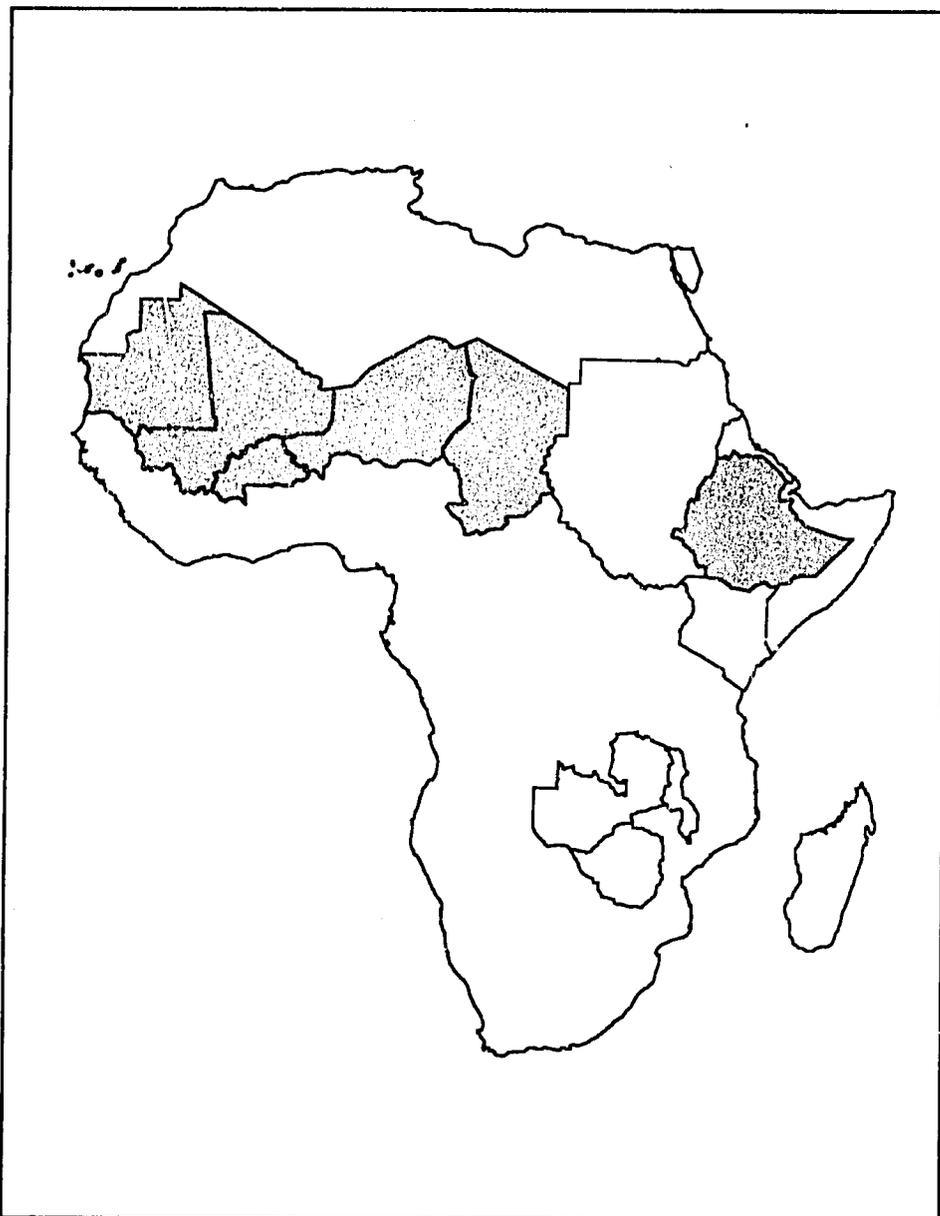


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# Vulnerability Assessment



*Contains Reports on:*

**Mauritania**

**Mali**

**Burkina**

**Niger**

**Chad**

**Ethiopia**

# **Vulnerability Assessment**

**June 1993**

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# **Vulnerability Assessment**

**June 1993**

## **Erratum**

Please note the following corrections to the Table of Contents

Table A 1.1 Burkina: Major Sources of Household Income	19
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## Executive Summary

### **MAURITANIA**

Parts of Tagant and Adrar are threatened by famine with increased levels of malnutrition in both areas. Heightened conflict and border insecurity combined with poor harvests and pasture land increase vulnerability in Guidimaka. Pastoralists elsewhere in the country face a crisis of lack of pasture land; their mobility is limited by insecurity along the Malian border and difficulties in crossing the border with Senegal. Forty-two thousand Malian refugees are in camps in southeast Mauritania.

### **MALI**

A modest harvest, stable prices, and adequate household stocks have maintained low levels of vulnerability for most of Mali. 813,600 farmers and pastoralists, and 1,500 returning refugees, are moderately to highly vulnerable due to poor rainfalls and civil unrest. Continued peace in the north is encouraging the return of refugees from Algeria and more may be expected. Another adequate harvest and continued stability will be necessary for low risk of food crisis.

### **BURKINA**

Burkina had another excellent cereal production year in 1992/93. Currently no populations are extremely vulnerable and emergency food aid will not be necessary. This second consecutive year of above average cereal production greatly reduced the vulnerability of large numbers of people in northwestern Burkina. However, below average cereal production in several economically marginal provinces in eastern Burkina has kept 450,000 people highly vulnerable. There are also 800,000 people who are moderately vulnerable due to low grade pasture and pockets of below average cereal production in more marginal parts of the country.

### **NIGER**

Vulnerability in Niger is slightly higher than in 1992. Although the global cereals' harvest in 1992/93 was above average, it was inferior to the near record 1991/92 harvest. Vulnerability levels for populations in Tanout, Illéla and Loga arrondissements, northern Tillabéry Department and Agadez Department have significantly increased since 1992, and approximately 628,000 people are now highly vulnerable. Continued civil strife in Agadez, or another poor cereals' harvest in the other highly vulnerable areas in 1993/94 would further elevate vulnerability levels.

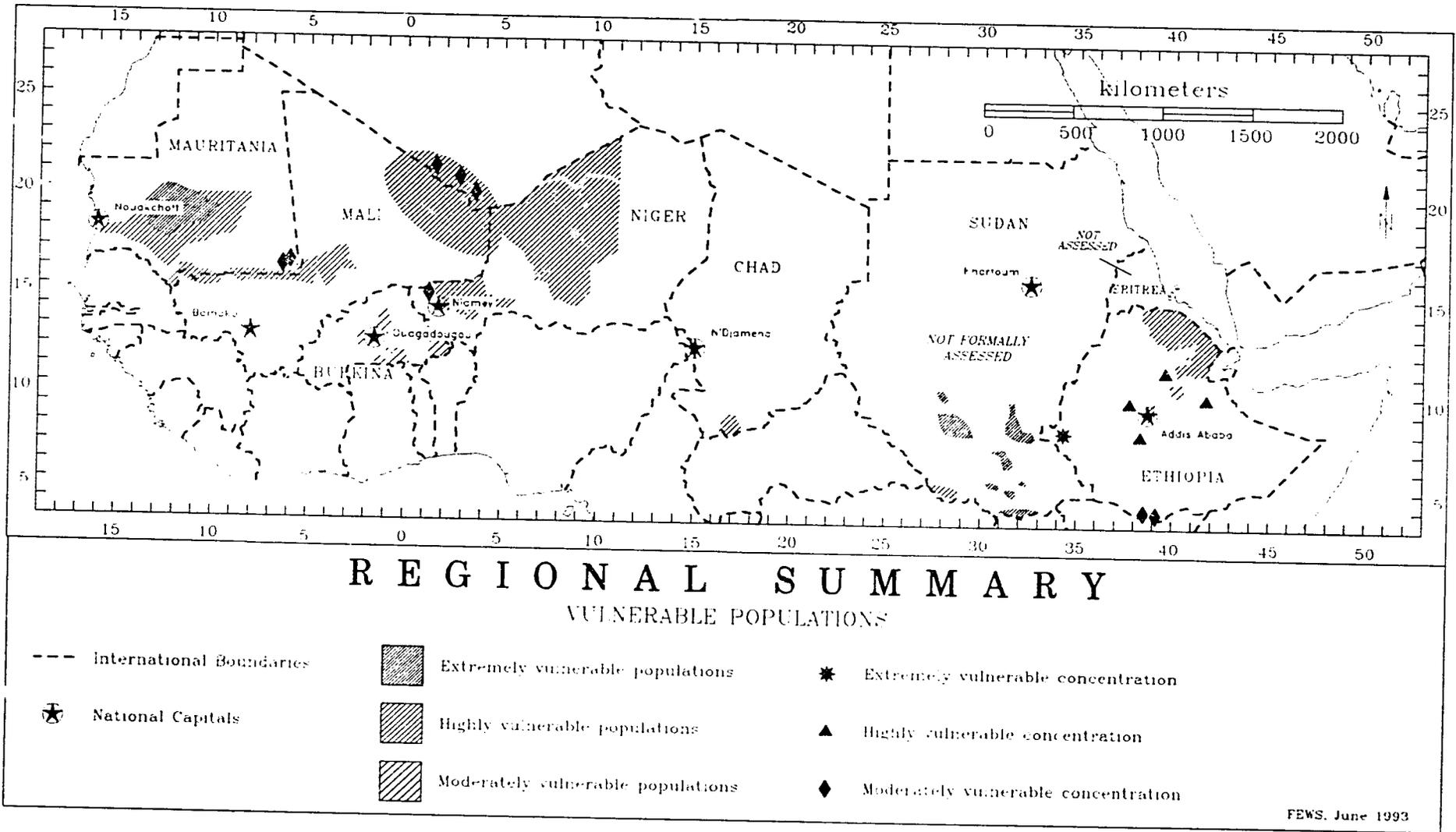
### **CHAD**

Generally low levels of vulnerability to famine prevail throughout Chad, except for the eastern Logone Oriental Prefecture where military exactions have disrupted normal economic activities, depleted grain reserves, and caused significant population displacement. Agriculturalists in the affected zones lack basic necessities including food, seeds, cooking utensils, and agricultural tools. A program of assistance has been approved by the donor community, but its implementation is predicated upon improved stability and security.

### **ETHIOPIA**

Current agricultural and pastoral conditions are generally good, and there is no imminent threat of famine (though as always there are pockets of localized food stress). Millions of Ethiopians are chronically poor and food-insecure. One bad season would cause a crisis. Displaced and relocated populations continue to need assistance and may fall into highly vulnerable categories if not successfully reintegrated during the coming year.

**Map 1. Regional: Vulnerability Assessment Summary**



## Vulnerability Decreases Except in Hot Spots

Washington D.C. June 10, 1993

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Vulnerability levels improved over 1992 in rainfed farming areas in all FEWS countries of the Sahel and Horn, except for Sudan and Mauritania. Harvests in 1992/93 were average to outstanding in Mali, Burkina, Chad, Niger and Ethiopia.

Vulnerability levels in Sudan have remained higher than in the other Sahelian and Horn countries for several years. While it is not clear that conditions have worsened significantly from those of 1992, the situation in the South, at least, has remained sufficiently dire as to warrant prolonged relief efforts.

In Saharan central Mauritania, vulnerability levels worsened significantly following repeated years of poor pastures, poor harvests in neighboring agricultural zones, and general economic decline. The physical isolation of this region has denied its people the variety of means of livelihood that exist in the agricultural zone itself. The wider opportunity for earning a living and annual provision of relief have prevented vulnerability levels in Mauritania's agricultural zones from climbing as high as those further north.

In other areas of the Sahel, increases in vulnerability levels have been localized and are ultimately the result of civil insecurity. In the case of Chad, the situation in a small area of the South developed since the first of the year. At the time of this printing, the situation has settled down quite a bit—the ICRC is now positioned in the area to begin relief activities. The insecure situation in south-central Mauritania is also fairly new, and is in large part caused by the tension between farmers and herders following prolonged presence of herds normally kept further north. In northern Niger, northern Mali and bordering areas, the insecurity has been ongoing for several years. In Mali, peace accords have been signed by all parties and the situation has begun to stabilize.

Ethiopia and Eritrea are both countries undergoing redefinition and reconstruction. Multiple famines and years of civil war have left up to a third of Ethiopia's population chronically food-insecure. Although not included in this year's vulnerability

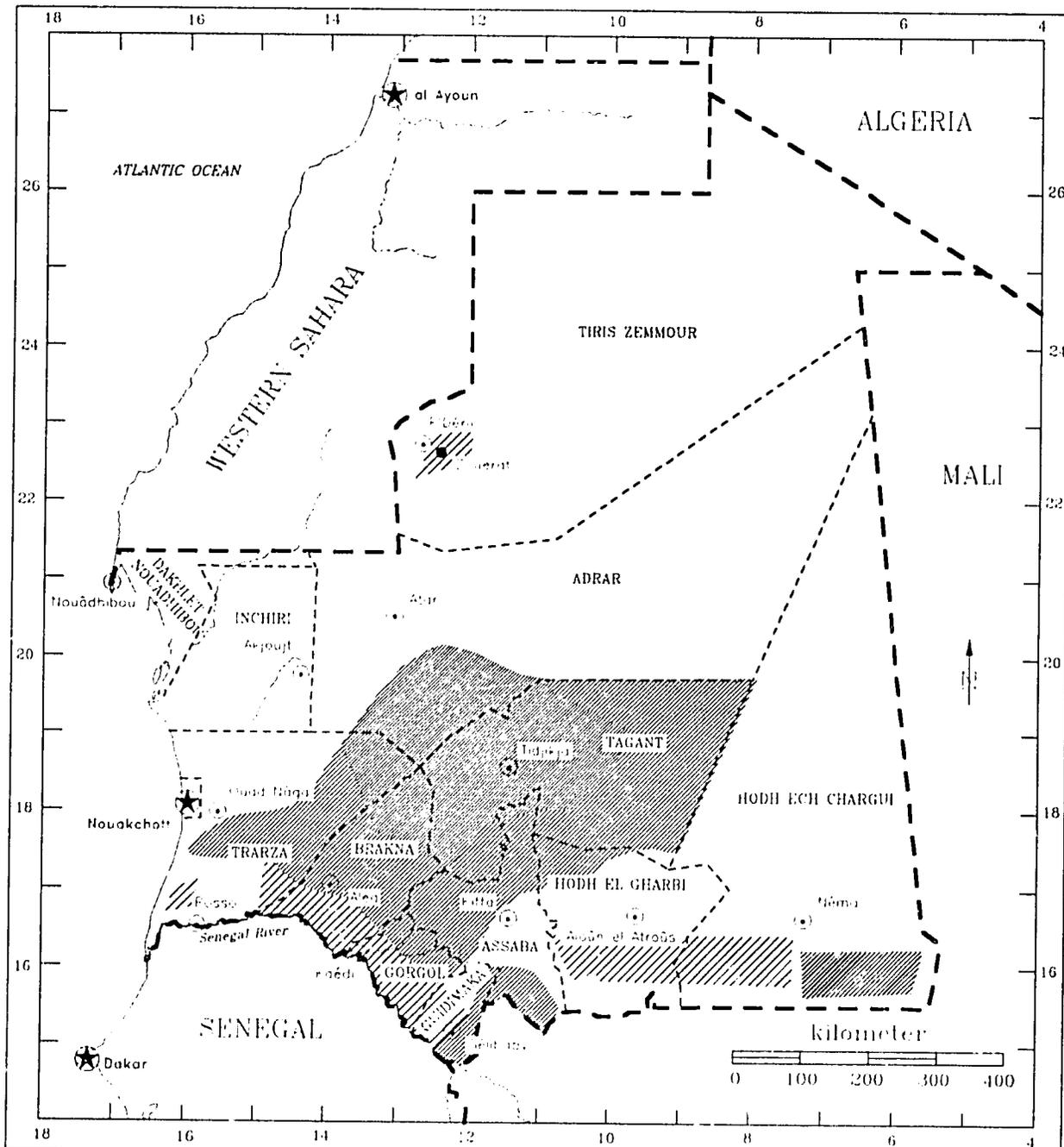
assessment, the people of Eritrea are in the same situation. Even with excellent harvests over the next several years, Ethiopia and Eritrea will remain fragile in terms of food security—the people have few resources or alternatives on which to rely should crops fail, the economies suffer some other shock, or the political situation deteriorate. The effect of poor harvests is borne out by current conditions in Tigray and Wello, where locally mediocre 1992 *meher* (main) and part or totally failed 1993 *belg* (secondary harvests have engendered high and extreme levels of vulnerability.

In contrast, Sudan is in a state of deterioration. The civil war in the South continues unresolved, with southern factions fighting each other as well as the government in Khartoum. The fighting has disrupted whatever economic activities there are in the South and placed a serious drain on the economy of the North, leaving many populations entirely dependent on food aid. The ability to deliver food aid fluctuates, governed by problems of climate and infrastructure and the frequent prohibition of the movement of relief supplies by one or another party to the fighting.

### No Assessment of Sudan or Eritrea

FEWS did not carry out a Vulnerability Assessment of either Sudan or Eritrea for 1993. In the case of Sudan, FEWS stopped full coverage of Sudan in June 1992, following the May 1992 down-sizing of USAID's presence in Khartoum. A modest coverage effort has continued from Washington D.C., but without staff assigned to carry out a full vulnerability assessment. In the case of Eritrea, FEWS shifted its Ethiopia coverage from a Washington, D.C. base to Addis Ababa during the period that Eritrea became an independent country. Given the newly independent nation status, discussions are underway as to whether and how FEWS could provide analytical coverage. These discussions continue.

