persisted since recorded time.* In this century alone, over two hundred million people have been affected by drought - famine.[18] Recent events and careful study of famines over the last 50 years have led to a reappraisal of the causes of such famines. Droughts which extend over three or four crop years are often the proximate cause for a famine. However, the erosion of socio-economic support systems and the reduced access to food and employment of the rural poor have more to do with creating famine than as a result of the effects of drought on food production. Most often the socio-economic conditions that lead to reduced access to food by the rural population are the result of misguided national policies: disincentive farm prices, investment and policies that lead to environmental deterioration or misuse of the land and inadequate incentives for the food marketing system. Famine has also often been preceded or accompanied by civil strife and civil war which have added stress to the weak production, marketing, distribution, transportation and communications systems.

Since the beginning of this century, the Western World has taken a more active role in dealing with famines in famine prone countries. As early as the 1920's the western nations bonded together to send food for millions of starving Ukrainians. In this case the famine was a conscious government policy of to bring a recalcitrant and rebelling province to its heels and the food relief was then rejected by Moscow. Since 1960, led by the United States government, the Western World has taken a greater responsibility for solving food shortages and the massive famines that have occurred in South Asia and across the Sahel of Africa.[4]

Increased and improved global communications as well as increased logistics capacity has made it possible for the developed world to be made aware of disasters almost instantaneously. The people and the news media have pressured their governments and the voluntary relief community to send help because it is now possible. Humanitarian motives of both peoples and their governments in the West have created a self-induced climate of responsibility to act.

*Perhaps best known is the Biblical story of Joseph and the 7 years of plenty and 7 years of famine in Egypt. Joseph may have been the first historical person to propose the concept of a Food Security Reserve.

There is very little that can be done about droughts. That droughts quite often are accompanied by famines is not a weather problem but a problem of local food availability and access to food. Famines only occur in underdeveloped countries; unfortunately these countries are least able to deal with the problem and are more vulnerable because of weak or non-existent relief systems to assure the availability of food where it is needed.

Developing countries can least afford to suffer the high cost of famines: government investments and government programs are often disrupted by famine and many are never completed; government budgets are depleted to finance the cost of buying and distributing food and providing emergency medical help and water; government operations are disrupted and do not return to normal for months after the emergency is over; reconstruction and rehabilitation efforts may take years; investment resources in both the public and private sector are diverted to consumption and; large scale movement of famine victims and migrations disrupt village social and economic system to the extent that it takes a decade or more to return to a semblance of normality.[18]

These effects are not only felt by the people and the host government but they equally disrupt donor development programs and investments. The attention of the entire donor staff is diverted to the problems of the famine emergency and it may take many months if not years to recover to their normal development operations.

During the most recent drought/famine in Africa (1982-1986) much of the time of top management in some of the biggest bi-lateral and multi-lateral agencies was taken up by the problems of the famine for as long as two years. The United States government alone spent \$1.5 Billion on the "Famine", an amount equal to 15% of its development assistance budget.

The U.S., international donors, and relief organizations have come to a crossroads. Their constituencies expect them to act to solve the problems of famine, but they have little control over famines or their consequences. Yet the costs to them in terms of program and organizational disruption are increasingly out of proportion to their capacity. In the midst of the 1982-86 African famine, the U.S. and donor community resolved to find a way to be warned of famine and be able to prepare themselves for the problems and demands of famine relief.[58]

In July 1985, the AID Africa Bureau's Office of Technical Resources was requested to initiate work on the development of a famine early warning system (FEWS). Initially, the system was designed to help manage the famine emergency that was underway in the countries in the Sahel and the Horn of Africa. Soon eight countries were selected as the targets for development of that system, i.e., Chad, Niger, Mali, Burkina Faso, Mauritania, Sudan, Ethiopia and Mozambique. The early warning system was to take

advantage of advanced satellite technology for weather forecasting and for assessing crop conditions and to develop social and economic indicators of famine and nutritional stress of rural populations.

FEWS has continuously developed and improved its systematic approach to the collection of data, evaluation of data and data sources, definition of indicators which tell of current stress situations by location and numbers affected and potential nutritional stress, and methodology, content and output of analysis.

B. Purpose and content of this report.

In February/March of 1987, the Africa Bureau initiated a series of evaluations of their FEWS to determine its efficacy and its effectiveness and to determine its future direction. This report utilizes the results of those evaluations, post hoc reports of the African famine, and famine and disaster literature.

The report is written for the AID Africa Bureau executives who are charged with responsibility for managing a famine early warning system. It is concentrated primarily on a famine early warning system for USAID and does not attempt to evaluate other systems. It looks to the future in terms of what needs to be done to make an effective system and it proposes guidance on how to proceed.

Many of the concepts in this report are based on the theories and practices of the international disaster management community. Many of the conclusions and recommended practices regarding famine relief are included in evaluations, books and other literature; much of this is well known and considered generic to the professionals who have practiced disaster management over the past 20 years. However, the disaster community has only recently been involved deeply in focusing its attention on drought induced famine as a preventable disaster. Except for countries like India and Bangladesh, the body of knowledge and practice in famine management is incomplete; even less is known about the Sahel and other African drought/famine prone countries.

Throughout, the report views famines and management's response to them from a systems approach. There are four sub-systems which make up the famine emergency management system which are well known to disaster specialists: 1. Early Warning, 2. Preparedness, 3. Emergency Management, and 4. Recovery and Rehabilitation.

The report concentrates on providing guidance on what AID should do and how it should proceed.

C. Background.

1. The Sahel drought/famine.

The drought/famine in the Sahel and the Horn of Africa, 1982-86 was a calamity because of the late response of the donors to pledge and deliver food. Throughout the drought, there were many warnings of disaster and requests for aid from government spokespersons in the drought affected countries and more often from the FAO.

In 1982, 1983 and 1984, FAO advised the international donors of the serious problem throughout the Sahel and the collapse of the food supply systems in the severely affected parts of Ethiopia and Sudan.[54]

The failure of the international donors to respond early to these calls for help was due primarily to a lack of credible and verifiable information on the extent of the food shortage and the numbers and locations of the drought victims.

A series of post-hoc evaluations pointed to the essence of the problem: no matter how early a warning may be given there must be agreement between the donors and the host countries on the nature and extent of the problem and the kind and quantity of resources needed to solve it. In those cases where mutual trust does not already exist, such as between the United States and Ethiopia, the data must be verifiable by the donor.

It took dramatic and Herculean efforts on the part of the donors, the governments and the PVOs to make up for the late response of the donors and their late arrival on the scene in order to prevent death on a massive scale.

The lesson learned from this recent famine as well as from the previous Sahel Famine of 1971-74 is that an early warning system must exist that is acceptable both to the donors and to the governments of the famine prone countries themselves.

2. The need for an effective early warning system.

The urgent need for a system to warn of famines was one outcome of the 1982-86 African famine. Donors in particular, but also the governments of the affected African countries were buffeted on all sides by the seemingly insurmountable and endless stream of problems they faced in coping with the famine and by demands from their constituents and the media to "get the food to the starving millions." Charges and counter-charges of bureaucratic inertia, genocide, ineptitude and politically motivated actions often consumed both the good-will and the energies of political and administrative leadership on both sides. Several conclusions emerged from this exhaustive and exhausting experience:

- a. More help could have been delivered better, cheaper, and faster:
 - (1) if both the country governments and the donors had been better organized to manage famine disasters,
 - (2) if there had been a better mechanism for coordination of all participants,
 - (3) if there had been accurate and current information on the location, numbers, conditions and needs of the affected population and information about the food supply, distribution and transportation system serving those locations.
- b. The problems could have been reduced to manageable proportions if the governments and the donors had received earlier, accurate and believable information about the food shortage.
- c. Since drought induced famines are "slow-onset" disasters, and usually take several years to unfold, countries and donors alike should have a means or system to detect and receive earlier warning.

3. Problems in achieving an effective warning system.

Famines are most often associated with starvation resulting from a food shortage. However, the term famine is qualitative and perceptual and therefore defies accurate definition. So too starvation and hunger. Most of the world, nevertheless, has focused on the simple equation of food production and food supply as the cause of famine. Consequently, famine-prone country governments and donors alike have concentrated much attention on the condition of food production and estimation of crop yields. Yet history records famines which were underway during bumper harvests and while adequate food stocks existed in the affected countries. True, often famines are accompanied by localized or national under-production of food. Although food supply and availability may be constrained, most often the starving have exhausted their resources and access to food, either their own production of food or the cash or barter to procure it. Today, the disaster/relief community and some scholars view starvation/famine as a condition resulting from the socio-economic situation and the system in which the victims find themselves.

Although there are evolving methods and systems for measuring malnutrition, there is no generally agreed upon objective standard for determining acceptable and unacceptable levels of malnutrition. As will be discussed later, varying ethnic and community values in most of sub-Saharan Africa accept conditions of persistent hunger and under-nourishment as normal and there are even periods of acceptable, "normal" communal starvation. As a result, if one could measure malnutrition or starvation, at any one point an observer might conclude that a famine was in the making when measured was "normal" levels of starvation.

It is therefore difficult for the Western world to approach the problem of famine and starvation since there is not an objectively definable condition to measure and there are not yet reasonable measurement instruments available.

4. Efforts to Improve the International System.

To try to correct those problems in the international response to famines, the experts group at the Bonn Summit, May 1985, proposed that "there should be better arrangements for monitoring crops and the access to food of vulnerable groups. This will require collaboration with African countries and the international organizations to improve early warning systems and distribution of emergency food supplies. It also implies assistance to African Governments... to improve national and regional preparedness plans."

The Bonn Summit report made a series of recommendations to the summit member countries and to the European Community for action to improve crop monitoring and early warning system. The recommendations were prefaced with a recognition of the importance of developing monitoring and early warning capacities within Africa itself. The recommendations included action to:

- ensure that primary attention is focused on developing and/or restoring the basic agricultural data systems within Africa itself;
- help establish or reinforce agro-meteorological and crop reporting services at the country level including contributing to the improvement and support for the functioning of these services through institution building, training, development of agro-meteorological stations and access to remote sensing facilities;
- make regional organizations more effective, and improve the coordination and collaboration between these organizations and the FAO early warning system;
- help standardize the criteria for early detection of food shortages;
- encourage FAO improvement of its early warning system;
- increase the basic and advanced training facilities available in this sphere and, in this context, give priority to the requirements of African countries;
- recommend that the panel on remote sensing, established as a result of the Versailles Summit, be charged with formulating technical guidelines on the use of remote sensing, with particular attention to African countries and their financial and management constraints, to enhance drought early warning capacities in sub-Saharan Africa. [21]

In his address to the committee on Food Aid of the World Food Council in Rome in May 1986, US AID Administrator, Mr. Peter McPherson stated that the United States was going to:

- a. help build and strengthen an apolitical, highly professional early warning system or systems which will be credible to the donor, budget people and decision makers.
- b. support donor coordination by host governments at national, regional and local levels in the early planning and need assessment stages of food emergency situations.

In his speech to the U.N. General Assembly in June 1966, Mr. McPherson emphasized famine preparedness and placed highest priority on a drought early warning capacity for African countries: "it should be a system of continuous monitoring manned by professionals and; an apolitical system. It should include first hand knowledge and supported by satellite scanning. The need is for a national and regional warning capability and effective coordination of donors." [35]

II. Current Early Warning Systems.

A. International Systems.

Several international organizations and donors have partial early warning systems or elements of systems. Most prominent is the FAO Global Information and Early Warning System on Food and Agriculture (GIEWS), which monitors food crop production and food supply through use of satellite technologies, in-country reports from FAO personnel and dispatch of special assessment teams to problem countries. The data base under development by FAO and the separate effort by the World Food Program (WFP) include substantial arrays of socio-economic factors.[47] However, it is probably not feasible for either organization to collect reliable and useful data on these factors unless their manpower, institutional capacity and resources are augmented. The FAO system of food supply monitoring is generally good and valuable for the donor community but it is not now capable of accurate forecasting of crop production short falls early enough to head off a severe crisis in the making.

There are many international and regional organizations which collect data which is useful as input to an early warning system. For example, the World Meteorological Organization provides rainfall data from most nations of the world through its international system of telecommunications; the World Health Organization has an epidemiological data bank for many African countries; the United Nations Environmental Program has under development a Global Environmental Monitoring System (GEMS) utilizing satellite technologies and remote sensing data from the Regional Remote Sensing Center in Nairobi; the World Bank recently established an environmental monitoring unit which will use remote sensing, cartographic and other technologies; the CILSS (Inter-State Committee on Drought Control in the Sahel) monitors rainfall and crop production prospects for the Sahel, and the AGRHYMET (Regional Center for Training and Application of Agrometeorology and Hydrology for the Sahel) also provides data on weather and crop forecasts for that region.

Other than the FAO GIEWS which provides food production and supply information, only the AID AFR FEWS program constitutes a comprehensive and systematic approach to monitoring famine in more than one African country.

B. AID's Early Warning System.

1. The beginning of the FEWS program.

The current AID system was initiated in the summer of 1985 at the request of the AID AFPICA Drought Task Force. The Africa Bureau Office of Technical Resources was asked to devise a system which could help AID manage its part in the on-going Africa-wide famine: determine specific food needs in each country, target food to the specific areas in each country where needs were not met, and determine health and medical needs. At this point in the famine, the Task Force was concerned about the prospects for the grain harvests throughout the Sahel for the 1985-86 crop year (harvests take place between September and March). They were particularly concerned about crop prospects for Sudan and Ethiopia which had 1984-85 food deficits close to one million tons each. They were also anxious about another critical problem: in most of these countries the period just prior to harvest is when food is least available and the ability of the donors to deliver and pre-position food to those needy areas was reduced by the impact of the rainy season on roads and rail systems and the generally weak or non-existent internal transportation systems.

A small team of professionals was assembled on loan from various AID offices on and from other U.S.G. agencies to form the Famine Early Warning System (FEWS) team. They concentrated initially on utilization of weather and other satellite technologies for crop forecasting. However, a significant advance in early warning theory related to famines was made by the FEWS team when they concluded that physical and environmental events (e.g., droughts and floods) do not in and of themselves cause famine or nutritional emergencies. Lack of access to food over a period of time causes nutritional insufficiency. Reduced food consumption (nutritional insufficiency) may be exacerbated by a natural event such as a drought or the event may be the proximate cause of a nutritional emergency but the lack of access to food is most often a problem in the operation of the social-economic system. Therefore the monitoring of the physical phenomena, such as moisture levels, food supply and food crop production may provide important information but, by itself, is not sufficient to identify a nutritional emergency or incipient famine. The AFR FEWS then focused heavily on finding the socio-economic factors which are measures or clues of nutritional stress.

Eight (8) countries were selected as the FEWS targets: Chad, Niger, Mali, Burkina Faso, Mauritania, Sudan, Ethiopia and Mozambique. Because of the importance of nutritional status and condition of health for determining where food and medical aid was needed, AID/FEWS contracted with Tulane University to station Public Health Advisors in each of these countries (though due to civil strife, Mozambique and Ethiopia had to be excluded).

The FEWS team developed a list of 36 data items to be assembled by the PHA's. This list (See Annex II-1) was developed with the help of some 30 professionals in the health, nutrition and disaster emergency fields utilizing the Delphi methodology. The PHA's were not to collect their own data but to collect both secondary data and primary data developed by other sources such as the Ministries of Health, Agriculture and Social Services and multi- and bi-lateral donors and PVOs. By February of 1986, PHA's were stationed and operating in five of the six FEWS countries with the Burkina Faso operation beginning in August.

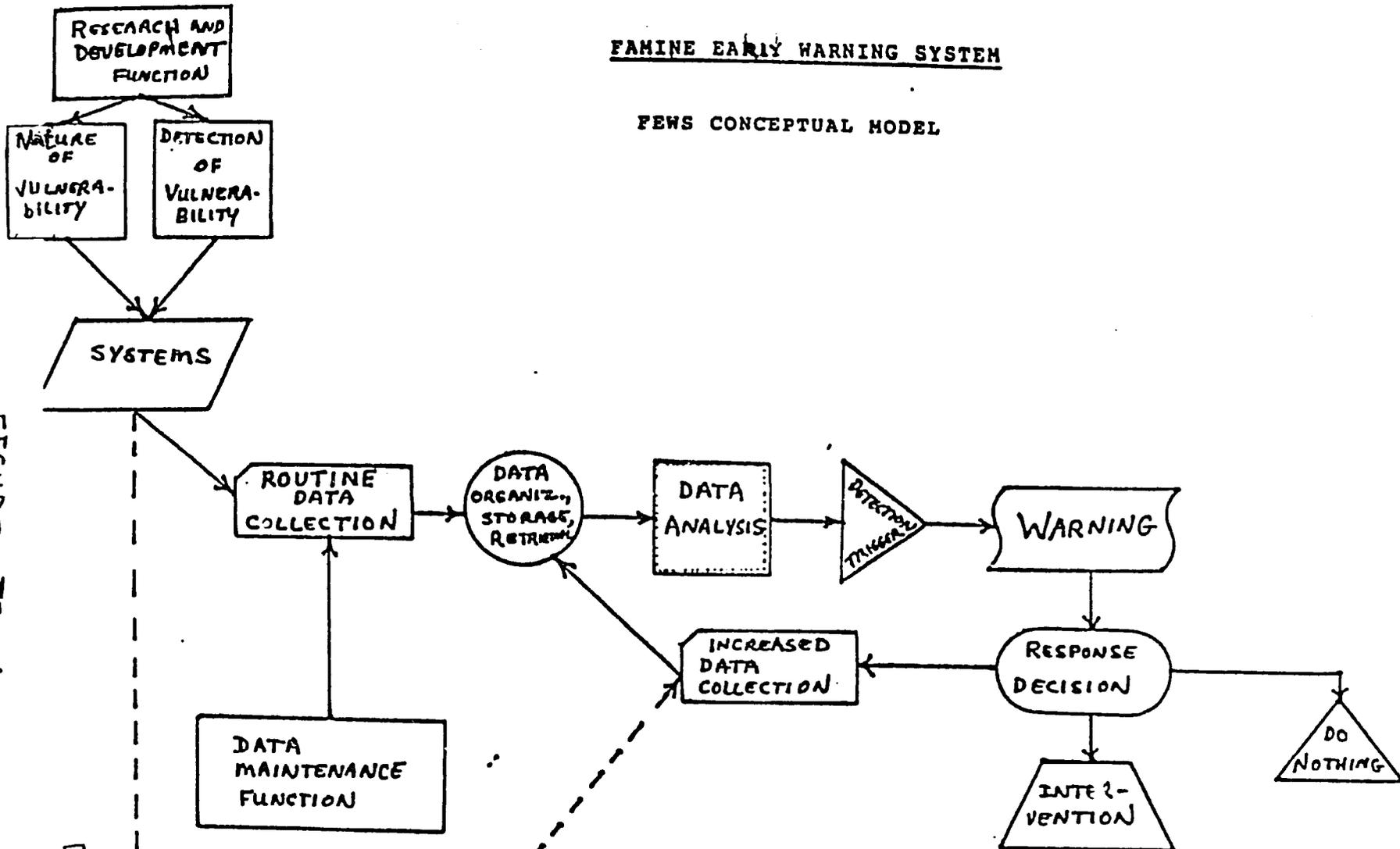
Concurrent with the Tulane contract negotiations, in the fall of 1985 AFR FEWS contracted with Price Williams Associates, a consulting firm in Bethesda, Maryland, to develop a computer based Geographic Information System to integrate both satellite/remote sensed data as well as traditional data sources, and to provide analyses of all the data from all sources on a monthly basis.

An early draft of the conceptual model for the FEWS system (See FIGURE II-1) includes the elementary components for monitoring vulnerability; detecting and warning and response. The elements for data collection and analysis are more thoroughly developed today and reflect the complexity of the monitoring process. The FEWS system for assessing moisture conditions and crop conditions utilizing satellite and other data through a variety of telecommunications systems is shown graphically in Annex II-2 and 3.

The original concept of the FEWS field collection, field reporting and Washington analysis and reporting system (See FIGURE II-2) is basically unchanged except that the AID missions in most of the FEWS countries provide more review and input into Tulane PHA originated reports.

FAMINE EARLY WARNING SYSTEM

FEWS CONCEPTUAL MODEL



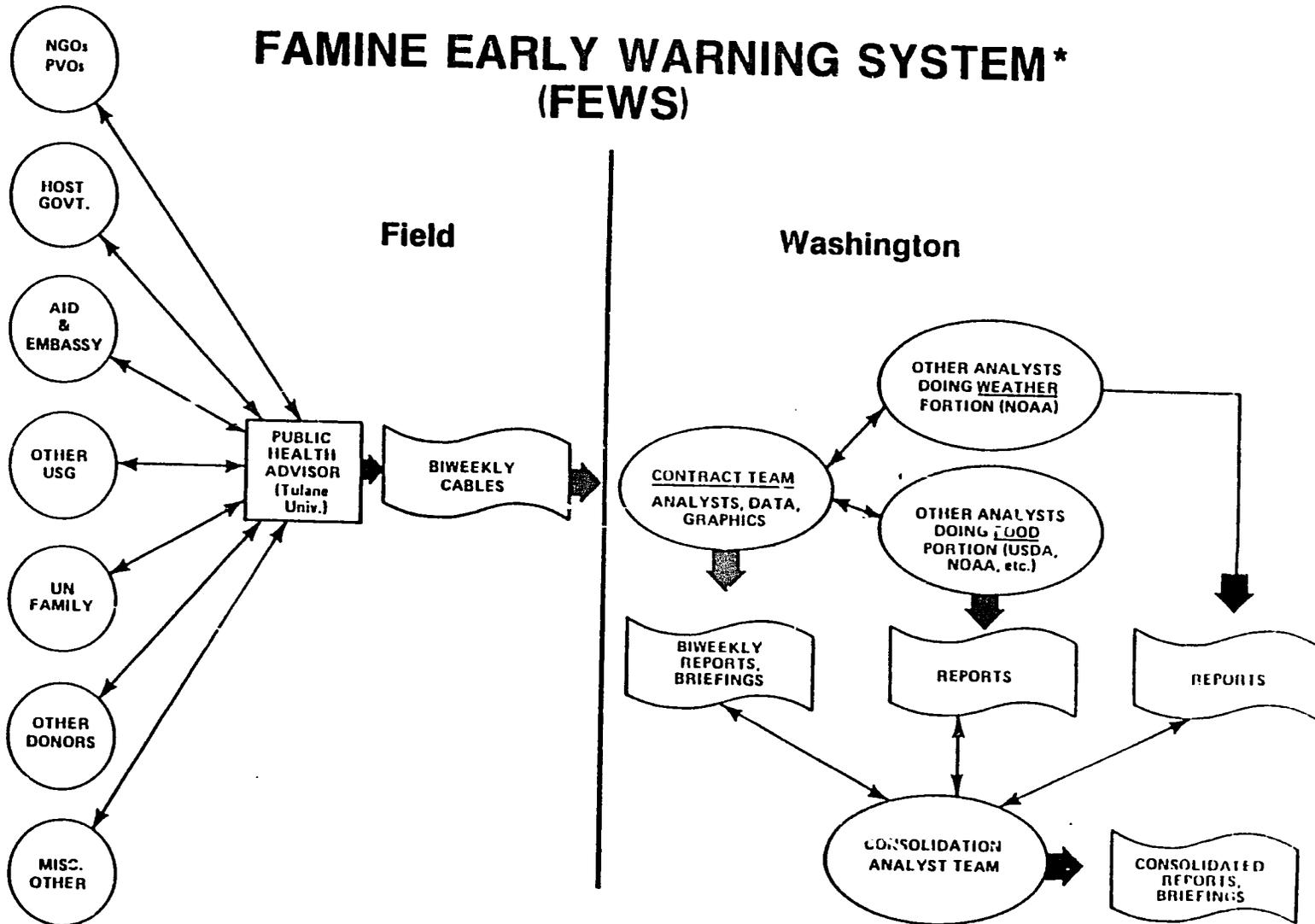
- send food aid
- send medical aid
- send trucks
- build roads
- send seeds
- send animals
- improve ports
- build storage
- airlift

- appeal to donors
- send Ambassador
- policy reform
- set up FEWS unit
- revamp AID progra etc., etc.

FIGURE II-1
-11-

[11]

FAMINE EARLY WARNING SYSTEM* (FEWS)



*Health & Demographic Component

FIGURE II - 2

(1)

The FEWS staff have had to develop an array of complex inter and intra-governmental relationships and contractual arrangements to assure access to and development of moisture and crop potential data. It has contributed to advances in the state of the art of satellite technology application and pushed the boundaries of methodology in determining crop conditions and making harvest estimates.

In the area of social and human factors which indicate nutritional stress and potential famine, FEWS has been the leader in the international community in its focus on data collection and analysis and the search for useful indicators to warn of emergencies. However, although "closing in" on the identification of appropriate indicators, it has not yet concluded its search.

2. Organization, Staffing and Costs of FEWS.

The heart of the responsibility for development and management of FEWS is in the AFR Bureau Office of Technical Resources (ATR/TR). Late in 1986, the AFR Bureau established an Office of Emergency Operations (OEO), initially to manage the ongoing locust/grasshopper plagues in the Sahel, but with assigned responsibility to assume the management and the operation of FEWS. The transfer of FEWS to OEO was to be completed in the spring of 1987, but has not yet been executed.

At the current time the AFR FEWS organization has only one full time staff member, a geographer on loan from the State Department. There are two senior AID officers within the Technical Resources Office who together devote one man year on management and technical design, and a part-time demographer is also assigned to FEWS.

The FEWS staff is assisted by an advisory committee which has been meeting every two weeks and has representatives from Food for Peace Office, Science and Technology Bureau, and from the Office of Foreign Disaster Assistance (OFDA). Others attend on an ad-hoc basis.

The implementation of the program is carried out primarily under contractual arrangements. The Tulane University contract provides six Public Health Advisors located in the FEWS countries and about three people involved in technical, management and administrative effort at its headquarters in New Orleans. The Price Williams Associates (PWA) contract has responsibility for development of a Geographic Information System which is to be designed to be the basis for integrating all other physical and social data. PWA also has the task of producing periodic analytical reports on the status of crops and nutritional conditions for the eight selected countries. PWA has six full-time and three part-time staff with technical qualifications in public health, public policy, economics and economic anthropology, bio-statistics, demography, regional planning, transportation, geography and cartography.

The satellite technology and data on physical conditions such as moisture, crop conditions and crop forecasts is provided by several U.S.G. agencies. USDA is providing its crop conditions reports and crop forecasts through its Foreign Agricultural Service. NOAA provides weather and moisture data. A special unit of NOAA, the Assessment Information Services Center (AISC), had been utilizing "greenness indexes" to analyze crop production under contract with the AID Office of Foreign Disaster Assistance (OFDA). However, the use of the AISC services by FEWS is being restructured and new PASA contracts are being negotiated with USGS and NASA to provide historical and current greenness reporting.

The only other major element of FEWS is a contract with the Universities of Tennessee and Pennsylvania to develop a Transportation Evaluation Package (TEP) which consists primarily of computerized transportation models for most of the Sahel countries. These models can be used in managing inland transportation of food.

The cost of the FEWS program through September of 1987, excluding AID staff and AID overhead, was about \$4.2 million. Ongoing costs through FY 1988 based on current plans are estimated at \$275,000 or about \$3.3 million per year. However, it is expected that in FY 1989 costs will be reduced substantially since most of the high cost research, development and intensive in-country data collection will be completed.

3. Evolution of FEWS Objectives and Strategy.

The initial assignment given to FEWS in the summer of 1985 to monitor the famine in the Sahel carried with it the following specific or implied objectives:

- monitor the current famine situation
- help determine or verify specific food needs in each country
- help target the food needs by areas within those countries
- determine health needs.

All the above objectives were to help AID Washington staff manage its part in the famine relief program. Although most of the information developed by the FEWS operation was passed to the governments of these famine affected countries and interested international donors, its primary client was the AID headquarters in Washington.

The earliest strategy for the AID/FEWS program relied on the integration and analysis of physical data (rainfall, crops and food supply) with "newly" collected social data to forewarn of famines. It was to amass all the relevant data which was collected by various agencies within each country as well as by international and regional organizations, synthesize and analyze

it in terms of the "conditions at a specific location at a specific time to enable early identification of abnormal events which lead to famine." [1]

The data which was to be the basis for analysis of potential famine was:

<u>Social</u>	<u>Physical</u>
Population location	Climate
Health Status	Rainfall
Nutritional status	Vegetative vigor
Water supply	Crop areas
Prices	Crop yields
Food stocks	Crop production
Migrations	Transport networks
Crime rates	Transport fleets
Seed availability	Fuel supply
Birthweights	Storage facilities
Brideweight [1]	

As the early efforts continued the FEWS staff's understanding of the problem of famine and what needed to be done evolved. They realized that the nature and course of famine varied from country to country, within and among regions in a country, among different ethnic groups and as between sedentary farm families and nomadic tribes. Although they came to realize that famine could not be detected by monitoring only the food production/supply picture, the identification of the other often more critical socio-economic factors was extremely difficult and; amassing reliable and comprehensive data for historical baseline development and for current measurement was near impossible. But detection of famine early enough for action to interdict its progress is almost entirely dependent on knowledge of and monitoring of often subtle and changing factors requiring a system with a high degree of methodological sophistication and accurate reporting. The recognition of the frailty of any famine detection system, i.e., its ability to discriminate between normal and abnormal events is dependent on:

- a relatively thorough understanding of the nature of famine itself, in order to select specific events to be monitored;
- the putting into place and maintenance of detection systems capable of monitoring the desired events; and
- accumulated experience, in the form of a detailed historical database, to permit the discrimination of abnormal from "normal" events and processes.[1]

Absence or defect in any one of these factors undermines the reliability and the ultimate value of the early warning system.

Sometime in 1986/early 1987 the FEWS staff arrived at some new conclusions which resulted in a revision of its objectives and strategies. It's earliest focus on constructing an AID operated FEWS designed to meet AID/Washington needs was augmented by new priorities and strategies.

The difficulties encountered in trying to develop an objective system without the benefit of a knowledge of how famines begin, evolve, and end; without the benefit of thoroughly tested theory(ies), methodologies and practices, and; with the discouraging revelation about the lack of or reliability of needed data in the FEWS countries, led to a reassessment of what AID could reasonably accomplish. Although throughout this period AID gave recognition to the "central" role of the African governments in their responsibility for monitoring controlling and avoiding famines, working to help those governments to build capability to do so was not in the initial FEWS plan. Yet the FEWS staff realized that development of its own AID system without respect to the indigenous government was not possible.