**Map 2. Mauritania: Vulnerability Assessment Summary**



**M A U R I T A N I A**

**VULNERABILITY ASSESSMENT SUMMARY**

- International Boundary
- ..... Wilaya Boundary
- ★ National Capital
- ⊙ Wilaya Capital
- Cities and Towns
- Intermittent Drainage
- [Cross-hatched] Extremely vulnerable populations
- [Diagonal lines] Highly vulnerable populations
- [Horizontal lines] Moderately vulnerable populations

Source FEWS/Mauritania  
FEWS, June 1993

## Third Poor Harvest Increases Vulnerability in Tagant and Adrar

Report released by the American Embassy/Mauritania May 29, 1993

### Summary

*The juxtaposition of natural factors (poor, irregular and badly spaced rains, poor pasture lands, inadequate river flooding, and destruction of crops by pests including camel herds), economic factors (devaluation of the currency, lack of or late agricultural loans, rising prices accompanied by speculation), and sociopolitical factors (continued border insecurity, large numbers of Malian refugees in the southeast corner of the country), adds up to another difficult year for many Mauritians.*

*Residents of Tagant and Adrar are extremely vulnerable because malnutrition and disease incidence are multiplying, and large numbers of residents are going hungry.*

*Agropastoralists throughout the country, nomadic pastoralists concentrated in the south in search of pasture, Malian refugees, traditional miners, poor urban residents, and Senegal River Valley farmers all face varying degrees of vulnerability ranging from moderate to high.*

### Methodology

In preparing the 1993 vulnerability assessment, FEWS/Mauritania has tried to exploit all relevant data sources in the country: ministries of the government of the Islamic Republic of Mauritania (GIRM), non-governmental organizations (NGOs) working on health, nutrition, agriculture or related projects, agencies of the United Nations family present in the country, such as the United Nations High Commission for Refugees (UNHCR) and the United Nations Children's Fund (UNICEF), informal sources in and outside the capital as well as first-hand information from FEWS/Mauritania field trips throughout the country.

Over the past two months, FEWS/Mauritania has, in preparation for the vulnerability assessment, made visits to the following *wilayas* (regions): Dakhlet Nouadhibou, Trarza, Brakna, Gorgol, Guidimaka, Assaba, Tagant, Hodh el Gharbi and Hodh ech Chargui.

### Vulnerability of Socioeconomic Groups

#### Country Background

Most Mauritians, who number approximately 2,200,000, are either subsistence farmers, pastoralists, or agropastoralists. Along the Atlantic Coast and in the Senegal River Valley, fishing is important as a commercial and subsistence enterprise. The commercial fishing industry, centered at the northern port of

Nouadhibou and iron mining in the Zouerat area, also in the north, are large employers as well as the largest sources of revenue in the country.

Since drought conditions have become chronic in Mauritania over the past two decades, the complexion of Mauritanian society has changed from one which was mostly rural and nomadic to one which is now more sedentary and urban.

The primary agricultural zone of the country, the Senegal River Valley, was the site in 1989 of deportations of large numbers of the mainly Pulaar-speaking residents. Four years later, normality has yet to return to the region as tens of thousands of residents of the area have still not returned to their homes and former livelihoods.

Poor rains, poor flooding, and an extraordinary animal concentration along the Senegal River Valley partially explain the reduction in surface farmed; one should not underestimate, however, the impact on an agricultural system of the absence of a large part of its active population (deportations and the rural exodus) combined with a continued military presence that, according to FEWS/Mauritania interviews with residents, inhibits productive activities such as farming, fishing and animal rearing.

Since 1990, there have been large numbers of Malian refugees in the extreme southeast corner of the country in three main UNHCR camps at Bassikounou, Fassala-Néré and Aghor. According to UNHCR, there are now 42,000 refugees in the camps.

#### Agropastoralists and Pastoralists in Central Tagant and Adrar Wilayas

Tagant is an agropastoral *wilaya* of Mauritania whose residents (61,000) are totally dependent on the annual rainfall for their livelihood (farming and animal raising). All agricultural activities depend on accumulated rainfall which infiltrates and collects during the rainy season on the small surface of the plateau which can be farmed; the region can provide totally for its own cereal needs when there is sufficient rain from the neighboring northern regions.

The area under cultivation on the plateau has decreased greatly over the past years because of the advancing desert. This, along with the decreasing seasonal rainfall has led to the present precarious situation of the two principal activities (farming and animal raising) in the region. Last year (a fair agricultural year), 30,800 hectares were cultivated in Tagant; this past season, in contrast, there were only 6,000 hectares farmed, including the large agricultural perimeters at Achram. Two-thirds of these fields never reached maturity, drying out due to a lack of water;

**Table 1. Rainfall in the Wilaya of Tagant**

Rain station	Cumulative rain for season, to 10/10/91 (mm)	Cumulative rain for season, to 10/10/92 (mm)
Tidjikja	120.9	20.8
Moudjeria	143.0	43.5
Achram	153.2	20.8

in the end, only 2,000 hectares were productive this year in all of Tagant.

There were severe drought conditions in Tagant this year; in fact, rainfall did not exceed 50 millimeters in any part of the *wilaya* (see Table 1). The rainy season for the agricultural campaign of 1992/93 (rains to November 10, 1992) was characterized by very poor, irregular and badly spaced rains. The absence of any rainfall from the end of June to mid-July seriously reduced potential pasture land.

No harvests, reduced pasture land, and the departure of most of the region's animals has exacerbated the food situation to the point of crisis. Imports from neighboring *walo* (river recession) harvests and from Nouakchott are not sufficient to attenuate the situation.

Similar conditions, although not as catastrophic as those now encountered, existed two years ago in the region. In its report of a field trip to Tagant (26 June to 2 July 1991), FEWS/Mauritania identified the different factors which block the development of the *wilaya* (poor rainfall, geographic isolation, poor state of agricultural infrastructure—mainly wells, small dams and “diguettes” or dikes); the conclusions reached in that report continue to be valid today since there remains only two organizations intervening in the *wilaya* (UNICEF operates community feeding centers and there is also one Peace Corps Volunteer in Tidjikja).

The central *hakem* (chief of the central arrondissement of Tidjikja) remarked that there had been no new interventions (by the GIRM, by NGOs, or by international organizations) in the *wilaya* since the FEWS report on its trip to Tidjikja in June 1991. Distributions of food aid have been sporadic and in quantities which are insufficient to respond to the needs of a population which is without any means to support itself.

The present crisis in Tagant is a logical evolution of the tenuous food situation which already existed in the region and can be summarized in a single phrase, “the people of Tagant are hungry.” In certain areas, such as in the arrondissement of Ghoudiya, the food situation has so deteriorated that famine conditions have been witnessed. Local residents report that many families are eating only one meal per day and that others go without a daily meal. Widespread malnutrition, cases of vitamin deficiency, scurvy and an epidemic of measles have been observed in the moughataa (department) of Tichitt and in Ghoudiya, according to the governor.

There is every reason to believe that the situation will deteriorate over the coming four months since even the food destined for the moughataas in need is spoiling in storehouses in Tidjikja because of lack of transport. The efforts undertaken by the central *hakem* to find a solution to the problem of transport have

apparently failed; as a result, families in Ghoudiya and in other neighboring market towns have been fasting involuntarily.

Deaths of children from diseases (mainly acute respiratory illnesses), clearly related to their reduced nutritional status, have, according to the governor and the *hakem*, occurred in el Moinan, and in the northern part of Tidjikja Moughataa. There is a danger that this condition will spread to other parts of the moughataa over the next four months.

Cereal and other food prices continue to rise while the purchasing power (which depends on people selling their animals) of the population is falling. Most livestock are in poor condition or have been moved towards the south, in the Senegal River Valley, and to Mali.

The non-agricultural informal sector is not well developed in Tagant; non-agricultural sources of income are mainly limited to several women's artisan cooperatives.

FEWS/Mauritania considers all of the population of the moughataa of Tichitt to be extremely vulnerable (at-risk); two-thirds of the population of Tidjikja and Moudjeria moughataas are also extremely vulnerable, especially the northern and southwestern parts of Tidjikja including the Ghoudiya arrondissement, for a total of approximately 41,000 extremely vulnerable persons.

The NGO “Pharmaciens Sans Frontieres” completed a nutritional study in Aoujeft Moughataa in Adrar at the end of April. This was a follow-up to a baseline study conducted in December in the same area. The study found a deterioration in nutritional status of children under five since the December study, recording 11.47 percent moderate malnutrition (less than 80 percent normal weight for height) compared to 7.9 percent in December. The report stated that this likely underestimates malnutrition levels since nurses examining children reported seeing mothers with apparently malnourished children who refused to participate.

The report also cited 30 deaths from measles in the village of Choum. FEWS/Mauritania estimates that all of the populations of Chinguetti, Aoujeft, and Ouadane are extremely vulnerable (at risk) and number roughly 27,000 persons.

#### **Agropastoralists and Pastoralists of Trarza, Brakna, Gorgol and Assaba Wilayas**

Agropastoralists and pastoralists in the eastern part of Trarza, northern Brakna and Gorgol and in northwest Assaba are considered to be highly vulnerable; the moughataas concerned are those of R'Kiz and Mederdra in Trarza; Aleg, Magta-Lahjar and northern Bababe and M'Bagne in Brakna; M'Bout, Monguel and the northern parts of Kaedi; Maghama in Gorgol; and Boumdeid, Guerrou and Barkewol in the Assaba.

In all of these areas, pasture lands have been extremely poor and are now totally degraded and overused by extraordinary numbers of animals coming from the northern regions. Cases of malnutrition including kwashiorkor and marasmas have been identified in the villages of Dar Salaam and Zem-Zem in Brakna, as well as in Monguel in Gorgol. Since the next four months are the most difficult of the year, it is likely that incidences of malnutrition and disease will increase.

## **Farmers, Agropastoralists and Pastoralists of Guidimaka Wilaya**

A recent visit to Guidimaka by FEWS/Mauritania confirmed repeated reports in the independent press of heightened insecurity along the border with Mali, cross border cattle raids, altercations between the Mauritanian military and Peulh herders resulted in deaths on both sides, and generally increased tension in the *wilaya*.

The main sub-groups in the *wilaya* are the Soninke, Peulh and the Haratine. The Haratine are probably the most vulnerable group because they do not have significant numbers of animals (as the Peulh do) nor do they have access to sizable remittances from family members outside the country (as many Soninke do), to soften the effects of poor harvests. For these reasons, the Haratine population (around 20 percent of the *wilaya* population of 134,981 or around 27,000), are highly vulnerable.

### **Urban Poor**

A recent trip to the "P.K." district of Nouakchott which, with parts of the 5th and 6th communes, houses the majority of the capital's poorest population, revealed higher prices on most basic foodstuffs—oil, sugar, rice, milk. Prices ranged from 15 to 20 percent more on similar items than those in town (a distance of between 5 and 15 kilometers, depending on the location in the P.K.). Because the inhabitants of these areas are impoverished, often displaced from homes in other parts of the country, and with little or no income, FEWS/Mauritania considers the "shanty town" dwellers of Nouakchott as well as those in Nouadhibou (who, together, may number 300,000) to continue to be highly vulnerable. There have been no epidemics observed by the NGO, "Terre Des Hommes," which operates feeding centers in the district.

### **Miners**

The populations working in the industrial mining sector (iron and gold) remain in a relatively stable position even though their salaries have not been adjusted in response to the recent currency devaluation. The majority of mine workers have free housing, medical care, and subsidized utility service, therefore they are considered only slightly vulnerable.

Traditional salt miners in N'Terer, Trarza, and Idjil in Tiris Zemmour, in contrast, are living in dramatically difficult circumstances. They earn a meager daily wage of 300 *ouguiyas* (US\$2.60), are located far from urban centers, and do not benefit from food aid. More than 60 families in the Trarza and 100 families in Tiris Zemmour are affected for a total of approximately 960 persons who are considered highly vulnerable.

### **Nomadic Pastoralists**

This is the first year that FEWS/Mauritania has considered this socioeconomic group. As described in earlier cables, nomadic pastoralists have descended from all parts of the country to the southern *wilayas* with their animals in search of pasture land. Many, finding severely depleted pastures in the south,

difficulty crossing with their animals into Senegal, and at the same time being far from family and traditional support systems, are increasingly vulnerable to food insecurity. FEWS/Mauritania estimates that roughly half of the country's transhumant (nomadic pastoralists) population (said to be 12 percent of the population, or roughly 260,000 persons) are now in southeastern Trarza, the southern parts of Brakna and Gorgol, and the south and west of Guidimaka. This group is considered to be highly vulnerable and are estimated to number 130,000. The other estimated 130,000 nomadic pastoralists in the eastern part of the country in Hodh ech Chargui and Hodh el Gharbi, are considered to be only slightly vulnerable because of better pasture in the two *wilayas*, and, increased access to pasture in Mali.

### **Malian Refugees**

The numbers of refugees in the southeast of the country are estimated by UNHCR to be 42,000 including 16,000 in Bassikounou, 13,000 in Fassala-Néré, and 10,000 in Aghor. Three thousand or more are uncounted and remain outside the camps. The situation is stable with adequate food and water supplies and newly established schools and health centers in place. No epidemics have been observed recently. There is a dispensary, feeding centers, and a bore hole well in each camp. Medical and veterinary care is also available. Nevertheless, because the populations are totally dependent on external assistance and are displaced from their homes, FEWS/Mauritania considers them to be moderately vulnerable.

### **Farmers Along the Senegal River**

Compared to last year, when the estimated 308,000 agriculturalists of the Senegal River Valley were judged to be moderately vulnerable, their situation has improved this year thanks to increased cultivation of traditional cereal crops (corn, millet, sorghum) in irrigated perimeters, as well as a marked increase in market gardening. Gardeners still face problems related to conservation and commercialization of their produce but, at the very least, they do have vegetables for personal consumption. Finally, as a result of decreased military surveillance of the river, residents have been able to fish and cross into Senegal more freely.

Nevertheless, the residents of the Senegal River Valley are still considered moderately vulnerable due to: poor *dieri* (rain-fed) and *walo* harvests, lack of or tardy agricultural loans, an extraordinary concentration of animals, especially camels (a constant threat to crops), the ongoing military presence, and the continued absence of a large number of the Valley's productive population (deportees and members of the rural exodus).

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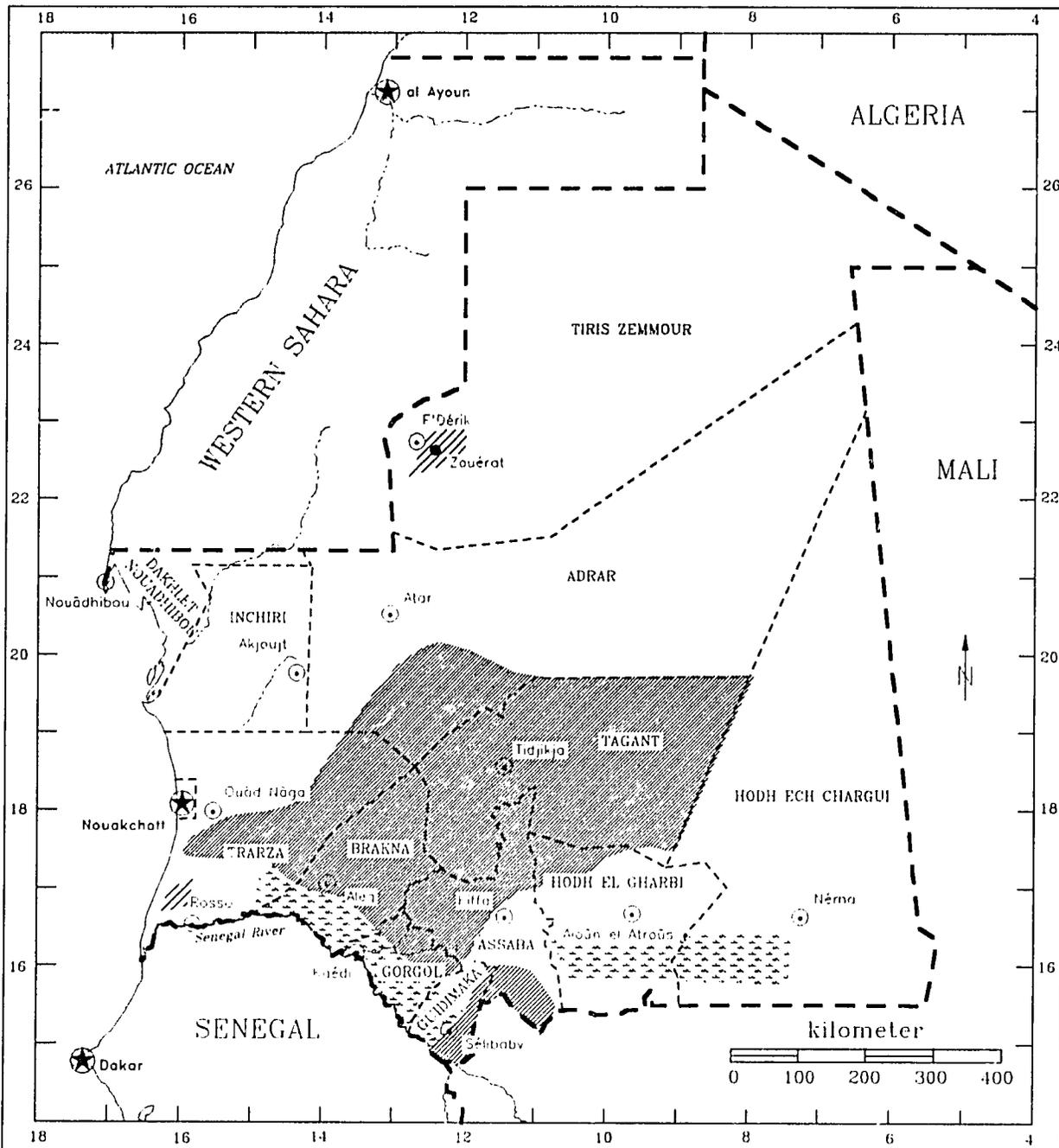
## **Conclusion**

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A third consecutive poor harvest has exacerbated the cereal deficit in the country (see Table 2). The present situation in Tagant and Adrar is extraordinary and FEWS/Mauritania estimates that 68,000 people are extremely vulnerable (see Map 3).