AID FEWS recognized that the process of developing "the system" was going to be a long, arduous task which must be done with and for the governments of the FEWS countries. AID's system was recast as an interim system, managed collaboratively with those governments and a system which also meets AID's management needs for reliability and credibility.

The new awakening to these realities was reflected in new objectives to:

- Strengthen national African institutions responsible for managing early warning.
- Reinforce indigenous data bases and analysis capacity to monitor trends.
- Improve the quality of national data and methodology for calculating food deficits.
- Foster famine preparedness plans for appropriate and prompt responses to emergencies.

Added to these developments was the realization that it is not enough to provide information about problems to decision makers either in the governments or in AID, there is a need for the development of famine preparedness, plans or systems which respond to or take action when warnings are given. New emphasis was given to the aspect of the institutional changes which are needed in both AID and the host countries to assure appropriate decision systems are in place to deal with famine emergencies. In fact during the period of 1986 the AID Food For Peace office was developing a manual for assessing food needs which attempted to solve many of the difficult and exasperating problems they had in deciding on how to allocate food during the Sahel

drought/famine. FFP Work is currently proceeding to design improved decision systems for PL480 commodities under emergency conditions.

A current statement of FEWS objectives developed at a conference held at Dakar in April 1987 indicates: 1. the importance of the AID field mission, and 2. the importance of the role of the host country government as the ultimate responsible agent for development of an indigenous famine early warning system.

"AID Mission Objectives:

- (1) provide current information to identify target populations
- (2) provide advance information to improve food crisis management and reduce incidence of population displacement
- (3) provide information to serve the management needs of host governments, missions and AID/Washington. Different products may be required at each level.

AID/Washington Objectives:

- (1) be inexpensive, reliable and able to be maintained during non-famine years.
- (2) detect food crisis situations reliably, timely and credibly.
- (3) be able to respond to ad hoc requests for information.
- (4) support mission and host country priorities.
- (5) be intimately linked to AID policy and sectoral goals.
- (6) be linked to other early warning systems and donors.
- (7) be supportive of the "one estimate" goal for needy population.
- (8) provide the basis for recommendations for action as well as alternatives to managers at different levels."[3]

4. Operating Results:

While grappling with this most difficult and complex task of designing a FEWS, the FEWS staff was instrumental in assisting the government of Sudan, AID Washington and the AID mission to identify remote villages in Western Sudan which needed food distribution, to identify crop conditions and to make better

estimates of food production. In both cases advanced satellite technology was integrated with other data and on the ground reporting.

By the spring of 1987, the FEWS had issued almost 100 individual "FEWS Country Reports" for the 8 FEWS. Countries as well as some special reports on Grasshopper and Locust Infestations. These reports were widely read by the same 75 recipients although often criticized by AID field staff as being a regurgitation of "what they already knew" but produced much later than they found useful, more objective observers have noted that the "reports" bring together "perhaps for the first time" a picture which integrated much data and information in a form which identifies the geographical location with the size and extent of the population at risk.

The reports lack specific recommendations for action or alternative steps which might be pursued by the government or donors who receive them. Perhaps this is a criticism, but understandably, with the integration of data and the analysis taking place in Washington far from the country and by personnel who are not intimately acquainted with the host country capabilities it seems appropriate that recommended actions to policy makers in the host country or AID must be made the subject of a different process and procedure. (Included in Annex II-4 are examples of Jan. 1987 reports on Mali and Sudan).

It is hard for an objective observer to identify and measure results to date of the FEWS other than those cited. Perhaps because there have been no serious famines lately or as this observer believes - most of the value so far has been to make both AID and host governments aware of the problems and to realize that they have basic information to deal with them. Some of the countries are taking actions either through PVOs or their own institutions which prevent risk situations from becoming emergency problems. Perhaps most notable is Mali where the AID FEWS in collaboration with a FEWS system financed by the EEC has provided the National Drought Prevention Committee with confirming information about nutrition problems which were dealt with by PVOs.[3]

5. Evaluation of FEWS

As already noted the task of developing a famine early warning system is very difficult and complex. It is not just the lack of established theories, practices and technologies to do the job. Hunger and famine take various forms and follow different patterns among countries and in regions within countries. The scope of the task is immense; to cover the targeted 8 FEWS countries alone involves a land area the size of the U.S.; there are agricultural zones which range from sea level, tropical agriculture to high altitude (10,000 ft.)

semi-arid production zones; there are production systems which range from sedentary farming grain production, slash and burn, hunting and gathering, nomadic herding, etc.; there are perhaps 20 major languages spoken and over two hundred distinct ethnic groups; their economic systems range from socialist communal, centrally planned to free market capitalist societies.

Perhaps, given the short period of time that the Africa Bureau FEWS has been under development and the limited resources that have been applied, it is too early to evaluate the effort; most research and development projects, (which the FEWS is in every respect) are rarely even underway in the first two years. FEWS, its approaches and objectives have evolved and are evolving; from a beginning which assumed a relatively simple task using advanced satellite technologies to monitor a famine already in progress, it has now changed direction and is attempting the difficult job of preventing famines before they occur.

However such a public enterprise, worthy as it may be, must be inspected, scrutinized and evaluated. It is managements' responsibility to assess how it is doing, reassess its' goals, objectives and resource commitments and judge its' prospects for success.

In March/April 1987 there were two evaluative efforts underway. The Office of Emergency Operations in AFR, charged with eventual succession to management of FEWS, conducted an in-house assessment of FEWS which was focussed on the future direction of the effort and the resources needed to be effective. The AFR Office of Technical Resources had contracted with a Washington, D.C. consulting firm EDI to do an evaluation which concentrated heavily on evaluating the technologies and methodologies being used and possible alternatives.

The OEO assessment resulted in a memorandum for AFR top management which stressed the important work already done by FEWS but underscored the need for better definition of the FEWS system, its components and what it can and cannot do for the various users. It cited the difficulties of developing valid and reliable indicators for the warning systems and proposed working design criteria for the FEWS project. Most important the memorandum proposed prioritizing objectives and requested approval of a permanent organization and staffing allocation for FEWS in the AFR Office of Emergency Operations. At this writing there has been no formal action on these proposals.

Subsequent to the OEO assessment a previously scheduled FEWS conference took place in Dakar, Senegal during April 21-25. Participants were from Africa Bureau TR., OEO, AID field missions and the two FEWS prime contractors, Price Williams Association and Tulane University. The conference concluded that FEWS had advanced more rapidly than expected in establishing common understanding of the need for early intervention in nutritional crises among host countries and donors, and in beginning the institutionalization of the early warning process in many of the

target host country governments. It also recognized the need for a more explicit system design for FEWS and more precise objectives for host countries, AID missions and AID/W.[3]

6. Future Direction and Needs of FEWS

As in any research and development effort the FEWS project is learning as it is progressing. Because of the initial lack of theory and empirical data, it has to stop and assess what it knows and doesn't know. It seems appropriate at this point to state an important conclusion which can help to provide future directions. A famine is primarily a man-made disaster which may be precipitated by a natural event such as drought or flood. It is a socio-economic event; its genesis, progress and ending may have as many variations as does the national and sub-regional social-economic, cultural and ethnic differences. Therefore, an early warning or surveillance system must move beyond generalizations and may need to be tailored to fit very limited geographical areas within the target countries.

The FEWS project needs to concentrate on the following:

- a. A better understanding of famine as a socio-economic process, i.e. an anatomy of famine; the concept of the vulnerability of populations/sub-populations to famine and an explicit methodology for measuring such vulnerability.
- b. A better understanding of the role, structure and content of a famine early warning system; its limitations and problems.
- c. Better definitions of famine indicators, indicator data, indicator baselines and appropriate measurements of change and prediction of consequences.
- d. Better definitions and assignments of objectives, goals and roles for each participant in the FEWS system, e.g., AID/W, AID Missions, host countries, other donors.
- e. More precise distinctions on the short-, mid-, and long-range requirements for each target country to effectively limit future famine emergencies, i.e., what are the effective complementary institutional and decision-making systems required by AID and host countries now and how can they evolve to limit the future need for AID emergency responses.

7. AID's Institutional Requirements for Support of FEWS

Some of the problems that the FEWS program faces relate to the need for AID's top management to make some clear policy and resource decisions. In particular the following areas need attention: AID-wide policy, financial and manpower resource commitments and clear cut goals and strategies for the FEWS program.

There is no announced AID policy on FEWS and its importance to the agency. Today two years after the apex of activity to deal with the Africa wide famine it is not broadly understood within AID that FEWS has a high priority. Therefore support from other AID/W organizations, including within the Africa Bureau as well as from field missions is uneven. The temporary and make shift nature of the FEWS operation within the Office of Technical Resources does not speak well of its priority nature. The fact that there are no full time AID direct hire employees assigned to the effort and that no additional resources are assigned the AID missions in the target countries implies a lack of bureaucratic importance and lackluster top management support.

The lack of clear and explicit goals, strategies and outputs for achieving FEWS objectives also makes it difficult for AID management and supporting organizations to know what they should expect in terms of progress and what resources may be needed to help attain targets. Lack of specified outputs also contributes to misapprehension of management about FEWS performance. The myriad of different, evolving and seemingly conflicting expectations of the various AID user organizations creates confusion and frustration by all involved.

a. Policy Needs

Although the current level of AID commitment is high, history suggests flagging interest and higher and more pressing priorities between famines prevent building the continuity and the institutional capacity needed if the FEWS system is to work. What is needed is a clear policy on the purpose, importance and priority of the FEWS, assignment of specific responsibilities and authorities for AID/W and field missions and setting high priority for:

1. Developing and operating the FEWS system within AID.
2. Helping to build host countries FEWS.
3. Cooperation, coordination and assisting international early warning system agencies.

In addition a statement on the extent of coverage for the FEWS is needed: how many and which countries will be the focus of priority effort.

b. Resource Needs

The level and permanence of resources assigned to such an effort is not only necessary to assure achievement of goals but it is an important signal within the agency and to donors and host countries as to the priority attached to the effort. AID management should assure that there are sufficient and appropriate staff and position ceiling assigned to the Africa

Bureau and that program funds for development of FEWS and assistance to host countries are not only allocated but protected for the duration of the development effort.

c. Strategy & Goal Needs

The clarity of goals and the route to achieving them helps the agency and those involved to concentrate their efforts and put the right priorities on what is necessary as opposed to what is desirable.

Current Goals Should Be:

- (1.) Develop and install a reliable system to warn AID management of impending famines in Africa for a 10 year period.
- (2.) Develop the methods and means to assist missions to help the target host countries to build a credible and institutionalized capability in early warning and emergency management to reduce the level of effort needed for an AID FEWS.
- (3.) Collaborate with international and donor agencies to improve the reliability and effectiveness of their systems and improve the sharing of outputs and costs.
- (4.) Where possible utilize the technologies, knowledge and information developed for the FEWS system to assist missions and host countries improve their work in other related development plans and strategies.

Management also needs to set current priorities and the concentration of effort to:

First - Complete development and installation of the FEWS system for AID/W and missions in the initial 8 countries.

Second - Develop a program and methods for joint AID/W mission efforts to build host country early warning and famine management systems and

Third - Develop and approach and plan to capitalize on international agencies and donors systems for early warning: sharing of data, developing common data bases and to share the work and costs for building host country systems.

The remainder of this report expands on the problems and prospects of famine early warning systems and suggested guidance for the AID FEWS program.

III. The Problems of Early Warning Systems for Drought/Famines

A. The emergence and evolution of famines

There are as yet no theoretical bases nor systematic empirical evidence about famines upon which to base the design of a warning system. Little is known about how famines are initiated, evolve and become full scale calamities. Famines evolve over time and are usually focused in relatively specific geographic areas. In the last two pandemic famines in Africa we know that hunger and lack of food was persistent in most of the famine stricken countries over a three or four year period prior to the famine. Reduction in basic food crops due to drought or poor rainfall patterns coincided with the three or four years of hunger, but total official food supply in any one of these years in these countries was not significantly below normal variations. But in those years when the hunger became recognized as a famine, e.g. 1983/84 national food production and food supply was not at crisis levels. In each of the countries affected broad scale hunger was limited in geographic areas, e.g. in 1984/85 Western Sudan was severely affected but not the Eastern and Southern regions. Only the provinces of Eritrea, Tigray, Wollo and Shoa in Ethiopia were severely affected in 1984, about 8,000,000 people or 20% of the population was at risk.

The Ethiopian famine had its beginnings in 1980/81, following four or five years of reduced peasant grain harvests, but did not result in broadscale famine and death until late 1983 -- it was not considered a famine until 1984.

Acute starvation, the precursor condition of famine, i.e., is sometimes defined as mass movements of people in search of food, seems to ebb and flow during its development over time but something acts as a catalyst that brings on the abandonment of villages and the movement of masses to towns and urban areas. The gradual erosion of subsistence farm family food stocks and marketable assets over time, coupled with the expectation of a further crop failure in the summer of 1984 led to mass movements of Ethiopians to towns along the main north south road in search of food. A further element which added to the catalytic force was the expectation that the government would provide food relief at these same towns as they had in the 1973-74 famine.[13]

What precipitated the starvation and mass movement of millions of people in Ethiopia? What were the conditions and causes? Was it the drought and reduction of food production? Overpopulation and erosion of farmland? All of these were and continue to be important factors. But we must add to this the political and military factors. At least 2 civil wars have been underway for several decades in the northern provinces of Eritrea and Tigray. Large areas of Wollo, Shoa and Gonder are subject to guerilla activity and the roads are periodically interdicted. The governments' current socialist policies have set market prices of basic grains at levels often below the cost of

production, thus a major contributor to the current "structural food deficit"* variously estimated at between 400,000 and 800,000 M.T. or 10-20% of the formal market demands. The government created additional problems in the peasant sector by extracting grain production under a quota system.

By fairly widespread and rigid local political "pass" or movement control it also limits the movement of cattle, production, and people to seek better market prices (black market), improved pasturage and labor seeking temporary migration. All of the latter are traditional means for peasant farm families to adapt to reduced food stocks and poor harvests.

*Structural deficit is defined in lay terms as food which could be produced but is not as a direct result of government policies and disincentives.

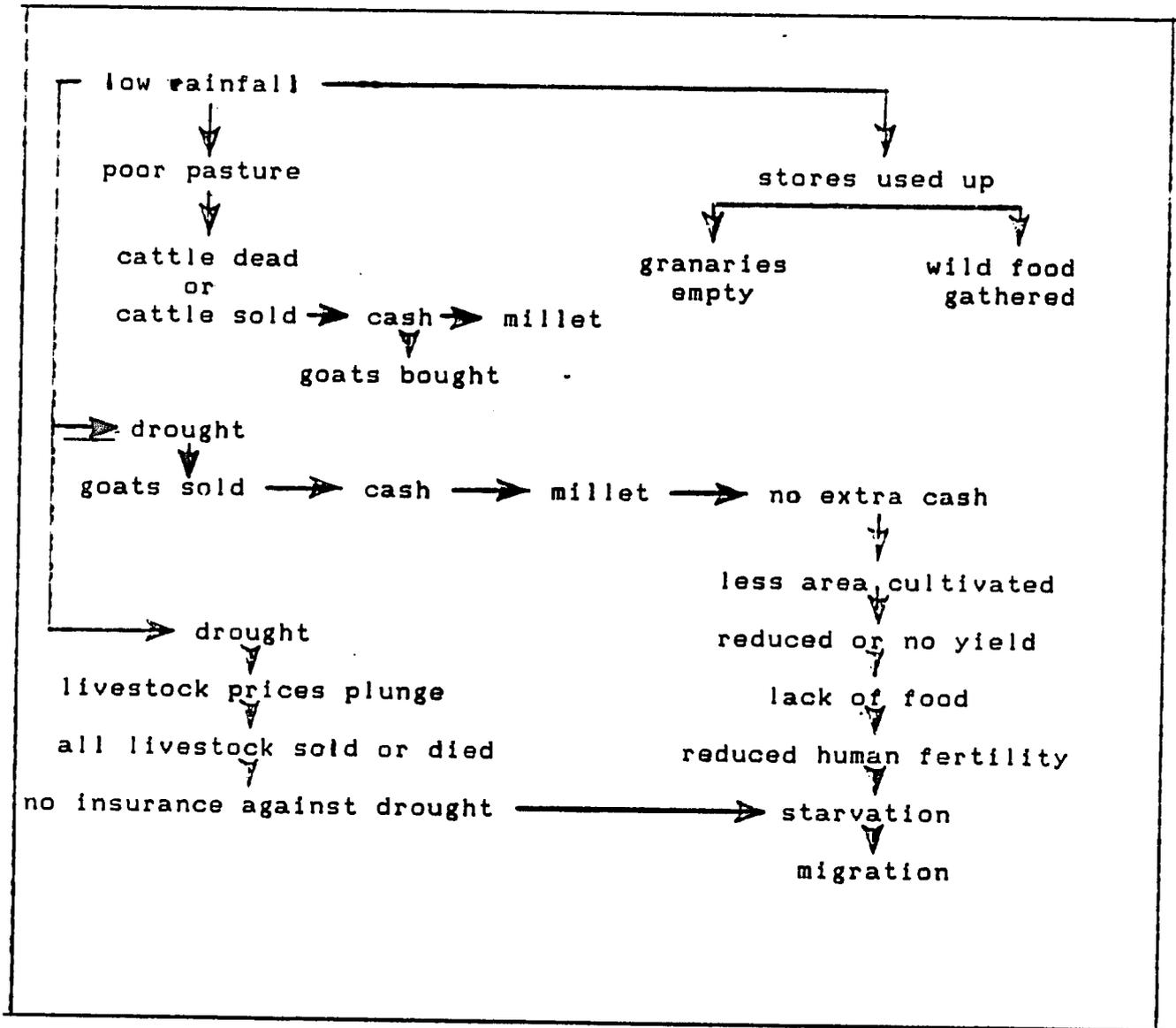
When one looks at the conditions and the events that are on-going during the height of a famine in specific locations, anomalies, contradictions, and seemingly illogical activity reigns. At the height of the build up of the relief feeding camps along the north south road in Wollo and Tigray in Ethiopia in late 1984 and early 1985, most of the local town markets had adequate stocks of food and prices were not above normal; there was evidence that grains and other foods produced locally were being transported from these areas and sold in urban markets while trucks were simultaneously sitting on long queues in the port of Assab to load and haul imported relief food to the camps; many hundreds of thousands of head of cattle were being driven from the Wollo region for slaughter and shipment to the Soviet Union in payment for weapons; while international relief agencies were importing sugar for supplementary feeding, the government was exporting thousands of tons of locally produced sugar; between the period of about October 1984 and January 1985, the period when imported relief supplies in the camps were at their lowest and many hundreds were dying daily, the government maintained a stock pile of grain estimated at between 275,000-400,000 M.T. for the military and urban populations. Because of the unusual political-military situation in Ethiopia, the examples appear particularly acute and pernicious but not unusual. In the 1943 Bengalese famine and food riots there were photographs taken of thousands of starving peasants blocked by armed police in front of a warehouse bulging with rice.

A detailed chronological account of the progress of famine in a village in Darfur province of Sudan during 1984/85 also reveals the anomalies of starving people squatting in and around towns while local food markets do business as usual and prices are normal or depressed.[50] Of particular interest are the direct impacts of low rainfall and the sequential progress of its effects on the family economy in the village from 1979-1985 (See Figure III-1).

Of more consequence is the balance of the article which analyzes the long term change in the social structure, depopulation of people and livestock and; the environmental stress from repeated drought over 20 years.

The progress and evolution of famine on pastoralists/herders differs from the rural sedentary farmers. Pastoralists vulnerability is greater than farmers, although they have greater mobility and can seek other greener pastures. However, when regional drought patterns occur, as in both Sahel droughts, moving the herd is not a viable option since there are few, if any, grazing areas not already occupied. The progress of famine among pastoralists follows a pattern (see FIGURE III-2).

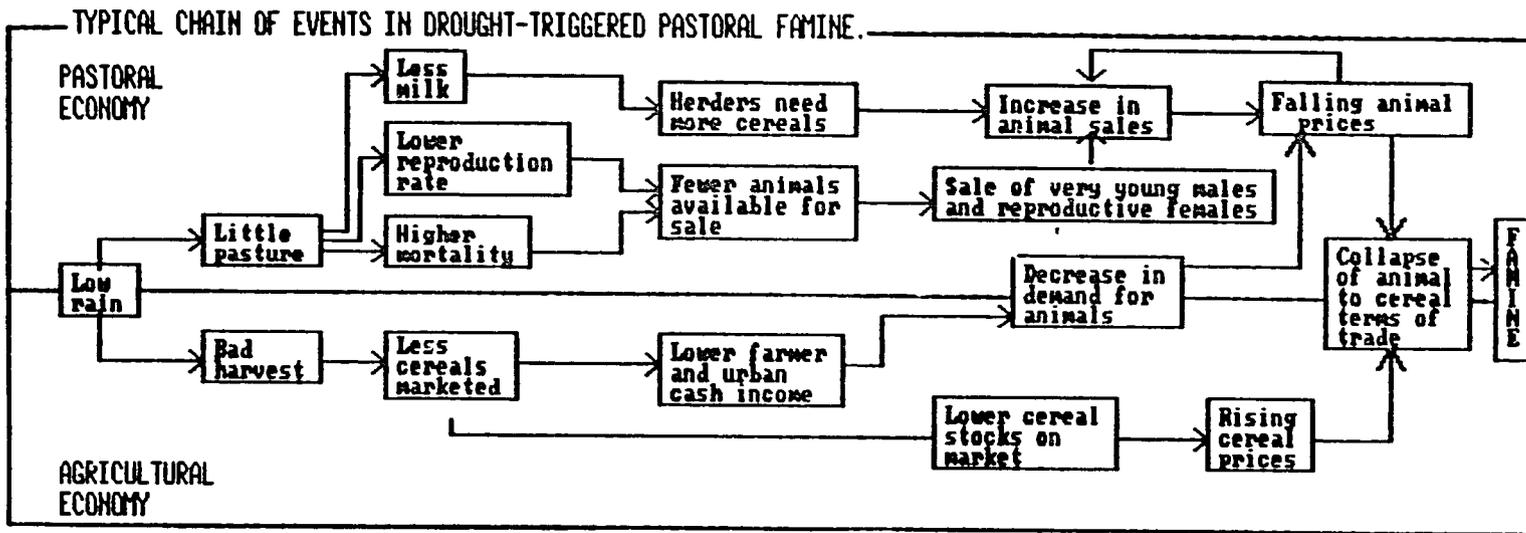
LONG TERM EFFECTS OF LOW RAINFALL



[50]

FIGURE III - 1

FIGURE III - 2



A noted scholar, P. Cutler, characterizes the sequence of events leading to a famine in a similar fashion as the above diagram suggests and adds:

" when the value of saleable family assets, usually labor and livestock, fall due to a glut on the market as many compete to buy food -- the only response left is to migrate and seek relief. These victims move as whole households, en mass, to a new area and they bring the famine with them, increasing prices of food and decreasing the value of labor and livestock, thus causing a "ripple" effects of famine on otherwise marginal communities." Thus....."mass migration, usually taken as the first sign of a famine, is in fact a terminal sign of distress and at this stage it is almost impossible to prevent mass deaths however great the relief effort." [13]

Famine, which is drought related, usually has a long gestation period, sometimes over several decades. It is usually geographically localized to areas of low resource peasant farmers who have limited opportunities for wage employment. It is accompanied by gradual deterioration of the environment for peasant food and livestock production, reduced employment and gradual consumption of assets; other government and economic constraints exacerbate peasant survival problems. The expectation of even further reduction of their food supplies leads rural families to desperation actions in the sale of livestock, labor and household possessions in an already "glutted" market, resulting in the terminal conditions of mass migration and starvation.

B. Definition of Famine; the Conditions and Causes of Famines.

1. Definition of Famine.

A famine is the result of the collapse of the social/economic systems which maintain normal levels of survival in a community. The lack of access to food is the usual cause but lack of potable water can also be important. Famine has eluded clinical definition as yet but it is cast as a series of perceptions:

- when morbidity and mortality reaches "abnormal" levels which are publicly obvious and publicly unacceptable.
- when social structures and social goods are threatened as a result of starvation, e.g. increasing and bold theft, excessive alms demands, excessive in or out migration, reduction in the effectiveness of the labor force as a result of sickness and excessive numbers of outdoor squatters in towns and urban areas.

- when massive movements of people seeking food, shelter and medical help overwhelm social support and administrative structures.

A recent review of definitions of famine by Tulane University concluded:

Models defining the nature and causes of famine have evolved from concentrating on ecological factors to identifying socio-political factors as the central, direct causes of famine.

Traditional models which stress ecological causes define famine as widespread hunger resulting from sudden, sharp reductions in food supply arising, in turn, from an ecological occurrence (e.g., drought, pestilence, etc.) These food availability decline (FAD) models lead to responses to famine which focus on increasing production, importation, and stockpiling of food.

In the 1970's, realization that famine and food supply are not always related stimulated reconsideration of the traditional definition of famine and its causes. The Tulane study describes a two stage evolution of thought beyond simple FAD models.

The first stage looked to economic and market factors as they related to famine. In the resulting model, famine is often caused by abnormal fluctuations in grain prices following crop failure and other economic shocks; a sudden rise in market prices without an accompanying rise in income denies access to food to part of the population out of proportion to the FAD. The assumption of market causality led to development of a market based solution: food aid sold on the open market to restore the market to a balance.

The second stage arises from recognition that this approach is dependent on sometimes baseless assumptions including: a) the state is willing to initiate required market controls; b) a reduction in market prices will ensure equitable food distribution; and, c) at even greatly reduced prices, those most affected will have the monetary resources to buy food.

Second stage models introduce the idea of inequalities in or collapse of social and political institutions. Some of these models cite FAD as the cause of famine but stress the role of socio-political factors in mitigating or exacerbating famine. Other models, though recognizing the role of ecological factors in creating a famine-susceptible environment, point to socio-political factors as direct causes of famine. Solutions

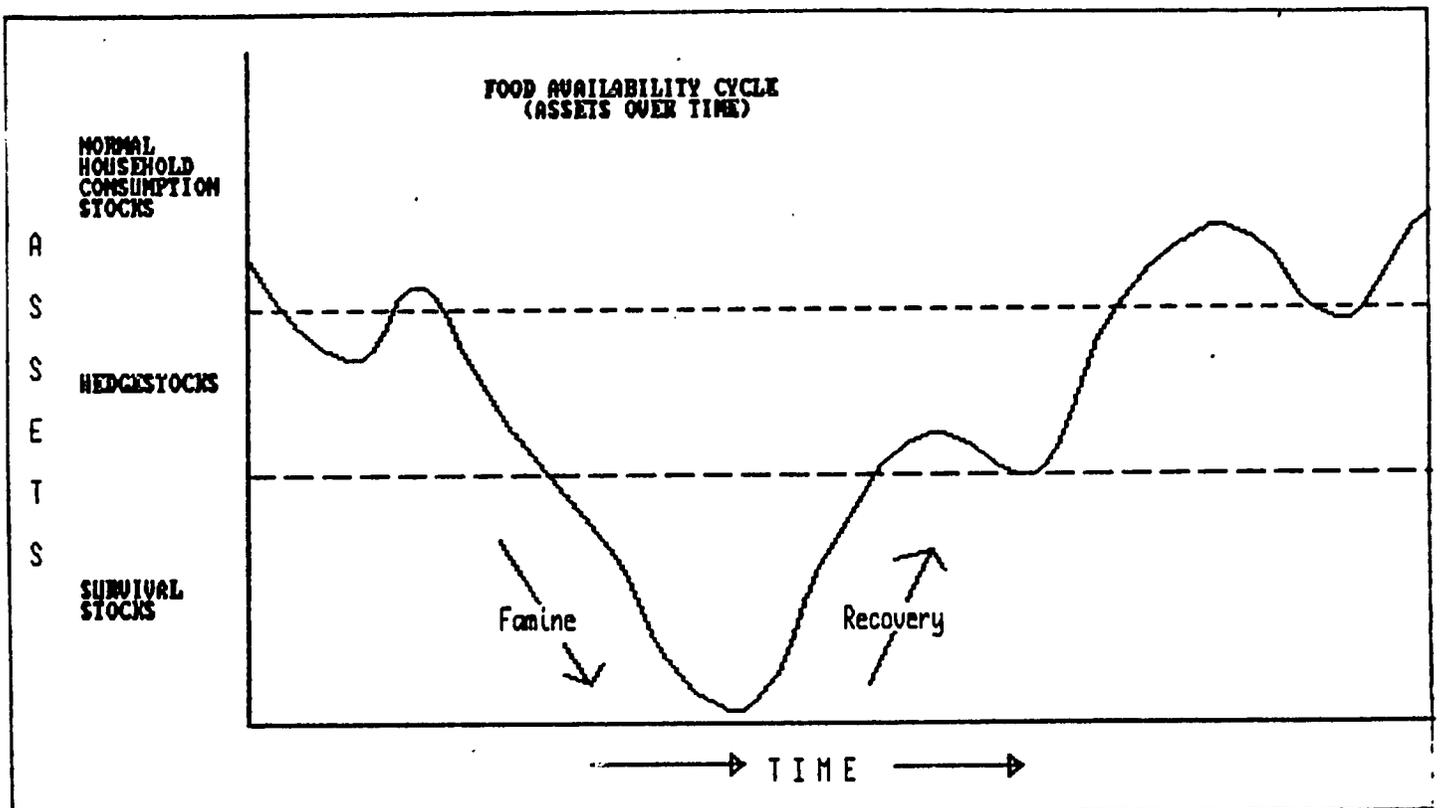
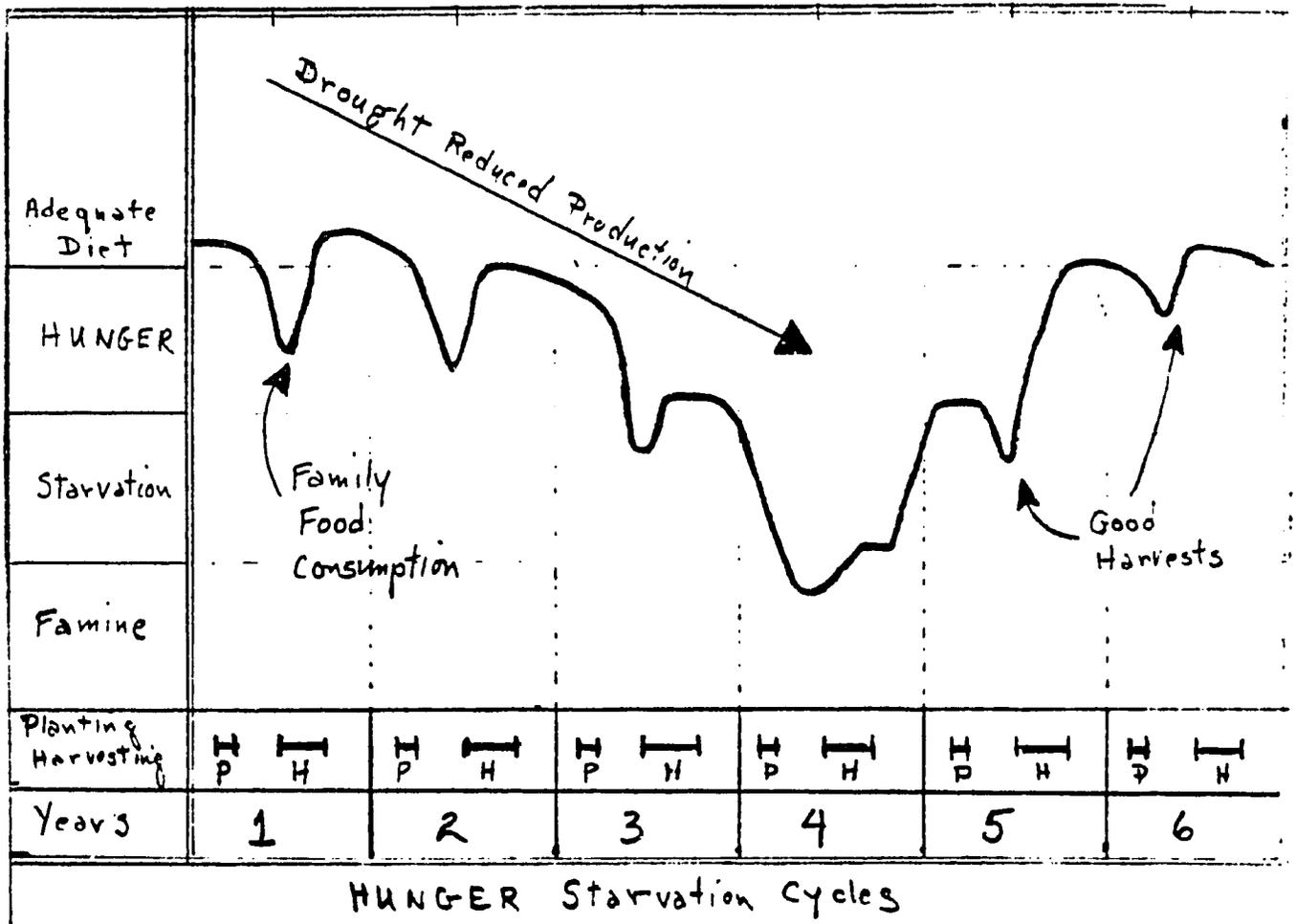


FIGURE III - 3

derived from these models include foci on correcting structural deficiencies and inequalities and reforming government policies which promote and/or exacerbate famine.

Evolution of thought concerning the nature and causes of famine led to recognition that the causes of famine go beyond ecological events: social, political, cultural, and economic structures have important, and sometimes causal, roles in famines. Effective mitigation of or reaction to famine must, therefore, consider and react to those structures.[53]

2. The Hunger-Starvation Condition.

Famine vulnerable areas of African developing countries are rural, with a predominantly subsistence agricultural base. Persistent hunger is the common condition with seasonal periods of communal starvation (below subsistence food intake) most years.

Most typically these periods are just prior to harvest. Since these communities are almost always on the margins of starvation, any significant change such as a drought induced crop failure can quickly move a community into the famine condition. On the other hand minor reductions of home food stocks coupled with other social/economic factors such as civil strife, or reduced employment, or any number of other factors can exacerbate the starvation condition and galvanize the famine syndrome. Non-drought induced famines in Sub-Sahara Africa are a continuous condition but usually only apply to individual communities and limited areas within countries. The famines which were of national or continental scope and recognized by the west as such, e.g., the 1972-74 Sahel and 1983-86 Sub-Sahara famines were precipitated or accompanied by severe drought and broad scale crop failures. (See Figure III-3.)

Starvation ensues and collapse into famine occurs as the bulk of the rural, primarily subsistence farm families cash and capital assets are reduced to a level where they no longer have the means to plant the next crop nor sufficient food to survive until harvest and; when their other survival and coping strategies fail. FIGURES III-4 and 5 characterize the way in which a family manages its survival. Their famine security system is labeled "survival box"; it is analogous to insurance programs and strategies found in Western societies but with a different content (e.g., it doesn't usually contain life, health, disability, and retirement insurance, savings, home ownership, and financial investments in forms similar to those in the more developed world.)

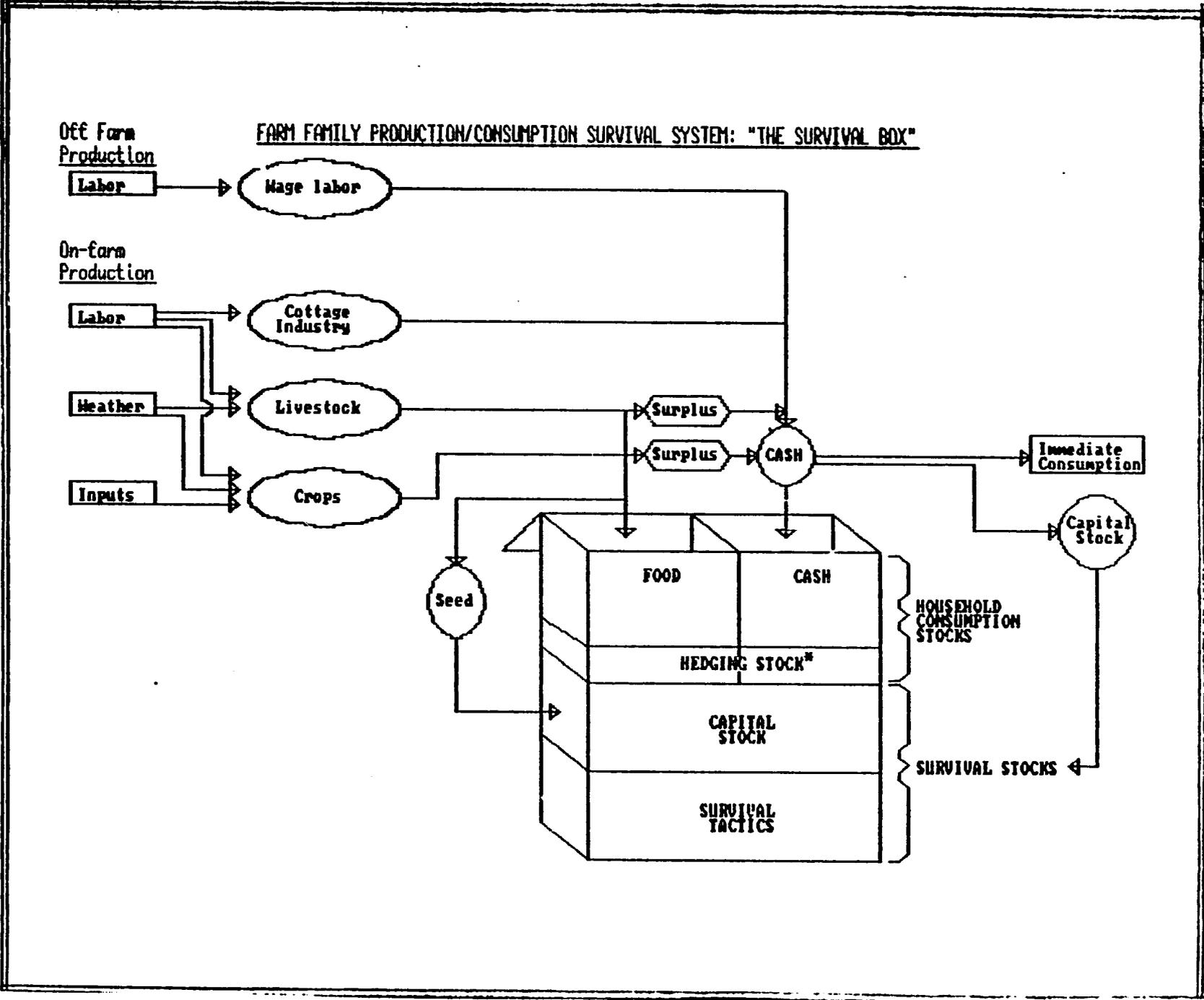


FIGURE III-5

Famine is not a specific event which takes place at a specific time over a given area affecting all people, but a deep drop into the starvation part of the normal cycles of a large number of people resulting in abnormal increases in sickness and death.

For the foreseeable future, many of the famine prone countries of the Sahel will continue to have local pockets of malnutrition and broader scale hunger if not starvation. The challenge of an early warning system is to identify which are normal and acceptable and which will/might trigger a "famine" requiring international intervention.

3. Groups vulnerable to famine.

In most of the famine prone developing countries, famine begins in the rural areas and only affects the rural people. Rarely do famines affect large urban areas, nor are the predominantly urban salaried, middle class and government bureaucrats denied food. Governments in developing countries will expend great resources in assuring food supply to the urban areas to avoid food riots and other politically destabilizing actions.

Those most vulnerable in the urban areas are the destitute, and the unemployed and underemployed. They are most threatened by the affects of price rises due to food shortages but often benefit from a famine as relief is more readily available in the urban areas during a crisis.

In the rural areas there are two broad groupings of potential famine victims, the sedentary farm community and the pastoralists/herders. Those most vulnerable among the farm community are:

1. Low resource based farm families, i.e. subsistence farmers.
2. Female headed farm households
3. Rural farm laborers
4. The Destitute

Almost all herders/pastoralists are vulnerable because of their high dependence on cereals that they have to purchase on the market or through barter exchange. Since between one-third and one-half of household production is marketed they are more vulnerable to market prices. The terms of trade between their production (milk and meat) and basic food grains creates their vulnerability, since famines tend to increase grain prices and reduce prices for livestock, thus eroding their purchasing power. [48]

4. Causes of Drought Induced Famines

The most prosaic statement of the cause of famine is insufficient food/nutrition intake by large numbers of people. It is essentially the same as malnutrition. This is a first order cause. The second order cause is that the family has insufficient food to eat. The third order causes include:

- inadequate farm food production (grains and livestock)
- inadequate cash or fungible assets to buy or barter for food
- reduced purchasing power due to price rises

The fourth order causes include:

- inadequate local or national food production and stocks
- inadequate rainfall for crops
- reduced grazing and water availability
- reduced employment opportunities
- civil strife

Fifth order causes include:

- inappropriate agricultural technologies (excessive herd size and grazing strategies, soil eroding and depleting technologies such as mono-cropping, etc.)
 - structural deficiencies:
 - government price policies
 - land tenure
 - government investment policies
 - employment and wage structure
- population growth/over population
- long-term (several years) reduced rainfall

The causes laid out above are in a continuum of immediate, direct to long-term, underlying structural causes. It should be noted that there is only one natural cause, i.e. lack of rainfall. What is not shown is the effect of the interaction of these factors over time which can exacerbate conditions and precipitate famine even without drought. For example, in the late 1970's in Tanzania, normally a food surplus country, the effect of government investment policies in exportable food crops coupled with an unrealistically low food price policy led to such reduced production that food had to be imported to avoid wide-spread famine.

A.K. Sen, an economist, concludes that the basic cause of famine is a lack of access to food, i.e. insufficient self production and insufficient resources (cash, employment opportunities, fungible assets) to buy food. He believes that food availability is not the central problem, access to the food is. Of course he recognizes that reduced food supply in the market exacerbates the food access problems of the poor since resulting price increases erode the purchasing power of cash and wage income.[46]

The role that soil erosion and forest reduction play in concert with population growth to create the likelihood of increasing famine in Africa cannot be overemphasized.[28] These are structural/policy problems and can only be reversed by effective development and investment policies.

The real underlying cause of famine is poverty: lack of access to productive resources and to employment. The one cause of famine that historically has been the focus of most attention is food availability, i.e. food production and food stocks. It is clear that in a competitive market system, expectations of reduced food stock levels increase prices, leading to reduced purchasing power which in turn reduces the access to food of vulnerable populations, thus increasing their vulnerability. However, in most cases of famine, national food stocks were sufficient to prevent the calamity over the short-term and purchase of imported food could have solved the problem over the mid-term. Government awareness of the problem, government will to act and government reallocation of resources to intervene were lacking.

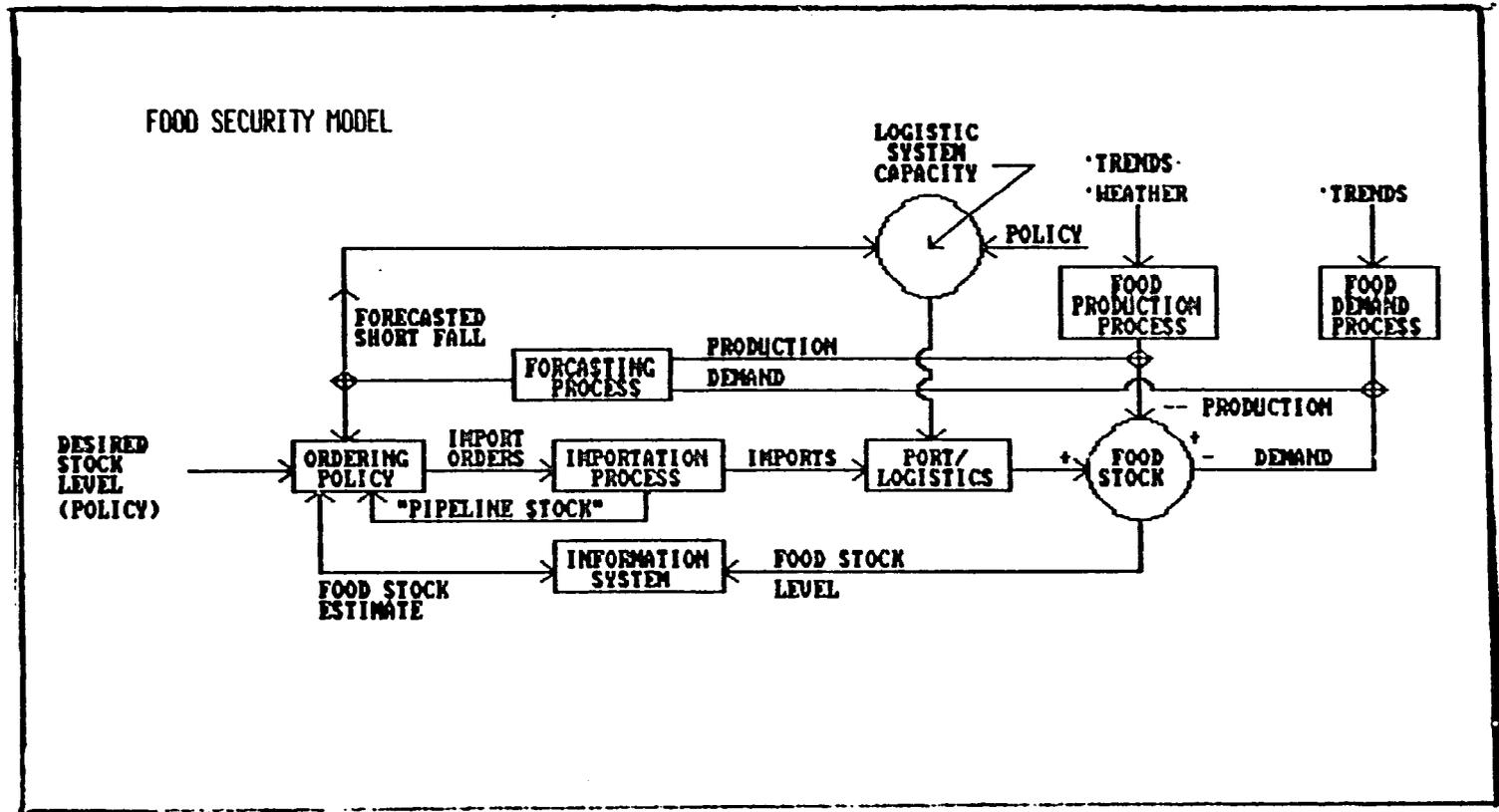
The causes of famine can, over the long run, only be eliminated by the process of development and not by improving the delivery of relief by the international donor community. However, the causes and their interaction are of critical importance in the development of cues or indicators for a famine early warning system.

5. Food Systems and Food Security

Although the causes of famines may be more related to food access and not food supply, food systems and how they work are important factors underlying both food availability and food prices. Knowledge of how the food supply system performs and is performing in famine vulnerable areas is critical in judging the nutritional status of the people and when famines occur, how to deliver emergency assistance.

A diagram of a national food supply system model (see Figure III-6) suggests the elements which exist at each level of the food system. National policies which affect agricultural production, prices, production or importation of farm inputs, agricultural investment and food stock levels are perhaps the most constraining in terms of what local communities and households can do to achieve their own food security goals.

FIGURE III - 6



But knowledge of the impacts of national policies on the food systems can not only provide insights into local vulnerability but also can be used to design intervention strategies which can reduce future vulnerability.

There are three basic food systems around the world: market dependent food systems, subsistence systems and, mixed market/subsistence systems. Subsistence systems predominate in the least developed countries which include all those that are famine prone.

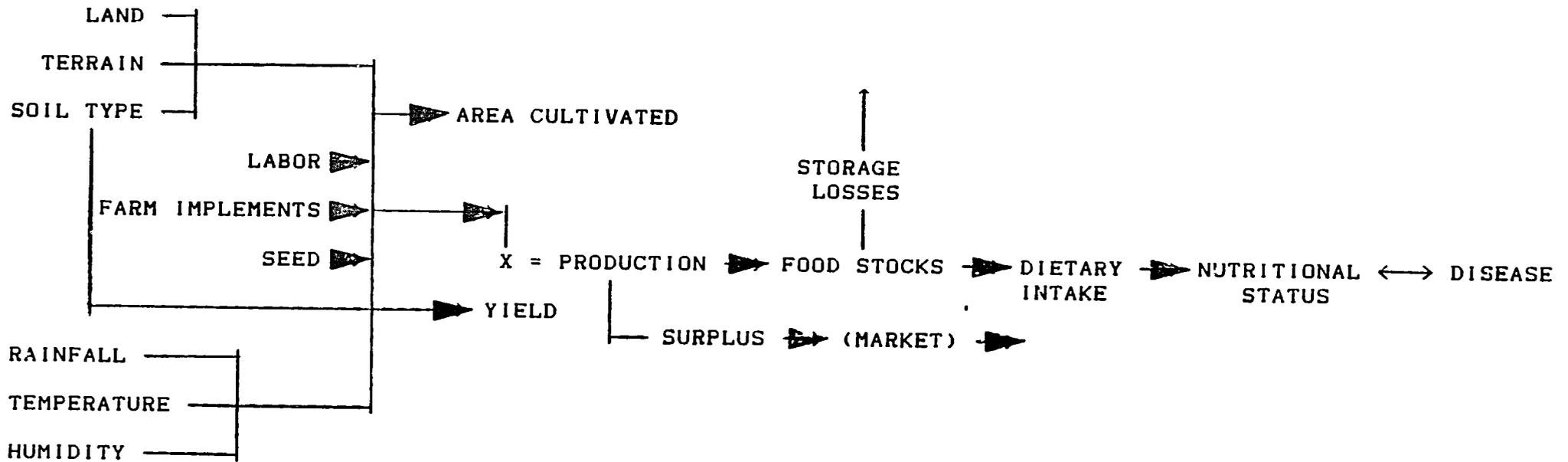
The market dependent system which is predominant in western industrialized countries is characterized by commercial food production, (with capital intensive inputs such as machinery, fertilizer and chemicals), a sophisticated food processing industry, a complex marketing system which is dependent on efficient transport and storage, and acquisition of food is almost entirely dependent on consumer purchasing power.

The subsistence system is usually characterized by lack of variety in its production, farmers either produce grain or tuber/root crops or livestock, although in most African famine prone countries the sedentary farmers also maintain some livestock. The production technologies are labor intensive, with minimum use of machinery, fertilizers and chemicals. Most planting stock is saved from the previous years' production. There is not a strong marketing/distribution component because most of the farm production is consumed by the farm family. The land holdings are usually small. The farm family's purchasing power is very low and therefore the variety of consumption is not great.[25]

The subsistence system is vulnerable to unfavorable weather, disease and pests. Because of lack of dependence of subsistence systems on the marketing system, the marketing/distribution and transportation elements are weak and cannot respond rapidly to changes in demand. As a result, interregional trade between surplus and deficit areas is not facilitated, exacerbating food availability problems when they arise and contributing to price increases. The weak marketing system is not then usable when relief intervention is required.

Knowledge of food systems and their vulnerability in famine prone areas is important to any warning or monitoring system as well as for determining the means and methods for the most effective intervention to avoid starvation. Warning systems in particular can be improved by monitoring selected food system performance indicators. (See Figure III-7.)

A SUBSISTENCE CROPPING FOOD SUPPLY SYSTEM SHOWING A POSSIBLE SELECTION OF PERFORMANCE INDICATORS



INDICATOR MATRIX:

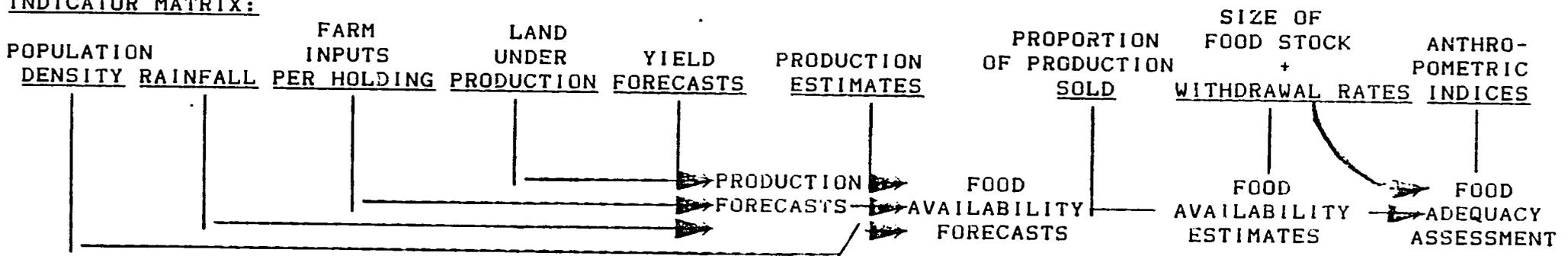


FIGURE III - 7 [25]

Although there are many larger villages and semi-urban areas in famine prone areas in which there are market dependent food systems to service wage earners, commercial farmers and the unemployed, the separate subsistence food system exists in isolation and is dominant in the rural economy.

It should be clear from the earlier discussion of the "security box" that the primary and pervading objective of the most vulnerable groups, the rural subsistence farm family and the nomadic herders is food security. It is central to all of their productive activities, savings and coping strategies.

Food security has recently been defined by the World Bank as "ensuring that all members of society have access to enough food throughout the year to lead an active and healthy life." The two key components are food availability and food access.[44] This definition is stated as a national policy and it stresses access to food, thus recognizing that efforts to improve food security must take into account that poverty can effectively bar the poor from the food market regardless of how much food is available.

It is clearly an important perspective for both the national relief community and those in charge of development policy in each nation to view both the problems of development and hunger in terms of interventions which provide adequate resources for the rural poor to achieve family food security. This is the basic equation most cited, i.e., if there were equitable development and attention to the rural poor there would be less likelihood of famine. The point here is that donors and national governments must seek those interventions to head off famine which provide the poor with the means for access to food, i.e., cash, employment, crop inputs and food distribution when necessary.

The above discussion seems to lead to a tentative conclusion about famine indicators in line with the Sen thesis, i.e., that we must seek to determine the condition of the rural family resources to produce or procure food over both the short and long-term.

C. Problems in Famine Indicators/Measurements and Their Meaning.

Unlike most other disasters which strike within days, the drought/induced famine may evolve over many years. Since it is also primarily a socio-economic event it should be susceptible to attempt to halt it or at least reduce its intensity. The quest of the western relief agencies to find the means to halt famine increased after the Sahel drought of 1972-74, waned in the late 1970s and intensified its pace during the Africa wide famine of 1984-86. The search initially was to identify the physical weather attributes leading to drought and to predict the course of food production and food availability. The 1974 Rome conference of the World Food Program developed a set of the indicators of famine which should be monitored. They were primarily focused on weather and food supply since the interest

of the west at that time was to be prepared to ship food during a famine and not be caught in the same logistics catastrophe as they had just experienced. Subsequent work by the World Bank, the International Food Policy Research Institute and other scholars focussed on other means to solve (what had become called) the food security problem such as food insurance schemes, international and regional food stockpiles and food security reserves (stocks) in each famine prone country. Other approaches were tried to find ways to mitigate the effects of drought through anti-desertification projects, soil conservation, small scale irrigation, improved range management, etc.

During the interregnum of the two great African famines, experiences and anecdotal knowledge began to emerge which suggested that the social and economic conditions were perhaps more causative than weather and reduced food production. And that signs of socio-economic stress in the rural population could be used to warn governments and provide a basis to stop famines before they begin. Unfortunately these concepts, though increasingly recognized by scholars, had little or no impact on the actions of the international relief community nor on the African governments. The exception is Botswana which in the late 1970s began to develop a surveillance system based on weather/crop conditions, nutritional measurement and socio-economic behavior which apparently was instrumental in preventing a famine in 1984-85.

The key to prediction and early warning of famine are the "indicators." Since most of the activities for which one needs such indicators are social and human and inherently complex, there may never be a rationally acceptable and accurate set of such measures which will fit the vulnerable African countries. The probability of developing a simplified set of one or two indicators, which is universally desired by concerned administrators, is not great. There is no magic formula!

At this point it is possible to attempt a generalized framework of "indicators". A comparative review of the literature in this area reveals general agreement on most factors (See FIGURE III-8). Interestingly all of these indicators were contained (or implied) in the Indian/Bengalese famine codes developed at the end of the 19th Century. (See FIGURE III-9)

Although the Indian "codes" have been criticized as only concerned with relief aspects and not dealing with the causes of famine but their effects,[15] a closer examination reveals a

FAMINE INDICATORS

Economic	Social	Political	Nutritional/Health	Physical/Environmental
Retail shop prices of food grain rise between 20%-40% (scarcity rate) above the normal rates.	Unusual emigration from or into an area.	Civil War	Eating of alternative "famine foods".	Unusual movements of flocks and herds in search of pasturage.
The contraction of credit.	Any increase in crime attributable to general rise in prices or scarcity of food.	War	Eating of less nutritious foods.	Dessication of arid and semi-arid lands due to poor use of land and technology, overgrazing, slashing and burning
Feverish activity in the grain trade.	Any wandering of needy, starving persons.	Elections	Killing of wild or domestic animals.	practices, and intensified agricultural land use in marginal areas contribute to a gradual deterioration of the environment and intensify the effects of drought.
The contraction of private charity, indicated by the wandering paupers.	Any unusual increase in mortality.	Coup	Weight Loss.	
If small farmers are suddenly selling off their goats in the market place.	Increased household migration in search of food and work outside the community.	Civil Strife	Organized fasting within households.	
A deterioration of producer incentives.	More married than single men are migrating to seek seasonal employment.		Greater incidence of infectious disease.	Years of below-average rainfall.
A substantial drop in market deliveries of basic foods.	If the number of beggars around the mosques after prayer is increasing.		Excess deaths among vulnerable groups, (aged, infants, etc.)	Any serious environmental changes, ie. unfavorable weather, serious outbreaks of pest attacks, man-made disasters, animal diseases which could lead to a substantial shortfall in production of basic foods.
A substantial rise in the prospective import bill of basic foods in a low-income country with a difficult balance of payment position.	If women are gathering famine foods.			Reduced food and annual production.
	Increase in small holder sales.			Reduced crop plantings and reduction in livestock herds.
Depletion in government food stocks.	Unusual sales of household possessions.			
	Rapid population increases.			
	Hoarding on a substantial scale and smuggling across national boundaries.			
	Settlement in new agricultural areas.			