Famine-related deaths, according to FEWS/Mauritania interviews with residents of Tagant, as well as with the governor of the *wilaya*, and *hakem* of Tidjikja, occurred in the northern part of Tidjikja Moughataa.

Map 3. Mauritania: Reference Map



**M A U R I T A N I A**

**REFERENCE MAP**

- |         |                        |   |                                  |
|---------|------------------------|---|----------------------------------|
| ---     | International Boundary |  | Failed harvests, failed pastures |
| .....   | Wilaya Boundary        |  | High herd concentrations         |
| ★       | National Capital       |  | Civil insecurity                 |
| ⊙       | Wilaya Capital         |  | Salt inners                      |
| ●       | Cities and Towns       |  | Mahan refugees                   |
| - - - - | Intermittent Drainage  |   |                                  |

Source FEWS/Mauritania  
FEWS, June 1993

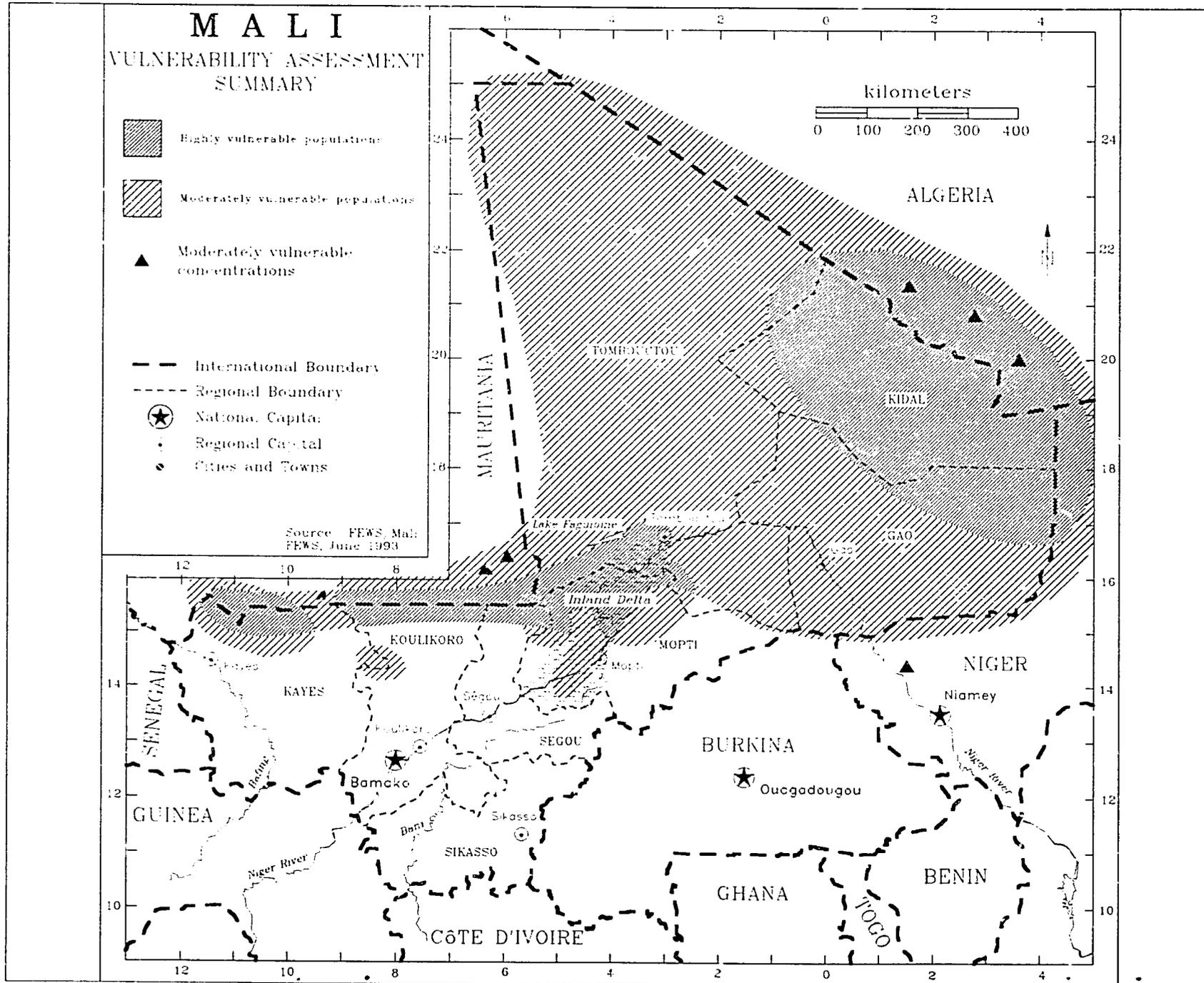
**Table 2. Mauritania: Cereal Production by Wilaya, 1989-1993**  
(MT)

Wilaya	Production 1989-90	Production 1990-91	Production 1991-92	Production 1992-93
H. Chargui	17,818	4,621	7,462	9,097
H. Gharbi	17,518	2,893	5,439	7,928
Assaba	2,929	3,004	3,281	1,907
Gorgol	12,978	17,192	15,238	11,045
Brakna	25,786	9,998	7,467	5,956
Trarza	20,393	25,838	16,720	17,411
Guidimaka	7,976	11,457	5,013	9,135
Tagant	—	—	7,003	2,333
Totals	105,398	75,003	67,623	64,812

Source: Mauritanian Agricultural Statistics Service.

The impoverished residents of Tichitt and Ghoudiya are at highest risk. Prompt attention to their situation is necessary to help them survive the difficult pre-harvest period that will extend at least until the month of September.

Map 4. Mali: Vulnerability Assessment Summary



# Over 800,000 Moderately to Highly Vulnerable in Northern Mali

Report released by USAID/Mali May 29, 1993

## Summary

*Approximately 300,600 farmers are moderately to highly vulnerable due to poor harvests. Another 292,500 agropastoralists and 220,500 pastoralists are moderately to highly vulnerable due to losses from cattle thefts and poor pasture and crop conditions. Over 1,500 refugees have recently returned from Algeria and are in immediate need of food and material assistance.*

*Vulnerability has been adversely affected by poor crop and pasture conditions and civil unrest, though stable prices and terms of trade have helped to ameliorate these conditions.*

*The security situation in the north has been stable for the past several months allowing for the initial steps toward the resumption of normal production and market activities.*

*Currently, adequate national security stocks exist to meet immediate needs and initial needs in the future. Plans are underway to provide assistance to the highly vulnerable populations.*

## Methodology

Mali's rural population was evaluated based on factors affecting the availability of and access to food and their general well-being. The population was differentiated among six production classes and factors leading to vulnerability were weighted according to the importance of a given factor relative to its contribution to income at the household level, among age and sex categories.

Seven qualitative factors were considered. Access factors include the dry crop production season, livestock production, and irrigated crop production. Access (or supply factors) include millet and livestock price dynamics. Well-being (or outcome) factors include morbidity from measles and meningitis, civil unrest (displacements due to violence and cattle thefts), and long term vulnerability.

These seven factors were each constructed of a set of variables. Access factors depend on vegetative quality as represented by normalized differential vegetation indices (NDVI—see inside back cover for an explanation of NDVI), river levels, and production. Supply factors depend on price dynamics during the preceding year as compared to the preceding four years. Well-being factors are more varied in their measurement, but reflect indices of magnitude.

The seven factors were calculated and weighted according to the relative importance to household income for each production class. The resulting indices were then summed according to their

respective production class. The population under analysis was divided into six classes consisting of pure pastoralists, agropastoralists, dryland farmers, irrigated and recessional land farmers, fishing populations (including those who practice some farming), and refugee populations.

The analysis used a wide variety of data which lent itself to the use of a geographic information system (GIS). Analyzed data were registered on spatial layers. These layers were then overlaid using mathematical transformations to result in an estimate of total vulnerability for each production classification. The resulting maps were then evaluated using expert knowledge of the underlying social and economic conditions for each area and a final classification was made of local vulnerability. Population figures were derived using census data and local reports.

## Analysis of Socioeconomic Groups

### Irrigated and Recessional Land Farmers

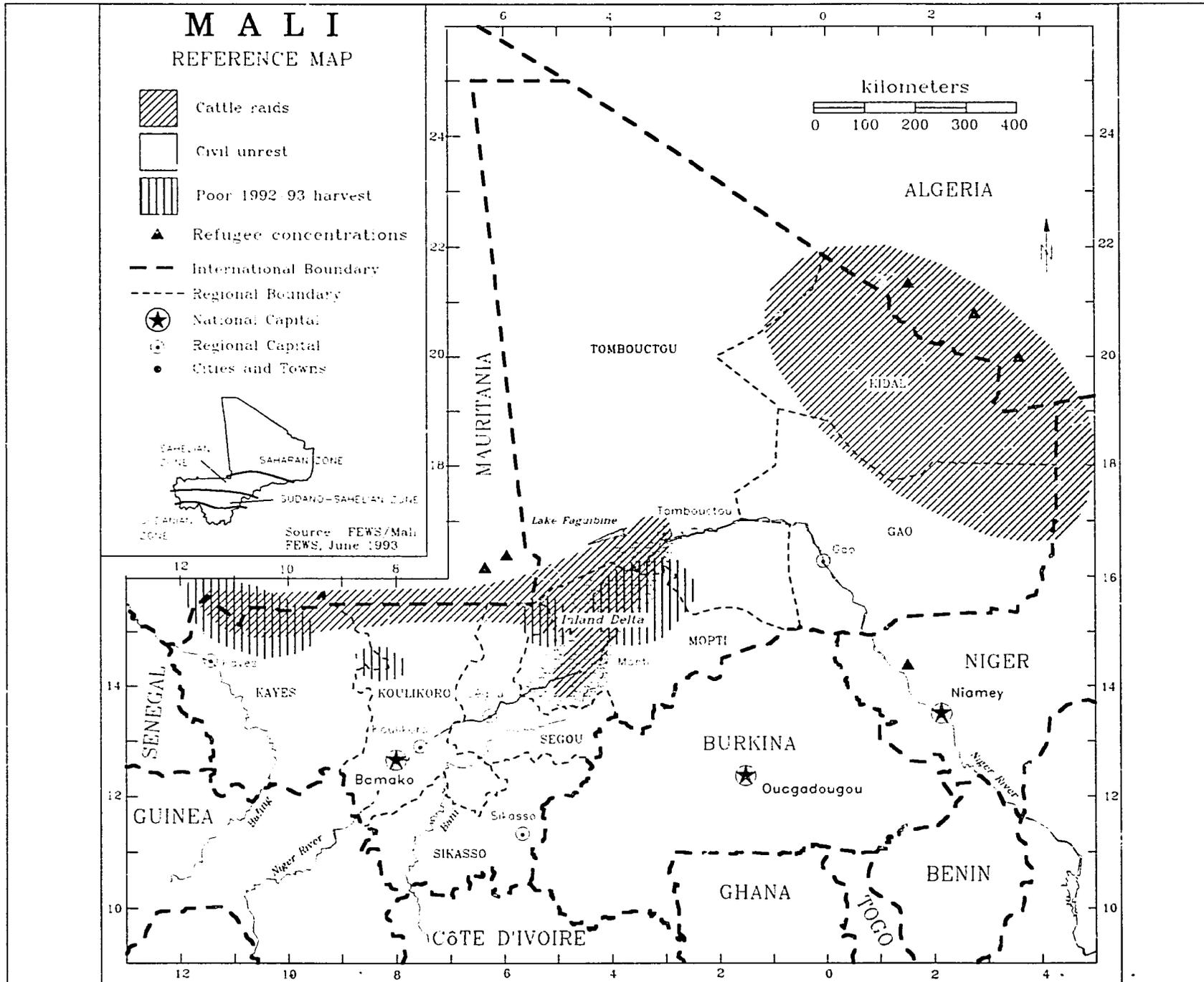
Farmers on irrigated and recessional lands normally constitute the lowest risk population. The same remains true entering the current agricultural season though, several factors have contributed to a slight increase in vulnerability. The seasonal flood was late and of short duration in the Inland Delta of the Niger, resulting in reduced harvests. The reduction in harvest was countered by high levels of remaining stocks. These high stock levels correspond to low prices for rice, slightly reducing purchasing power. Further, civil unrest in the north has caused some difficulty in marketing production, particularly around Gao and Timbuktu.

The vulnerability of most of this population group remains slight. Populations in the areas suffering from the most civil unrest are moderately vulnerable. They have suffered a decrease in their liquid assets while continuing normal production practices. This is particularly true of populations around Raz El Ma, Goundam, and Djebok, affecting approximately 5,000 households.

### Dryland Agriculturists

Farmers on drylands are normally the most vulnerable population in Mali. Due to relatively low levels of diversification and dependence upon highly variable climatic conditions, they often suffer severe setbacks due to drought and pest damage. The 1992/93 agricultural season was less than optimal. Current estimates of total production for each region of Mali are above

Map 5. Mali: Reference Map



average, but millet, sorghum, maize, and *fonio* production estimates are below average. These crops account for 40 percent of household income for dryland farmers. They are often forced to sell their harvest early and then purchase cereals on the market before the new harvest comes in. Fortunately, terms of trade for small livestock and cereals are favorable and household stocks remain high.

The vulnerability for dryland farmers is slight for most of the country. Harvests were poorest along the northern border with Mauritania and south of the Niger River in Mopti Region. These mediocre harvests have made populations within this area moderately vulnerable. The mediocre harvests combined with civil unrest and cattle raids (livestock account for 10 percent of household income in this group) have also raised the vulnerability of populations north of the Niger in Niono, Goundam, Tombouctou, and Niafunké *cercles* as well as throughout the cropping areas of Gao and Kidal regions (see Map 5). Approximately 300,600 people are affected. Another 100,000 are highly vulnerable and will receive food distributions.

### Agropastoralists

Agropastoralists are highly dependent upon climatic conditions for their livelihoods. They have diversified production between livestock and crops. When climatic conditions are unfavorable, they may send their herds to areas where conditions are better thus diminishing their losses to a greater extent than sedentary farmers. Though much of the area where agropastoralism is practiced suffered periods of drought during the crop year, residents benefited from satisfactory levels of household stocks and favorable terms of trade (livestock for cereal).

Most of the agropastoral population is slightly vulnerable. High levels of civil unrest, cattle raids, and damaged crops (due to stray cattle), have increased vulnerability moderately for populations in western Diema, Yelimané, Dire, Niafunké, Tenenkou, northern Douentza, northern Nara, eastern Niono, Goundam, Tombouctou, Gao, Bourem, and Menaka *cercles*. An estimated 192,500 people are moderately vulnerable and 100,000 are highly vulnerable (receiving food distributions). In addition high levels of morbidity from measles and meningitis have been noted in western Diema, particularly among the young.

### Pastoralists

Pastoralists are also highly dependent upon climatic conditions, use their mobility to take advantage of better conditions elsewhere. Pastoralists are found generally above the fifteenth parallel and in the east of Mali. They are generally only slightly vulnerable. When they lose their mobility, however, they become increasingly vulnerable. Though range and pasture conditions were favorable throughout the country, civil unrest caused them to concentrate in and around wet season grazing areas. Frequent cattle raids, particularly in northern Kayes, Ségou, Mopti, and southern Tombouctou regions resulted in large losses of livestock. During the past year, several hundred thousand head of livestock have been stolen. Fortunately, terms of trade remain satisfactory (see Figure 1).

There are populations of nearly 130,000 moderately vulnerable and 90,500 highly vulnerable in Nampala, Douentza, Coundam, Niafunké, Gao, Ansongo, Menaka, and all of the Kidal *cercles*.

### Fisherfolk

Fishing is an important activity for all of the populations living near rivers. Income from fishing accounts for 10 percent of total income for agriculturists and 60 percent for fisher populations. They have suffered decreasing catches for the past ten years and struggle with large debt burdens on equipment loans. The annual flood during the past year was again inadequate, leading to further reduced catches. Nevertheless, fish prices remain high and their vulnerability is slight.

### Refugees

Despite the signing of a peace accord over a year ago there are approximately 70,000 people, mainly Tuareg and Maurs, seeking refuge outside of Mali. Recently, the last rebel leader agreed to abide by the accords. Following this a small but significant portion of refugees returned. As of April 30, 500 returned to eastern Mali and now reside in Kidal, Abeibara, Tinzamali, Aréfis, Gao, Menaka and Agouni. Several hundred have returned from Mauritania and Burkina as well. Another 1,100 refugees have expressed their desire for immediate return from Algeria.

Many refugees lost all their belongings and will require immediate assistance to resume their livelihoods. Many who sought refuge during the past two years and have been highly vulnerable ever since. They have little or no resources and are returning during the *soudure* (hungry period), so they are considered highly to extremely vulnerable. It is also likely that if these groups find conditions suitable in Mali, a substantial portion of the remaining refugees will return during the rainy season.

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## Conclusions

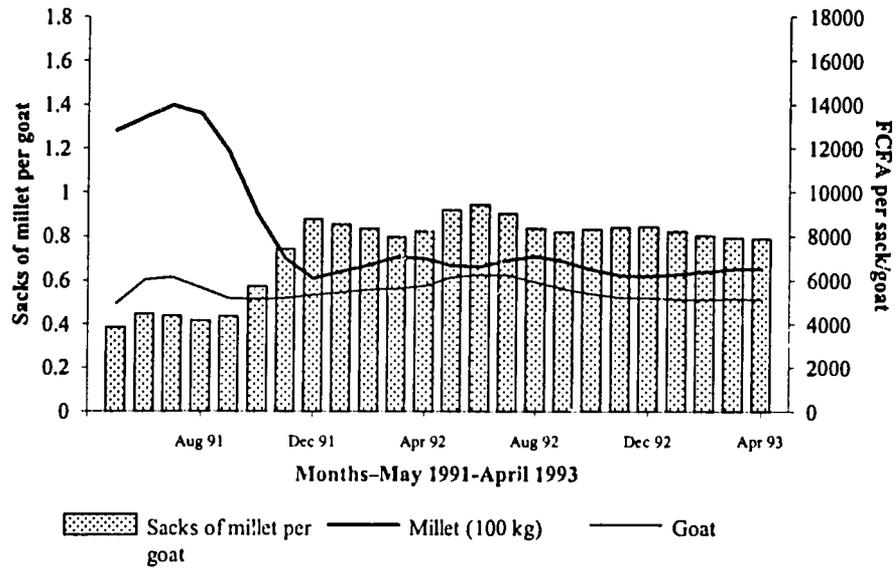
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Current vulnerability levels will depend largely on the dynamics of the upcoming rainy season. Moderately and slightly vulnerable populations, particularly those engaging in some cropping, will need a moderate to good harvest in order to maintain current food stock levels. A good harvest will be necessary for the highly vulnerable populations to recover their stocks (see Table 3). Those suffering from civil unrest require the maintenance of current security levels and reductions in cattle thefts.

During the agricultural year, rains and vegetation levels will be monitored throughout the country. Crop production and price levels will indicate the changing levels of food security for the agricultural and pastoral populations. Fishing populations will be evaluated based on the dynamics of the seasonal flood of the Malian river system. Continued contacts with private voluntary and international organizations will provide information on the returning refugee population.

In all cases, plans are made or in process to meet emergency needs. The Republic of Mali holds nearly 61,000 metric tons of

Figure 1. Mali: Terms of Trade Millet/Goat



millet and sorghum in national security stocks. This should be sufficient to meet immediate and future distribution needs.

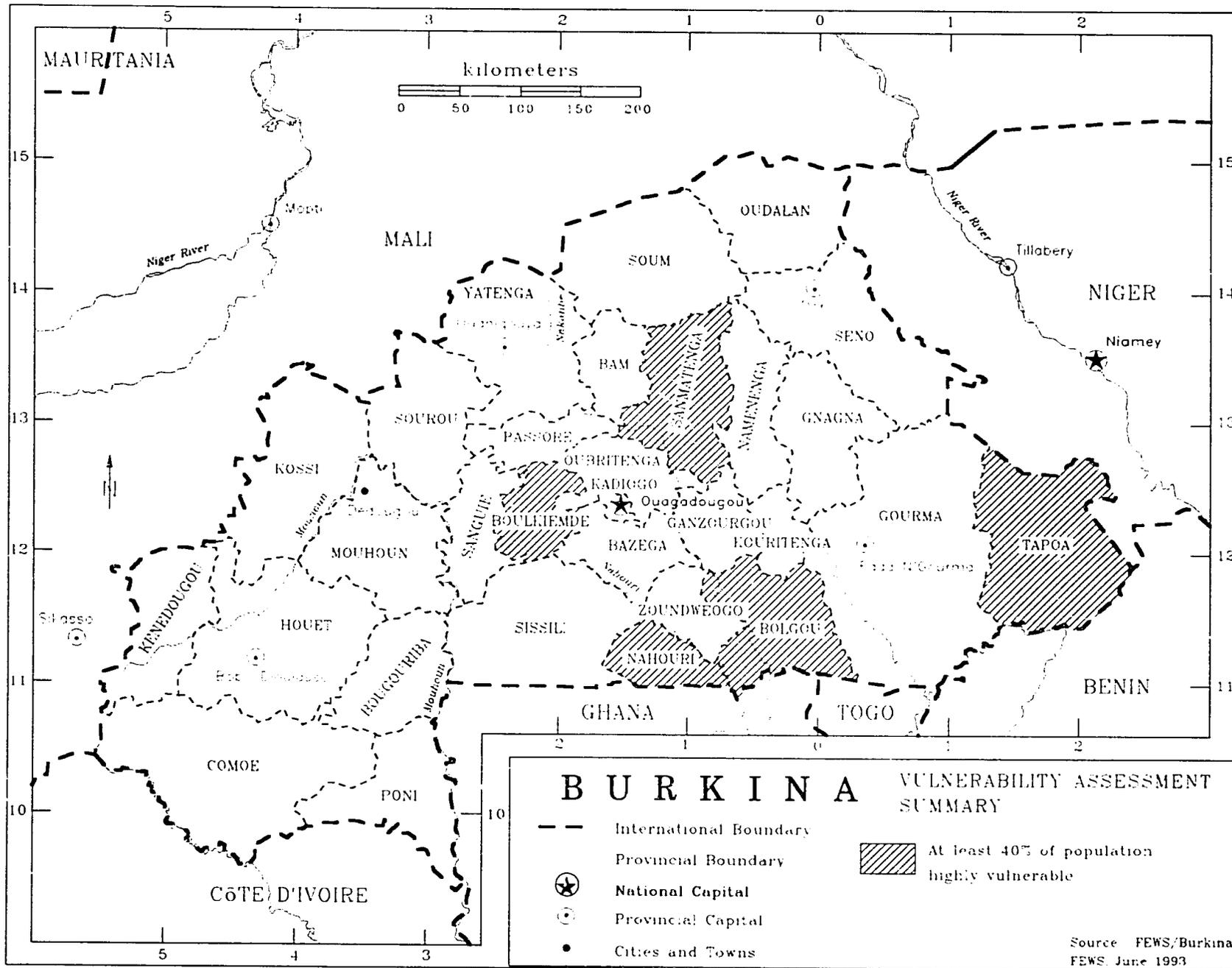
Additional material assistance in the form of other foodstuffs, shelters, as well as resources to restart production activities will be necessary for the returning refugee populations.

**Table 3. Mali: Moderate and Highly Vulnerable Population Groups**

Region	Group population	Major vulnerability factors
<b>Kayes</b>		
Dryland farmers	120,000	poor harvest cattle raids
Agropastoralists	135,000	
Pastoralists	76,000	
Total vulnerable	331,000	
<b>Koulikoro</b>		
Dryland farmers	45,000	poor harvest cattle raids
Agropastoralists	21,000	
Pastoralists	13,000	
Total vulnerable	79,000	
<b>Ségou</b>		
Dryland farmers	15,000	poor harvest cattle raids insecurity
Agropastoralists	15,000	
Pastoralists	8,000	
Total vulnerable	38,000	
<b>Mopti</b>		
Dryland farmers	90,000	poor harvest cattle raids insecurity
Agropastoralists	61,000	
Pastoralists	42,500	
Total vulnerable	193,500	
<b>Tombouctou</b>		
Dryland farmers	20,600	insecurity cattle raids poor harvest
Agropastoralists	20,000	
Pastoralists	15,000	
Total vulnerable	50,600	
<b>Gao &amp; Kidal</b>		
Dryland farmers	10,000	insecurity cattle raids
Agropastoralists	40,500	
Pastoralists	65,000	
Returned refugees	1,500	
Total vulnerable	117,000	
<b>Totals</b>		
Dryland farmers		
Agropastoralists	292,500	
Pastoralists	220,500	
Returned refugees	1,500	
Total vulnerable	814,100	

Note: Population figures derived from SAP reports.

Map 6. Burkina: Vulnerability Assessment Summary



# Second Consecutive Year of Good Cereal Production Reduces Vulnerability

Report released by USAID/Burkina May 13, 1993

## Summary

*National cereal production was excellent, however, localized crop failures and limited opportunities for other income have created economically stressed areas and populations in ten provinces. In addition, Sanmatenga, Boulgou, Nahouri, Tapoa, and Boulkiemde provinces have suffered below average cereal production for the last three years. Limited sources of household income in other provinces have resulted in 450,000 smallholder agriculturists being highly vulnerable. Another 800,000 people are moderately vulnerable in Burkina. There are no extremely vulnerable people in 1993.*

## Methodology

The 1993 Vulnerability Assessment evaluated long-term components of vulnerability to famine by characterizing the level of development and general economic situation at the provincial level (Burkina has 30 provinces). The assessment combined indicators of economic shocks, including the 1992/93 cereal balance and pasture quality, with long-term components, to identify provinces in which economic resources are limited. FEWS/Burkina identified four socioeconomic groups (smallholder agriculturists, agropastoralists, largeholder agriculturists and wage earners/artisans). The effects of economic stress, cereal production, and pasture quality were used to assess vulnerability levels of the two most affected groups (smallholder agriculturists and agropastoralists).

The assessment made four key assumptions:

- economic insecurity increases vulnerability to famine;
- low levels of development increase vulnerability to famine;
- household income and purchasing power in a province are related to the general economic situation of that province; and
- agricultural production (both crops and livestock) provides the greatest proportion of household income for the most vulnerable socioeconomic groups.

In this Vulnerability Assessment, each province was ranked according to the relative value of six indicators of general level of development, seven indicators for sources of household income and three indicators of economic shocks. The general development, household income and economic shocks sets of indicators were weighted equally for determining total vulnerability.

## Vulnerability of Socioeconomic Groups

### Smallholder Agriculturists (SHAs)

SHA households make up 49 percent of the total population of Burkina. They depend on their own cereal production for the bulk of their annual food supply. Livestock and cash crops contribute only a small portion to household income. SHAs may engage in off-season market gardening, gold mining or seasonal wage labor if the opportunities exist.

Due to recent below average cereal production, SHAs in Sanmatenga, Boulgou, Nahouri, Tapoa, and Boulkiemde provinces have had to purchase most of their cereals, depleting household resources. There are approximately 300,000 SHAs who are highly vulnerable in these provinces, where there are few other sources of income to replace lost cereal marketing income.

On the whole, the marketed cereal surplus from the 1992/93 season was high because of excellent cereal production. This resulted in continued low cereal prices during the harvest period (October-December) especially in provinces where cereal production was above average in 1992/93 (12 of Burkina's 30 provinces experienced per capita production more than 1.5 standard deviations above average).

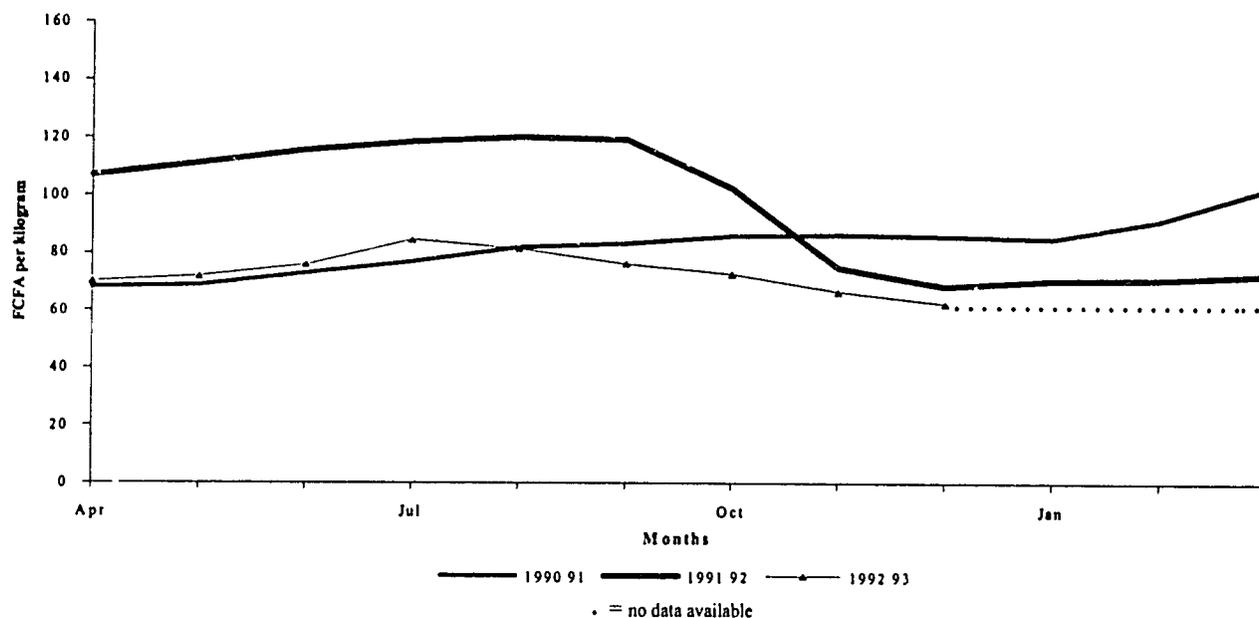
The low prices continued into 1993 (see Figure 2). These low prices are hurting SHAs in the northern provinces where sales of surplus cereal at a good price help offset the household income lost during 1990-92. Low to average prices may reduce vulnerability of SHAs in provinces that had below average production this year and in past years. Cereal prices will rise significantly only if the 1993 production season starts looking bad.

### Agropastoralists (AGPs)

AGPs make up 16 percent of the population. They have more diversified sources of household income than SHAs but are more dependent on pasture quality and the market prices of cereals and livestock. Pasture quality was below average in six of the poorer provinces of southern and eastern Burkina this year. For this reason 97,000 AGPs are highly vulnerable and another 146,000 AGPs are moderately vulnerable. They have had to migrate to greener pastures in northern and western Burkina, while liquidating livestock.

Pastures in northern Burkina were excellent in 1992/93 which further reduced the vulnerability of northern AGPs. However, livestock prices have been very weak in 1993 due to a loss of

**Figure 2. Burkina: Nominal Consumer Millet Prices 4/90-3/93**  
(average of 8 major markets)



Ghanaian markets. Despite low cereal prices, poor animal prices have reduced terms of trade between livestock and cereal. Vulnerability levels for these groups are summarized in Appendix 1.

#### Wage Earners and Artisans

This group includes public and private employees, mechanics, weavers, metalworkers, and all other service-oriented occupations. They make up 13 percent of the population. Most people in this group are associated with urban areas (settlements with a population of more than 10,000). There have not been any changes in the Burkina economy that would increase their vulnerability. They remain slightly vulnerable. The urban poor are a subset of this group. FEWS/Burkina estimate the urban poor to be about 10 percent of the urban population of each province. Because of improvements in the economy of urban areas, the vulnerability of the urban poor has decreased. These 172,000 people are moderately vulnerable.

#### Largeholder Agriculturists (LHAs)

LHA households contain 18 percent of the total population of Burkina. They have more diversified cropping possibilities owing to their larger farms and favorable locations (southwestern Burkina, or the best land in other parts of the country). They also engage in cash cropping of cotton and cereals. Because of their diversified income sources and high level of annual cereal production these households more easily adjust to occasional crop failures. They are only slightly vulnerable in 1993 because they benefited most from the excellent 1992/93 cereal production year.

### Conclusion

The ten most economically stressed provinces in Burkina are Oudalan, Sanmatenga, Oubritenga, Gnagna, Gourma, Tapoa, Boulgou, Zoundweogo, Nahouri and Sissili. These provinces

have a low level of development and limited access to sources of household income other than cereal production. These provinces have had below average cereal production (the average covers production for 1984-92) for the last two to three years and have poor pastures this year. They contain 450,000 highly vulnerable people.

These provinces have high proportions of smallholder agriculturists and agropastoralists, the groups most affected by a poor agricultural season. Above average cereal production in 1992/93 is needed to begin the process of rebuilding household wealth. Unfortunately, very few of these provinces are being monitored by the GOBF (Government of Burkina Faso) Zones at Risk project, Save The Children, or the UK/OXFAM Famine Early Warning System. However, the National and Provincial Drought Commissions have been assessing food aid needs by frequent field trips.

Other monitoring efforts will be focused on SHAs. Using its traditional tools of NDVI data and METEOSAT rainfall estimates, FEWS/Burkina will estimate the quality of the planting season, planting dates, and the quality of pastures as the rainy season develops. The GOBF National Drought Commission, Meteorological Service and Regional Centers for Agropastoral Production will be monitoring the evolution of the 1993/94 agricultural season using point rainfall data and surveys to estimate area planted and yield. The National Cereals Marketing Board/Market Information System will follow cereal prices and flows. As was the case in 1990/91, increasing cereal prices in November and December of 1993 would signal a poor production season.

A good crop year for the 1992/93 production season, however, has reduced the vulnerability of people living in northern Burkina and food-aid for populations in this area should not be required in 1993.

## Appendix 1. Burkina: Vulnerability Assessment Methodology

### Introduction

Each province was ranked according to the relative value of six indicators of general level of development, seven indicators for sources of household income and three indicators of economic shocks. The 16 indicators in these three groups attempt to capture the temporal aspect of famine vulnerability and famine development. The general development, household income and economic shocks sets of indicators were weighted equally for determining total vulnerability. The final rankings of vulnerability to food insecurity from the three groups are in Table A1.2. The most vulnerable groups in the top 10 provinces on this list require close surveillance in the coming year.

Following the ranking of provinces, socioeconomic groups within each province were identified using demographic data, then levels of vulnerability were assigned to each group based on the summary rankings. Finally, the province populations in each socioeconomic group were determined, and from that, the number of moderately and highly vulnerable people in each province was calculated (see Table A1.3).

### Groups and Corresponding Indicators

#### General level of development

The indicators of general overall development within a province are: the *crude death rate*, *infant mortality rate*, *literacy rate*, *school attendance* of 7-13 year-olds (INSD, 1989), *percent births attended by a professional* (MOH/DEP, 1991), and percent of the population living within 5 km of a health center or within 2 km of a good road (*access to health care*).

These are generally considered to be indicators of the level of economic development and access to development resources. Provinces ranked low are less likely to have the resources to respond to, and are therefore more vulnerable to, periodic economic stress. In general, the northern Sahelian provinces rank low and the southern and urban provinces rank high. The rankings of all indicators are summarized as the average rank. The average rank was converted into the Millet Equivalent (MEQ) Index (MEQs/per capita) so that these long-term indicators could be compared with the indicators of access to economic resources and economic shocks. Each rank was given a value of 10 MEQs/capita.