FIGURE III-8

THE SEQUENCE OF INFORMATION GATHERING PRIOR TO FAMINES PROPOSED IN THE BENGAL CODE 1913

Continuous Monitoring First Monday of each month Police Officer in charge of Thana Agricultural statistics including:	Spatial Targetting On or before 1st April each year District Officer Maps of areas liable to famine based on:	Special Watchfulness Whenever District Officer records when:	Danger Signals When distress is anticipated Weekly District Officer Compiles by Thana:	A Special Report Explaining impending famine when apprehensions of distress arise in any part of the district District Officer reports:	The Basis of the Declaration of Famine
<ol style="list-style-type: none"> 1. The amount and distribution of the rainfall. 2. The character of the weather. 3. The progress of agricultural operations. 4. The condition of the standing crops. 5. The out turn of the crops at the time of harvest. 6. The stocks of grain, as far as these can be ascertained. 7. The retail shop prices of common (cheapest) rice (mava chaul), in respect of the district of Murshidabad, and of maize, in respect of the district of Darjeeling (quantity obtainable for a rupee). 8. The general condition of the people particularly the existence of scarcity, if any, or distress, whenever it may occur. 9. The health of the people. 10. Any failure in the supply of fodder, the presence of disease, or the occurrence of any unusual mortality among the cattle. 	<ol style="list-style-type: none"> 1. The previous history of the tract in regard to its having been visited by famines or not. 2. The density and economic condition of the population. 3. The nature of the soil and the general capability of the tract to maintain its population. 4. How far cultivation depends on rainfall, and whether the normal rainfall is regular or otherwise. 5. How far the tract is irrigated by rivers, canals, weirs, etc. 6. The accessibility of the tract as regards transportation of food grains. 	<p>Retail shop prices of the food grains rise to 20 per cent or more above the normal rates.</p> <p>.....</p> <p>Submits explanation and reports when: Retail shop prices of the food grains rise to 40 per cent (the scarcity rate) above normal rates.</p> <p>.....</p> <p>sends to Commissioner of the Division</p>	<p>1. Weekly rainfall</p> <p>2. Prices of cheapest rice</p> <p>.....</p> <p>Fortnightly District Officer Calculates by district from railway authorities imports and exports of food grains</p> <p>.....</p> <p>Periodically District Superintendent of Police notes danger signals:</p> <ol style="list-style-type: none"> 1. Any increase in crime attributable to general rise in prices or scarcity of food. 2. Any wandering of needy, starving persons. 3. Any emigration from, or immigration into, the area. 4. Any unusual increase of mortality. 5. Any cases of starvation or severe want. 6. Any decline in the above symptoms of scarcity. <p>.....</p> <p>send to The District Officer who if prices continue to rise, looks for indications of famine</p> <ol style="list-style-type: none"> 1. The contraction of private charity, indicated by the wandering of paupers. 2. The contraction of credit. 3. Feverish activity in the grain trade. 4. Restlessness shown in an increase of crime. 5. Unusual movements of flocks and herds in search of pasturage. 6. Unusual wandering of people. 7. Increased activity in emigration as seen from booking returns at stations. 	<ol style="list-style-type: none"> I. The grounds of his belief that distress or famine is impending, commenting upon: <ol style="list-style-type: none"> 1. The normal percentage of each harvest to the total harvest of a year. 2. The out-turn of each harvest of each year in cents with reference to the normal area. 3. The out-turn of each harvest of the year reduced to express the relation which each such harvest bears to the total harvests of the year (100 per cent being taken as the normal total of all three harvests). II. The report should review: <ol style="list-style-type: none"> 1. The economic condition of the district or part or parts of the district affected. 2. The out-turn of recent harvests. 3. The nature and the extent of the anticipated failure of crops. 4. The probable intensity and duration of distress and the contingencies on which they depend. 5. The classes most affected. 6. The position as regards local trade, communications, food stocks, prices, fodder and water supply, etc. 7. The precautionary steps taken to organize measures for dealing with distress and the proposed measures of relief. 8. The state of the relief programmes. 9. The probable extent to which the land revenue demand may have to be postponed or remitted. III. The report should also show: <ol style="list-style-type: none"> 1. The area and population likely to be affected. 2. The extent of relief which is likely to be required. 3. The expenditure which that relief will involve. 4. The local sources from which such expenditure can be met. 5. The additional staff which will be required in the Civil, Public Works and Sanitary departments. 6. Whether any landrevenue are likely to remit rent, and whether any concessions should be made to government estates. 	<ol style="list-style-type: none"> 1. "Test relief" to find out whether the signals are real or deceptive, will be opened by the District Officer when the danger signals are clearly observable. 2. "Gratuitous relief" may be given in the villages where this is found necessary owing, for instance, to the emigration of able-bodied persons leaving their dependants unprotected for. <p>District Officer shall report with a view to famine being declared when:</p> <ol style="list-style-type: none"> 1. Test works begin to attract workers in considerable numbers. or 2. Gratuitous relief appears likely to be required on a considerable scale, i.e. when one-half per cent of the population (according to the preceding census) of any Thana or larger area in the district has been in relief for two months continuously.
<p>sends to District Superintendent of Police and District Officer</p>	<p>sends to Commissioner of the Division</p>	<p>sends to Commissioner of the Division</p>	<p>sends to The District Officer</p>	<p>sends to The District Officer</p>	<p>sends to Commissioner of the Division and Local Government</p>

source: Bruce Currey and Graeme Hugo (eds), Famine as a Geographical Phenomenon, D Reidol, Lancaster, 1984, pp 194-195

FIGURE III - 9

very sophisticated appreciation of the socio-economic factors as well as social and physical vulnerability. In addition the "codes" include very practical tests of whether or not there is real stress.

Famine indicators fit into two categories, physical/environmental and socio-economic. The latter category includes many indicators broken down for ease of understanding into Economic, Social, Political and Nutritional/Health. Another classification is the FAO system which was largely adopted by the international relief community until the 1983-86 famine:

Crop Forecasting

(includes weather/drought forecasting)

Food Balance Sheet Accounting

(projected food availability in the country)

Monitors were also to maintain watch for severe problems in internal marketing, imports, deterioration of nutritional status, refugee influx and world cereal prices, stocks, fertilizer and production in food exporting countries.[15]

Such macro-factors at the national level do have to be watched and can signal potential problems but national level food supply may give no indication of food availability nor food access in local areas as was the case of Sudan in 1984. Such statistics are dependent on the quality of local data which is notoriously inaccurate and incomplete and lack historical continuity. Even expert expatriate survey teams' estimates differ by wide margins. Other, more objective means, such as satellite crop forecasting have to rely heavily on ground truth and historical baselines, neither of which are currently dependable. As we have said famine is normally a micro problem or series of micro problems that evolve into a large problem. Such global indicators ignore the micro climates and the conditions at the family/community level. Indicators such as market prices and sales also ignore a sizeable part of the rural subsistence sector that is outside of the money/market economy and largely rely on barter and informal exchanges. Therefore, the global type indicators can at best only provide general trends and identify problems when they are already at an emergency state.

It was during the recent Africa famine that more attention was paid to the concept of nutritional stress and nutritional surveillance as an important indicator. It became a significant factor not because of its value to predict nutritional problems, but as a means for determining which of the famine victims required emergency feeding and which were the most needy groups and communities. It was a means for prioritizing the use of food relief as well as a justification of NGO's to request food allocations from donors.

The concept of nutritional surveillance and nutritional measurement is attractive since it seems to meet the test of objectivity and is readily usable for justifying how many people need how much food, which is prized by the donor bureaucracy. The state of the art, however, is such that there have been widely divergent results from different groups measuring the same population. The methods may eventually improve, but it will still be dependent on the quality of implementation. This system of measurement is a very labor intensive and costly process; it has potential defects in its statistical representativeness and; its standards of when stress exists may not fit the varying local social and ethnic standards of hunger and starvation.

The socio-economic and cultural clues or proxies. (e.g., use of survival crops, women's sale of jewelry, cattle slaughter and barter) are difficult to get at and equally difficult to assess as to their significance with regard to phases or degrees of nutritional emergencies; and they may differ in context and significance from one ethnic group to another.

The monitoring of food and other related commodity prices is one agreed upon proxy for determining potential stress in food availability or a prediction of future food availability which may be a measure of access to food by those in the market economy. But what does it say about rural populations outside the market economy? Having accurate historical information about rural survival/coping methods may not be useful about countries/populations:

- Which are already in nutritional distress
- Just survived a calamity (famine)
- In the midst of civil strife.

The status of efforts to find or build famine indicators under the AFR FEWS program provides insight into the problems and complexity of this task. After some 1 1/2 years of in-country effort by the Tulane PHAs and collateral efforts by Price Williams Analysts, there is no country in which there is an agreed set of indicators nor even a frame of reference from which to work. Some individual PHAs have identified some of the factors of vulnerability in some communities. By and large the bulk of the effort has, of necessity, been directed at identifying data and data sources and in providing analysis and monitoring of on-going nutritional emergencies in their countries.

The problems of data collection, data gaps and anomalies, as well as timely release and availability of data are legion and can only be appreciated by reading the full text of the PHAs' reports to the Dakar FEWS Conference in April 1987.

Looking at the long list of socio-economic indicators, considering their complexity, considering the difficulties in their measurement, considering the fact that the events and conditions that they are to measure do not occur simultaneously

throughout countries, regions or classes of people and; given that the human and institutional infrastructure in vulnerable countries is not capable of handling the sophistication and complexity of such measures, a serious person would be tempted to declare the effort hopeless.

Perhaps most of the difficulty with indicators, which after all are the key to a monitoring and warning system, is that the western donors have approached them from the "top down", searching for the simple but "magic" indicators which are accurate and quantifiable and can trigger the warning, thus reducing their bureaucratic uncertainties.

In this author's opinion the quest for the indicators is over! There are adequate lists of indicators which are sufficient to identify any and all signs of nutritional stress and incipient famine conditions. All that is needed is a system to fit them in and a test of their applicability by trial and error method; find what works! The selection of the indicators and the design of the system should accurately reflect:

- a. the functioning of the local food supply system; and,
- b. the realities of the local economic and social structure, its:
 - wealth/poverty,
 - income sources,
 - exchange and market dependency,
 - family and community support systems..
- c. the community, state and national intervention policy i.e., under what conditions will external help be offered, when and in what form.

The outcome of this effort will be a realistic grasp of the vulnerability of the community to nutritional stress, regardless of its causes.

The conference of the Working Group on Famine in Africa held in Kinshasha, Zaire in January 1980 concluded that any national surveillance program must include "Development of national knowledge on the nature of food systems, vulnerable areas, population groups and the likely dynamics of any food shortages." [62]

Oxfam stated its criteria for indicators:

- "- They must be timely and give advance warning of an approaching food crises;
- They must accurately identify the area and population at risk;
- For the sake of continuity they must be cheap and easy to collect since famines occur rarely;
- They must be area specific in order to identify the symptoms of distress in the local economy
- They must identify the end of the famine and the start of economic recovery." [24]

The conclusion that one must draw is that the effort must be based on intimate local knowledge and can be designed and managed only with local participation. Nothing in the literature would suggest that this approach has been attempted. In most known cases of attempts to install local systems they have relied on local (but externally controlled) institutions e.g. the Indian famine codes rely on the local police officer, the OXFAM is attempting to organize the local Red Crescent Society as a monitor in Darfur, Sudan. Why is it that we always seek to build a top down system? Is it possible that the local community is unable to measure and communicate conditions of nutritional stress in terms that relief administrators are unable to make reasonable judgements?

It is time for FEWS systems to halt their quest for a theory and principals upon which to base a generalized set of indicators and to select a set of indicators (arbitrarily if necessary) in collaboration with local communities and test their relevancy.

There are several other points that must be made about indicators: the availability and accessibility of data, its quality and reliability and the feasibility of interpreting such data to arrive at a conclusion about the meaning of the selected indicator. Perhaps most important is the cost and effort to collect such data.

A review of the status of natural resources and environmental data in famine prone countries in Africa concludes that only geological, topographic and hydrology maps and reports are widely available and provide national coverage. Other key information either does not exist, is very sketchy or is not available, e.g., terrain, vegetation cover, land use, soils, soil erosion, climate and eco system.[5]

Similar conclusions result from an inventory of FEWS mappable data done in February 1987 by Price Williams Associates which included land and climate, political, administrative, economic, food production, and social data. Price Williams concluded that most of the data available was spotty, far too broad (macro) or too aggregated and resulted in "determining

areas of risk at relatively low levels of resolution." Often where good data existed, e.g., Ethiopian land use maps, it could not be obtained or was inaccessible.[41]

D. Differences of Objectives and Needs.

Perhaps the most significant problem of early warning systems in general is that each user or participant in the system may have a different set of objectives, desired outputs, desired level of accuracy and expectations. Some governments put a higher priority on avoiding political disruption as a result of food shortages in urban areas than rural areas and are thus more interested in the accuracy of food production estimates and food supply balance sheets than in levels of rural malnutrition. Ministries of Agriculture are usually more interested in food production, food supply and demand and prices than they are in access to food. Ministries of Health concerned about the clinical aspects of malnutrition and disease are most interested in morbidity and mortality data and perhaps concerned with the potential demands on their resources to service relief camps and deal with epidemic disease. As can be expected, each such government agency with a different responsibility and objectives will view the FEWS in terms of how it can help them in achieving their objectives. Typically they will be unable or will resist redirecting their own efforts in such areas as data collection and monitoring to meet the needs of FEWS.

Except in countries such as Ethiopia, which has a Relief and Rehabilitation Commission charged with warning of famine and providing food relief, and Botswana, which has a nutrition surveillance system, there is usually no single government entity charged with preventing or relieving famine.

Until such time as each of those governments in famine prone countries establishes a clear cut responsibility for famine prevention and relief it will be difficult to get agreement on policies, objectives, indicators, data requirements and system configuration.

Equally important, in the donor communities there are different sets of objectives. Obviously they wish to have as much advance warning as is possible of problems, and possible requests to them for food and other relief. They also need and seek greater accuracy and reliability regarding the number of famine victims, their condition, their locations and food requirements. Their bureaucratic systems are such that accuracy and credibility of these statistics is more important than the urgency to act to solve a known calamity. In the fall of 1984, after the BBC televised the desperate famine conditions in Wollo, Ethiopia, most of the donors sent in teams of experts to review the Ethiopian Government's statistics on numbers in need and food supply prior to recommending the first allocation of food relief.

A survey of the recipients of the African Bureau FEWS reports was conducted in Feb. 1987. It revealed that most of the AID officers who received and read the report were interested in those aspects which could help them to do a better job and some of their views implied different objectives than FEWS had. For example, several of the recipients recommended more information on donors and PVOs and long term development plans. Others requested more validation of the numbers of people at risk while recognizing that it was probable not possible given the "political" nature of the estimates.

Of perhaps more significance relating to different perspectives and needs was the issue of timeliness of the reports. "When asked if the information in the reports was timely, most respondents answered 'no' (45%), or that the information was only 'reasonably timely' (18%). This response may indicate a misinterpretation of FEWS purpose. FEWS analyzes the available information in holistic fashion, the FEWS reports forecast possible implications of a country's food situation." [2]

Indeed, the interpretation of current events in order to warn of potential future problems should be a first order objective.

Other elements of the survey such as the confusion about whether the FEWS objective was to provide information and/or warning to AID Washington, AID Field Missions or host countries seems to confirm a wide variety of "perceived" objectives which was developed by the OEO Evaluation in March 1987:

- (1) To improve U.S. (AID) response to nutritional emergencies.
- (2) To improve host country (affected country) response.
- (3) To improve donor response.
- (4) To avoid famines.
- (5) To avoid or reduce dislocation of affected people during famines.
- (6) To assist in development planning.
- (7) To assist in agricultural planning.
- (8) To assist in natural resources management.
- (9) To assist in monitoring health crises e.g. AIDS

Other confusions in objectives and goals relate to the definition of the problems. Some still believe that famine is a food availability problem. Therefore, there are many agencies in affected countries as well as donors and the FAO whose objective is to predict the condition of the food supply. This attitude is changing, primarily among those relief agencies and donors which are most involved in famine relief. More needs to be done to raise the level of understanding to the current level of knowledge and capability and to concentrate on more precise and relevant definitions of objectives, goals and outputs.

As can be readily seen, each different perception about FEWS system objectives and goals will result in a different configuration of the system, its content and cost.

In the AFR FEWS System there are not clear and definitive statements of who is to be warned, about what, when, how many people must be in an emergency condition to qualify as a famine, etc. Answers which are agreed upon by the various participants are needed to such questions as:

1. Is the FEWS objective to:
 - prevent famine?
 - reduce the impact of famine?
 - prevent dislocation of population in search of food?
 - prevent malnutrition?
2. How many victims of potential malnutrition or starvation constitute a problem or require action?
3. Who is to be warned about what size and type of problem and how far in advance?
 - Host country?
 - AID Mission?
 - AID Washington?
 - Other donors?
 - All of the Above?
4. Should the FEWS:
 - Provide only early warning?
 - Monitor food production and food supply?
 - Provide information about current emergency operations?
 - Monitor recovery and rehabilitation?
5. Who should operate the system?
6. How accurate should the system be?

IV. Famine Early Warning System Redefined*

Linking the FEWS System to the Phases of Famine

In reviewing the problems inherent in the different sets of objectives, perceptions and expectations about Early Warning Systems, it is apparent that there is a need for more precision about what is needed by whom but also to determine when it is needed, what level of accuracy is required and how possible it is to provide this, given current information bases, institutional capacity and technologies.

The answers to many of these questions will be easier if they are put into the context of the phases of a famine, provided that the information needed to identify the condition of the affected populations, is obtained and various actions are taken to deal with the problems. (See Figure IV-1.)

Regardless of the particular phase of the famine, the system must be capable of scanning and monitoring conditions and of determining the size, extent and direction of the problems. When the system reveals nutritional stress or other symptoms of food crises more intensive monitoring may be required. In addition, if the government is to actively intervene it must have a means for preparedness and contingency planning and appropriate decision making machinery. If conditions snowball or move too rapidly to intervene in heading off a famine, there must be a system to manage the emergency, including allocation and distribution of food and medical care.

In order to deal with a famine or potential famine, more than early warning is needed to effectively manage each of its phases. Constant scanning and monitoring is required, albeit at different levels of intensity and monitoring different sets of indicators, during the phases of the famine. What has often been desired by many of the involved relief agencies as a single warning of impending famine has in some ways turned attention away from the fact that hunger, starvation and famine is a process. That process is a complex one involving political and socio-economic interactions; it does not have single, linear progression; it may manifest itself in novel ways but the events that occur as the process unfolds in retrospect seemed to be

* The name Famine Early Warning System is less appropriate and concentrates on only one of the elements that the system should encompass. A more descriptive name would be Famine Emergency Management System. However, because the current title, FEWS is already institutionalized and accepted we will use the term interchangeably with Famine Emergency Management System.

Response to Famine

Phases of Famine	PRE FAMINE	IMMINENT FAMINE	EARLY FAMINE	LATE FAMINE	RECOVERY	Post FAMINE
Status of Vulnerable People	Erosion of Food Access →	Mal Nutrition	Starvation →	Starvation Migration	Starvation Death Mass Migration	Food Access → Recovery →

FIGURE IV-1

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PHASES OF A FAMINE

PHASES OF FAMINE	INFORMATION NEEDED	POSSIBLE ACTIONS
Drought reduces family food production and food access (over several years)	Rainfall Production in vulnerable areas Family/Community food stocks levels	Intensify monitoring and other factors to show stress, e.g. labor migration
Malnutrition increases	Child nutrition levels	
Sales of livestock & other assets Continued drought Further reduction of food stock Labor migration in search of employment	Prices of food & livestock Rainfall Production Migration and Labor rates	Increase employment Credit for agricultural inputs and livestock
Famine Foods	Market demand and prices	Food subsidy
Panic sales of assets & increased seasonal migration	Market prices of jewelry & assets Migration & labor rates	Food for work & cash for work Food distribution
Migration in search of food relief	Numbers and locations of villages	Food distribution to village
Whole household migration and temporary relocation at urban points		Food & medical relief in camp sites
Improved nutrition and access to food	Nutrition monitoring & food distribution rates	Provide food production assets. Seed, tools, livestock, etc. Food
Return to villages	Food production rain fall	Food distribution to villages

FIGURE IV - 2

linked together as in a chain and build on each other. Bruce Currey calls this process one of concatenation, "... an extension of the concept of complexity. In famines it is the process in which the complex inter-relationships (from grain shipments to kinship links or from political ties to administrative chains of command) become strained and eventually rupture...".[11]

The simplified paradigm in Figure IV-2 demonstrates the need for a broader perception/or vision of the famine process. (The term nology and categories are descriptive and not intended to be precise.) We must begin our discussion by assuming that the primary purpose of a FEWS is for an external authority to intervene in the process to somehow change it. Viewing this paradigm from a systems perspective we see that in each phase the status/or condition of the vulnerable people change in various degrees of stress; and required actions in response to their survival status may change quite radically. Perhaps most significant is that the kind, magnitude and costs of possible interventions at each phase will change and increase geometrically.

Components of a FEWS system.

A Famine Early Warning System can not operate on an ad-hoc basis and must be institutionalized in central and local government authorities. That does not mean that it must be an operating organization on a full time basis throughout the year. But it must have the means to activate an emergency organization when the conditions require it. The system must have sufficient legal authority, institutional resources and decision making power to energize the other elements of the emergency management system and other government agencies and; to gain access to appropriate executive authority to take action.

The four major elements or means needed for a famine system if it is to achieve its purposes are:

- monitoring the condition of the vulnerable population throughout all phases of the famine.
- planning for and determining which phase exists, what kinds of interventions are appropriate and where or when interventions should take place.
- managing and implementing such interventions.
- managing and implementing post famine, rehabilitation activities.

In 1977, the Botswana Interministerial Working Party on Drought set the following working aims which fit most of the important criteria for a famine system:

- 1) Establishment of a permanent monitoring system on the impact of drought (of varying degrees of severity) on the human population.
- 2) Establishment of a system of communication (and responsibilities within that system) of information pertaining to apparent drought conditions, and the timing of such alerts.
- 3) Investigation of transport capacity, storage capacity and the establishment of drought officer at district and central levels.
- 4) An evaluation of the nature and source of aid in times of drought.
- 5) An examination of criteria for the distribution of relief, including an investigation of which groups are vulnerable in time of drought; who in fact obtains assistance in times of drought; what conditions should be attached to relief.

and :

"The Committee should have four main areas of focus:

- 1) Food supply:
 - (a) Establishment of a monitoring system of food prices and retail and wholesale food stocks.
 - (b) Assessment of the ability of farmers to obtain and keep oxen and seeds in time of drought.
- 2) Food storage:
 - (a) On-going assessment procedure for monitoring basic foodstuffs kept in rural people's homes.
 - (b) Food, seed and feed storage plans for each area.
- 3) Food distribution:
 - (a) On-going monitoring process of nutritional status of population.
 - (b) Policy decision on the food-for-work program, free handouts, etc., in times of drought.

- 4) Coordination process between Central and Local Government in times of drought: establishing lines of contact to insure rapid response to drought, famine and assessment of policies' effects." [59]

Thus a Famine Early Warning System should include the following components :

Scanning and Monitoring.

The system for the collection and monitoring of physical and socio-economic data which are known to be indicators of potential stress and which can lead to famine e.g., drought, migration; food stockouts. It also includes the means to monitor and survey conditions throughout all famine phases.

Preparedness and Contingency Planning

This sub-system is made up of the organizations, systems, plans and procedures put in place to act on monitoring alerts; to activate such plans; to decide on mitigation actions or contingency actions; and to begin to mobilize the necessary resources to move into the Emergency Management phase of a famine.

Emergency Management.

When a famine disaster is declared this sub-system of organizations and management systems needed to mobilize and deploy manpower and resources is activated to deal with the effects of the famine e.g., food stocks, transport, health and nutrition services.

Rehabilitation and Recovery.

Once life threatening conditions are under control the Emergency Management system begins phasing over to the organizations which will deal with reestablishing the necessary social and economic conditions for the community to return to non-emergency status. Although there will be need for extraordinary programs and resources, typically this phase will be handled by the established public and private institutions (e.g., ministries and PVOs.) This sub-system will overlap with the Emergency Management system and must be carefully coordinated by the latter as long as the emergency condition continues.

FIGURE IV-3 shows the ways in which the various sub-systems or components are activated and interact during the course of a famine.

Famine Emergency Management System

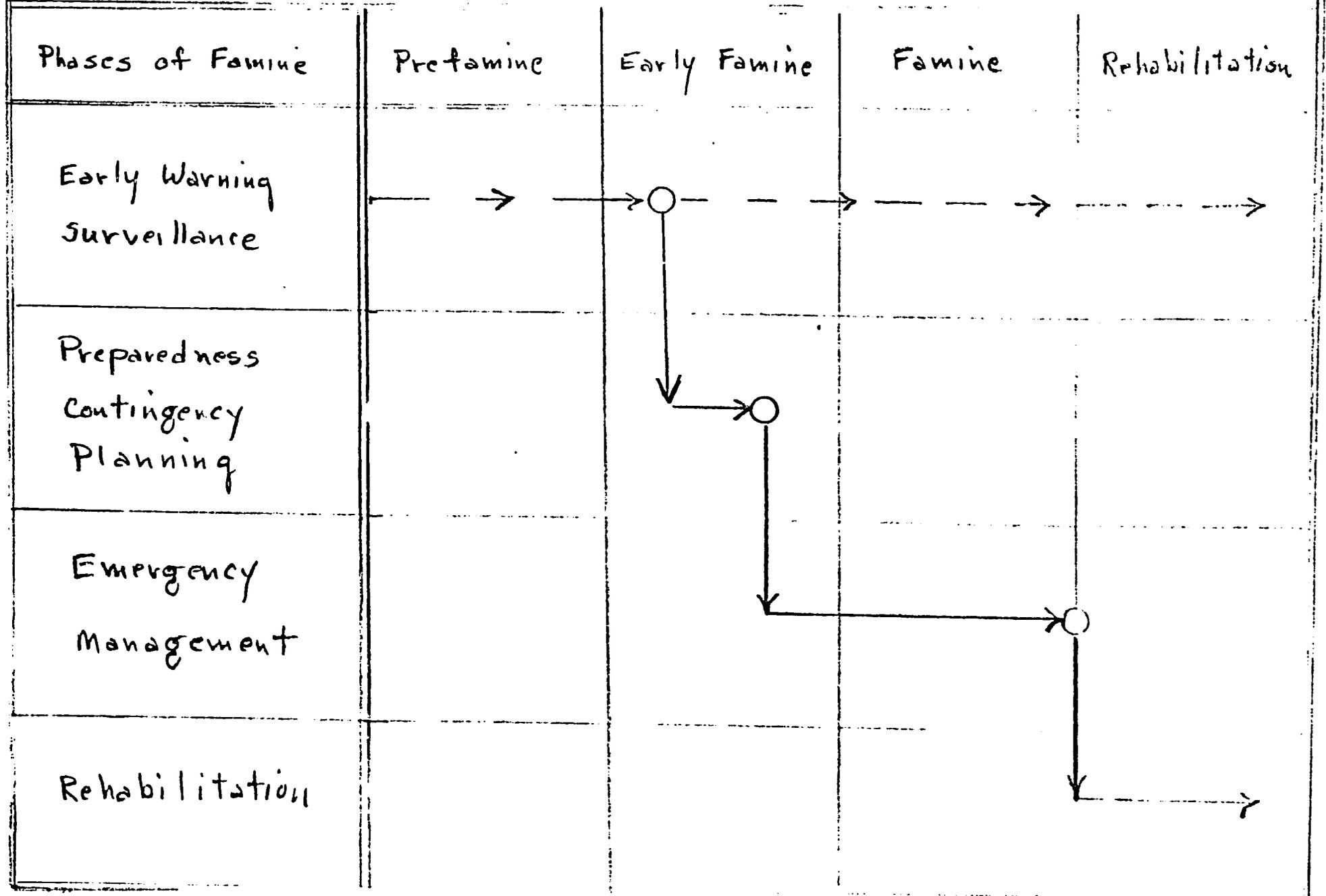


FIGURE IV-3
-57-

The Famine Early Warning System or Famine Emergency Management System is organized into four Sub-systems primarily because each of these components would normally involve different organizations, resources and methods. Undergirding this system a fifth and most important component is the "policy, decision making and resource allocation system." It includes such things as what level has famine/malnutrition reached and the number of affected people requiring action; how will a decision to act be made; on the basis of what information; who will decide; who will act to intervene; what interventions will be made; what kind and quantity of resources will be allocated; where will those resources come from; what emergency authorities and procedures will be used; who will be accountable?

The importance of this element of any emergency management system cannot be over emphasized, whether it be the system for the affected host government or for the donors. The information and warning elements of a famine system are of no value if there is not a means for converting them to management decisions and actions. More will be said about ways in which this component can be organized.

V. Purpose and Objectives of an Emergency Management System.

Any system which might be developed by affected host governments or by donors can only be effective to the extent that its purposes and objectives are clear and to the degree of realism about the kinds and quality of resources (manpower, funds and institutional capacity) available and which they are willing to commit.

If a government decides that its policy is to intervene in the famine cycle at a point to prevent marginal malnutrition from deteriorating into serious malnutrition, its monitoring and emergency management system must be relatively sophisticated. It must have the quality and quantity of human resources which most African governments do not yet have. Conversely, if the government were to decide to intervene to prevent mass migration, this phase of a famine might be easier to detect and perhaps it could stop its momentum once it started. However, the government would be gambling on the rate at which collapse occurs and the speed with which they can respond with adequate resources to stem the tide.

Given the state of development of most of the affected African states, a reasonable objective would be to prevent death due to starvation and; prevent dislocation of sufficient families due to insufficient food which could lead to collapse of the community social and economic infrastructure. Resources external to the community will be used only when local resources are insufficient to prevent abnormal and whole family migration.

The definition of these objectives and the implications with regard to the system requirements would seem just as demanding as to prevent malnutrition. However, the intent of these objectives places the burden on the local community to define under what circumstances and what level of stress they can and cannot cope. The external system does not then have to decide on its own indicators. This approach puts a very high premium on trust between the community and the external authorities; it requires good and rapid two-way communication, it requires negotiation of differences in advance with regard to definitions and to how verification of the status will be done to satisfy external criteria for response; and most important, it requires of the external authority the will to act and to assure simple and rapid allocation and delivery of external resources.

This approach does not relieve the external authority of its responsibility to monitor such factors as weather and food supply, and those policies which could have long term detrimental impact at the local level such as prices, money supply and employment.

International donors too have a responsibility to establish clear cut purposes and objectives which realistically can be accomplished given the fact that they must act through and with the consent of the host country. Many of the donors are understandably frustrated that they are held responsible and accountable to respond to famines in an effective and humanitarian manner by their constituency and/or public opinion, yet they are without authority to act in these countries. It would seem reasonable that such donors, given their general objectives to prevent suffering and death as a result of famine, might have the following objectives:

- To provide encouragement, assistance and support to those governments to build and install an effective Famine Emergency Management System.
- To provide to host countries all information donors have available as input into its early warning and monitoring system.
- To develop their own means for rapid verification of stress conditions in such affected countries.
- To develop their own preparedness and contingency planning and emergency management systems to respond rapidly to assistance requests and to avoid disruption of their own organizations.

AID FEWS-

As discussed earlier until recently the AID FEWS system was designed to provide its headquarters' management with the means to be warned early about impending famines and to be able to make decisions about resources and assistance in an orderly fashion and with some assurance about needs and requirements. Although this is a continuing objective, providing assistance to host governments in developing an emergency management system has become a new priority. Support to AID field missions in improving their disaster management system has also become more important.

The objectives which we have stated above for international donors seems equally applicable to AID FEWS. However, FEWS has a peculiar role in that it has taken on responsibility for researching and developing an improved early warning and monitoring system which can be a critical determinant for the design of host country systems. It is hoped that AID FEWS can also develop improved technologies and methods for drought and crop forecasting and perhaps most important, the methodology for integrated analysis of both physical and social stress data and information. Continuation of this work can serve at least two purposes:

1. It can provide better tools for country level FEWS systems; and,
2. It can provide the means for credible validation by the international donors and AID headquarters.

AID's specific objectives over the short run should be to continue to build and operate its FEWS in the interests of helping host countries to be better warned of impending food crisis; to utilize the knowledge it is developing to help host countries to design tailored systems that fit their purposes, objectives and different situations and; over the long term to redesign the FEWS to provide a means for AID and the other international donors to independently validate emergency conditions, needs and requirements and; to assure continued access of host countries to satellite and other high technology systems for information.

VI. Organization of a Famine Emergency Management System (FEWS): Components and Responsibilities.

A. Overall system for FEWS

The focus of attention for all FEWS systems must be at the national level since in all cases in affected African countries, authority is centralized and the national government has the bulk of the resources and capabilities to respond to famines. In addition, the mobilization and allocation of resources even at regional and local levels normally requires the authority and/or legislation of the central political leadership.

Perhaps the most important single decision is to establish an executive authority which derives power directly from the highest state authority, that is, either the chief of state or the cabinet. Of almost equal importance is that the executive authority must have the direct involvement and support of, if not supervision over, key ministries such as transport, agriculture, food supply, and health during emergencies. This can be accommodated through an advisory or executive committee which is composed of the relevant ministers. One organizational suggestion is illustrated in Figure VI-1.

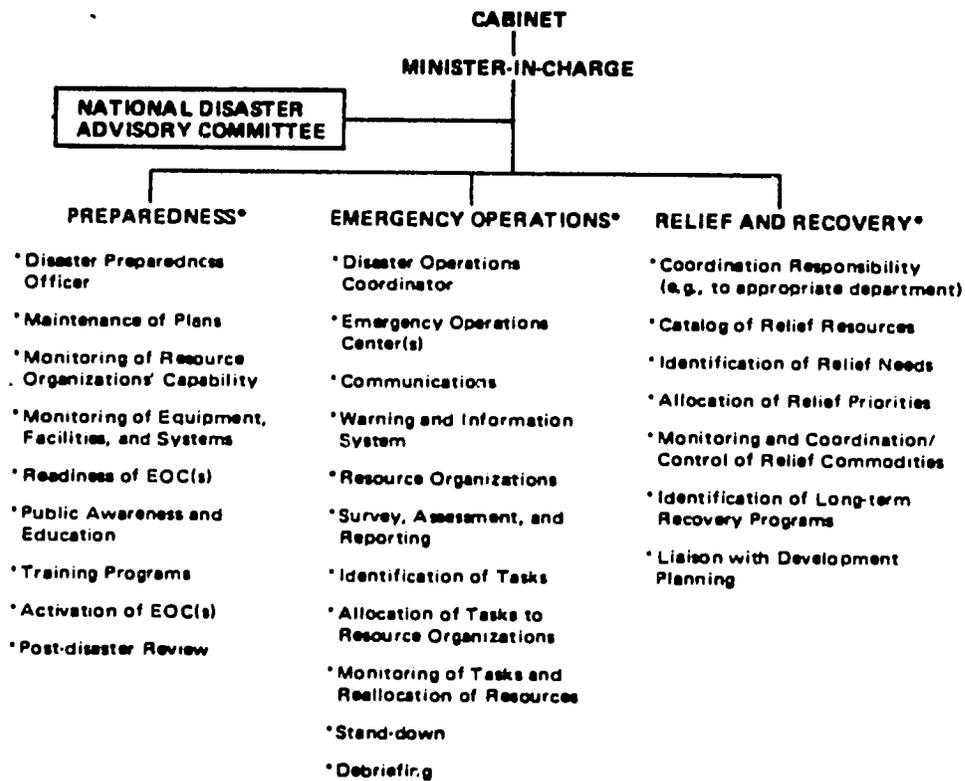


FIGURE VI -1

[7]

Much of the rest of the organizational needs at the host country governmental level has already been well developed in the disaster literature, such as national disaster policy, legislation, organization and responsibility at the national level, roles of resource organizations; coordination and control, operational procedures and authorities, etc.

Perhaps the most useful set of guidelines is found in Carter, Air Vice Marshall W., 1. Procedures and Guidelines for Disaster Preparedness and Response, Pacific Disaster Preparedness Project, East West Center, Honolulu, Hawaii, Dec. 1984. Of particular note is his treatment of intermediate levels of government and local communities in the disaster system. Adaptation of these or any such guides must be conditioned by the institutional, human and resource limitations of the society and the national, regional and local authorities.

To the extent feasible the national system should also seek means for direct involvement of local communities and regional authorities in all phases of the mitigation, monitoring, preparedness and emergency management subsystems. In Botswana, the District Development Committees are also assigned drought warning and relief responsibilities.[60]

Given the resource realities of most of the African famine-prone countries for the foreseeable future they will have to turn to the international donor community for assistance in all but the most limited food crises. It is therefore imperative that:

1. National governments provide for close coordination with donors or incorporate donor groups in their advisory committees or adjuncts to their emergency management system.
2. International donors seek to establish at least informal but effective organization and coordination mechanisms among themselves which complement host country systems.

As the international donors either control, manage or operate some information, data and early warning systems such as the international weather/ meteorological system and the FAO GIEWS. They should be reviewed in terms of adapting their systems and outputs to the structure and needs of the individual African government FEWS systems.

AID FEWS has already begun its adaptation to the African government systems and structures through efforts of the country AID mission and the Tulane PHAs. Perhaps it is time for a more explicit and formal approach to restructuring AID FEWS to fit the needs of the AID mission and the host country government while retaining its role vis-a-vis the AID headquarters' own internal requirements for warning, monitoring and verification.

B. Organizing the system components

1. Early Warning and Monitoring Sub-System

A single organization or center must be established under the Famine Executive or Famine Committee to receive and process data and information and provide analytical services for the system; it should also have the capacity to organize, activate and/or carry out intensive monitoring, surveys and assessments. It should assist other data and information source organizations in improving their methodologies, quality control and data processing.

This unit can be part of a permanent relief organization such as the Ethiopian Relief and Rehabilitation Commission. However, it must have direct lines of communication to the famine executive authority.

Other organizations which are included in the Early Warning and Monitoring Sub-system are the national meteorological/weather service, agricultural and food/marketing, health and nutrition, economics (prices) and labor (employment and wages) agencies. Regional and local government authorities including district officers, extension agents, etc. should also be closely linked in this data and information network either directly or through the appropriate central government agency. The early warning organization should have authority to coordinate and access information and data from other government agencies. However, although it should recommend the collection of additional data, the decisions relating to and tasking of other national agencies must be a function of the Famine Executive and Famine Committee. Adjunct organizations to this sub-system would be regional and international agencies such as AGRHYMET, WHO, FAO (GIEWS) and the AID/FEWS.

2. Preparedness and Contingency Planning Sub-system.

This sub-system should be operated by a Preparedness Unit or sub-committee under the supervision of the Famine Executive but would be activated only when required. It would have as a basis for operation a Basic Famine Plan which would be prepared and updated by its members on at least an annual basis. Members would represent the important national resources and agencies which would be required for a famine, i.e.,

- finance
- food supply (agriculture)
- health services
- transportation (air, sea and land)
- defense
- police
- communications
- welfare
- public works (water supply)
- [domestic and international relief organizations]*

* these agencies could act as advisors or observers to the unit.

Once this unit is activated as a result of an impending food crisis, it would update plans and resource inventories in line with the information for the specific food crisis and current resource availability. On the basis of information provided by the Early Warning and Monitoring organization, this unit would develop contingency plans and alternative resource allocation proposals based on known or projected size, location and the direction of the food crisis.

These contingency plans and resource proposals would be reviewed and acted on by the Famine Executive/Famine Committee they would serve as the basis for determining when to activate the emergency Management System.

3. Emergency Management Sub-System

This unit would be composed of operating executives detailed from the various ministries organized around the management and delivery of resources e.g.,

- Resources Procurement
- Resources allocation and distribution
- Transportation
- Health
- Manpower
- Public Safety

The Early Warning and monitoring unit and the planning unit would become units within the Emergency Management Organization to provide continuous monitoring and planning assistance. Two additions to the Emergency Management Organization would be Public Relations and Communications and Donor Coordination. The planning unit would be responsible for advising when the food crisis was over and to propose the form and content of the sub-system for the Rehabilitation and Reconstruction phase including the role of the Early Warning and Monitoring component. The planning unit would monitor the transition from Emergency Management to Rehabilitation and reconstruction.

4. Rehabilitation and Reconstruction

In some cases, depending on the scope and magnitude of needs, the government should set up a national committee for this phase. It would be composed of the ministries appropriate for the work needed, e.g., agriculture for land rehabilitation, restocking of livestock, seeds, tools, etc., relief for orphaned children and destitute families, public works for rehabilitation of water wells. The Famine executive would be a member of this committee during the transition phase to assure coordination with

ongoing relief and; to advise on ways and means to apply famine mitigation techniques in the rehabilitation and reconstruction activities.

5. Decision Making and Resource Allocation Sub-System

This sub-system is not represented by an organizational unit in the normal sense of the word. It is a system of special authorities, procedures, resources and decision requirements which are necessary to facilitate rapid response and efficient delivery of resources.

More is said about this sub-system in VIII below.

B. AID/FEWS

AID, in addition to its role in assisting host countries to build their own FEWS, must have its own system for Famine Emergency Management*

AID as a major donor during famines must have the means to either monitor potential food crises or, in anticipation of providing assistance, to validate food crises; to monitor the progress of the emergency management phase and assure that emergency decision making and resource allocation are responsive, efficient and effective as well as to assure proper use and control of the accountability for the assistance resources.

A major purpose of the system must be to minimize the disruptive effects of famine emergency operations on the AID organizations and ongoing development programs.

Design of AID's system components and its organization is discussed in the following Chapters.

*NOTE: AID does have its own system for disaster management in the Office of Foreign Disaster Assistance. However, as a practical matter, because of the broad scope of its organization and its limited resources it cannot deal with long term disasters such as drought famines.

VII. General Design Criteria for a System.

The following design criteria are suggested solutions and approaches to some of the problems and issues which are raised in this report.

A. Definitions

History and current confusions suggest that lack of clear definitions and understandable terminology has inhibited progress toward building effective FEWS i.e., definitions of famine, hunger malnutrition, the causes of famine, early warning systems, phases of a famine, famine indicators, etc. All must be defined and have clearly stated assumptions. Working definitions, however unscientific they may be are preferable to confusion. As long as there is agreement to accept temporary working definitions until more precision is found, all those who are involved in or affected by the FEWS will better understand the system.

B. System Problem

Confusion is not just restricted to definitions. Understanding of the distinction between a warning system and a Famine Emergency Management System is still lacking. The need for surveillance, warning, and monitoring is critical for both the African countries and the donors. But the warning system must be seen as only one vital sub-system of a Famine Emergency Management System. The other essential but complimentary components discussed earlier are:

- Preparedness and Contingency Planning
- Emergency Management and Response
- Rehabilitation and Reconstruction and
- Decision making and resources allocation

Unless all of these elements are explicitly included in the FEWS systems of both the African countries and the donors, we may continue to get warnings but there will be less than acceptable and achievable responses to famines.

C. Policies, Objectives and Roles of FEWS

Clarity and realism about what can be expected of a FEWS flows from the care taken to define and state forcefully the policies, purposes, objectives, roles and input/output requirements of each participant in the FEWS. This includes the international donors, the international warning and information system (i.e., WMC, GIEWS), the African national government, its ministries and lower level units and the famine vulnerable communities themselves. Each of these organizations will have different roles and objectives as well as varied information needs. Organizations that only supply data and information to the FEWS system are equally in need of carefully developed objectives and roles.

This may seem to be an obvious and rather simple criterion. However, various evaluations and much of the recent literature leads to the conclusion that much wasted effort and resources could have been avoided if participants had had better defined missions and organizations. There are many instances in both of the Sahel famines of relief agencies and governments being so intent on attacking the immediate problems that they duplicated efforts, did not coordinate actions and resources and often did not think beyond today's problem. This was due only partially to untrained and inexperienced personnel. Its major cause was and continues to be the lack of well thought out organizations, purposes, objectives, and defined planning and management systems.

During October 1984-March 1985 the period of the most calamitous phase of the famine in Ethiopia and Sudan, most donors, international relief organizations and the governments themselves went through an almost continuous but ad-hoc and disruptive process of defining purposes, roles, objectives, coordination, etc. It is obvious (in hindsight) that much of the wasted effort and counter productive results could have been avoided if all participants had well thought out organizations and plans. Of course they would have to be adapted to the circumstances and needs and perhaps renegotiated. But they should not have to be developed, as they were, in a vacuum while chaos persisted.

This problem is not confined to the emergency management phase of a famine but applies equally to the surveillance and preparedness planning elements of a FEWS.

D. Decentralization

Although primary authority and responsibility for a FEWS must rest with the African national government, every effort should be made to change the current "top down" approach and to involve local agencies and vulnerable communities in the definition, design and operation of the system.

E. Early Warning and Response

Design of the FEWS whether for the national government level in African countries or for the AID mission or for AID Washington, should concentrate on integrating the warning system with the response system. Warning is only useful if there is some assurance that action will follow. The key is to link various levels of warning (orders of magnitude or intensity of stress) with different but responsive decisions and actions. However, care must be taken to assure that the system design is realistic in terms of the type and quantity of resources, their availability and accessibility.

F. Timeliness

Timeliness of warning and of emergency response is a difficult problem to solve. The perceptions of various participants as to what is timely has created frustration and unrealistic expectations. Because of the long administrative and logistics lead

times for importation and delivery of food the international donors would like to have warnings one or two years in advance in order to respond properly.

The problem is to define: whom to warn, about what condition and to do what? It is not a question of forcing the technology of the warning system to meet desirable but arbitrary time requirements, but one of determining the minimum times needed to respond effectively to a given situation.

Each host country should calculate their lead times of the delivery of funds and food to each vulnerable area in their country and then determine what advance warning is necessary to meet their intervention goals.

International donors can also compute their administrative and logistics lead times for distribution of money or food in a similar manner thereby establishing some realistic benchmarks for warning levels and timeliness.

G. Indicators

Much has been said about the problems and prospects for developing effective famine indicators because they are the most critical elements of each and every phase of the FEWS system. However, to repeat the earlier discussion, indicators are difficult to define; it is difficult and costly to collect the data needed for such indicators and; the indicators will never provide the levels of precision and certainty desired by managers.

There are four guidelines to follow with respect to indicators:

- (1) Currently known indicators are sufficient and already available. We should not search for more. Indicators must be selected using the experience available and then tested for appropriateness.
- (2) The best approach to development of our appropriate set of indicators is to involve local agencies and communities in vulnerable areas in their definition and selection.
- (3) The best way to use the series of indicators is to apply successively more intense levels of measurement to verify and provide more precise definition of stress conditions.
- (4) Indicators will never provide the desirable level of precision since they reflect complex human behavior. We should seek to use indicators only as approximations of conditions. They should be understandable and used in conjunction with other indicators of stress. The India Famine codes system relied on officials at various local levels to collect and analyze a large number of fairly generalized indicators and to use good judgement in interpreting what they saw.

Human intelligence and good judgement must be the critical ingredient in the interpretation and application of indicators to arrive at conclusions.

H. Accuracy and Precision

There is an implicit motivating force in the various FEWS, especially among the western donors, to devise an objective, automatic and mechanical system for warning. The idea of such a neutral and mechanical system is patently infeasible. First, because the course of human behavior is not susceptible of such precision and secondly, because neither the countries nor the donors are willing to finance the implied costs of such a system.

The level of precision and accuracy designed into the system must be balanced not only with intrinsic costs and institutional capability needed but with risks the government and donors are willing to accept. The level of accuracy need not be high if a government is willing to intervene early to prevent a condition from deteriorating at the risk of being wrong occasionally.

I. Interventions

The literature is very clear in concluding that food is not always necessary in famines and may even be counter productive. A complete assessment of national and international resources for each target country should be made available for use in famine intervention. Each of those resources should be analyzed and assessed in terms of availability, effectiveness and utility for successful intervention at any phase of a famine in the vulnerable areas within the country.

J. Coverage of the Systems

Each national FEWS system must carefully pinpoint those areas which are most vulnerable to famine for use as a basis for concentrating their warning and response systems. The general criteria for deciding which areas to cover are: historical incidence of food crises and famine, persistent drought and low productivity areas, communities where low-resource (subsistence) farming predominate; areas with substantial low-asset rural populations (e.g., farm laborers) and; areas of nomadic pastoralists populations.

The AID FEWS now covers 8 countries in Africa. The criteria for coverage should be:

- Historical incidence of food crises and past requirements for external assistance.
- Limited resources of the national government.
- Limited famine warning and preparedness systems.

- Difficult access of relief to famine vulnerable areas.
- Unusual stress e.g., civil war or civil strife.

The kind of FEWS system AID devises for each country must be different depending on whether there is an AID mission, only an embassy or no U.S. presence in the country.

K. Level of Concern/Intervention

Each of the FEWS systems must establish standards for when they will intervene, i.e., at what stage of the famine, at what level of stress, and for how many people in an area. For example, will the government intervene if 10% of the population in a given area are at 80% of normal weight? Will it intervene at starvation levels for 1,000, 10,000 or 100,000 people?

The need for the donors to establish the level and extent of stress which will trigger intervention is equally important. AID FEWS standard for intervention should be different for each untry. They should be based on expectations of self-help by the country as well as considerations of types of resources that AID is willing to provide and the administrative and logistics lead times associated with each.

L. Vulnerability Assessment

The famine system, its indicators and measurement proaches are primarily focussed on revealing the symptoms of food crisis or food stress. Perhaps a change of perspective is needed. We should look at ways to determine communities and populations which are at greatest risk or (vulnerable) to famine and nutritional crises. We already know most of those factors which contribute to making families high risk to food crisis, e.g., low resource farm milies, families with limited asset ownership such as small land holdings, wage laborers, etc. Most of the information needed to assess vulnerability is already available in local communities but not in the quantifiable form desired. What is needed is a simple methodology for assessing vulnerability which can be understood and used by indigenous personnel. Bruce Currey has developed a technique for vulnerability assessment in Bangladesh. This approach should be explored.

M. Performance Standards

Each FEWS system must have built in performance standards, which are consistent with its stated objectives. These would be used to judge the effectiveness of the system.

Standards for the surveillance system, for example, would be timeliness and the quality of data collection and analysis with specified parameters of error. Such standards would be set at each successive stage of surveillance and analysis.

Timeliness is also an important performance standard for the production of need assessments and for updated contingency and operational plans. Speed of decision making, delivery of food and implementation of other intervention tactics can be used to measure effectiveness.

Other performance standards that apply to the warning, planning and emergency management systems are those that relate to the objectives set for the system. Standards could be: To provide warning and intervention "to prevent communities fragmenting because of crisis" or to prevent a given number of cases of hunger or, of deaths from starvation or, "to prevent two out of three food crises in which over 1,000 starvation deaths are recorded" or, "to prevent food crises in which there are 10 or fewer cases of hunger oedema twice in ten years." [9]

N. System Costs and Institutional Capacity

When famines are not foremost in the minds of the political leadership, interest, support and resources to develop and operate a Famine Emergency System tend to flag. System designers should apply the following criteria to insure that the resulting system can be sustained:

- Systems must be designed to be manned and operated with the level and quality of human resources allocated.
- The recurring costs of operation must be sustainable by the organizations involved.
- The level of sophistication of the systems and the technologies chosen must be adaptable to and capable of being absorbed by the existing institutional capacities.
- Data collection and information inputs should be produced at the lowest feasible cost.

VIII. SPECIFIC GUIDANCE FOR AID/FEWS:

OBJECTIVES ORGANIZATION, PROGRAM AND SYSTEM DESIGN CRITERIA

The general design criteria in VII above should be used by AID in further development of its FEWS system. Particular attention should be paid to the following:

A. General Systems

Each of the FEWS systems (host country, AID mission and AID/Washington) will have all necessary components of a Famine Emergency Management System including surveillance, preparedness and contingency planning, emergency management, rehabilitation and reconstruction and a decision making and resources allocation element. Each FEWS system will have separate but explicit objectives and goals and they will be oriented to prediction, preparedness and to decision making.

Each system will be highly focussed on vulnerable areas and populations in the country and; each system will be complementary to and linked with the other systems.

B. System Goals

1. For AID/W, AID mission and host country:
 - a. 12 month predictability for food crises affecting 10% or more of the population and which will require food imports.
 - b. 6 month predictability for crises affecting 5%-9% of the population with some food imports.
2. For AID mission and host country:

a minimum of 4 months predictability for food crisis affecting less than 5% of population which will not require food imports.

C. Objectives

The AID FEWS should first of all be considered a program with two distinct objectives:

1. Assisting target countries to build better systems to reduce or eliminate food crises and famines.
2. Building a FEWS system to serve AID's purposes.

Separate objectives are needed because each of the African countries will have different objectives based on what they are able to do to intervene in a given phase of famine. Although all of the target countries are poor, each of their resource bases is different, their problems are different and their capacity to develop and manage a FEWS differs. AID should provide the amounts and kinds of help commensurate with each country's capability and commitment to a FEWS system.

AID's objective to build a FEWS to serve AID's purposes arises from self interests. As a matter of humanitarian policy, AID has responded to famines with food and other relief assistance and will continue to do so in all of the target countries. It is therefore important for AID to have its own means for early warning and preparedness regardless of the scope, objectives or effectiveness of the country level FEWS. Of course everything possible should be done by AID to encourage and help those countries be self sufficient in their FEWS systems. AID should also encourage the efforts of the other donors to develop their own systems; it should coordinate with them and use the outputs of other donor systems to the extent feasible; it should exchange information among donors; however because of the enormous and disruptive impacts of famine on its own organization, ultimately AID must have its own FEWS to protect its interests.

D. Country Selection

1. AID should provide technical assistance in the design and installation of a FEWS for African countries which have been vulnerable to famines but which have sufficient resources to handle most food crises without extraordinary external assistance. AID's objective is to have a host country FEWS system which will preclude the necessity for AID to provide emergency (unplanned for) allocation of food or financial assistance.
2. AID should provide technical and financial support for developing FEWS systems in countries which are designated as famine prone and, which do not have sufficient resources to handle most food crises. AID's objective is to have a Host Country system in each target country which will preclude the necessity for AID to make emergency allocations of food or financial assistance equal to 20,000 M.T. or \$5 million for a food crisis in any one year.
 - a. AID should help such countries to operate their system and should build complementary systems of surveillance to assist them.
 - b. AID should provide emergency assistance to these countries to meet resource needs to intervene when more than 5% of the population or 500,000 people (which ever is less) lack access to food and are in danger of starvation.

E. AID FEWS System Organization

1. General Organization

AID Washington, similar to the host countries, should decentralize its organization. In those countries where there is an AID mission, authority and responsibility should be delegated to the extent commensurate with the mission resources and capabilities. Back stopping, support and technical assistance should be provided by the Washington FEWS, as is now done.

Special consideration is required for those countries where there is no AID mission e.g. Mozambique and; others where there is not an AID mission and the Embassy is very small, like Ethiopia. Not only should AID/Washington develop special support programs for them, but the REDSOs, which have not yet had a specific role to play in FEWS should be given responsibility for backstopping these countries' missions. Surveillance and monitoring is a very critical function which can be better handled by REDSOs.

2. Specific organization

The organizational requirements for famines are similar to a disaster organization. However source elements of management structure will be in a continuous state of operation such as the surveillance system or periodically activated during the year such as the preparedness and contingency planning components.

a. AID/Missions

Should not only have a well developed famine plan and procedures for operation of surveillance, planning and managements, it must also have designated officers responsible for maintenance and operation of the system periodic reporting and exercises would be useful.

This is easier said than done because of the usual limited manpower and available time at the missions. AID/Washington should provide trained teams to assist each designated mission to organize and design the internal systems and procedures and; to train current staff. In addition, when the surveillance system activates the preparedness planning system, AID/W should provide technical backstop professionals to assist each mission on request and for as long as needed.

AID should also consider using the REDSOs to provide more sustained support to the smaller missions in the design and operation of their famine systems.

Special consideration should be given to providing field missions with stand-by authority to hire additional local staff or PSCs whenever the mission determines a state of active preparedness planning exists.

b. AID/W FEWS

The current organization of FEWS in Africa's office of Technical Resources is still a very informal organization based primarily on informal authority of AID's upper management.

The FEWS staff meet with as informal committee bi-weekly to review technical progress of the program. They meet periodically with country desk officers and FFP personnel to review developments.

The AID/Office of Foreign Disaster Assistance (OFDA) is an "emergency management organization", but as discussed earlier, it does not have the personnel resources to manage a long term intensive famine operation and was not designed to do so. Its annual appropriation of \$25,000,000 is not sufficient to cope with both sudden onset disasters like earthquakes and the large amount of funds needed for another Sahel famine.

Other than OFDA there is no formal system in the Africa Bureau or the rest of AID for acting on alerts, activation of preparedness and planning committees and mitigation of an Emergency Management Organization. In short there is no Famine Emergency Management System for Africa nor are there specific responsibilities and procedures to establish one.

A famine emergency management plan and organization for Africa should be developed. It should capitalize both on the advice and assistance of OFDA in developing the plan as well as to use OFDA staff to act as the cadre for the preparedness and contingency planning system. This part of the system must also include representatives of FFP, the Policy and Program Coordination Bureau, the Africa Bureau Program Office and the Country desks.

AFR TR should be charged with responsibility for the design of the whole system and the operation and continued development of the surveillance system.

The Emergency Management Organization should be organized around a task force concept primarily within the Africa Bureau but with delegated, authorized representatives from FFP.

3. Delegation of authority

Each mission in a FEWS country should have special authorities, depending on their size and capabilities, to act early in a famine to either prevent it or to provide stop gap resources while awaiting approval and execution of resource procurements by AID/W.

In the famine prone countries, the AID mission should have decision authority for between \$100,000 and \$250,000 for cash for food grants, 2,500 MT to 10,000 MT for Food for Work and/or for free food distribution.

Their authority could also be used to divert AID owned food in the country or to procure food from the region when a designated food emergency exists.

Each such mission would have authority to declare a food emergency without reference to AID/W. That authority could be used under specified conditions and criteria.

In AID Washington similar type authority would be delegated to the Assistant Administrator of Africa to handle stop gap actions.

4. Interventions

Quite often the resource that appears to be needed in a famine is food. The literature is clear in this matter, the earlier the intervention in a food crisis, the more appropriate is employment, Food for Work or Cash for Food. Even when availability of food in local markets is limited as it was in some areas of Darfur, Sudan, funds for transport or incentive grants to ship food to Darfur to merchants in Khartoum, where food was available, would have been more timely earlier in the famine than was shipping food from the U.S.

The need is for much greater flexibility in the use of resources to head off famines or reduce their impact. Timeliness is very critical since we cannot expect to have perfect warning systems.

AID cannot easily use its funds and food resources interchangeably because of legislative and internal policy limitations. But its limitations probably have more to do with internal procedures and perspectives. Except for the Office of Foreign Disaster Assistance, there are no procedures or authorities to by-pass the normally deliberative process of programming, allocation and contracting (executing). Food and funds are not interchangeable nor fungible. Even though the Office of Food for Peace (FFP) has emergency authority for use of Title II grant food, its normal procedures involve annual programming. Use of this authority for large amounts of food on an emergency basis is bureaucratically difficult. Inertia and

fear of over-reaction inhibit most organizations. However, the FFP office has been developing improved procedures and authorities to handle famine emergencies in the future.

AID should request special stand-by authorities from Congress to provide greater flexibility in the use of resources when a famine emergency is declared. AID, in preparing for this, should examine each of its famine resources i. e., food, funds, manpower, health supplies and services, and emergency relief supplies such as tents and water supply. It should determine the limitations on each such resource in terms of its utility for a particular phase of famine and the limitations on its use in terms of the process for programming, allocation and control. This could provide the basis for requesting special authorities to provide greater flexibility in use of resources for intervention in famines.

Insufficient attention has been paid to intervention strategies that do not involve resources. Moral persuasion with host countries to act earlier in an emergency should have a higher priority. Other efforts are required to pressure governments to change those policies which contribute to food access problems such as low producer prices and inappropriate development investments.

Host countries also have problems in flexibility of use of resources, quite often switching resources into areas that become vulnerable is not possible because of legal policy or bureaucratic limitations. Construction, relief and development projects can expand employment or increase the numbers of eligible participants much more readily than starting a new program or allocating new resources. Emergency authorities for doing such need to be built in the host country legislation. Such authorities must also extend to donor programs. This latter point can be accomplished if AID provided leadership within the donor community to achieve this.

5. System components

(a.) Surveillance and Early Warning.

As stated earlier, this component of the FEWS must be organized around the specific objectives, performance standards and the intervention strategy of the organization whether AID/W or field mission. They will be different, although the AID/W part of the system must be supportive of and provide for the field mission needs.

The system of surveillance should have the means for various intensities of monitoring, surveying and measuring. These methods and technologies should be linked to the various phases of a famine and cued to increasingly more detailed and specific measurement of conditions. See Figure VIII-1 and 2.

FIGURE VIII-1

ELEMENTS OF THE SURVEILLANCE SYSTEM					
SCANNING	MONITORING		SURVEYING	ASSESSING	MEASURING
	TRENDS	INTENSIVE			
National Food Stocks	Vulnerable Areas:	Vulnerable Areas:	Representative Sampling of Vulnerable Communities:	Needs Assessment of Affected Communities:	Famine Management Response:
Vulnerable Areas:	Prices	Prices	Nutrition Surveys	Food	Food Supply and Distribution
Rainfall, greenness of survival crops	Employment	Employment	Food Stocks	Cash	Nutrition Status
Food availability	Wages	Wages	Intensive Surveys of Affected Communities:	Employment	Morbidity
	Livestock Sales	Livestock	Food Migration	Production Inputs	Mortality
	Asset Sales	Land Sales	Asset Stocks	Health Services	
	Food Stocks	Asset Sales	Food Stocks		
		Food Stocks	Health and Nutrition Status		
		Labor Migration			

(b.) Preparedness and Contingency Planning

This sub-system is activated based on a specific set(s) of signals from the surveillance system. The Famine officer must make a "go"- "no go" decision based on the information received. His decision would set in motion the planning officers who would update national resource assets inventories, map the targeted vulnerable areas, estimate the minimum/maximum numbers of people at risk, identify local resources such as current work programs, construction, development programs, food stocks, economic activity, transportation and distribution assets, PVO's and government agents in the area, specific constraints to intervention e.g. washed out roads in rainy season, no airports, limited fuel, limited warehousing.