#### Economic access

The total value of each major income source (see Table A1.1) was converted to MEQs and then disaggregated to the provincial level. The MEQs were divided by the estimated provincial population of June 1993 (INSD, 1989) and the MEQs per capita were summed. Provinces in the southwest have higher incomes from crop production, wages, cotton and gardens.

*Average annual cereal production* (1984-92) contributes 20 percent to the national economy. The contribution of this source of income was distributed to the provinces using agricultural

Table A1.1 Burkina: Major Sources of Household Income

Source	Value in FCFA total (millions)	Millet equivalents MT@ 40,000 FCFA/MT	Percent of total
Cereal production (84-92)	61,423	1,535,572	20
Wages	109,400	2,735,000	35
Remittances	45,000	1,125,000	14
Livestock	40,000	1,000,000	13
Other crops (92)	38,900	972,500	12
Gold mining	11,500	287,500	4
Market gardens (92)	6,793	169,825	2
Total	313,016	7,825,397	100

statistics from MAE/DSAP. The results give a good indication of the importance of cereal production to the households in that province.

*Wages* come from three sectors: Public (34,000 million FCFA), Military (20,700 million FCFA) (*Jeune Afrique Economie*, 1992) and Private. FEWS/Burkina estimated the Private sector contribution as equal to that of the Public and Military sector combined. The total of 109,400 million FCFA is 2,735,000 MEQs. This household income source was distributed to provinces as a function of the percent population in towns of more than 10,000 people and, in the case of Boulkiemdé and Bazèga, as distance to Ouagadougou.

Burkina has from 2 to 3 million people working in Côte d'Ivoire. They remit money to families living in Burkina. The value of these *remittances* is estimated to be about 45,000 million FCFA (*Jeune Afrique Economie*, 1992) or 1.125 million MEQs. These MEQs were distributed to provinces as a function of the percent of the population out of the country in 1985.

*Livestock production* contributes about half of what rainfed agriculture contributes to the national economy (World Bank, 1989). FEWS/Burkina estimated the contribution of livestock at 40,000 million FCFA or 1 million MEQs. FEWS/Burkina distributed this source of income to provinces as a function of the total number of cows, sheep and goats per capita in each province (MAE/DSAP, 1990).

The value of *other crops* were found by multiplying the 1992 production in MT times the value to the producer for each crop and totaling the value of production for all the crops for each province. Values to the producer of other crops are as follows (in FCFA/MT): cotton 30,000, peanuts 100,000, *vouandzou* 200,000, cowpea 120,000, *igname* 116,000 and *patate* 148,000.

The quantity of *artisanal gold production* for each province was the official figure from GOBF gold purchases provided by *Comptoir Burkinabè Métaux Précieux* (CBMP) for 1990. Because migration to gold mines is a significant factor, this source of income was distributed to provinces as a function of the distance to the provinces where gold is found. Provinces with

large production and provinces close to areas of production were given a larger share. FEWS gave a value of 2,500 FCFA per gram to the gold.

FEWS/Burkina valued market gardens at 2,000,000 FCFA per hectare. Data on the distribution of gardens come from MAE/DSAP. Products include potatoes, onions, peppers, cabbage, etc.

### Economic shocks

Large scale economic shocks in the Sahel are caused by drought, agricultural pests, disruptions of remittances and civil unrest. In Burkina, there is a high probability of drought and pests but a low probability of disruptions of remittances and civil unrest. (The devaluation of the FCFA will have some impact on remittances from, and migration to, Côte d'Ivoire, but the full extent of this impact is not fully understood.) The most vulnerable socioeconomic groups depend on annual cereal production and pasture quality. Thus, this analysis looks only at these two indicators of economic shocks.

This assessment sees *cereal production* as a source of household income, not merely as a source of food (Riely, 1992). This reflects the FEWS orientation toward the accessibility of food (can it be purchased?), not its availability (how much is there?). Thus, the importance of the cereal production balance for any year is its difference from average or difference from what was expected.

In addition to the annual production balance for the current year this assessment uses the differences from average for the past three years. Although production in the current year is most important for early warning, famines are slow onset disasters and a view over several years helps identify potential problem areas.

The other major component of short-term vulnerability is *pasture quality*. To assess this component, the average NDVI values for the nine dekads (10-day periods) of July-September were totaled for each province and were compared with the average total (in this case, 1984-92). Total of the average NDVI values for July-September gives an indication of biomass production for the year. The values were converted to a MEQ index the following way:

- NDVI very much below average -20 MEQ
- NDVI slightly below average -10 MEQ
- Average 0 MEQ
- Above Average 0 MEQ

### Socioeconomic Groups

In Burkina, the important socioeconomic groups are wage earners/artisans, agropastoralists, largeholder agriculturists and smallholder agriculturists. The number of people in each of these groups was determined in the following way:

- The number of wage earners/artisans in each province was determined as a function of the percent of the provincial population living in or near settlements of more than 10,000 people. This is 18 percent of the total population of Burkina.
- The number of agropastoralists in a province is a function of the total number of cows, sheep and goats per capita in that province. Agropastoralists make up 15 percent of the total population.
- Agriculturalists are the rest of the population.

They were divided into smallholder and largeholder agriculturalists as a function of the percent of households with less than 6 hectares and more than 6 hectares, respectively (Ministry of Agriculture, *Resultats de l'enquete permanente agricole: Campagne 10/91 1991/92*). Smallholders and largeholders are 49 and 18 percent of the total population of Burkina.

### Vulnerability Levels of the Socioeconomic Groups

The indicators show that largeholders and wage earners/artisans are only slightly vulnerable this year. Smallholder agriculturalists, who are very dependent on annual cereal production, are either highly or moderately vulnerable. Their level of vulnerability was determined as a function of per capita cereal production difference from an average for the past three years and value of other economic resources. If other economic resources were greater than 1,000 MEQs then there were only slightly vulnerable smallholders in the province. If other economic indicators were less than 1,000 MEQs, the number of standard deviations less than average cereal production was used as an index and converted to the percent of the total smallholders who were highly and moderately vulnerable. Due to the lack of data at this level, numbers of vulnerable people were arbitrarily distributed to the 2 remaining classes of vulnerability according to the following scale: 40 percent were highly, and 60 percent were moderately vulnerable.

The levels of vulnerability for agropastoralists was a function of the difference from average of maximum NDVI for 1992. If NDVI was better than average then all agropastoralists were slightly vulnerable. If it were less than average then 40 percent of the agropastoralists were highly vulnerable and 60 percent were moderately vulnerable.

Note: The complete 1993 Burkina Vulnerability Assessment Methodology is available from FEWS/Washington as an Occasional Paper.

**Table A1.2 Burkina: Summary of the Regional Domain of Vulnerability in Burkina in Millet Equivalents (MEQs)**  
(per capita)

Province	General Economic Development (MEQ index)	Economic access	Shocks	Total
Sissili	20	446	-100	366
Gnagna	-100	531	29	461
Oudalan	-130	544	134	549
Tapoa	-10	607	-38	559
Nahouri	-30	682	-56	596
Boulgou	30	753	-154	630
Gounna	-50	646	36	632
Oubritenga	-40	602	75	637
Sanmatenga	-75	778	-47	655
Zoundwéogo	-75	653	93	671
Soum	-120	613	196	689
Namentenga	-110	655	179	724
Yatenga	-60	763	33	735
Sanguié	0	783	-42	740
Sourou	65	553	127	745
Boulkiemdé	65	763	-58	769
Séno	-140	675	239	774
Ganzourgou	-90	816	81	807
Bazèga	50	660	143	853
Mouhoun	115	657	82	854
Passoré	10	773	168	951
Poni	-20	856	117	953
Bougouriba	80	687	251	1,018
Kouritenga	0	768	254	1,021
Bam	90	762	196	1,048
Kossi	40	903	282	1,225
Kéné Dougou	100	1,043	111	1,254
Comoé	115	1,337	-30	1,422
Houét	130	1,314	17	1,461
Kadiogo	140	1,463	-6	1,597

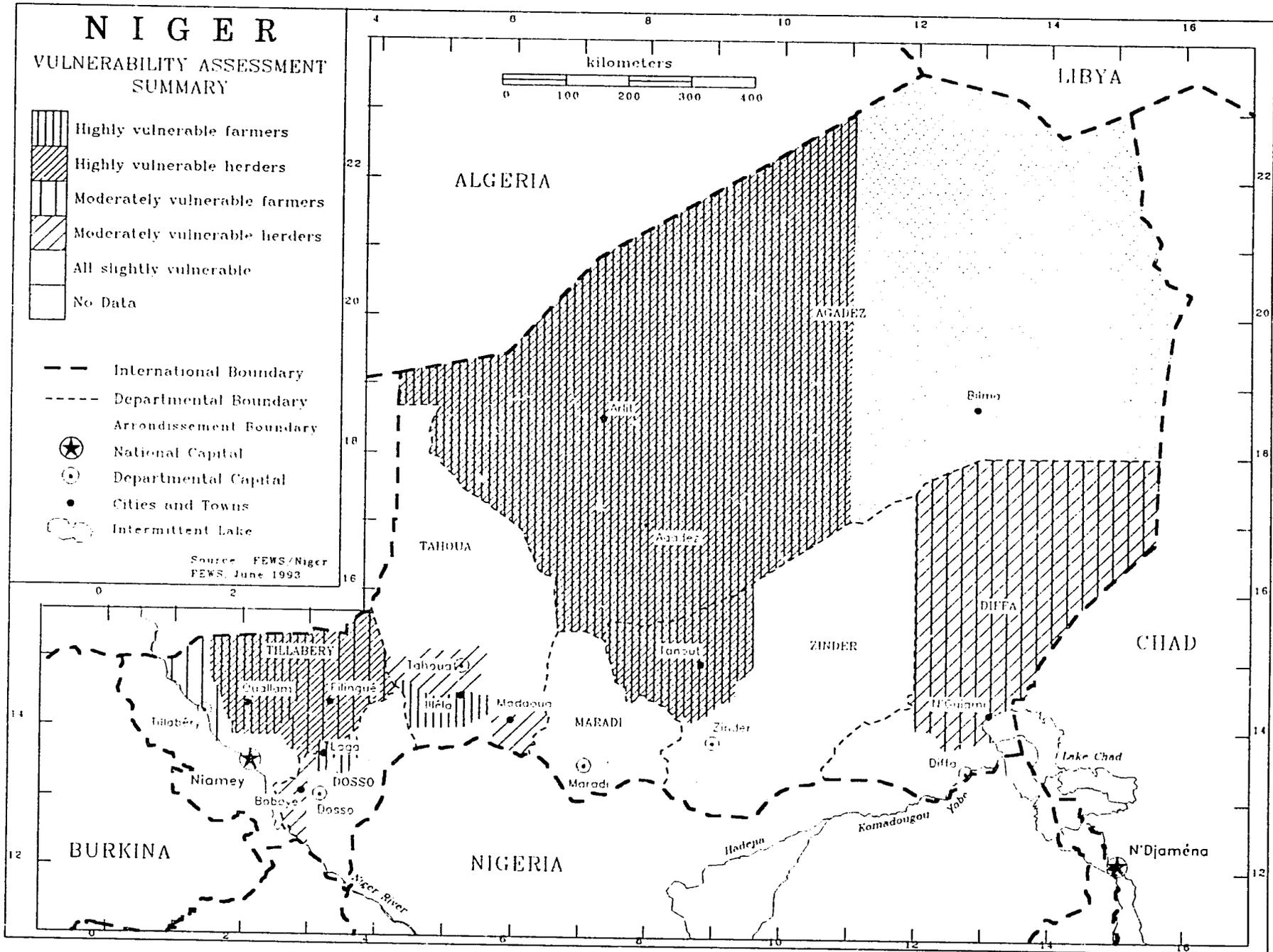
**Table A1.3 Burkina: Number of People and their Level of Vulnerability-Agropastoralist/Smallholder Agriculturists/Urban Poor-1993**

Province	Total population	Agropastoralist		Smallholder		Urban poor	Total
		High	Moderate	High	Moderate	Moderate	High
Boulgou	490,858	25,285	37,927	131,441	197,162	5,530	156,726
Sanmatenga	424,392	0	0	94,028	141,042	2,979	94,028
Boulkiemdé	411,120	0	0	53,219	79,828	5,845	53,219
Gnagna	288,384	0	0	32,773	49,159	378	32,773
Sissili	315,880	27,476	41,214	3,432	5,148	1,414	30,908
Nahouri	127,963	5,463	8,194	22,796	34,193	1,727	28,258
Tapoa	199,921	17,589	26,383	8,720	13,080	1,981	26,309
Zoundwéogo	184,308	10,957	16,436	0	0	1,212	10,957
Poni	271,768	10,775	16,162	0	0	1,230	10,775
Sanguié	244,582	0	0	9,805	14,707	3,234	9,805
Oudalan	130,393	0	0	0	0	123	0
Kadiogo	719,309	0	0	0	0	69,066	0
Houét	768,821	0	0	0	0	39,661	0
Kossi	411,361	0	0	0	0	4,825	0
Bougouriba	254,936	0	0	0	0	346	0
Mouhoun	356,723	0	0	0	0	2,601	0
Séno	281,067	0	0	0	0	1,301	0
Namentenga	223,884	0	0	0	0	225	0
Bazèga	370,906	0	0	0	0	1,830	0
Ganzourgou	235,826	0	0	0	0	1,280	0
Soum	229,382	0	0	0	0	1,975	0
KénéDougou	170,812	0	0	0	0	1,591	0
Sourou	331,238	0	0	0	0	1,555	0
Bam	180,730	0	0	0	0	1,382	0
Gourma	370,289	0	0	0	0	2,625	0
Passoré	242,661	0	0	0	0	1,530	0
Oubritenga	342,500	0	0	0	0	1,688	0
Kouritenga	239,242	0	0	0	0	1,500	0
Yatenga	581,719	0	0	0	0	5,779	0
Comoé	314,579	0	0	0	0	6,009	0
<b>Total</b>	<b>9,715,560</b>	<b>97,544</b>	<b>146,317</b>	<b>356,213</b>	<b>534,319</b>	<b>172,422</b>	<b>453,757</b>

Map 7. Niger: Vulnerability Assessment Summary

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FEWS Vulnerability Assessment



## High Vulnerability Persists in Regional Pockets

Report released by USAID/Niger May 27, 1993

### Summary

*Going into the 1993 rainy season, the most vulnerable populations in Niger are agropastoralists and pastoralists in Tanout, Tchirozérine and Arlit arrondissements, farmers in Loga and Illéla arrondissements and the urban population of Agadez Commune. A total of approximately 601,000 people are now at least highly vulnerable to severe food insecurity.*

*High vulnerability in Tanout, Illéla, and Loga is primarily due to poor 1992/93 cereals' harvests, while Tchirozérine and Arlit have been affected by ramifications from civil strife and insecurity. A second straight poor harvest in cereal-producing Tanout and Loga arrondissements would greatly increase these populations vulnerability. Continued civil strife would also lead to higher vulnerability for populations in Agadez Department, and could cause sedentary populations to migrate in greater numbers.*

### Methodology

This assessment identifies socioeconomic groups vulnerable to food insecurity at the onset of the 1993/94 agricultural season. Niger's three major socioeconomic groups are farmers/agropastoralists, pastoralists and urban dwellers. Until this year, only farmers and pastoralists, which make up 82 percent of the population, were covered in Niger vulnerability assessments. For this assessment a component was added to the Niger vulnerability assessment methodology for evaluating the relative vulnerability of urban populations.

The recently revised Niger vulnerability assessment methodology employs two ranking systems of vulnerability for populations at the lowest geographical unit for which comprehensive data exists. In Niger, these units are the arrondissements, or third-level administrative units, and the communes, which comprise the territory of major urban areas.

The first ranking employed is a determination of chronic vulnerability that compares the relative value of average income, and the results of previous vulnerability assessments. The second ranking is a determination of current vulnerability. This is accomplished by assessing the change in income during the current year from average income. Both rankings are composed of sums of weighted estimations of the value of different income sources (i.e., different types of crop production, livestock production and migration or wage income).

Relative levels of current vulnerability are identified based on a comparison of the chronic and current vulnerability

income rankings, consideration of changes in malnutrition rates during the current year from those of the previous year, and qualitative data from recent field reports. The results of these arrondissement and commune-level assessments are discussed below. Table 4 provides a summary of the numbers of moderately and highly vulnerable populations in Niger by socioeconomic group and location.

### Analysis of Socioeconomic Groups

#### Farmers and Agropastoralists

This assessment of farming groups consists of sedentary, subsistence farmers and more recently sedentarized agropastoralists. These two groups comprise approximately 80 percent of the total population of Niger, and in the southern portion of the country, derive between 47 and 72 percent of their total income from cereal production.

All Niger departments (second administrative level), except Agadez, registered overall rainfed cereal production above the 1985-91 average in 1992/93. However, all departments, except Diffa, produced an average 20 percent less cereal this year than in 1991/92, and had arrondissements which experienced production at levels considerably lower than their respective averages.

#### Agropastoralists in Tanout Arrondissement

Agropastoral populations in Tanout Arrondissement were rated as being no more than slightly vulnerable in 1992, but due to extremely poor (69 percent below average) cereal production in 1992/93 and generally unfavorable terms of trade for animals, their vulnerability levels increased dramatically, and they were rated as extremely vulnerable in the 1993 Harvest Assessment. Since that assessment, 2,000 MT of emergency food aid has been distributed in the area. However, because of relatively high food prices, continuing unfavorable animal terms of trade, low buying power and the recent liquidation of assets, these populations are still at least highly vulnerable. A poor 1993/94 harvest could cause these populations to become extremely vulnerable.