The Planning group could request additional data from the surveillance system, or from government agencies, conduct on-site inspections, etc.

Contingency plans would be updated and adapted to the specific conditions of the vulnerable groups and areas. The contingency planning effort would be the major means for providing a basis for intervention. This group could recommend pre-emptive or other intervention, activation of the Emergency management Organization or wait and see.

It would also initiate information coordination activities with PVOs and donors and make assessments of available and potential donor resources.

(c.) Emergency Management System

As discussed earlier, when this system is operational, it incorporates the planning system and the Famine Officer who activated it. However, the Surveillance system should not be absorbed into the emergency activities since it must continue to monitor conditions in areas not at risk.

This system is a management and operational one. It should have all the means to coordinate effectively the organizations, and resources to make the interventions; to coordinate and manage communications and information and to continuously monitor and evaluate the changing situation. There are many management and support elements needed to make this effort effective. Much has already been written about needed improvements in this area. The critical elements for AID's food program are shown in Figure VIII-3.

Eleven Critical Elements for Successful
Implementation of Emergency Food Assistance Programs

- Objectives
 1. Clear program objectives
- Management and Organization
 2. A fast decision track in Washington headed by a full-charge decision-maker
 3. Good, experienced USAID management and sufficient staffing
 4. Adequate host government support
 5. Effective donor coordination
 6. Timely decisions and action
- Program Content
 7. Key information
 8. Adequate resources
 9. Proven delivery systems
 10. Good logistics
 11. Integrated emergency/development activities

FIGURE VIII-3

(d.) Rehabilitation and Reconstruction

The planning unit within the Emergency Management should be charged with responsibility for continuing to plan for rehabilitation and recommending specific actions early in the relief phase. Such things as seeds, tools, and oxen should be planned and organized early enough to meet cropping deadlines. These actions will not only help to program resources but will ease the transition to the rehabilitation phase.

A new organizational mechanism should be set up to handle rehabilitation as soon as possible. It will normally involve different government units and relief agencies and it will focus more on coordination than on management and delivery. A national committee composed of the appropriate ministries is the typical way in which this is handled.

(e.) Decision-making and Resource Allocation

The critical ingredient of any Emergency Management System is the set of authorities and guidelines for making decisions to take action and to appropriate and allocate resources to intervene in a famine.

The rules for when, how and who is to make such decisions under conditions of inadequate and sometimes non-existence of information need to be carefully thought out. Executive authority requires that the executives can make mistakes-but the mistake of not acting for fear of making a mistake cannot be

acceptable in an emergency. At each pressure point in the system the executive must be required to decide to act or not to act and should document his reasons either way.

The decision system should be structured around the phases of a famine in terms of the types of decisions that should be made and in what time frame. For example, if the information from surveillance says that a representative sample of 200,000 people in region X are at 78% of normal body weight and your lead time to deliver intervention is 90 days, you must decide to activate the Emergency Management organization and allocate in readiness state 5,000 M.T. of food grains. Or you may decide not to act. Of the latter, what are the reasons not to act and what changes did you make to the contingency plan to protect your decision not to act?

Figure VIII-4 shows the links between the surveillance and the decision system at each phase of a famine and Figure VIII-5 illustrates how the whole system works.

FAMINE INFORMATION and DECISION system

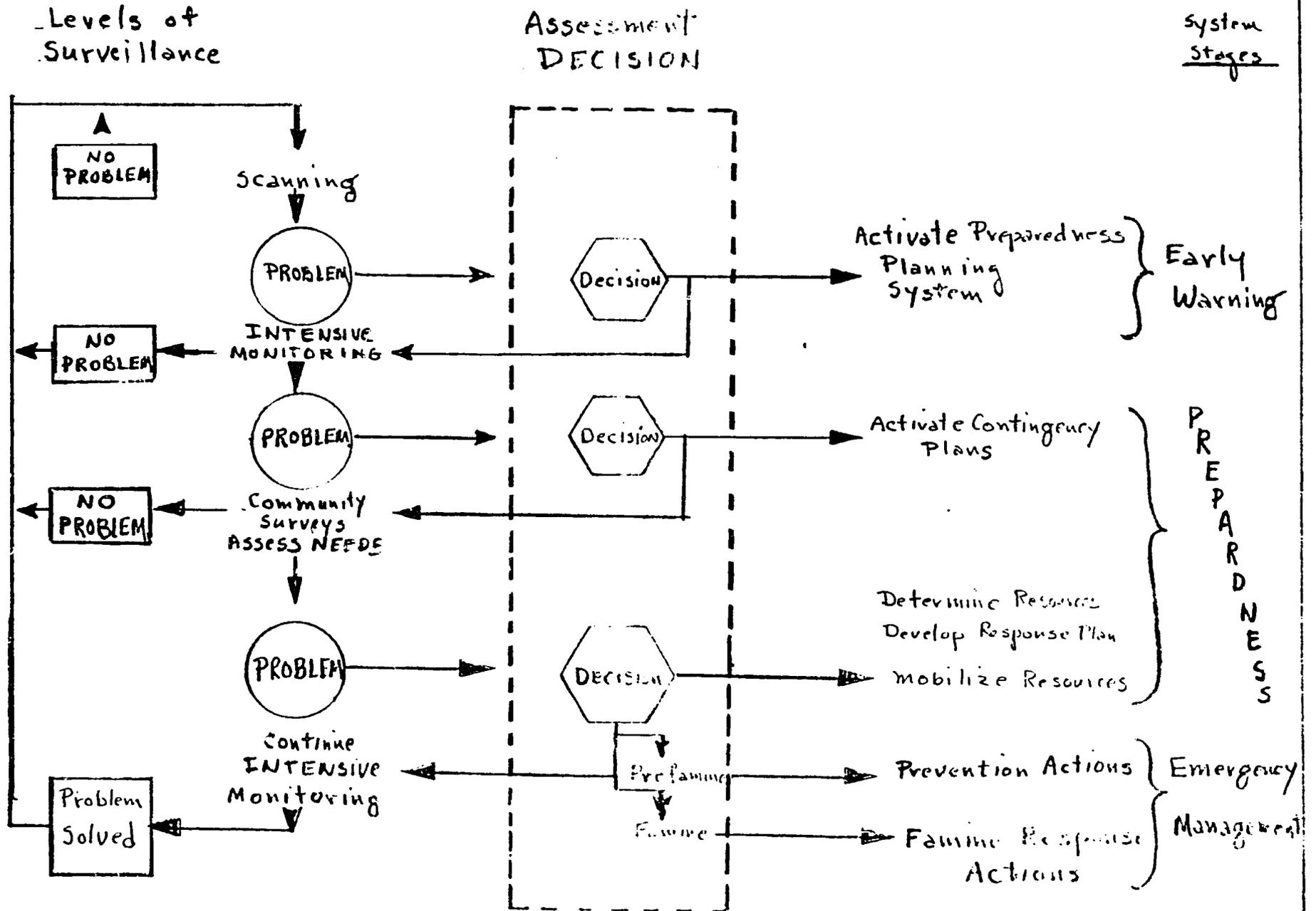


FIGURE VIII-4
-83-

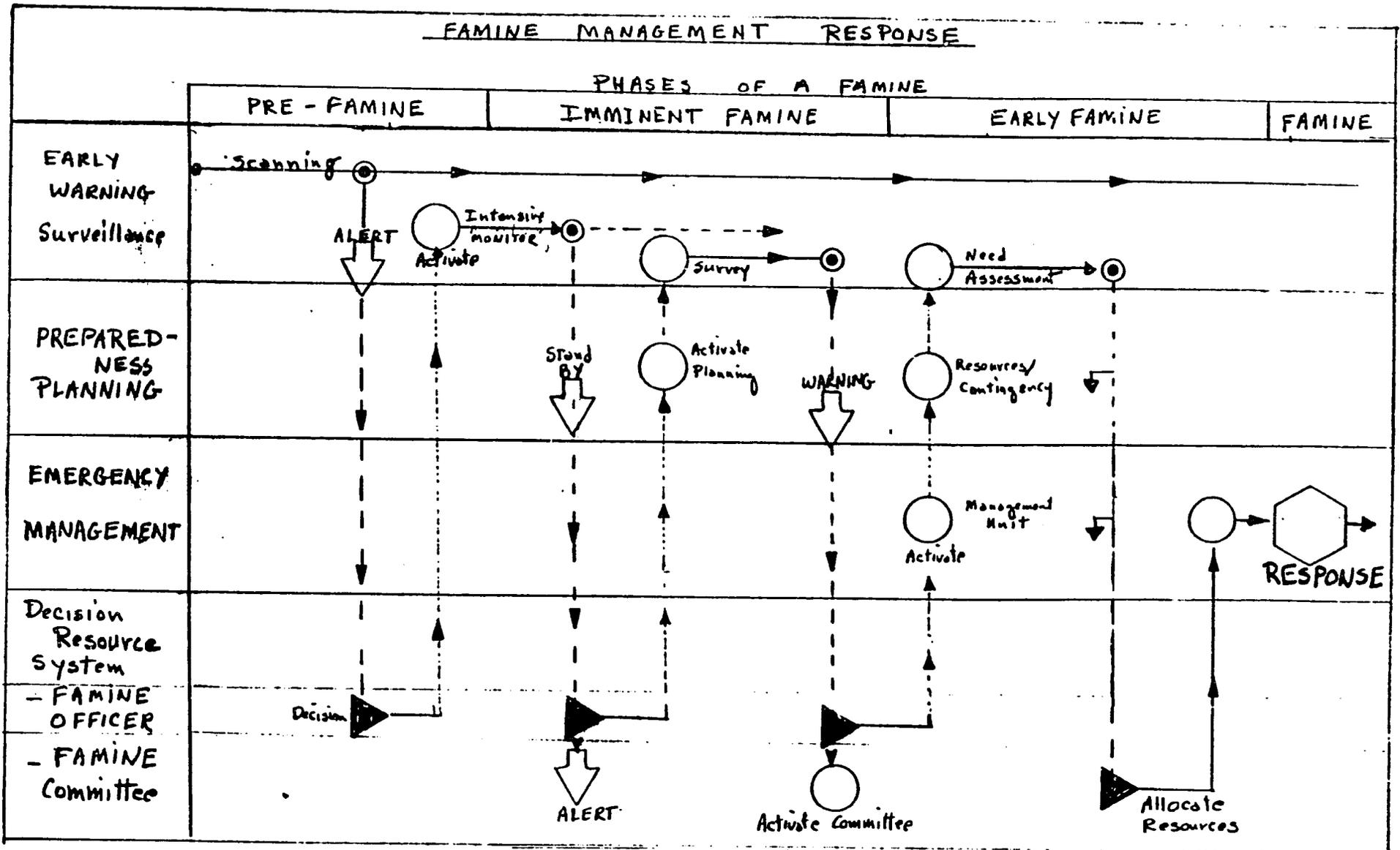


FIGURE VIII-5

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ANNEXES

Background

1) Date : ___/___/19___ 2) Entity : _____ 3) ID : _____
da mo yr
4) Lat : _____ 5) Long : _____ 6) Water : _____
a. Source : _____ b. Supply : _____

Demographic Section

General Population :

7) Refugees : _____
8) Displaced : _____
9) Resident : _____
10) Total : _____

At Risk :

11) Refugees : _____
12) Displaced : _____
13) Resident : _____
14) Total : _____

Percentages :

15) % total : _____%
16) % refugees : _____%
17) % displaced : _____%
18) % resident : _____%

19) Data Quality : _____ (1=poor, 2=fair, 3=good)

Health / Nutrition

20) Deaths per day : _____
21) % under 80% ntr. : _____%
22) % under 70% ntr. : _____%
23) # rpts diarrhoea/day : _____
24) % bloody : _____%
25) % watery : _____%
26) % scurvy cases : _____%
27) # measles cases/8 wks : _____
28) # measles vaccine : _____%

30) ORS supply (# pkts) : _____
31) ORS use (#pkts/8 wks) : _____
32) Sanitation prog? (0,1) : _____
33) Shelter (1,2,3) : _____
34) Storage (1,2,3) : _____
35) Phys. Access (1,2,3) : _____

29) vaccinations (0,1,2) : _____
a. measles (0,1) : _____
b. SPT (0,1) : _____
c. polio (0,1) : _____
d. tetanus (0,1) : _____
e. diphtheria (0,1) : _____

36) Data Quality : _____
(1=poor, 2=fair, 3=good)

Indications / Warnings

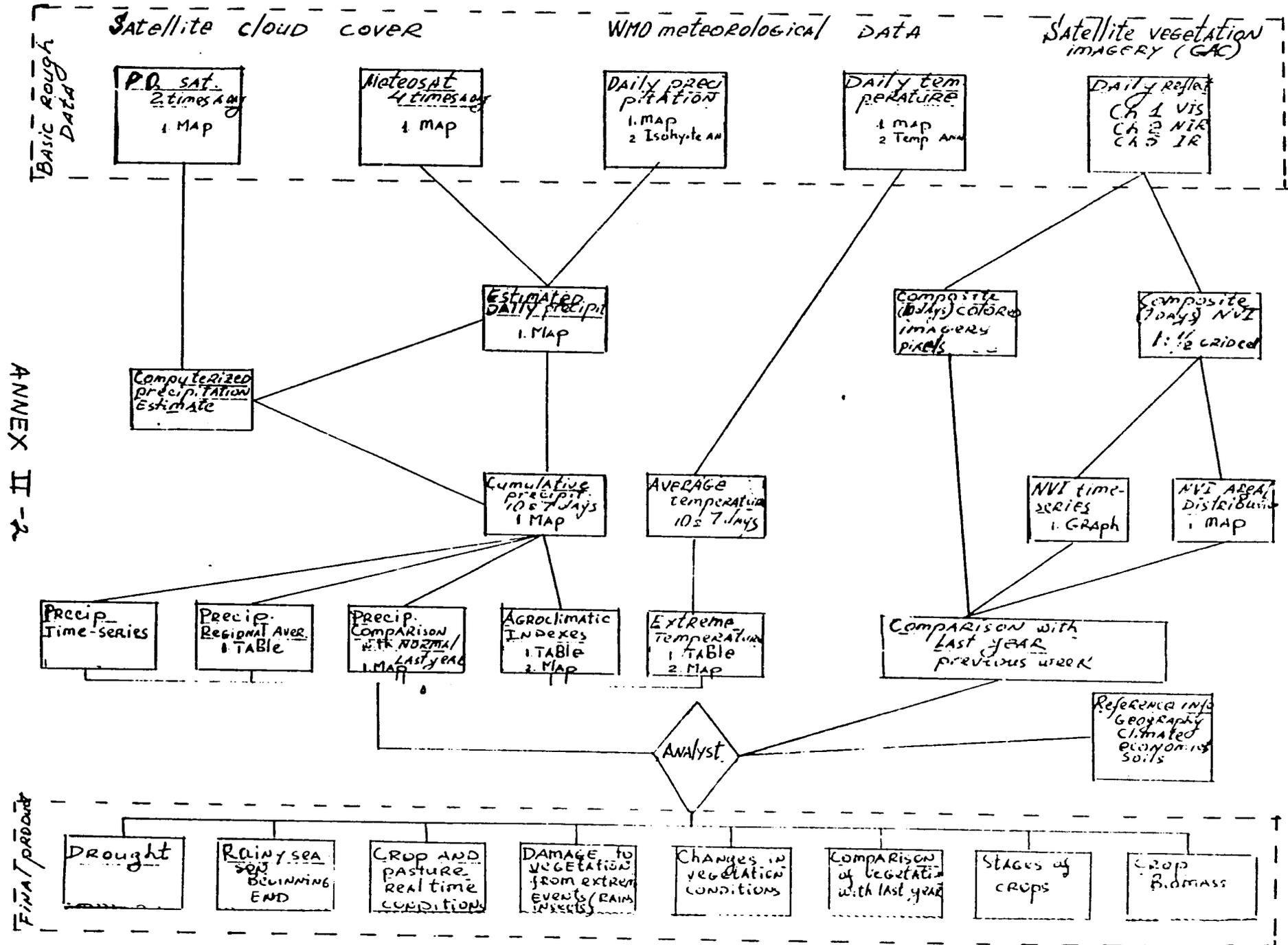
Code : **General**, 1=abnormal

37) Price of : _____
a. staples : _____
b. draft animals : _____
c. food animals : _____
38) Available credit : _____
39) Charity/sec. svcs use : _____
40) Indigent population : _____
41) Migration pattern : _____
42) Clinic intake pattern : _____
43) Crime (food related) : _____

44) Data Quality : _____ (1=poor, 2=fair, 2=good)

45) Notes : _____

DIAGRAM explaining DATA BASE, Assessment PROCESS & FINAL PRODUCT

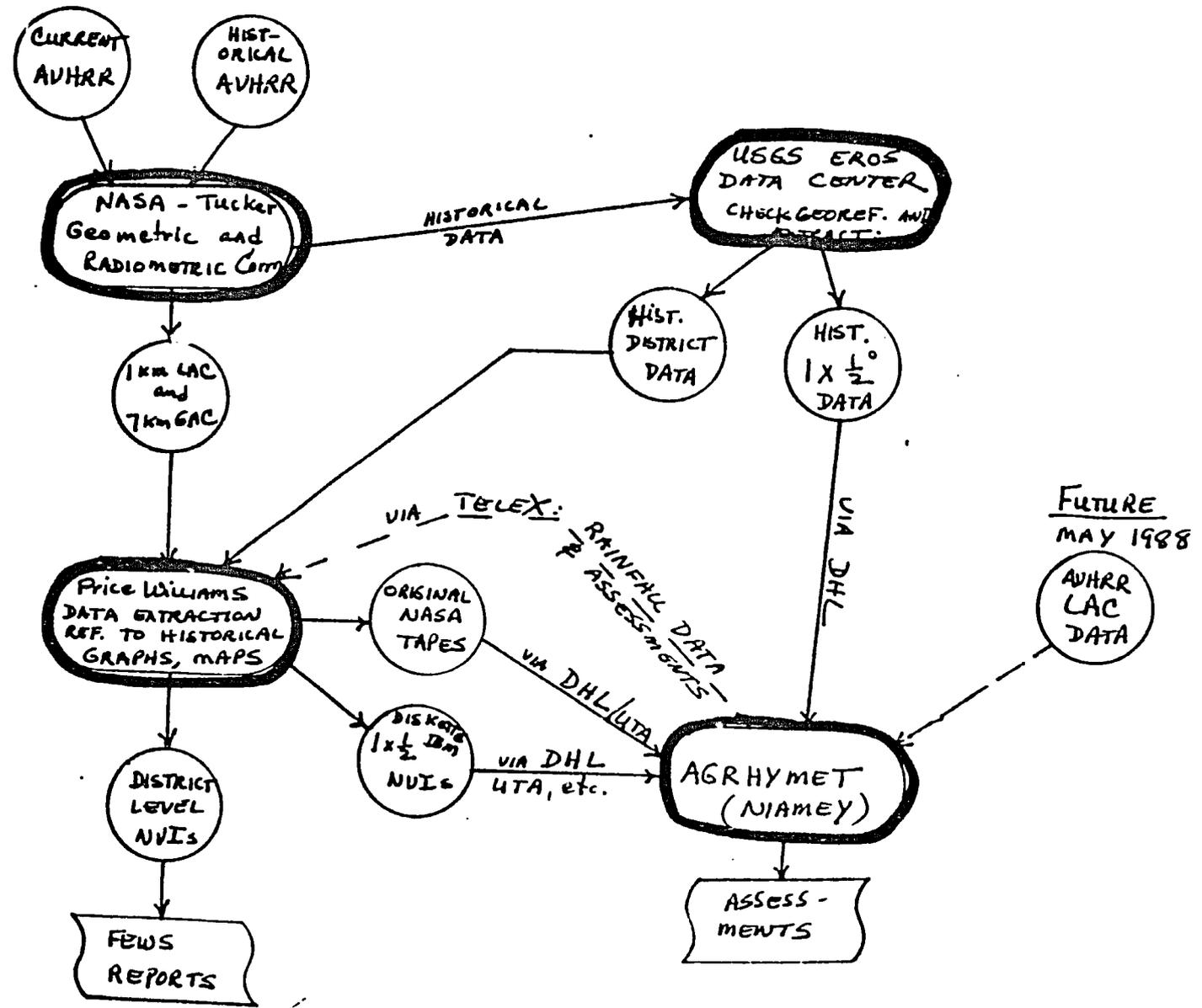


ANNEX II - 2

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PROPOSED DATA PROCESSING/SHARING - FEWS/NASA/USGS/AGRHYMET (AVHRR SATELLITE DATA)

ANNEX II-3



APR/TR:WTray/ecs: 3/2/87

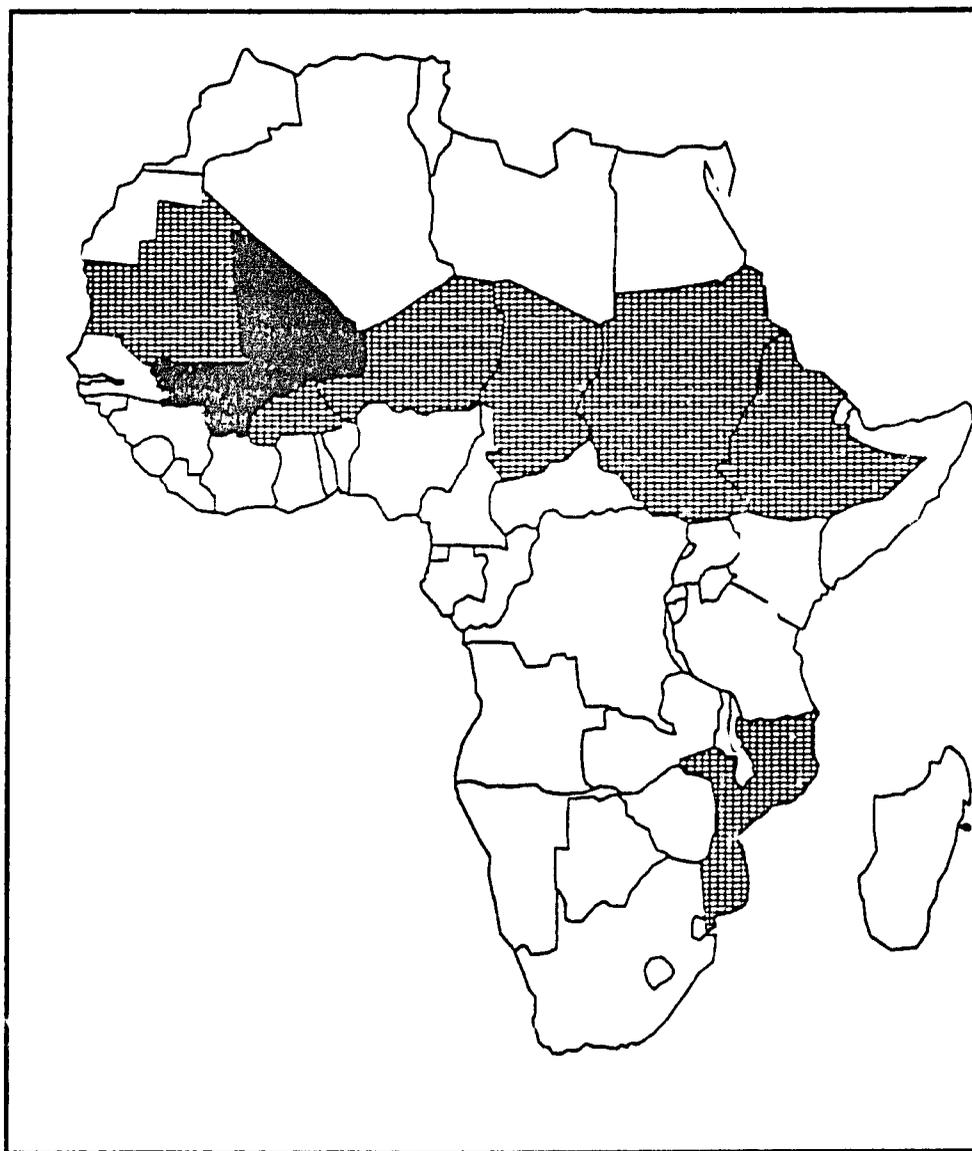
Clearance: PWA:RCollins PKC
Agrhymet: JDomergue

J. Domergue

103

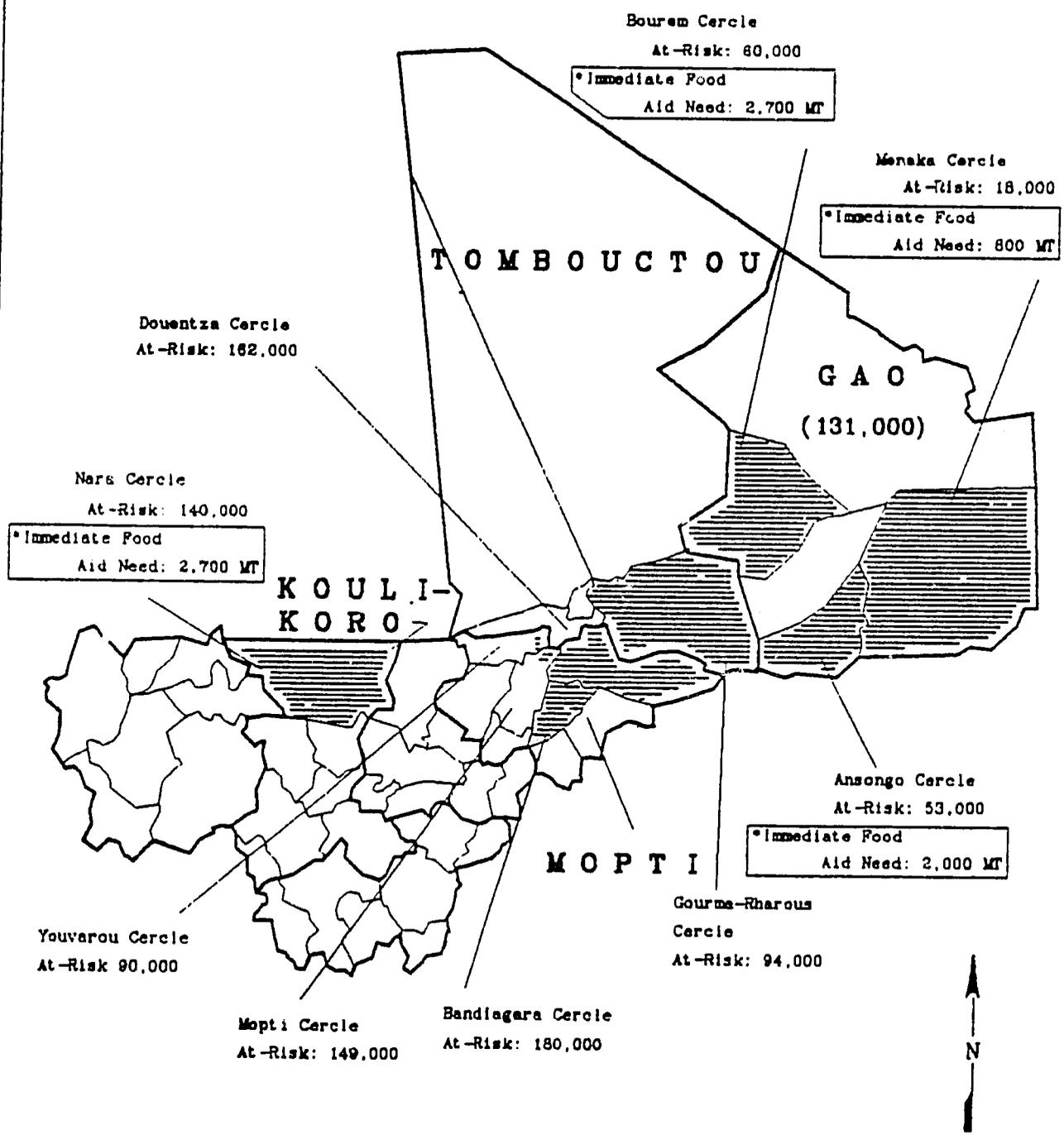
Report Number 8
January 1987

FEWS Country Report MALI



Africa Bureau
U.S. Agency
for International
Development

Summary Map



* Immediate food aid need computed at 42kg per person for 3 month period.

Famine Early Warning System Country Report

MALI

At-Risk Update: Focus on Gao

Prepared for the
Africa Bureau of the
U.S. Agency for
International Development

Prepared by
Price, Williams & Associates, Inc.
January 1987

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6	Displaced Persons
6	Health and Nutrition
7	Market Prices
7	Food Aid

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4	Map	3	Tombouctou At-Risk
5	Map	4	Mopti At-Risk
Back Cover	Map	5	Administrative Units

INTRODUCTION

This is the eighth of a series of monthly reports issued by the Famine Early Warning System (FEWS) on Mali, current as of January 10, 1987. It is designed to provide decisionmakers with current information and analysis on existing and potential nutrition emergency situations. Each situation identified is described in terms of geographical extent and the number of people involved, or at-risk, and the proximate causes insofar as they have been discerned.

Use of the term "at-risk" to identify vulnerable populations is problematical since no generally agreed upon definition exists. Yet it is necessary to identify or "target" populations in-need or "at-risk" in order to determine appropriate forms and levels of intervention. Thus for the present, until a better usage can be found, FEWS reports will employ the term "at-risk" to mean...

...those persons lacking sufficient food, or resources to acquire sufficient food, to avert a nutritional crisis, i.e., a progressive deterioration in their health or nutritional condition below the status quo and who, as a result, require specific intervention to avoid a life-threatening situation.

Perhaps of most importance to decisionmakers, the process underlying the deteriorating situation is highlighted by the FEWS effort, hopefully with enough specificity and forewarning to permit alternative intervention strategies to be examined and implemented. Food assistance strategies are key to famine avoidance. However, other types of intervention can be of major importance both in the short-term and in the long-run, including medical, transport, storage, economic development policy change, etc.

Where possible, food needs estimates are included in the FEWS reports. It is important to understand, however, that no direct relation exists between numbers of persons at-risk and the quantity of food assistance needed. This is because famines are the culmination of slow-onset disaster processes which can be complex in the extreme.