#### Agropastoralists in northern Tillabéry Department

Agropastoral populations in northern areas of Ouallam and Tillabéry arrondissements were rated as no more than slightly vulnerable in 1992 due to the near record 1991/92 cereals harvest. While higher than average, the total cereals harvest in both

**Table 4. Niger: Population Vulnerability Rating**

Department/ Arrondissement/ Commune	Socioeconomic group	Vulnerability level	Affected population
Niamey Com.	urban	moderately	20,000
Tillabéry Ouallam	agropastoral pastoralist	highly highly	101,000 13,000
Tillabéry Filingué	agropastoral agropastoral pastoralist	moderately moderately highly	74,000 151,000 26,000
Dosso Boboye Loga	pastoralist farmer	moderately highly	4,000 31,000
Tahoua Illéla Tahoua Madoua	farmer pastoralist pastoralist	highly moderately moderately	78,000 3,000 7,000
Zinder Tanout	agropastoral pastoralist	highly highly	188,000 13,000
Diffa N'Guigmi	farmer pastoralist	moderately moderately	4,000 10,000
Agadez Agadez Commune Arlit	urban agropastoral pastoralist	highly highly highly	58,000 34,000 23,000
Tchirozérine	agropastoral pastoralist	highly highly	46,000 17,000
Total highly or moderately vulnerable			901,000
Total highly vulnerable			628,000
Total moderately vulnerable			273,000

arrondissements in 1992/93 met only about 80 percent of the population's consumption needs, and much larger deficits were reported in their northern portions.

There has been considerable insecurity in the northern half of Tillabéry Department, due to roving groups of bandits, which have severely disrupted income-generating activities. In addition, livestock and cash crops terms of trade with millet were 23 and 26 percent lower than average in Ouallam. Reported cases of malnutrition in the fourth quarter of 1992 were more than 12 percent higher than in 1991. As a result, approximately 74,000 agropastoralists in northern Tillabéry Arrondissement are moderately vulnerable and 101,000 in northern Ouallam Arrondissement are highly vulnerable.

Approximately 151,000 agropastoralists in Filingué Arrondissement, who were rated as moderately vulnerable in 1992, remain moderately vulnerable going into the 1993 rainy season. Because of a considerably better than average 1992/93 cereals harvest, these populations were rated as no more than slightly vulnerable in the 1993 Harvest Assessment.

Relatively high cereal prices and reduced terms of trade on animals and cash crops—the major alternative sources of revenue

for these populations—have reduced assets and elevated vulnerability in past months. A below average cereals harvest for 1993/94 could cause these populations to become highly vulnerable.

#### Agropastoralists in Diffa Department

Approximately 4,000 agropastoralists in N'Guigmi Arrondissement were rated as moderately vulnerable in 1992, and continue to be moderately vulnerable going into the 1993 rainy season. Although cereals production in 1992/93 was more than 30 percent below average for the second year in a row, few people in this largely pastoral arrondissement depend heavily upon cereal production for their livelihood. In addition, millet prices are only six percent above average and income from off-season cropping and seasonal migration is relatively high.

Agropastoral populations in Diffa Arrondissement are rated as only slightly vulnerable in this assessment because of much higher than average cereal production in 1992/93, cereal prices that are 21 percent lower than average (see Figure 3) and animal terms of trade that are 20 percent higher.

#### Agropastoralists in western Agadez Department

Agropastoralists in this Department are sedentarized pastoralists and depend chiefly on small-scale irrigated crops, livestock production and other sources of income rather than rainfed cereal production for their subsistence. Average rainfed cereal production for Tchirozérine and Arlit Arrondissements averages 14 and two kilograms per capita, per year, respectively. Accordingly, the weightings for different income components in both ranking systems were adjusted to reflect the breakdown of income sources.

Agropastoral populations in both Arlit and Tchirozérine arrondissements were rated as no more than slightly vulnerable in 1992, due primarily to low millet prices and relatively high animal to millet terms of trade. Approximately 80,000 agropastoralists in both Tchirozérine and Arlit arrondissements are highly vulnerable going into the 1993 rainy season.

Since 1992, civil strife in the area has worsened causing the closure of many projects which facilitated income generation.

**Figure 3. Niger: Cereal Price Variations in Diffa Arrondissement**

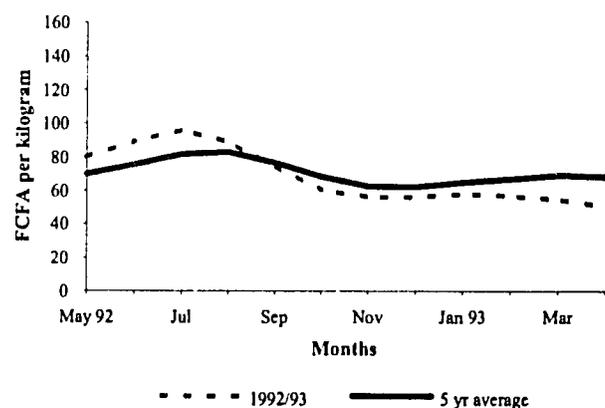
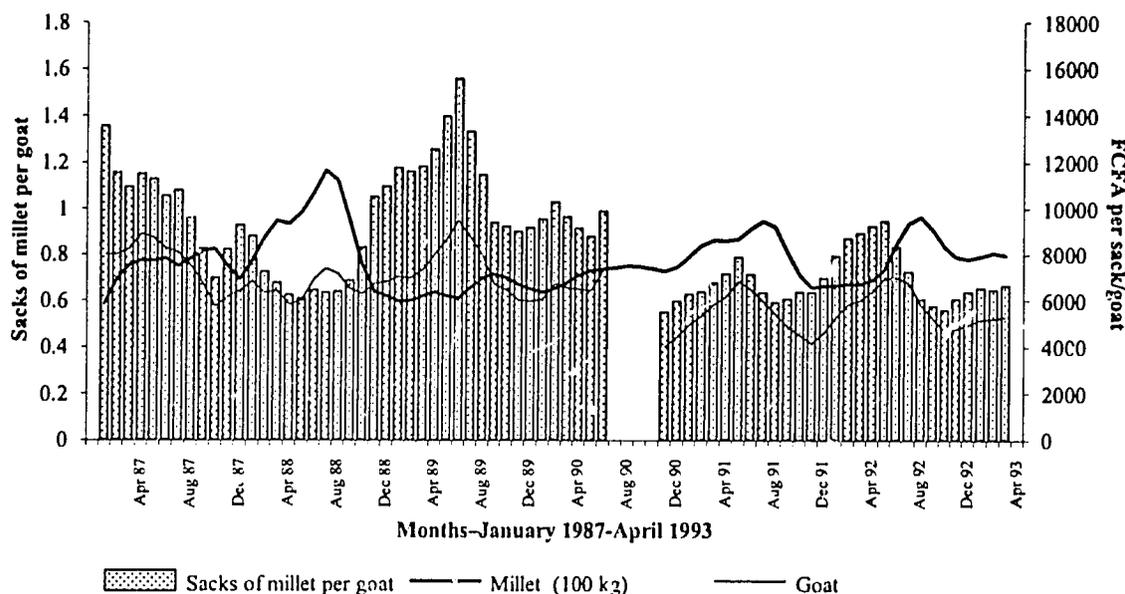


Figure 4. Niger: Terms of Trade Millet/Goats



Since Tchirozérine and Arlit produce little cereal, food stocks must be transported from southern, cereal-producing areas of Niger to meet the population's consumption needs.

Due to insecurity, food is often transported by military convoy. The high cost of the convoy transport has led to sharply elevated cereal prices (nearly 20 percent above average). Live-stock terms of trade have also been very unfavorable (39 and 31 percent below average for Arlit and Tchirozérine, respectively, (see Figure 4), off-season crop production was 163 percent below average last year, and migrant remittances have been relatively low.

#### Farmers and Agropastoralists in Dosso and Tahoua Departments

Farming populations in Loga Arrondissement were rated as no more than slightly vulnerable in 1992. However, going into the 1993 rainy season, 31,000 people are rated highly vulnerable in Loga because of a 30 percent below average 1992/93 cereal production and reduced cash crop production. Another poor poor cereals harvest in Loga could cause these populations to become extremely vulnerable.

Illéla Arrondissement farmers and agropastoralists were rated as no more than slightly vulnerable in the 1992 Vulnerability Assessment. However, a very poor (66 percent of average) cereals harvest in 1992/93 and below average off-season crop production causes 78,000 people to be highly vulnerable. Their vulnerability level could be elevated by another straight year of poor cereal production.

#### Pastoralists

Pastoralists comprise approximately 2 percent of the population of Niger, and depend on income from livestock production for their livelihood. Their major occupation is animal herding, and they

migrate with their herds to wherever there is quality pasture and easily obtainable water. All arrondissements in Niger currently have some pastoral herding activity.

In 1992 the most vulnerable pastoralists were in northern Tillabéry Department; where pastoralists in Tillabéry Arrondissement were highly vulnerable and pastoralists in Téra, Ouallam and Filingué arrondissements were moderately vulnerable. Most pastoralists in Tahoua Department (Tahoua, Bouza, Illéla, Birmi N'Konni and Tchir Tabaraden arrondissements) were also rated moderately vulnerable. Pastoralists in the arrondissements in Zinder Department, except Matameye (Gouré, Tanout, Magaria and Mirriah), and Tchirozérine, Diffa, Dosso, Dogondoutchi, Loga, Aguié and Dakoro arrondissements were moderately vulnerable.

In 1991/92, pastoralists across Niger were hurt by worsening terms of trade from the onset of the harvest. Although millet prices were considerably lower than average in 1991/92, even lower animal prices resulted in reduced rates of return for pastoralists. Millet prices were again relatively low in 1992/93, but again animal prices in many areas were considerably below average.

Pasture production in 1992/93 in many areas was rated as being generally good to excellent. Animal production income, the most heavily weighted component for pastoralists, was ranked as being well below average in nine arrondissements, Tchirozérine, Arlit, N'Guigmi, Boboye, Tahoua, Madaoua, Ouallam, Filingué and Tanout. The largest decreases were found to be in Tchirozérine, Arlit, Ouallam, Filingué and Tanout arrondissements where approximately 93,000 pastoralists were highly vulnerable going into the height of the *soudure* or "hungry period."

Decreases in animal production income are less severe and pasture estimated to be better in N'Guigmi, Boboye, Tahoua and Madaoua arrondissements where approximately 37,000 pastoralists are moderately vulnerable.

## Urban Populations

For the purposes of this assessment, urban dwellers are defined as those populations living in the three communes of Niamey and in the communes of the seven departmental seats, of Agadez, Diffa, Dosso, Maradi, Tahoua, Tillabéry and Zinder. Urban dwellers comprise approximately 18 percent of the population of Niger. The vulnerability of urban populations was evaluated based on the same two indices used for rural populations, except that the migration income component was replaced by an urban wage income component: this component was weighted as the heaviest percentage of total income.

Urban populations in Niger have generally been more affected by economic decline than their rural counterparts because their income is dependent on commercial activity and or government salary payments. Agadez has been affected by a lack of tourism and other commercial activity due to insecurity. Niamey, in particular, is affected by government salary arrears since approximately 20,000 government employees have not been paid in 6 months. Although there are most probably more vulnerable populations in Niamey, government employees are easily quantified. As a result, at least 20,000 residents of Niamey and their families are rated moderately vulnerable.

Due to the lack of commercial activity in Agadez, buying power is extremely low. Food prices are 18 percent higher than normal, livestock terms of trade are down 31 percent, and last year's off-season crop production was considerably below average. This combination of economic stresses causes approximately 58,000 people in Agadez Commune to be highly vulnerable.

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## Conclusions

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Going into the 1993 rainy season, the most vulnerable populations in Niger are agropastoralists and pastoralists in Tanout,

Tchirozérine, Arlit, and Ouallam arrondissements; farmers in Loga and Illéla arrondissements; and the urban population of Agadez commune. Approximately 628,000 people are now at least highly vulnerable.

High vulnerability in Tanout, Illéla, Ouallam and Loga is primarily due to poor 1992/93 cereals' harvests. The effects of civil strife and insecurity have led to elevated vulnerability in Tchirozérine and Arlit.

A second straight poor harvest in 1993/94 in highly vulnerable, cereal producing arrondissements, would greatly increase these populations vulnerability. Continued civil strife would lead to higher vulnerability for populations in Agadez Department, and could cause an increase in the migration of sedentary populations.

FEWS/Niger will monitor rainfall, planting dates, satellite imagery and other crop related information to enable timely reporting of any probability for poor harvests in Tanout, Loga, Illéla, Ouallam and other areas particularly dependent on rainfed crop production. For populations in Agadez Department, where rainfed crop production is of limited importance, FEWS/Niger will concentrate on economic activity, satellite imagery, and field reports for information about pasture production and herding, and migration activities.

Other vulnerable populations which will require close monitoring include the urban population of Niamey, agropastoral populations in northern Tillabéry Department and pastoralists in marginal pasture areas. If civil strife in the north continues, herding populations may be forced into agricultural areas. There were several clashes between herding and farming populations over marginal land areas during the last growing season.

## Appendix 2. Niger: Vulnerability Assessment Methodology

Two ranking systems were used to gauge levels of vulnerability: 1) a chronic vulnerability index—the average values of weighted indicators were added to determine a score. The score was then calibrated with the population's vulnerability ratings in past Vulnerability Assessments; and 2) a current vulnerability index—the percentage change from average values of current-year values were weighted and added to determine a score. The characteristics of this score (expressing increasing or decreasing income) were then compared to the population's chronic vulnerability rating and the change in reported malnutrition from 1991 to 1992 to determine its current vulnerability rating.

For each ranking system, the values of the population's separate income components were calculated and weighted by their importance to total income. The income components for the 1993 Niger Vulnerability Assessment are: *Cereal crop income*. This component is calculated by multiplying the area's per capita cereal production by food price; *Livestock production income*. This component is calculated by calculating a cereal terms of trade per tropical livestock unit (1 TLU is equal to one bull or 10 goats); *Cash crop income*. This component is calculated by multiplying *niébé* production by *niébé*-to-cereal, terms of trade; *Off-season crop income*. This component is comprised of total off-season crop production for the area; *Seasonal migration income*. This component is only used for farming and pastoralist populations. It is calculated by determining the adult, male population (ages 15-44), multiplying this figure by 1990 United Nations Food and Agriculture Organization (FAO) estimates of the percentage of seasonal migrants and multiplying by the average manual wage rate to determine total migration income for the population. This total migration income is then divided by the group's population to determine the average income per capita; *Urban wage labor income*. This component is only calculated for urban populations, and consists of multiplying the average manual wage rate by the percentage weight of total income for this component for a given commune.

For the current vulnerability index, the characteristics of the final income score (expressing increasing or decreasing income) are balanced against the population's chronic vulnerability rating and malnutrition change from past years to determine its current vulnerability rating.

Percentage changes in reported malnutrition is based on a comparison of malnutrition cases in children (weight for age—more than two standard deviations below the mean) reported by health clinics during the fourth quarters (October-December) of 1991 and 1992.

### Notes, Caveats and Sources

Per capita production estimates are calculated using total arrondissement population. This does not take into account reductions in population, during three to six months of the year, caused by seasonal migrations.

### Note on urban vulnerability:

although our current methodology now has a component for assessing the relative vulnerability of urban populations, this year's assessment provides no detailed breakdown of the largest component of urban income, wages. FEWS/Niger is in the process of breaking down the detailed 1988 census, which provides occupational information, to enable comprehensive analysis of different sources of wage income.

Terms of trade for livestock was evaluated according to tropical livestock unit (TLU) to millet price ratios. One TLU is defined as 1.2 camels, 1 cow or bull, 1 horse, 2 donkeys, 6.7 sheep, or 10 goats. Because they are the most representative for Niger, only male goat and bull prices were used to calculate TLU/cereal terms of trade in this analysis.

Percentages of adult, working age, males from each arrondissement who seasonally migrate for additional income were obtained from a detailed 1990 FAO report that was prepared after considerable field work in all Niger arrondissements. Relative income weights for different types of crop production were derived from values in the same report. Other weights for income components were derived from discussions with key Government of Niger (GON) informants and/or specific knowledge of the areas' production systems. The current manual wage labor rate, as reported by the GON Ministry of Economic Promotion, is slightly less than 25,000 West African francs (FCFA) per month.

FEWS/Niger 1993 population projections are based on the 1988 general census and arrondissement-level growth rates published in 1992 by the GON Census Bureau. Figures on numbers of GON employees were obtained from the Ministry of Public Services.

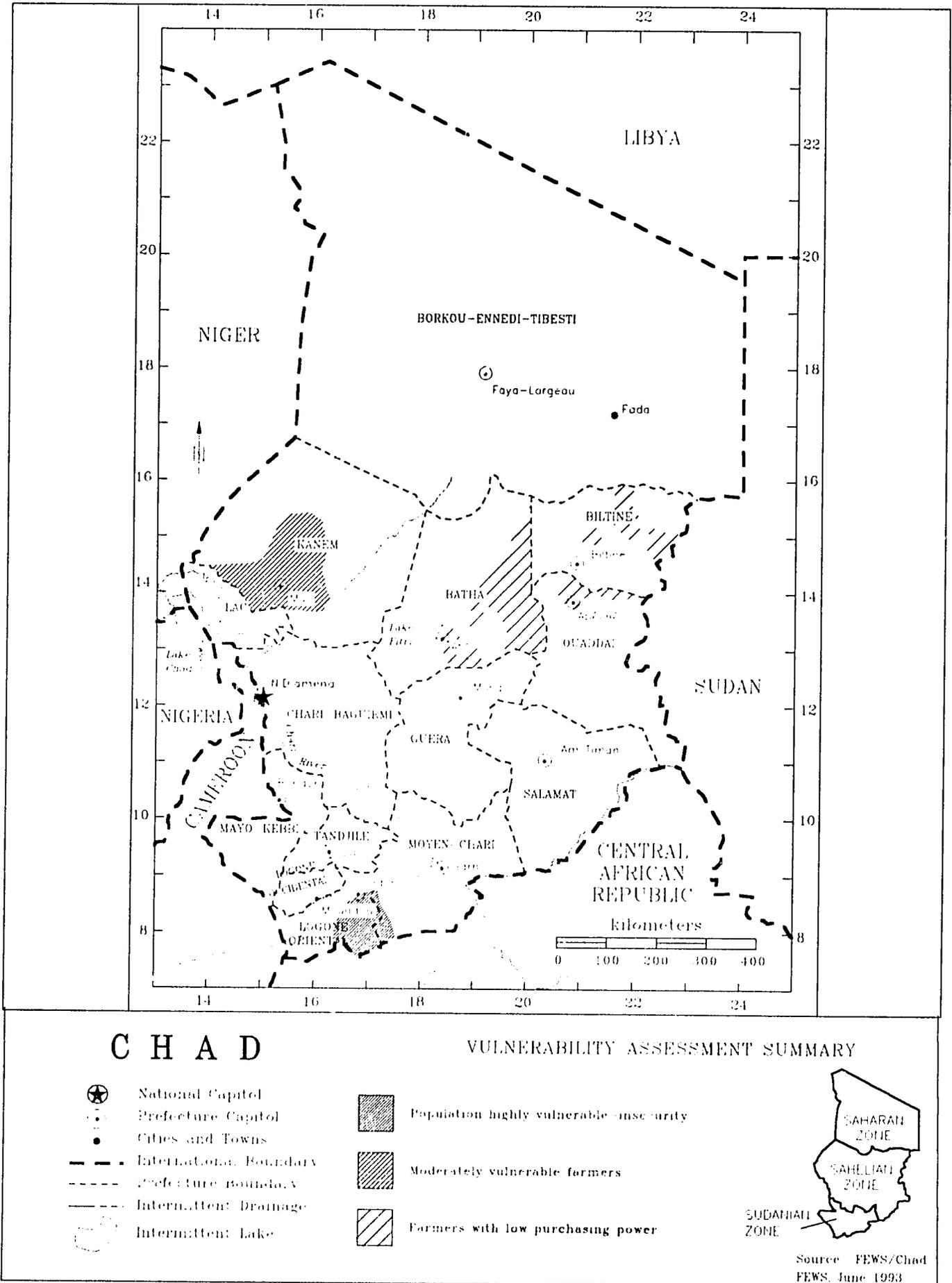
All crop production figures are from the GON Agricultural Statistics Service. However, arrondissement and commune production figures for historical off-season crop production were extrapolated from department-level figures and 1992 arrondissement and commune production levels.

Note: for the purposes of this assessment, weights from the income components, for which data were available, added up to total income (100 percent), however no, or limited data, was available for several other possible income components, which could not be quantified. As a result, the quantitative analysis in this assessment does not factor in other possible income. What other data was available is expressed qualitatively in the assessment.

Data on malnutrition levels is from the National Health Information System (SNIS) which obtains data from well-baby sessions at health clinics nationwide.

Insufficient data prevented a comprehensive assessment of the vulnerability of populations in Bilma Arrondissement (Agadez Department).

**Map 8. Chad Vulnerability Assessment Summary**



# Increased Famine Vulnerability in the South Caused by Insecurity

Report released by the USAID/Chad May 22, 1993

## Summary

*A record harvest in 1992 has reduced vulnerability for all populations in northern and eastern Chad. Cereal production surplus in the Sahelian zone prompted a significant drop in cereal prices that have remained low through April 1993. Vulnerability levels of Sahelian populations are at their lowest since 1987. There nonetheless remain localized areas in northern Kanem, eastern Batha, northern Ouaddaï, and eastern Biltine where some groups are experiencing problems in access to cereal (see Map 8).*

*In the Sudanian zone, the good 1992 harvest allowed the southwestern prefectures to recover from the poor harvest of 1991. However, cereal prices in this area remained higher than in other parts of Chad, due to little leftover stock from the previous year and high demands for this year's cereal crop.*

*In Logone Oriental Prefecture, insecurity and military reprisals levied against civilian populations in rural Doba and Goré sub-prefectures since January 1993 have resulted in looting and burning of villages. Some of the population in this area fled to neighboring regions, including northern Central African Republic. Approximately 54,000 persons who have remained in this zone are in need of assistance. Destruction and looting of grain reserves by military units have made the population highly vulnerable to famine, particularly during the July/August lean period.*

## Methodology

Vulnerability to famine comprises two components; chronic and current. FEWS/Chad maintains a set of indicators that are grouped into three categories: supply, access, and well-being. Chronic, or long-term vulnerability is evaluated using historic average levels and coefficients of variation of the indicators. A geographic approach is used in which each indicator is converted into data points on a map. Each point on the map is compared to the other points, resulting in relative geographic levels, or rankings, of each indicator. The coefficient of variation is used to address the variability of a given indicator. High variability is associated with high risk. Current, or short-term, vulnerability is evaluated using current levels of indicators compared to their long-term averages.

The FEWS/Chad Vulnerability Assessment (VA) categorizes the population into three general groups: agriculturalists, pastoralists, and urban dwellers. Relative importance of each indicator for each of these groups is assigned. Interpretations of the VA analysis were made together with information obtained from

field visits, reports from NGO's, and reports from the European Community (EC) funded Système d'Alerte Précoce (SAP) project to identify populations who are currently experiencing, or have historically experienced, food insecurity.

## Vulnerability of Socioeconomic Groups

The three major socioeconomic groups in Chad are agriculturalists, pastoralists, and urban dwellers. FEWS/Chad recognizes that the systems of economic activities found in Chad are considerably more complex than the groups presented here. Without further analysis and research, a more detailed categorization of socioeconomic groups is not possible. Consequently, the FEWS/Chad analysis focuses on these three groups.

### Agriculturalists

Agriculturalists in Chad experienced a good 1992/93 season. Rainfall quantities and timing were adequate in most areas. The Sahelian zone saw an important increase in cereal production this year because of substantial and lengthy rains, and the lack of crop pest attacks. This increase in production, and consequently an increase in cereal supply, has lessened high vulnerability levels identified in the 1992 VA. There are however, localized areas in northern Kanem, eastern Batha, northern Ouaddaï, and eastern Biltine where some agriculturalists are experiencing limited access to cereals (see Map 8) due to a lack of diversified income sources to supplement local agricultural production.

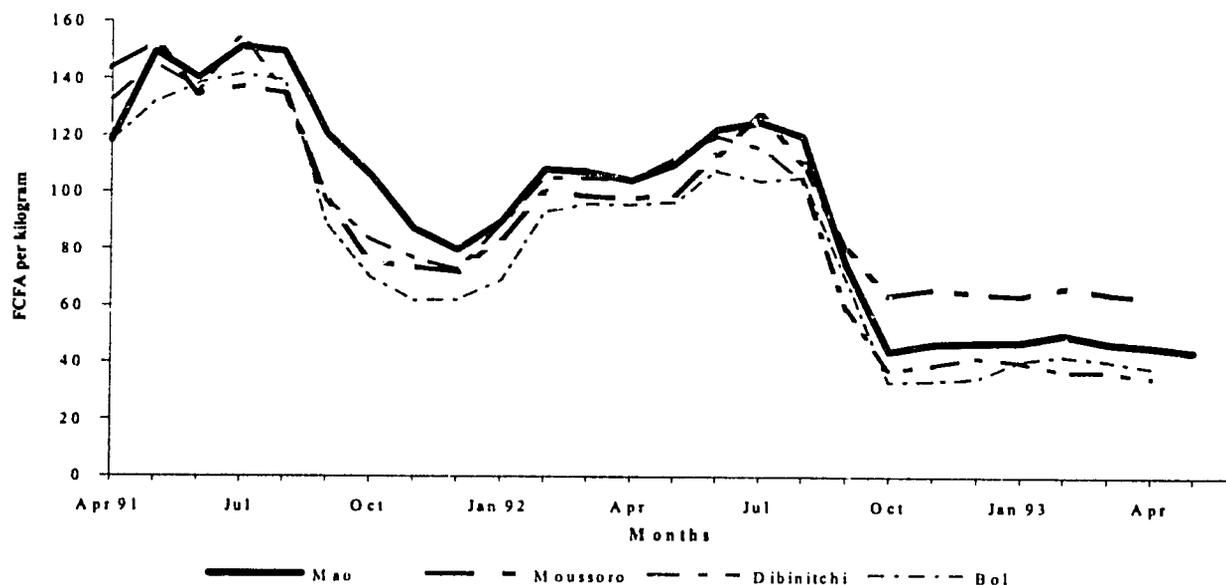
In the Sudanian zone, the good harvest offset any lingering effects of the poor 1991/92 season in Tandjilé and Logone Occidental prefectures. However, in Logone Oriental Prefecture, the beneficial effect on food security expected from this year's good harvest has been partially negated by insecurity that has caused population displacement, reduced on-farm reserves, and significantly increased vulnerability to famine.

### Agriculturalists in Kanem Prefecture

**Chronic Vulnerability:** Agriculturalists in Kanem have a high level of chronic vulnerability. Agricultural practices are possible only in the southern half of Kanem. Even so, interannual cereal yield is low and variability of production is high due to highly uncertain rainfall on marginal crop land.

A structural analysis performed by the SAP project indicates that the populations of Kanem obtain the majority of their foodstuff from the marketplace. Long-term cereal price analysis

**Figure 5. Chad: Millet Prices in Kanem and Lac Prefectures**



shows that prices of major cereals in Kanem Prefecture are generally higher than in other regions of Chad. Agriculturalists in Kanem are faced with a chronic problem of supply and access to cereal.

**Current Vulnerability:** The 1992 VA rated agriculturalists in Kanem as highly to extremely vulnerable to famine due to insufficient rainfall and crop losses from grasshopper attacks. In 1992, rainfall in Kanem was adequate for the first time since 1988. There were also no major insect attacks on cereal crops. Consequently, cereal production in Kanem Prefecture was adequate for the first time since 1988. Additionally, Bokoro in northern Chari Baguirmi Prefecture, a major supply region for Kanem, had an excellent harvest. The combination of a good local production and increased availability in market supply from Chari Baguirmi resulted in a 50 percent drop of cereal prices in Kanem during the 1992 harvest period (see Figure 5).

Cereal prices are at their lowest level in Kanem since the SAP project began collecting data in 1987. Cereal prices have remained low during the first four months of 1993, indicating continued adequate supply. However, the SAP has noted localized pockets where populations lack purchasing power due to the lack of diversification in their income generating activities. These pockets are located in Nokou, northern Mao, and western Moussoro sub-prefectures (see Map 9).

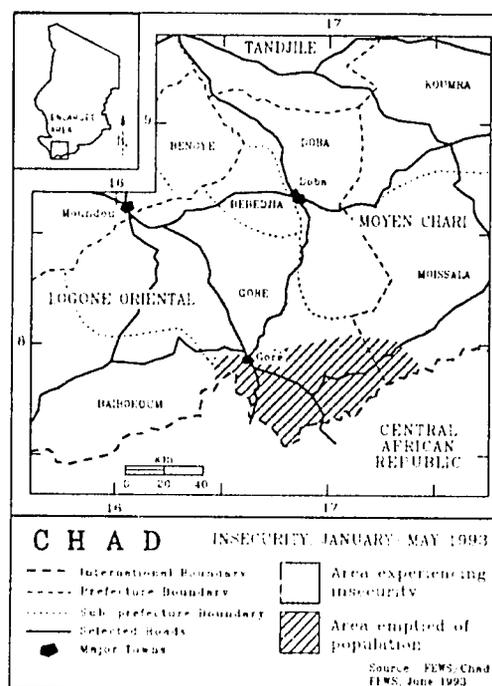
**Agriculturalists in Lac prefecture**

**Chronic Vulnerability:** Agriculturalists in Lac Prefecture have a low level of chronic vulnerability. Agricultural practices are possible in the many wadis and polders bordering Lake Chad. A very shallow water table enables easy access to water for irrigated wadi agriculture. Lake Chad provides opportunity for recessional agriculture along its shores, and fishing activities to augment agricultural production. Chadians in this zone derive a high percentage of their protein intake from fish.

**Current Vulnerability:** In the 1992 VA, agriculturalists in Lac Prefecture were rated as moderately vulnerable to famine

due to crop losses from grasshopper attacks. During the 1992 growing season good rains and a lack of grasshopper infestation allowed agriculturalists in Lac Prefecture to recover from the poor harvest of the previous year. The 1992 polder maize crop was good. Cereal supply is adequate in the prefecture and prices are low. USAID/Chad has purchased surplus maize from this

**Map 9. Chad: Insecurity, January-May 1993**



area to reconstitute the national food security stock. The populations of Lac Prefecture have regained their normal level of slight vulnerability.

### Agriculturalists in rural Doba and Goré sub-prefectures in Logone Oriental

**Chronic Vulnerability:** Logone Oriental, bordering the Central African Republic, is one of the most productive areas in Chad. Crop use intensity is high. Production levels are high and intra-annual crop yield variation is very low. It has a perennial cereal surplus. In 1992/93, net cereal production equaled 156 percent of local needs.

**Current Vulnerability:** Since early 1993, numerous villages in ten cantons of rural Doba and Goré sub-prefectures have been subjected to military exactions: cereal stocks, tools, farm animals, and seeds have been taken or destroyed. Villages were burned and mortalities occurred. In addition, farmer-herder conflicts have increased and in some cases, farmers were prevented from working their fields. In light of this heightened level of insecurity, significant numbers of agriculturalists fled the area. Villages south of Goré remain completely deserted (see Map 9). Persons displaced from this region have, for the most part, fled to the Central African Republic or relocated to more secure regions within Chad. There are no concentrations of displaced persons as those fleeing have been dispersed among numerous villages.

As a result of the insecurity, agricultural activities have been slow to start or have not yet commenced in Goré sub-prefecture. Here, the population has been reluctant to return.

In rural Doba sub-prefecture, villages are partially occupied and planting has commenced. A shortage of agricultural inputs, including seeds, will likely compromise the 1993 harvest. NDVI analysis shows that the vegetative season starts in late April through mid-May in this area. If crops are not planted by the end of May, it will become increasingly difficult to complete the crop season, even with late plantings.

The populations of rural Doba and Goré sub-prefectures are currently highly vulnerable to famine due to general insecurity, reduction of agricultural capability, and loss of household resources. Any relief program depends on the restoration of peace and security in the area. Donor efforts to distribute food aid and seeds have been interrupted by the slow restoration of security. If this situation does not improve in time to allow full resumption of agricultural activities during this rainy season, the affected population will become extremely vulnerable by the end of this year, requiring the continuation of a relief program through most of 1994.

### Pastoralists

#### Nomads

Transhumance and nomadic cattle-raising are common in the Saharan and northern Sahelian zones, with pastoralists migrating south and west towards Lake Chad at the end of the rainy season. These populations depend mainly on animal products for their income. Due to their mobility, they are able to leave non-productive pastures for better ones. With good rainfall two years running, pasture conditions are good to excellent in most areas. Cereal prices have declined significantly in the Sahelian zone since the 1992 harvest period. Therefore, nomadic herders remain only slightly vulnerable.

#### Agropastoralists

Most pastoralists in the Sahelian zone maintain a few head of cattle and a small herd of goats or sheep and engage in small scale agricultural production. Two years of adequate rainfall ensured good pastures, allowed for animal reproduction, and resulted in crops being harvested. Market prices of animals have increased in the northern Sahelian zone. Additionally, low cereal prices translate into very favorable terms of trade for pastoralists

Figure 6. Chad: Terms of Trade Millet/Sheep

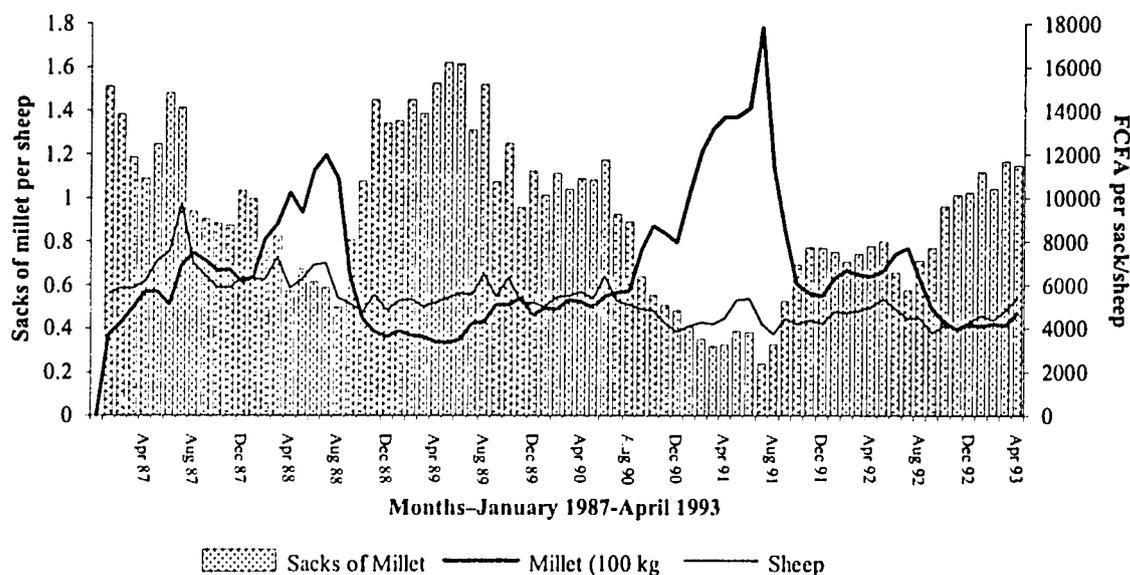
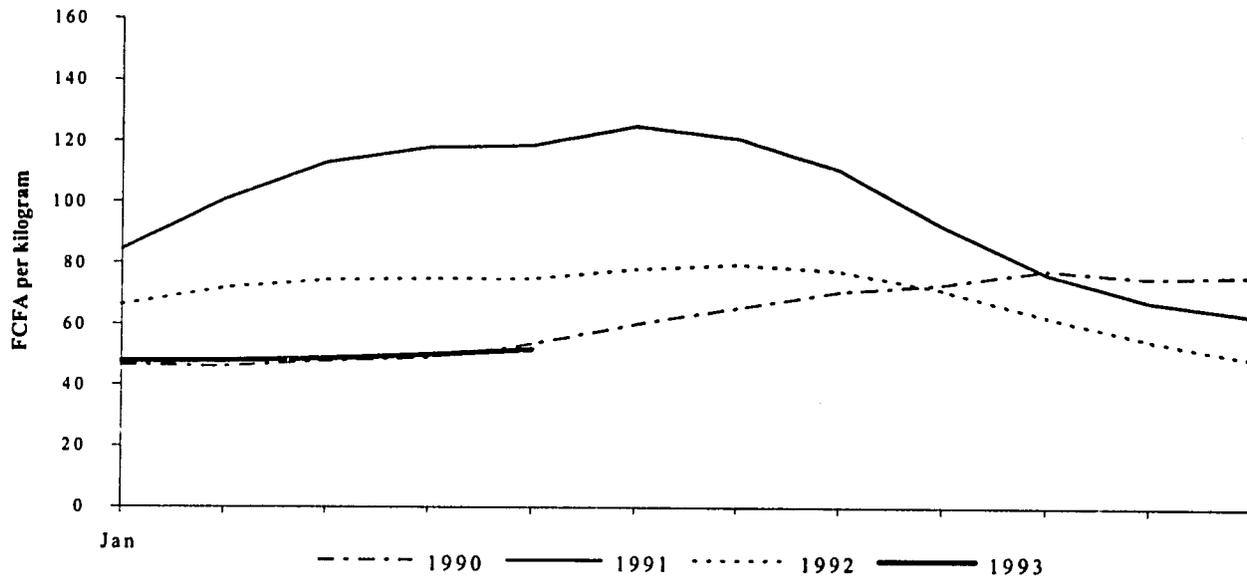


Figure 7. Chad: Nominal Millet Prices in Urban Centers 1990-93



and agropastoralists (see Figure 6). The vulnerability status of agropastoralists remains low for the second year running.