The food needs of individual populations at-risk depend upon when in the disaster process identification is made and the extent of its cumulative impact on the individuals concerned. Further, the amount of food assistance required, whether from internal or external sources, depends upon a host of considerations. Thus the food needs estimates presented periodically in FEWS reports should not be interpreted to mean food aid needs, e.g., as under PL480 or other donor programs.

FEWS is operated by AID's Office of Technical Resources in the Bureau for Africa in cooperation with numerous USG and other organizations.

SUMMARY

The at-risk populations in Mali remain generally unchanged since last month, except in some cercles of Gao Region. It appears that the residents of Gao and Kidal Cercles may still be able to cope with a food situation which, although harsh, is no more so than normal. Monitoring of these two cercles is, however, still necessary. The situation is more critical in the neighboring cercles of Bourem, Ansongo, and Menaka. There, people are being forced to leave their homes, seek free food distributions, and take other emergency action to protect themselves from a nutritional crisis. The number of displaced persons in Gao town is again rising, largely fed by the return of those who left the town to harvest wild grains in the surrounding areas, and by migrants from Ansongo and Bourem. Estimates of food aid required in at-risk areas are being developed by appropriate governmental and international agencies. The Systeme d'Alerte Precoce (SAP), the early warning unit of the National Committee for Aid to Victims of the Drought (CNAVS), estimates that Bourem, Ansongo, Menaka, and Nara Cercles immediately need approximately 7,500 metric tons of food aid for the next three months.

Issues

- A second survey in Almoustarat Arrondissement found dramatically fewer children suffering from severe malnutrition than indicated by an earlier survey. While the organizational umbrella under which this estimate and re-evaluation were carried out suggests a robust process, the magnitude of the differences between the two surveys suggests critical problems with methodology or with other, as yet undetermined factors.
- The SAP recommendation to provide a three month ration of food aid to the at-risk populations in the cercles of Bourem, Ansongo, Menaka, and Nara would allow time for further food assessment and nutrition surveys to be carried out. A plan for additional short-term, and appropriate middle-term interventions for these populations could then be planned in a non-crisis atmosphere.
- A common criteria for intervention in areas at-risk needs to be agreed upon by donors and regional and national authorities. The Drought Relief Office of the USAID mission in Mali suggests that general food distributions be carried out in areas which have a malnutrition rate of over 15% among children. This would require regular anthropometric surveys in areas identified as at-risk in order to decide whether intervention is needed, whether it should continue, or should be stopped.

Key January Events

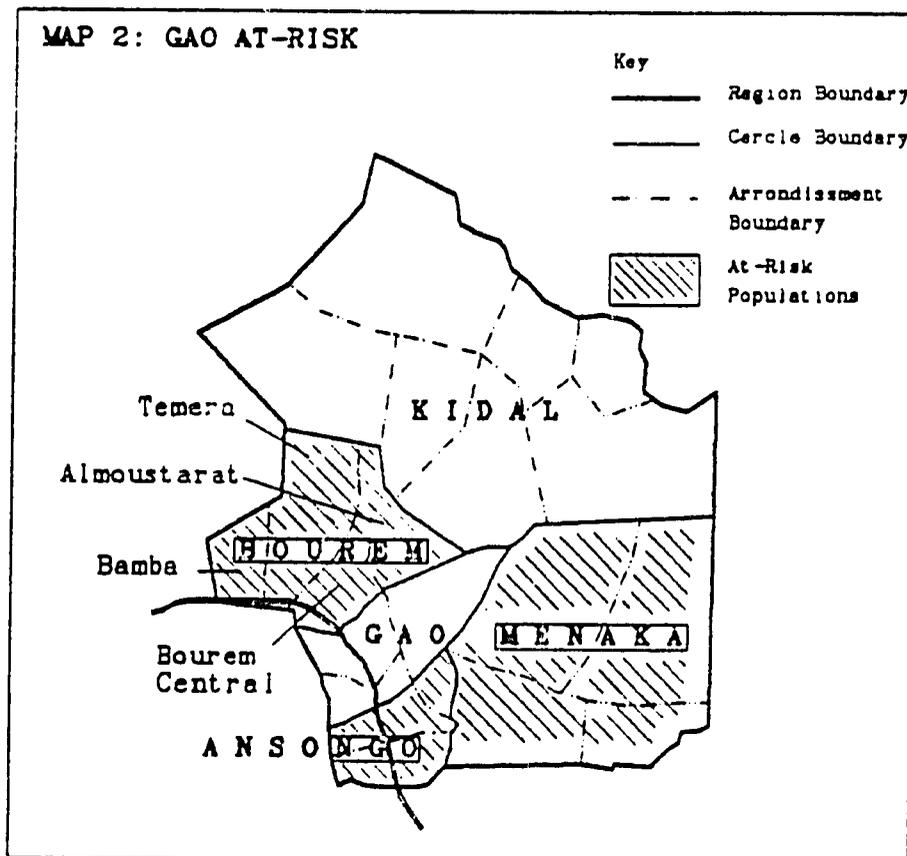
- Ten grasshopper survey teams returned from the field in early January. Results of their egg-pod counts should be available shortly.
- A second agricultural production estimate should be released soon by the DNSI (National Statistical and Information Science Department).

POPULATIONS AT-RISK

The December FEWS report discussed the divergent opinions in the donor community concerning the severity of food shortages in Gao Region. Several measures of nutritional stress there (stable feeding center attendance, mixed nutrition survey results, unusual population movements) presented conflicting indications. A more consistent picture is emerging from further study and receipt of additional information.

Gao Region

The specific areas of Gao Region with people at-risk include Bourem and Ansongo Cercles, and, to a lesser extent, Menaka Cercle. The chronic food problems currently visible in the Cercles of Gao and Kidal require monitoring, but are not yet critical.



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The cercle of Bourem is the most severely at-risk in the region for several reasons. As mentioned in previous FEWS reports, the cercle, with a total estimated population of 60,000, was one of the most seriously affected by the drought of 1984-1985. A large percentage of the residents of this cercle are herders, and great numbers of their animals died during this period. Many people were forced to leave Bourem to seek food distribution in the town of Gao. A large number of these same people are still not able to sustain themselves economically.

Agricultural production in the cercle has been hurt by other factors. In Fall of 1985, even though the Niger River was well below its usual levels, dikes near Bourem failed and waters destroyed a large portion of the area's meager rice crop. Rainfall throughout 1985 was insufficient to support the few agricultural activities of this cercle. In 1986, the rains continued light, the low crest of the river reduced planting areas along its shore, and rodent infestations were widespread. These elements all combined to produce a catastrophic effect on the crops; this year's harvest is expected to be nil.

The rodent problems and poor rains this year also severely diminished the size of the wild grain harvest, eliminating a major food security cushion that could have softened the impact of the harvest failure. The final, and perhaps most severe blow this year was the impact of the poor rains on pastureland. Grasses are insufficient for normal herding needs in most arrondissements of the cercle.

In November, the SAP medical team surveyed 277 families in the Bourem Central, Bamba, and Temera arrondissements. SAP reports that food stocks at the family level are almost nonexistent, many people have already left the area, and an out-migration of thousands of people should be expected in the coming months.

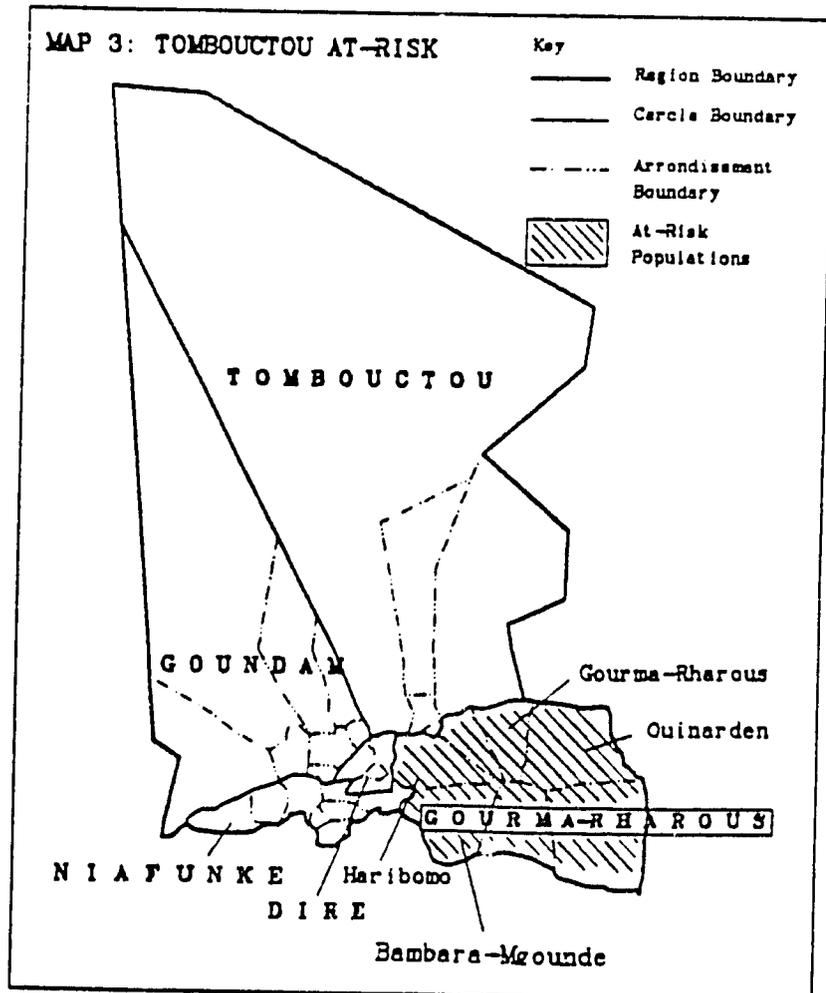
Another area of great concern is the Cercle of Ansongo (estimated total population 56,000), where both the rainy season and irrigated crop harvests are poor, and livestock conditions are difficult. Again, the combined effects of insufficient rainfall and rodent infestation have had a devastating effect on both cultivated crops and wild grains. Wild grain traditionally constitutes an important part of the diet of the people in Ansongo Cercle at this time of year. Perhaps the most significant indicator of the level of hardship prevailing in the cercle is the unusually large migration of population out of the area toward Niger. This migration

involves not only nomads and their herds, but also sedentary people. The number involved is not yet known, but reports from local authorities indicate that the exodus may be large enough to create a political strain at the border with Niger, and will certainly create additional hardship for those leaving, as available transport resources become overburdened.

Other cercles in Gao Region are also suffering from the effects of poor rains and rodent infestation, but to a lesser degree. Menaka Cercle had a very bad harvest this year, but the presence of World Vision and its food distribution and development-related programs have helped the population maintain a relatively stable food supply.

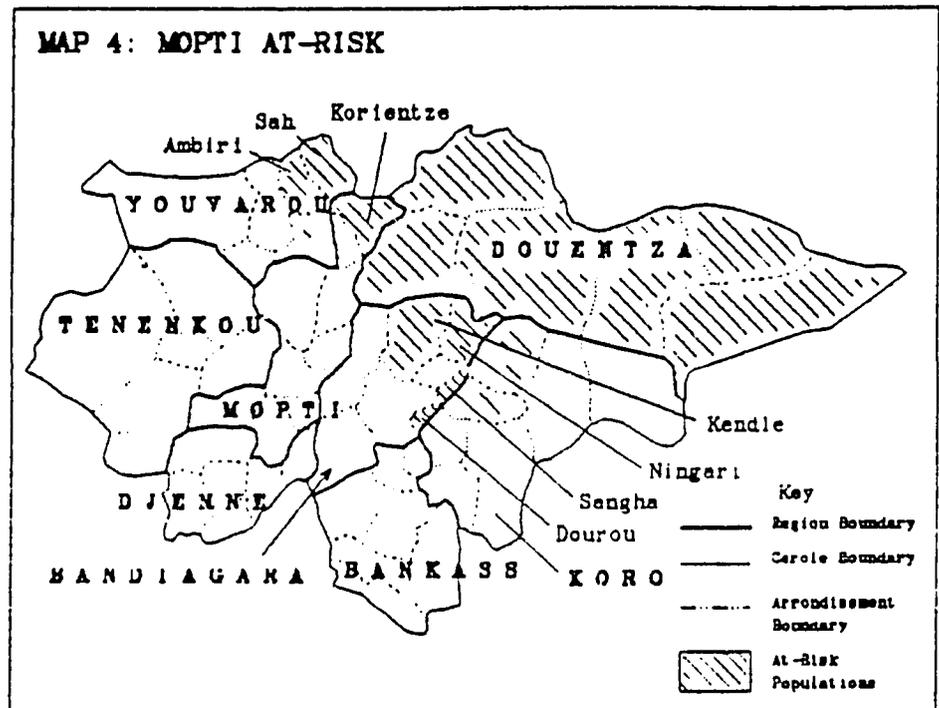
Tombouctou Region

In Gourma-Rharous Cercle, family food stocks are reportedly very low, and the food situation remains particularly tenuous in the arrondissements of Bambara-Maounde, Ouinarden, Haribomo, and Rharous. Some arrondissements in Goundam Cercle may eventually exhaust their food stocks, although off-season sorghum harvests may provide some relief. However, rodent attacks have been noted since the middle of the growing season and may seriously reduce grain production in localized areas.



Mopti Region

A much more varied picture is found in Mopti Region, where family food stocks are low in much of Douentza Cercle, in the Korientze Arrondissement in Mopti Cercle, the arrondissements of Dourou, Kendie, Ningari and Sangha in Bandiagara Cercle, and in the arrondissements of Ambiri and Sah in Youvarou Cercle. However, Government of Mali (GOM) reports indicate that millet production in the rest of the arrondissements in these cercles is average to better than average, and is particularly good in the cercles of Bankass and Koro this year.



Koulikoro Region

The combined impact of grasshopper infestations and lack of rain in Nara Cercle has led to very poor harvests in some arrondissements, and a substantial grain deficit is expected for the cercle as a whole. Unusually early herd movements from north to south are reported, indicating poor pasture and low water levels in the north.

Kayes Region

The cercles of Nioro and Yelimane both merit continued monitoring as certain arrondissements in each suffered from poor rains and heavy grasshopper damage. At present, the food situation does not appear as serious as in Nara Cercle.

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DISPLACED PERSONS

As suggested in the December FEWS report, the reduction in the number of displaced people in the town of Gao was only a temporary phenomenon, and reports indicate that many families have returned to the town after the wild grain harvest. Although the latest figures on displaced people in the town are not yet known, numbers are expected to increase as a result of migrations from the cercles of Bourem and Ansongo.

A significant element in identifying population movements in the Gao Region is the time of the year when the movement occurs. Distinguishing between "normal" and "abnormal" movements in a nomadic population is difficult. However, the departure of entire families from rural areas during harvest time is undoubtedly unusual in most places, and will usually be indicative of a problem with the harvest. A survey performed in November by the SAP estimates that approximately 20% of the residents of Ansongo and 11% of the residents of Bourem left during the past three months. The interpretation of this figure must be cautious, however, until confirmation from additional sources is found.

One explanation for these migrations so early in the year may be that people are anticipating food shortages in the coming months, and are choosing to leave before the situation worsens. Indeed, the survey also found widespread reliance on consumption of famine foods in these areas, which is further evidence of a lack of food stocks and purchasing power.

HEALTH AND NUTRITION

A nutrition survey carried out in the Gao Region in November does not support an earlier survey that reported extremely high numbers of severely malnourished children in some cercles. The earlier nutrition survey was carried out under the auspices of the SAP in October (sample size 200), and discovered a staggeringly high 43% rate of severe malnutrition in children under the age of six in Almoustarat Arrondissement, Cercle of Bourem. This prompted UNICEF to conduct a nutrition evaluation of the same population. With a sample size of 800, UNICEF found a severe malnutrition rate averaging only 9.7% for those areas in the survey. Though even this rate indicates an important malnutrition problem in the area, it is very near the level that is commonly found in rural sahelian zones. While this discrepancy can be partly attributed to differences in methodology and in handling of anthropometric measurements, other, as yet unexplained, factors have to be responsible for the huge disparity between the overall results.

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UNICEF operates five feeding centers in the cercle of Bourem, one of which is in Almoustarat. As a result of their nutrition evaluation in that arrondissement, they have decided to distribute dry rations through January 1987 to all the families in villages where the malnutrition rate is above 10%.

Two other nutrition surveys were conducted by the SAP in November. The first was in the arrondissements of Bourem, Bamba, and Temera (Bourem Cercle), where a malnutrition rate of 13.7% (less than 80% weight to height ratio) was found among children under six. The second nutrition survey was carried out in the arrondissements of Ansongo and Ouatagouna (Ansongo Cercle), where a rate of 8.3% was found. While this latter rate is considered relatively low, it is widely expected to increase as the season progresses and food resources become depleted. The unusually heavy reliance on famine foods recorded in these arrondissements is indicative of food shortages, and will itself have an impact on the overall nutritional status of the population. UNICEF will operate two feeding centers in the cercle of Ansongo until January 1987.

MARKET PRICES

In the southern and relatively productive agricultural areas, like Bankass Cercle in Mopti Region, the retail price of millet on the open market remained stable until September, and started to decrease at the time of the main harvest in October. By comparison, millet prices in the less productive cercles of Bourem and Ansongo to the north, were an average 54% higher through October. This divergence became further accentuated in November, when the price dropped in Bankass while remaining stable in Ansongo. The millet harvest in Bankass is reported to be very good, as it is in many other areas of the country this year, and one should expect most prices to drop further in the coming months. The pattern differs in the northern belt, where food production was very poor this year, and where prices will remain relatively stable at a high level.

FOOD AID

The Government of Mali's CNAVS (National Committee for Aid to Victims of the Drought) Provisions Committee for Emergency Distribution will meet in January 1987 to develop a preliminary estimate of emergency needs for 1987. The committee is composed of GOM officials, representatives of line ministries, bilateral donors, OPAM (the GOM cereals marketing board), and PVOs and other international organizations working in affected areas. The committee will be using data from the SAP.

government services in the field, and PVO observations, to develop this estimate.

Initial recommendations made by the SAP indicate that about 15,000 MT of food will be necessary for emergency distribution over the next six month period. The cereals for this distribution will probably be made available by the CNAVS. However, some PVOs are already buying cereals from local markets and from OPAM. Cereal stocks available from OPAM, the National Security Stock, and other organizations in Gao (as of the end of October 1986) included approximately 10,000 MT, from which there have been minor distributions in the intervening period. This total does not count whatever cereals may be available on the open market in this area.

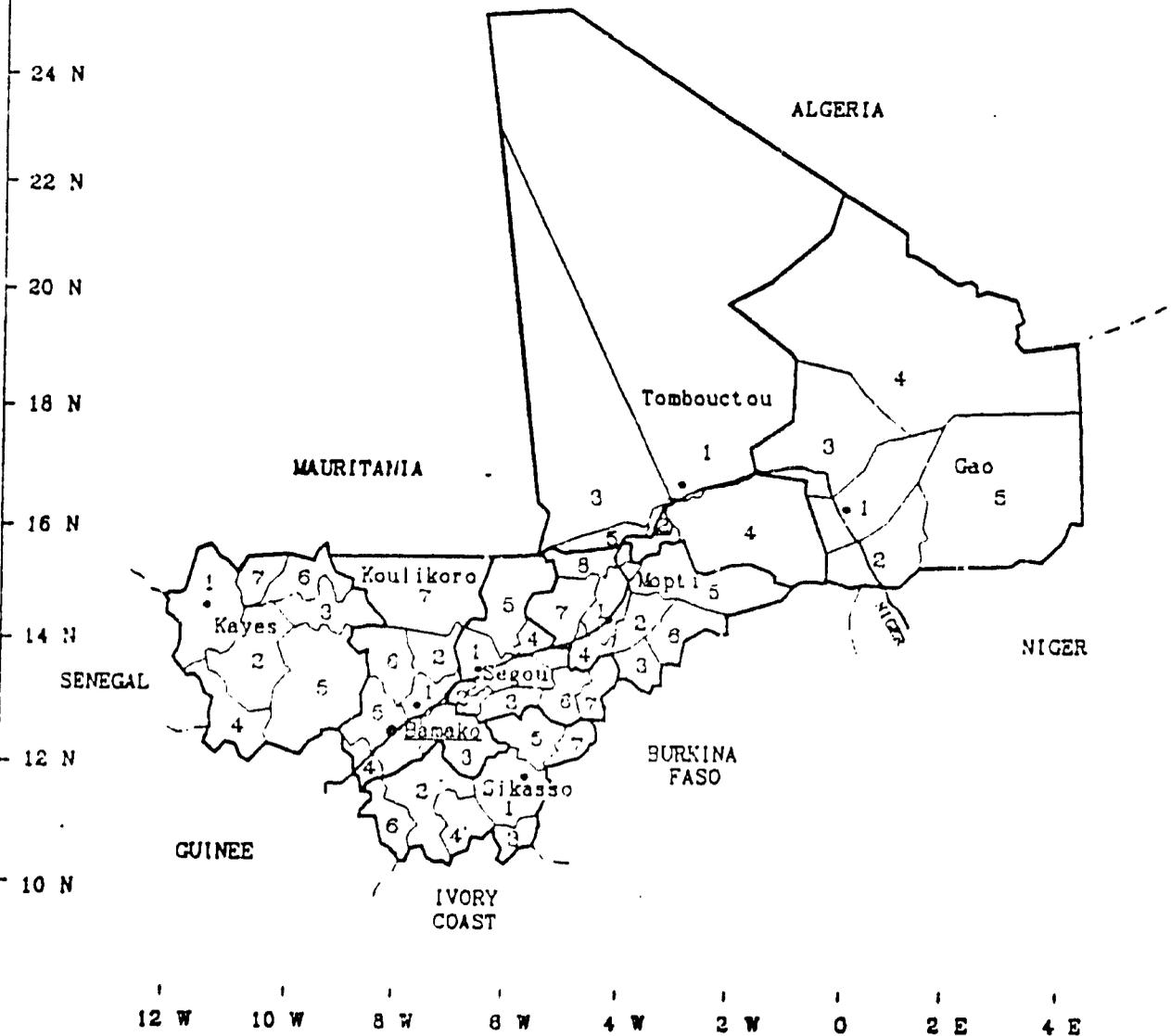
To meet immediate needs, and to provide a three month period for further assessment to occur, SAP has recommended that the following amount of cereals be made available by the end of January for distribution in the cercles of Bourem, Ansongo, Menaka, and Nara.

- Bourem: 2,700 MT. This quantity would provide 64,286 people with a three month ration. SAP estimates the population at 90,000 people; FEWS/Mali, using work completed in 1986 by a demographer, estimates 60,000.
- Ansongo: 2,000 MT. This quantity would supply 47,619 people with a three month ration. SAP estimates the population at 73,000 people; FEWS/Mali estimates 53,000.
- Central arrondissement of Menaka: 800 MT. This quantity would supply 19,047 people with a three month ration. SAP estimates the population at 18,000 people.
- Nara: 2,700 MT. This quantity would supply 64,286 people with a three-month ration. The population of Nara was estimated (in 1983) at 143,000.

(Note: The above rations were calculated using an annual cereal requirement of 167 kg per person and dividing it by four to arrive at a three month requirement.)

MAP 5: MALI

Administrative Units: Regions & Cercles



REGIONS and CERCLES

KAYES

1. Kayes
2. Bafoulabe
3. Diema
4. Kenieba
5. Kita
6. Nioro
7. Yelimane

KOULIKORO

1. Koulikoro
2. Banamba
3. Dioila
4. Kangaba
5. Kati
6. Kolokani
7. Nara

SIKASSO

1. Sikasso
2. Bougouni
3. Kadieho
4. Kolondieba
5. Koutiala
6. Yanfolila
7. Yorosso

SEGOU

1. Segou
2. Barsoueli
3. Bla
4. Macina
5. Niono
6. Sen
7. Tominian

MOPTI

1. Mopti
2. Bandiagara
3. Bankass
4. Djenne
5. Douentza
6. Koro
7. Tenenkou
8. Youverou

TOMBOUCTOU

1. Tombouctou
2. Dire
3. Goundam
4. Gourma-Rharous
5. Niafunke

GAO

1. Gao
2. Ansongo
3. Bourem
4. Kidal
5. Menaka

Other Int'l
Boundaries

Region Boundary

Cercle Boundary

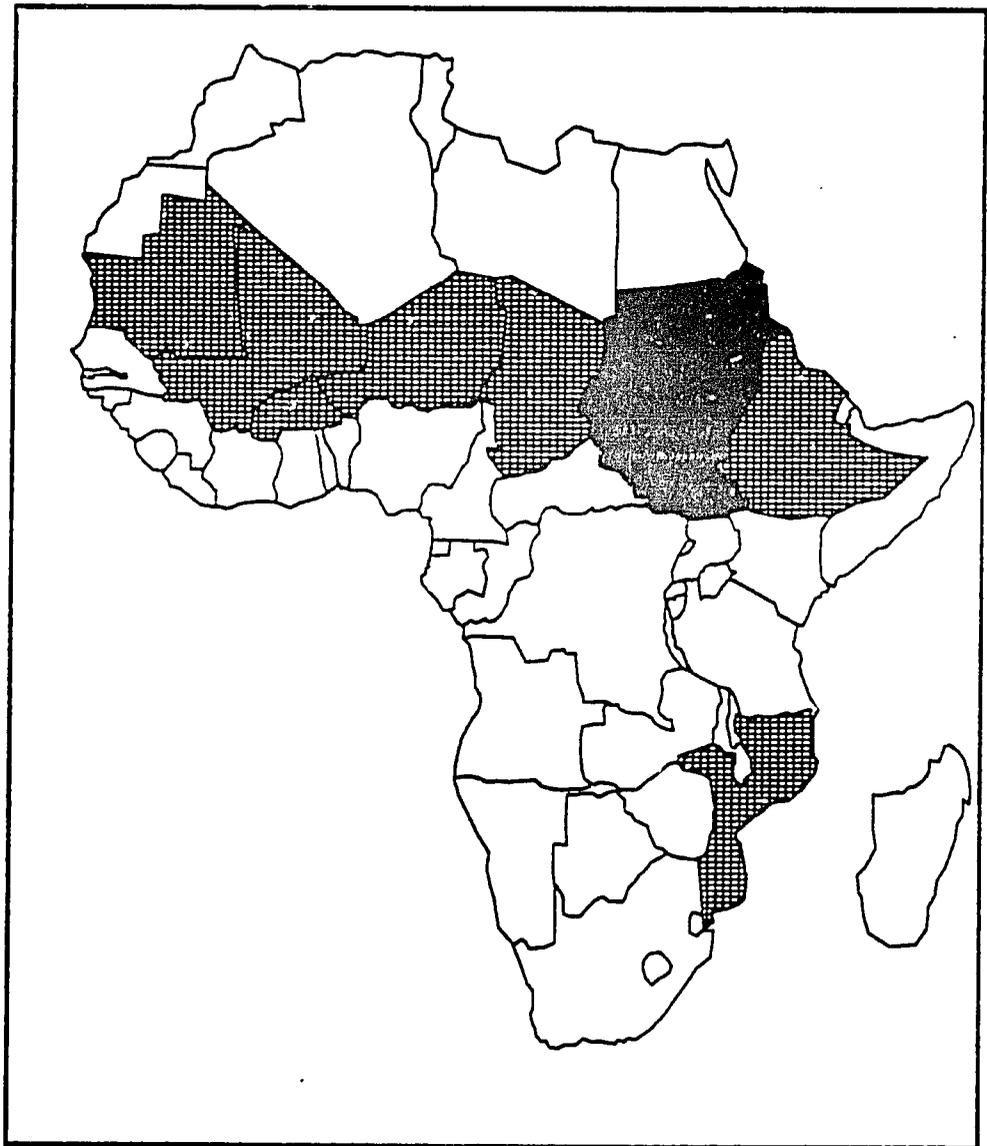
- National Capital
- Regional Capital

200 km

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Report Number 8
January 1987

FEWS Country Report SUDAN



Africa Bureau
U.S. Agency
for International
Development

Summary Map



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SUDAN

The Problems With Surplus

Prepared for the
Africa Bureau of the
U.S. Agency for
International Development

Prepared by
Price, Williams & Associates, Inc.
January 1987

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INTRODUCTION

This is the eighth of a series of monthly reports issued by the Famine Early Warning System (FEWS) on Sudan. It is designed to provide decisionmakers with current information and analysis on existing and potential nutrition emergency situations. Each situation identified is described in terms of geographical extent and the number of people involved, or at-risk, and the proximate causes insofar as they have been discerned.

Use of the term "at-risk" to identify vulnerable populations is problematical since no generally agreed upon definition exists. Yet it is necessary to identify or "target" populations in-need or "at-risk" in order to determine appropriate forms and levels of intervention. Thus for the present, until a better usage can be found, FEWS reports will employ the term "at-risk" to mean...

...those persons lacking sufficient food, or resources to acquire sufficient food, to avert a nutritional crisis, i.e., a progressive deterioration in their health or nutritional condition below the status quo and who, as a result, require specific intervention to avoid a life-threatening situation.

Perhaps of most importance to decisionmakers, the process underlying the deteriorating situation is highlighted by the FEWS effort, hopefully with enough specificity and forewarning to permit alternative intervention strategies to be examined and implemented. Food assistance strategies are key to famine avoidance. However, other types of intervention can be of major importance both in the short-term and in the long-run, including medical, transport, storage, economic development policy change, etc.

Where possible, food needs estimates are included in the FEWS reports. It is important to understand, however, that no direct relation exists between numbers of persons at-risk and the quantity of food assistance needed. This is because famines are the culmination of slow-onset disaster processes which can be complex in the extreme.

The food needs of individual populations at-risk depend upon when in the disaster process identification is made and the extent of its cumulative impact on the individuals concerned. Further, the amount of food assistance required, whether from internal or external sources, depends upon a host of considerations. Thus the food needs estimates presented periodically in FEWS reports should not be interpreted to mean food aid needs, e.g., as under PL480 or other donor programs.

FEWS is operated by AID's Office of Technical Resources in the Bureau for Africa in cooperation with numerous USG and other organizations.

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SUMMARY

The global grain glut is expected to lead to a decline in world prices which will severely curtail the ability of the Sudanese to export their surplus grain sorghum. The agricultural surplus could strain Sudanese resources and could lead to a devaluation of the Sudanese pound to be competitive on the world market. The record production will probably lead to a further decline in domestic prices. Detailed analysis of the May-June Childhood Nutrition Survey by the Sudan Emergency and Recovery Information and Surveillance System (SERISS), shows that childhood undernutrition is widespread throughout northern Sudan. While inter-provincial variation in childhood malnutrition is significant, the overwhelmingly important variable is the specific urban, rural, or nomadic council in which the child lives. Analysis of 19 social, economic, demographic, and child specific variables showed that altogether they explained only 20% of the variation in childhood malnutrition. Concern, within Sudan, over a locust emergency next summer could become justified if swarms successfully escape from their winter and spring breeding areas to the central grasslands of Sudan.

Issues

- The expected worldwide decline in grain prices will limit the ability of the Government of Sudan (GOS) to export its sorghum stocks and could lead to a decline in domestic prices that will limit incentives to farmers to plant sorghum next year.
- The overvalued Sudanese pound limits the export market for its cash crops (gum arabic, sesame, groundnuts) without massive government subsidies. Sudan requires foreign exchange for imports, including wheat and other foodstuffs for its urban population, and to support prices on domestic production.

Key January Indicators

- The third in a series of SERISS childhood nutrition surveys will begin at the end of January and should provide invaluable baseline data on post-harvest childhood nutrition in northern Sudan.
- Preliminary results from the second SERISS childhood nutrition survey (that took place in September/October) might become available in January, providing data on pre-harvest childhood nutritional status.

CROP PRODUCTION

Estimates of record cereal production, reported in the December FEWS report (gross production of 4,451,000 MT based on November's preliminary estimates by the Ministry of Agriculture (MOA)) is supported by a Food and Agricul-

ture Organization (FAO) estimate of 4,370,000 MT. It is also coincident with an FAO estimate of record world cereal production. The estimated increases in crop production for 1986 are attributed, by the MOA, to improved crop protection measures and a more even distribution of rainfall than in 1985.

World grain prices are expected to decline as large numbers of exporters (including many small, usually food deficit, countries) fight for a share of the market. Sudan's surplus sorghum, over-priced due to an over-valued Sudanese pound, will not be in a competitive position without export subsidies. Domestic prices, already low in much of the country, should decrease further thus providing disincentives for farmers in 1987. Newspapers in the Sudan, however, report that 1,250,000 MT of sorghum will be exported this year. Of this, 300,000 MT are to go to Holland, 500,000 MT to Iran and 435,000 MT to Saudi Arabia.

Table 1: Cereal Production by Region and Province in Sorghum Equivalents Based on Ministry of Agriculture Preliminary Estimates.

Province/Region	Estimated 1987 Pop	Cereal Reqd. (000)MT	Sorghum Caloric Equivalents Production		Surplus/(Deficit)		Per Capita
			Gross	Net	(000)MT	% Of Req	Surplus/ Deficit KGS
Central Region	4,585,190	669	1,946	1,553	912	136	199
Kassala	1,736,797	254	1,222	984	734	290	423
Khartoum	2,179,281	318	29	23	(295)	(93)	(135)
Nile	696,375	102	26	20	(81)	(79)	(116)
Northern	459,828	67	56	40	(19)	(28)	(41)
Northern Darfur	1,691,499	247	109	88	(159)	(64)	(94)
North Kordufan	1,888,561	276	271	219	(57)	(21)	(30)
Red Sea	824,453	120	19	15	(105)	(87)	(127)
Southern Darfur	2,061,539	301	287	232	(69)	(23)	(34)
South Kordufan	1,441,261	210	296	238	28	13	19
SUBTOTAL							
Northern Sudan	17,564,784	2,564	4,261	3,413	890	35	51
Southern Region	5,675,835	517	190	149	(366)	(71)	(64)
TOTAL	23,240,619	3081	4,451	3,562	524	17	23

Sources: MOA, Division of Agricultural Statistics Preliminary Production Report, November 6, 1986. GOS historical production figures on wheat, maize, and rice. 1983 GOS census results, extrapolated to 1987. GOS consumption requirements by region (146 kg/person/year in the north, 91 kg/person/year in the Southern Region). Crop specific seed, post-harvest loss factors, and caloric values calculated by ABT Associates. NOAA based production estimates from FEWS Report #6.

Regional and provincial food deficits, as shown in Table 1, are very sensitive to population estimates, but these can vary widely. In Northern Darfur Province, for example, the FEWS/Sudan population estimate of almost 1,700,000 people is 36% higher than the figure used by Save The Children (SCF (UK)). On the other hand, MOA and SCF (UK) production estimates for Northern Darfur are very close. In another case, estimates of people displaced, from the Southern Region to northern Sudan, range up to 1,000,000. Such a shift in population would lead to a change in the food deficit calculations for the southern Region, as well as for the destinations of the displaced people.

The MOA estimates for crop production in northern Sudan show that the areas under sorghum, millet and wheat have decreased by 5%, 13% and 1%, respectively, since 1985. The reduction in area under sorghum was largely in irrigated areas, and under millet, in the rainfed mechanized areas of the Central and Eastern Regions. In 1986 less irrigated land is said to have been planted with wheat in Northern Region than in 1985. In spite of the reduction in areas under sorghum and millet, production of sorghum is expected to increase by 2% to 3,250,000 MT and millet, by 33% to 551,000 MT. Estimates used for wheat production were made based on historical records; it has been suggested that production could fall by as much as 30%.

Wheat imports are flexible in the sense that any deficit in national wheat production will be compensated for with imports. Wheat is the staple food in urban areas, Khartoum in particular. Given that 70% of the population in Khartoum Province is urban and 70% of wheat imports reach the Khartoum market, data suggesting that Khartoum has a large grain deficit (based on sorghum and millet requirements) must be treated with extreme care.

In southern Sudan, production of sorghum has been estimated by the MOA to have fallen by 39% to 152,000 MT and millet by 47% to 7,000 MT. This decrease is explained by the reduced area under cultivation. These estimates, however, probably understate production due to limited access to rural areas because of the security situation.

The decrease in the area under production of sorghum and millet in northern Sudan has been offset by a 40% increase in the area under groundnuts. This increase has been in the irrigated areas of Central and Eastern Regions and the traditional rainfed areas of Kordufan. Farmers switched to groundnuts and, to a lesser extent, sesame, because of low sorghum prices following 1985's record sorghum

production. Groundnut production is expected to reach 443,000 MT, which is an 80% increase over production in 1985. The area of sesame production increased by 7% compared with 1985, largely in the rainfed mechanized areas of Central and Eastern Regions, and production is expected to reach 295,000 MT, which is 144% of the 1985 level. The implications of an increase in groundnut and sesame production for nutritional status should not be over-looked; both crops are important as cooking oil. Thus, any increase in production could result in an increase in the availability of edible oil, a decrease in price and an increasing food energy intake by people.

AGRICULTURAL PRICES

Sorghum prices are presently low through most of northern Sudan. In Gedaref, a 90 kg sack sells for 20 Sudanese Pounds, while in Kordufan the price is 30 Pounds per sack. Prices are around 50 Pounds per sack in Darfur Region and in Northern Darfur Province they are said to have reached 60 Pounds per sack. One reason suggested for these latter high prices is that merchants are transporting grain to Southern Sudan, where the price is considerably higher. Save The Children suggests that high prices in Northern Darfur are due to uncertainty over the extent to which pests will affect the harvest.

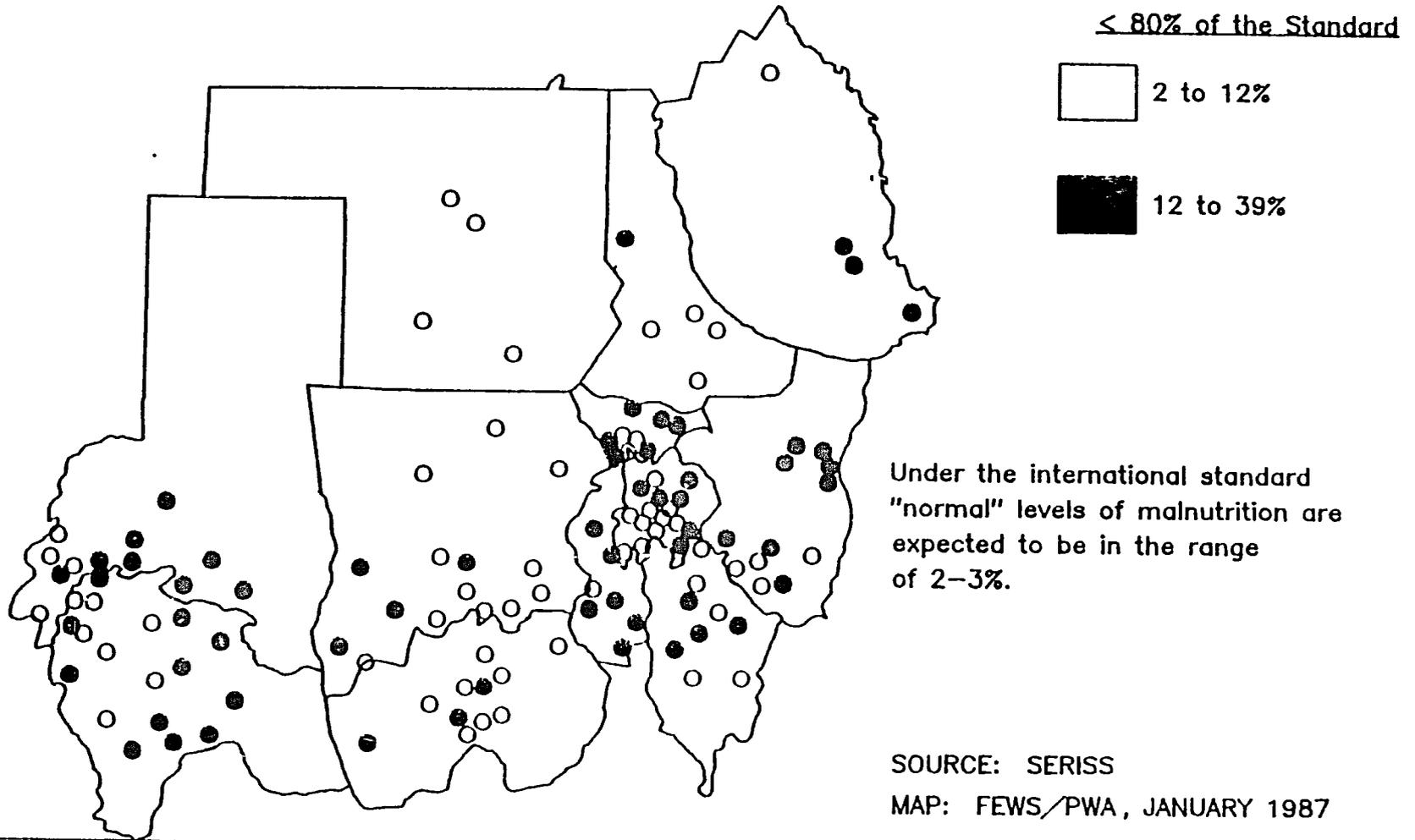
HEALTH AND NUTRITION

Data from the first round of the Sudan Emergency and Recovery Information and Surveillance System (SERISS) surveys, carried out in May/June 1986, showed that childhood undernutrition, as measured by a standard weight for height measure, was widespread throughout northern Sudan. Indeed, the most important finding was that the intra-provincial variation in the average weight/height measure overrides the inter-provincial differences. This indicates that there are pockets of undernutrition throughout northern Sudan and the situation in any one province cannot be termed better or worse than in another province (See Map 2). The average nutritional score (Z wt/ht) of children studied was approximately one standard deviation below the international standard reference level, although the distribution was normal. Twenty percent of the variance was explained by 19 social, economic, demographic and child specific variables, of which the greatest contributor was age of the child.

Thirty-five percent of the nomadic, 50% of the rural and 57% of the urban households studied were calculated to have less than 300 gm of grain available per person per day. The high proportion of urban households having less than 300 gm/person/day, reflects the fact that these households have access to a greater variety of food than

SUDAN: Malnutrition Levels in Sample Rural Villages

May-June SERISS Survey Results of the Percent of Malnourished Children. Median = 12%



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rural and nomadic people, and so grain is of less importance in the urban diet.

Fewer children in urban areas were reported to be suffering from either diarrhea, vomiting, measles, respiratory tract infections, fevers or night blindness than children in either rural or nomadic areas. Children suffering from these conditions were generally less than 33 months old. Water source was associated with morbidity patterns. More children suffered from diarrhea or vomiting in areas where hand-drawn well water and river/canal/wadi water was used, than where tap water was available.

The over-all mortality rate among children under two in northern Sudan was found to be 111 per 1000. Relatively high levels were found in Kassala, Blue Nile and White Nile Provinces (Table 2), which are all areas of surplus agricultural production. These provinces, along with Gezira Province, received less food aid between 1984-1986 than other provinces in northern Sudan. Work is currently in progress to determine whether there was any relationship between total food aid distributed and the mortality rates among children under two.

Table 2: Relative Mortality Rates in Children Under Two by Province

<u>Low</u> <u><100/1000</u>	<u>Medium</u> <u>100-120/1000</u>	<u>High</u> <u>>120/1000</u>
N. Kordufan S. Kordufan Nile Red Sea Khartoum	Gezira N. Darfur S. Darfur	Kassala Blue Nile White Nile

One of the more interesting results of the survey was that households representing 64% of the population, reported receiving food aid in the twelve months preceding the survey (Table 3). In the three months prior to the survey, which was the first quarter of 1986, households representing 21.5% of the population reported receiving food aid. Extrapolated to the total population of the northern part of Sudan, these figures represent 10,500,000 people and 3,410,000 people, respectively. This latter figure corresponds well to the total of 3,112,000 estimated by FEWS to be at-risk in June, 1986. The distribution of food aid recipients in the survey,

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however, differs significantly from the distribution of at-risk people estimated by FEWS in June.

Table 3: Estimated Number of People Receiving food Aid in the 12 Months and 3 Months Prior to the May/June SERISS Nutrition Survey, Based on Proportion of Urban, Rural and Nomadic Households Reporting Receipts of Food Aid.

<u>Province</u>	<u>Population</u>	<u>Estimated Food Aid</u> <u>1986 Estimated Recipients 4/85-3/86</u>		<u>Estimated Food Aid</u> <u>Recipients 1/86-3/86</u>	
		<u>Number</u>	<u>%</u>	<u>Number</u>	<u>%</u>
Khartoum	2,103,702	200,191	9.52%	26,584	1.26%
Northern	443,881	20,668	4.66%	13,746	3.10%
Nile	672,224	254,782	37.90%	177,840	26.46%
Red Sea	795,861	289,603	36.39%	146,211	18.37%
Kassala	1,676,564	1,525,329	90.98%	224,998	13.42%
Blue Nile	1,162,216	919,051	79.08%	77,336	6.65%
Gezira	2,226,166	1,345,758	60.45%	122,941	5.52%
White Nile	1,037,813	754,807	72.73%	43,212	4.16%
N. Kordufan	1,823,065	1,714,622	94.05%	1,405,530	77.10%
S. Kordufan	1,444,450	775,649	53.70%	10,439	0.72%
N. Darfur	1,241,000	1,090,686	87.89%	704,910	56.80%
S. Darfur	1,990,044	1,681,173	84.48%	462,996	23.27%
<u>Total</u>	<u>16,616,964</u>	<u>10,572,320</u>	<u>63.62%</u>	<u>3,416,744</u>	<u>20.56%</u>

The estimate that 3,400,000 people received food aid in the first quarter of 1986, immediately following a record harvest of cereal grains, implies that they did not have access to that production and that more than that number would require food aid later in the year (assuming that those who require food aid and those who receive food aid are one and the same). In the beginning of 1987, following another record harvest, there has been no essential change in the economy, or in the distribution of agricultural production, that would suggest fewer people should be fed.

SOUTHERN SUDAN

The Sudan Emergency Operation's (UNOEOS) Technical Co-ordination Committee estimated in December that 1,174,000 people are at-risk in Southern Sudan, requiring 71,250 MT of food aid over the next six months. They have estimated 300,000 of these people as displaced and destitute, requiring full rations. While not including people in at least some areas of East Equatoria, Jongoli or Boheriat Provinces, this estimate does include those people in areas accessible to relief efforts. Donors and relief organizations are using this estimate to target their activities.

Table 4: People At-Risk and Cereal Requirements (Metric Tons) in Southern Sudan.

<u>Region</u>	<u>Population At-Risk</u>	<u>Cereal Requirement</u>
Bahr El Ghazel	690,000	38,350
Upper Nile	172,000	9,900
Equatoria	312,000	23,000
<u>Total</u>	<u>1,174,000</u>	<u>71,250</u>

The number of displaced people in the Narus camp, in southeastern Eastern Equatoria Province, has declined to about 5,000 from an estimated high of 30,000. The health conditions in the camp are reported as good. This is an abrupt turnaround from reports at the end of last summer which described the situation as "as bad as the worst situation in Ethiopia during the height of the drought".

A figure of 1,000,000 people is current, in Sudan, as an estimate of the number of urban displaced people and migrants from southern Sudan into northern Sudan. An accurate enumeration is not likely.

Food aid shipments overland via Uganda and Zaire are continuing at greater cost in time and money than originally anticipated. Food aid stocks in Juba are at low levels, even in the face of successful recent deliveries.

REFUGEES

Recent nutrition surveys in 19 camps in Eastern Sudan show childhood malnutrition levels among Ethiopian refugees to be relatively low. Among children less than five years of age, only 6.4% of the reception camp children and 7.2% of the settlement camp children were found to be acutely malnourished (<80% weight/height standard). This is lower than the level of malnourishment found among the surrounding Sudanese population.

The results of the survey showed a range of from 1.6% to 7.2% of refugee children acutely malnourished in reception centers and from 2.1% to 14.3% in settlements. Supplementary feeding centers enrolled 58% of these malnourished children in reception centers and 45% in settlements. Many healthy children also attended supplementary feeding centers.

The highest incidence of malnutrition was found among children aged 12-23 months. This high level was attributed to poor weaning and infant feeding practices, amenable to change through education.

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There are currently a total of 277,000 Ethiopian refugees living in 9 reception centers, 16 agricultural settlements, 8 rural (wage earning) settlements and 2 semi-urban (wage earning) centers (according to a recent GOS Commissioner for Refugees, UNHCR and WFP assessment mission report). Generally, the twenty-six rural settlements offer limited opportunities to their inhabitants. The mission found that the drought, food aid and counterproductive development strategies also limited the ability of refugees to adapt to life in Sudan.

In all the rural settlements, wage earning is an essential survival strategy. The limited land allocated to farmers in the agricultural settlements can, at best, only provide farmers with their own cereal subsistence needs. Wage earning limits the amount of time farmers can spend on their own crops during the most important periods in the agricultural calendar.

For many rural refugees, livestock ownership is important for subsistence and for wealth generation. Pastoralism is the traditional economic strategy of most refugees. Livestock herds have been built from the sale of food aid, wage earnings and farm production sales.

The assessment mission recommended that food aid distribution to refugees be drastically curtailed in 1987. Exceptions would be made for supplementary feeding programs and refugees in reception centers, as well as those moved to settlements since 1984. A new school feeding program has been recommended to improve attendance and improve nutritional levels among school age children. This would provide a ration of 620 calories and 20 gms of protein per day to each child.

PESTS AND DISEASES

Crop pests continue to be of concern within Sudan. Desert locusts, in particular, are being monitored with some apprehension. In areas of Northern Kordufan and Northern Darfur, however, other pests such as American stalkborer and rodents have caused meaningful damage and, along with millet smut, are reported to have deprived some villages of a harvest.

Warnings of a locust emergency next summer are continuing within Sudan. The reappearance of Desert locusts in the highly productive central grasslands is described as likely, as is the return of swarms to those areas from the Red Sea coast and the Arabian Peninsula.

In historical perspective, however, it is too early to issue warnings of a dire locust season this year. ... could be severe if there is a particular convergence of meteorological events in both the central grasslands and the Arabian Peninsula. The reappearance of Desert locusts in the central grasslands of Sudan is certain, as they appear there every year.

The question for forecasters is whether those returning locusts will reproduce in numbers that imply a worse pest year than the one just past. This depends in large part on the timing and distribution of rainfall next summer. The year just past cannot be characterized as one of high locust activity. Even a worse year, if fueled only by the reproduction of returning solitary phase locusts, should not reach plague levels or cause other than local damage to crops. Outbreaks at less than a plague level are cause for action, but not of special concern for this year's total crop.

If swarms in Arabia and on the Red Sea coast successfully breed and reproduce during the winter and spring breeding seasons, and if they give rise to breeding swarms, and if those breeding swarms are blown back into Sudan in the early summer, then conditions would be right for a possible plague year in Sudan. But, even in the absence of human intervention, it is by no means certain that this will occur, although our understanding of why plagues end is limited. It appears related to the vagaries of rainfall and the actions of predators. With the ongoing monitoring of locusts by the Sudanese and Arabian authorities, and the provision of adequate resources for combating them, there is no reason to expect major swarms are likely to return from winter and spring breeding areas to the central grasslands of Sudan. Desert locust breeding in the central grasslands, during last summer and fall, is not directly relevant to this year's problem. Unhatched eggs will have died before the next rains arrive. Eggs laid in dry soil will not hatch and the maximum incubation period (which is reached only in cool areas) is 90 days. The extent and form of migration from winter and spring breeding areas will determine the degree of the locust threat this summer.

In Sudan, control measures were taken, with over 230,000 liters of fenetrothion deployed along with other pesticides. By the end of November, a total of 370,000 hectares (1,430 sq. miles) had been sprayed, with 90% of that by aircraft (270 hours). This was a major undertaking and was necessary for a total multi-year control

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effort, even if it was not all directly connected to the results of last year's harvest in the productive regions.

Reports of small Desert locust swarms traversing agricultural areas during late November and December--on their way toward winter breeding areas--were of limited threat to last year's harvest. Reports of damage are minimal and concentrate on cotton. It is important to control these swarms to limit the breeding stock in the winter breeding areas, and thus limit the potential geometric increase in locust numbers that a good winter breeding season could produce. (A tenfold increase per generation could be expected under plague conditions).

These reports of small swarms and/or concentrations of locusts during November and December are normal. Dispersed insects are concentrated by a reduction in available food and breeding areas, hormonal clues and prevailing winds. Their migration to winter breeding areas would occur in any case, but their concentration provides an opportunity for control. Current control efforts are focused on the Red Sea coast, specifically the Tokar delta, where numerous small swarms and concentrations have been reported.

IMPROVEMENTS IN THE EMERGENCY MANAGEMENT OF FOOD ASSISTANCE

Management and Organization

1. Establish a fast decision track in Washington headed by a full-charge decision-maker.

Every set of lessons learned cites the same problem: slow response time in Washington, turf battles, and reasonable people differing on the issues. A generic principle here is that timing is everything. The bureaucracy still must be organized as if it is.

2. Ensure good and experienced USAID Mission management and sufficient staffing

AID runs its emergency food assistance programs in the field with whomever happens to be resident in the Mission at the time. It usually does not add management staff to run these programs, but peels some of its development cadre away to manage the emergency effort. These may be good people and experienced development staff. However, most USAID Mission personnel are not experienced in running emergency food assistance programs, and they do not manage them especially well.

AID persists in under-resourcing food emergencies in terms of its own staff complement. In fact, effective emergency food assistance efforts require large amounts of staff time. Food monitors, for example, are necessary in many cases to supplement USAID personnel and government capabilities. Using AID personnel experienced with food emergencies and expanding USAID Mission staff when necessary will add to the cost of the program. Emergency food assistance programs often are larger than the normal development program of a Mission, and they represent large resource transfers. Some additional expenditure to make these huge programs more successful can be justified.

3. Arrange adequate host government support.

Emergency food assistance programs can be undertaken in a variety of ways. Some of these approaches require major host government involvement and support, whereas others do not. In planning an assistance effort, the government support needed for specific program elements will be identified and contingency plans developed to control these elements (in case the host government does not go along or does not perform as agreed).

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during implementation, the actual achievement of host government support needs to be both an operational and a policy-level effort. Program managers, especially at the USAID Mission level, will have to define the level of support needed, arrange for it, and monitor to see that it is being provided. [61]

The monitoring of host government support and development of contingency plans in case things do not go as expected are important. For example, the government may agree to expand its fuel supplies and supply fuel inland. If it does not perform, donors may have to supply the fuel, perhaps even by airlift. If the actions of the host government are being monitored, it may be possible to identify that they have not placed forward orders for fuel or that they have inadequate foreign currency to purchase it. If these problems are identified early, it may be possible to encourage or arrange adequate government support in time to avoid a major fuel shortage problem. Even if adequate government support cannot be obtained in this instance, early warning of the problem may enable other arrangements to be made before a major crisis arises.

4. Develop effective donor coordination.

Effective donor coordination, if achieved early, helps ensure a rapid emergency response. During program planning it greatly reduces uncertainty (e.g., who is going to do what; when?). Because different donors agree to undertake various parts of the program, donor coordination during implementation reduces duplicate effort, eliminates some mistakes, and increases program efficiency. Trading food between donors, for example, can reduce transport requirements and meet beneficiary needs in a more timely manner.

Coordination is best when the information available is best. Standardized and frequent reporting of key information to involved donors during implementation is an important element of donor coordination. As noted in the prior section on preparation, the coordinating mechanism and the way decisions are reached within it also are important aspects of effective donor coordination. A joint government/donor/international agency/PVO coordinating mechanism is more effective than independent coordination between each donor or operating entity and the host government or lead coordinating agency.

5. Make timely decisions and undertake timely action.

Emergency food assistance programs must move at a much faster pace than development programs. To ensure that this pace is achieved, decisions and actions must be timely. Usually, they must occur within a specific and fairly narrow window of time if program effectiveness is to be maximized. Consistently making decisions and taking actions according to such a time-phased action plan will require special procedures (e.g., the delegation

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of certain legal and contracting authority to USAID Missions and clear lines of authority in Washington). These procedures should be worked out in advance.

Even when special procedures are not available, timely decisions and actions are possible. Quality planning helps, as does experienced management, good host government support and effective donor coordination. Obtaining key information and ensuring the existence of other critical elements (see Box 2) also enable greater timeliness. With these elements present in adequate measure, the decision-maker will usually have a basis for deciding and acting within the time dimension of the emergency if willing to risk doing so without the protection of special procedures. In such cases, as occurred in Sudan, it is important that support be given to the rule- or protocol-breaker after the fact by top officials in AID/Washington and other agencies.

Substantive Content of the Program.

1. Obtain key information.

Key information in emergency food situations is always insufficient, but it is important. Often little effort is put into obtaining this important information, making its insufficiency a self-fulfilling prophecy. Only if it is valued, insisted on, and worked hard (and intelligently) for, will key information become available. In Mali, for example, special studies were used to get relevant information, and more are planned. A required reporting format and frequency for key variables is one way to pin down what data are available and what is known and unknown; it also helps allocate resources toward providing key information.

Some key information needed to make decisions and take action in emergency food programs is situation specific. However, most key information will be the same for different food emergencies, falling into two categories: problem data and solution data. Examples of key problem information needed are the following:

- Who is affected by the drought?
- Where are they?

- How many are there?

- How has the drought affected them? (Loss of income? Lack of food supplies locally?)

- How are people responding to the drought (stages-of-drought response)?

Examples of key solution data needed are the following:

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- What is available to meet the income/food needs of the affected people (food, money, materials, personnel)?
- Can available food meet the needs of the affected groups (e.g., children)?
- What delivery mechanisms are available? Which would be most appropriate/developmental?

2. Ensure that adequate resources are available.

The resources needed for an effective food assistance program include much more than food. Management staff, systems, and procedures and key information are essential parts of the resource mix. In addition to these "soft" inputs and food, there will be need for money, transport, technical assistance, equipment, supporting material for food-for-work activities (e.g., seed and hand tools), and infrastructure such as housing, improved bridges, and food storage facilities. These have to be available in the proper proportions and at the right times to maximize program success.

3. Use proven delivery systems/mechanisms.

The means by which food is delivered to end users has a great deal to do with program impact and cost-effectiveness. After incurring all the effort and cost of moving food thousands of miles and over difficult terrain, its delivery by one means (e.g., general distribution) may have less impact on the needs targeted than distribution by another means. Where available, existing organized programs of PVOs and other organizations (e.g., food for work, other development activities, supplemental feeding efforts) had more impact than general distribution. The food was better targeted on the nutritional/medical needs of individuals and used more developmentally as well.

Where the income of the affected population is not the problem but a local or national supply problem is, monetization will be a preferred distribution mechanism. Funds generated could be used via cash-for-work activities to reach groups for whom drought has caused major income shortfall and wealth depletion.

In some situations, such as Sudan in 1984-1985, "proven" delivery systems will not exist. Judgements about which to try should be followed up with intense monitoring of actual end-use, and adjustments should be made on the based on the information obtained.

4. Organize a good logistics system.

Logistics are fundamental to the successful operation of emergency food assistance programs. (6) The logistics system invariably will need special attention -- repair, fortification, expansion. Use of the private sector to meet the special needs the food emergency placed on the logistics system worked well in Sudan. Good planning, contingency planning, and the use of personnel experienced in the logistical aspects of food emergency implementation will help in organizing and using a good logistics system.

At one point during the evaluation in Sudan, the evaluation team's Land Rover ended up in a desert miles from anywhere with only three good tires, two flat ones, and no more tube patching compound. Having had three prior flat tires that day, the team developed a generic principle: logistics are everything -- be sure you have enough.

5. Carry out integrated emergency/development activities.

Food emergency programs should be planned to fit smoothly into development efforts. They should aim directly at the income problem of affected people and solve it in the way that most supports development. When the income of farmers has disappeared due to the drought, food can replace it and, at the same time, keep the farmers in their home villages so they can begin crop production immediately when the rains return. Exchanges of food for cattle at reasonable exchange rates may be the most developmentally appropriate way to help pastoralists convert their wealth into income/food. Food-for-work, monetization, and other mechanisms should be used as extensively as possible to ensure that the emergency program is not seen as an isolated event to be disposed of as rapidly as possible in order to get back to development. Rather, programming of food emergencies needs also to be viewed in a development context. Then the structure of the solutions proposed can be measured not only by medical/nutritional and social/humanitarian criteria, but also by development criteria (e.g., to what extent did our emergency food programming help solve over the longer term the low-income problem of those affected by the drought?).