### Urban Dwellers

Urban populations in Chad are concentrated in N'Djaména, Moundou, Sarh, and Abéché. Most urban dwellers are salaried workers in the private or public sector. A portion of urban residents travel to their respective villages at the onset of the rainy season to cultivate. The vulnerability level of urban populations corresponds closely to their purchasing power. All of the urban populations, especially the urban poor, are slightly or moderately vulnerable to the impact of changes in cereal prices. Figure 7 shows that millet prices in 1992 have remained lower than in 1991. The current price level is low, which benefits most urban groups.

In 1992, late salary payments to public servants continued. Usually, urban dwellers have limited opportunities to make up for late or non-payment of salaries. However, as this situation has been ongoing for more than a year, those affected have begun to develop alternate means of income. Their level of vulnerability remains moderate.

### Conclusion

Although the overall food security situation in Chad continues to improve, major problems exist in the southeastern areas of Logone Oriental Prefecture. Most affected are the sub-prefec-

tures of rural Doba and Goré where agricultural activities have been circumscribed. Populations affected by the insecurity have lost their household assets and, in some cases, their production assets. If this situation is not resolved quickly, these populations will not be able to feed themselves nor will they be able to provide surplus production for other areas. Emergency food aid is currently required to assist 54,000 persons through the July/August lean period. This food aid would be drawn from the existing security stock or from local purchases. Should 1993 agricultural activities be compromised, then some of the population will likely require assistance through most of 1994.

Elsewhere in Chad, food security in the Sahelian zone has increased steadily during the past two years. FEWS/Chad will continue to monitor the agricultural season and food access and availability situations in collaboration with the SAP project. Remote sensing data, as well as market price information will be monitored closely and reported in each month's FSOC. FEWS/Chad will continue to develop a geographic information system to incorporate all the indicators in a geographic context for analysis. This analysis is based on the FEWS/Chad methodology of the convergence of indicators approach that should, by the time of the Pre-Harvest Assessment report published in October 1993, allow an update on the anticipated outcome of the 1993/94 agricultural and pastoral season.

### Appendix 3. Chad: Vulnerability Assessment Methodology

The paucity of reliable data in Chad remains detrimental to assessing vulnerability. Nonetheless, three classes of quantitative data are used to evaluate vulnerability levels:

- production data,
- market price data, and
- population/health data.

Production data captures elements of food availability. Price data reflects market dynamics including supply (availability) and demand (accessibility). Population and health data are used as denominators for interpretation of production and indication of general well-being.

Long-term indicators for each of these classes of data were converted into a raster format in IDRISI. Long-term averages and coefficients of variation were calculated for each indicator. An average level shows the general distribution of the measured quantity geographically throughout the country. A coefficient of variation shows the risk involved. These two types of analysis were combined to assess chronic vulnerability. Current levels of indicators were compared to the long-term averages to assess current vulnerability.

For production data, cereal production was reallocated geographically using four indicators generated by NDVI time series analysis: length of season, accumulation of biomass, maximum NDVI reached, and rate of decline after the peak. These indicators were normalized to address intra-regional variation. The resultant indices were multiplied to the actual production levels to obtain a production-per-unit-area map. Long-term averages and coefficients of variation maps were then created based on these adjusted production maps.

For price data, long-term cereal prices were used to create Thiessen polygons. Thiessen polygons delimit geographic zones of similar market trends. One map was generated per month. The analysis was performed using millet, sorghum, sheep, and beef prices. Terms of trade were obtained by taking ratios of animal to cereal prices. The Thiessen polygons were then combined to calculate long-term average price levels and coefficients of variation, which reflect price changes.

Map 10. Ethiopia: Vulnerability Assessment Summary



# No Imminent Famine Risk, but Millions Chronically Vulnerable

Report released by USAID/Ethiopia May 21, 1993

## Summary

*Ethiopia is chronically food-insecure at a national level. Although the last three years have seen relatively good harvests, domestic food production has not kept pace with population growth. At regional levels, these problems are magnified. Chronic vulnerability to drought and famine is concentrated mainly in two zones:*

- *the densely-populated farming areas of the north and central regions, where production is below subsistence even in good years, and purchasing power is weak; and*
- *the pastoral areas of the south and southeast, which have been struggling with livestock depletion, extended drought, and civil conflicts.*

*The risk of drought is high in both these zones. This year's rains are promising so far, with the exception of a dry spell during the March belg (secondary) season in North Shewa and South Wello. Rangeland conditions are the best in several years.*

*Agricultural and pastoral conditions are generally good at present, and there are no imminent emergencies; but underlying vulnerability is high. Close monitoring of climatic conditions, other natural risks (particularly increased locust infestations and migrations), and the rehabilitation of displaced populations will be needed during the coming season. The current assessment of vulnerability is shown in Map 10.*

## Methodology

This assessment is a synthesis of secondary sources and reports, both statistical and qualitative, and of the unpublished knowledge of people interviewed during its preparation. While focusing on current conditions, it includes a perspective on the recent history of the problems described. A number of extensive vulnerability and risk mapping projects are currently in progress, which will help to inform and refine future assessments. Unfortunately, their results are not yet available.

## Vulnerability of Socioeconomic Groups

### Country Background

Ethiopia has a high drought propensity coupled with an almost total reliance on rainfed agriculture, widespread extreme poverty, poor economic infrastructure, and a growing population outstripping and pressuring its natural resource base. Food production estimates show that the past three years (1990/91,

1991/92, and 1992/93) have yielded relatively good harvests in aggregate terms. The 1992 *meher* (main) harvest was a record 8.5 percent above the previous year's, and 11.6 percent over the average of the preceding five years. However, three crucial features are masked by this aggregate summary:

- the wide regional disparities in production capacity, poverty, and vulnerability illustrated in the "chronically vulnerable" areas shaded on the reference map (see Map 11). Even in good years there are deficit regions, and good and bad years vary widely between areas and even between villages. The extreme weakness of the marketing and distribution system between surplus and deficit areas aggravates the geographic concentration of food insecurity.
- the failure of domestic food production to keep pace with population growth (see Figure 8). At regional and sub-regional levels, this is heightened.
- the socioeconomic distribution of control over, and access to, food production. At all levels it is the poorest people who produce least, have the most unreliable and remunerative income options for food purchase, and lack a social safety net to fall back on in times of crisis. Poverty is the greatest single determinant of food insecurity, and Ethiopia is one of the poorest countries in the world.

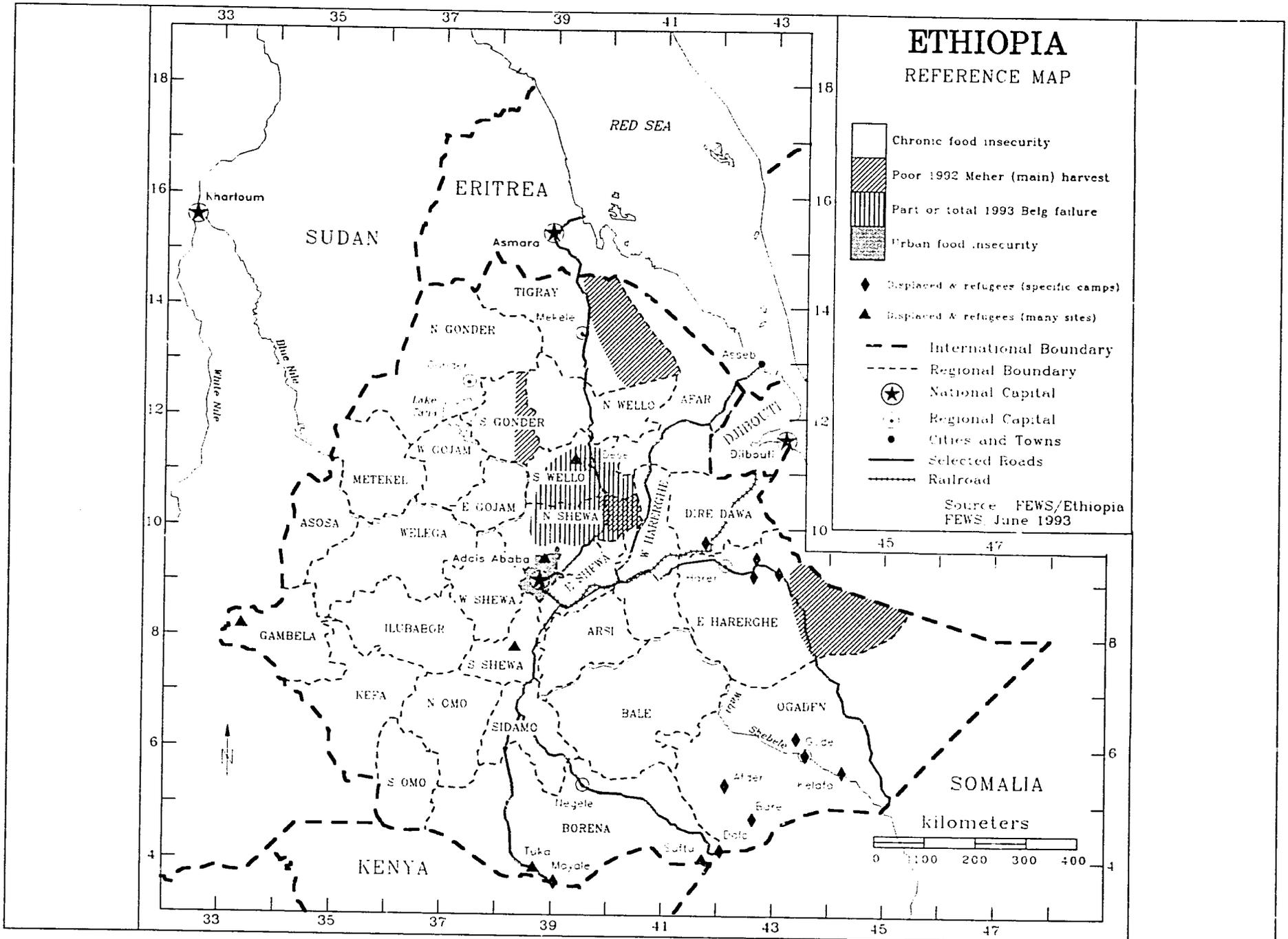
Approaching the second anniversary of Mengistu's overthrow, some positive food security impacts of peace and policy reforms are evident—such as the expanded area planted in 1992 due to improved security, greater labor availability as soldiers and others returned home, and price incentives from liberalized grain markets. At the same time, the reverberations of upheavals following the end of the war continue, with large numbers of displaced and newly relocated people still highly vulnerable to food crises. All these factors underlie the analysis of vulnerable groups below.

There are a number of overlapping ways of classifying food-insecure groups. The Government of Ethiopia (GOE) Relief and Rehabilitation Commission (RRC) divides the populations needing food relief into two categories:

- those affected by natural problems (drought, crop damage, livestock loss), and
- those affected by man-made problems (conflict, demobilization, return from forced settlements or exile, etc.).

The relative geographical distribution of these categories is shown in Maps 12 and 13. Another common distinction is between chronic and transitory (or acute) food insecurity.

Map 11. Ethiopia: Reference Map



These general distinctions are useful, but the lines between them are often blurred. For example, the man-made causes of food insecurity listed above are essentially transitory, but people in such difficulties can easily slide into chronic vulnerability through loss of, or simple lack of assets (such as livestock or land). The same pressures apply to people in “transitory” difficulties due to natural causes; and people made vulnerable by man-made causes are now subject to natural risks as well.

### Resource-poor and Drought-prone Farming Communities

This is the largest group, numerically, of both chronic and transitory food insecure people. Seventy-eight percent (over 2 million) of those considered in need of food relief this year are in the primarily agricultural regions of Tigray, Harerghe, Gonder, Wello, Welega, Dire Dawa and Ilubabor. Tigray alone accounts for half of this group, and Harerghe, Gonder and Wello together for a further 34 percent.

The major causes of famine vulnerability in these regions are drought propensity; low agricultural productivity (due to severe soil erosion, increasing use of marginal land, and inability to purchase improved inputs); population pressure; and poverty (caused in part by asset depletion during previous famines). A further factor in parts of Ilubabor and Welega is trypanosomiasis, which limits the availability of draft oxen.

Tigray suffered two consecutive poor crop years in 1990 and 1991. Although its production rose sharply (by 58 percent) in 1992, it remains the main concentration of the most chronically food insecure and poverty-stricken rural groups. It is also absorbing large numbers of displaced and de-settled people, as outlined below. Although current climatic conditions are good, most of the population are still highly vulnerable due to their lack of resources and assets.

Lowland areas of eastern Harerghe had a poor *belg* and short *meher* (main) season in 1992. Current conditions are better, however, this area should be considered slightly to moderately vulnerable for the coming season.

The Menze Gische Awraja of northeastern Shewa have been suffering food shortages due to hail and frost damage to *meher* crops in late 1992, now compounded with a near total failure of the 1993 *belg* harvest. This area, too, is chronically vulnerable to drought and famine (see Map 11). It's current vulnerability level is considered moderate, as relief efforts are already under way.

South Wello is also expected to have a relatively poor *belg* harvest due, as in North Shewa, to a rainfall deficit during March. However, the condition of surviving crops is reportedly much better than in North Shewa. Other *belg* growing areas are experiencing normal or above normal conditions. Since the beginning of April the rains have been exceptionally good, and prospects for a successful *meher* season are encouraging. However, it is still too early to predict the continuation of the rains and the harvest outcome.

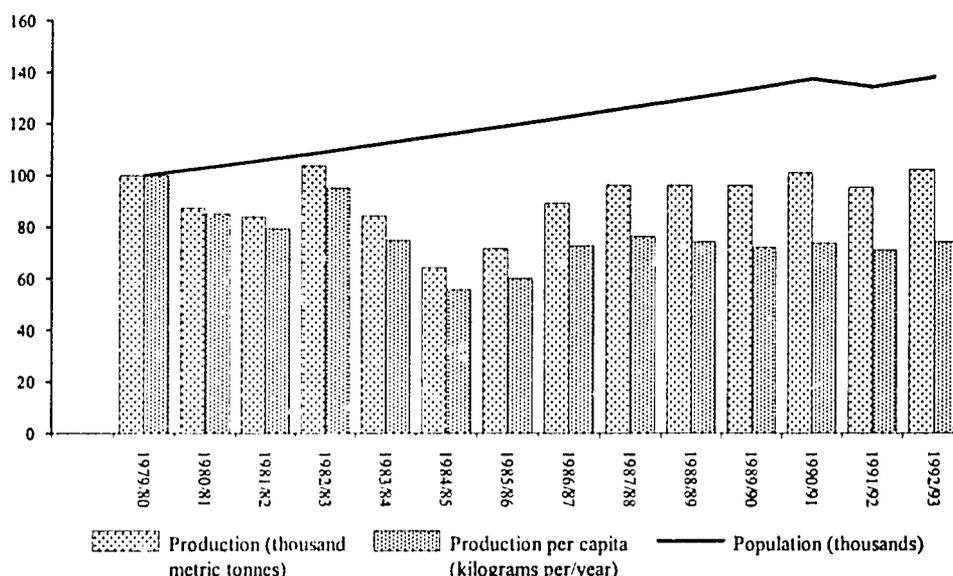
### Resource-poor and Drought-prone Pastoralists

The south and southeastern zones of chronic food insecurity marked on the reference map are primarily pastoralist, as is the Afar Region (centered on the Awash Valley). Pastoralist production systems, particularly in semi-arid areas, are adapted to uncertain climatic patterns; however, they tend to recover more slowly than farmers from major drought and famine shocks.

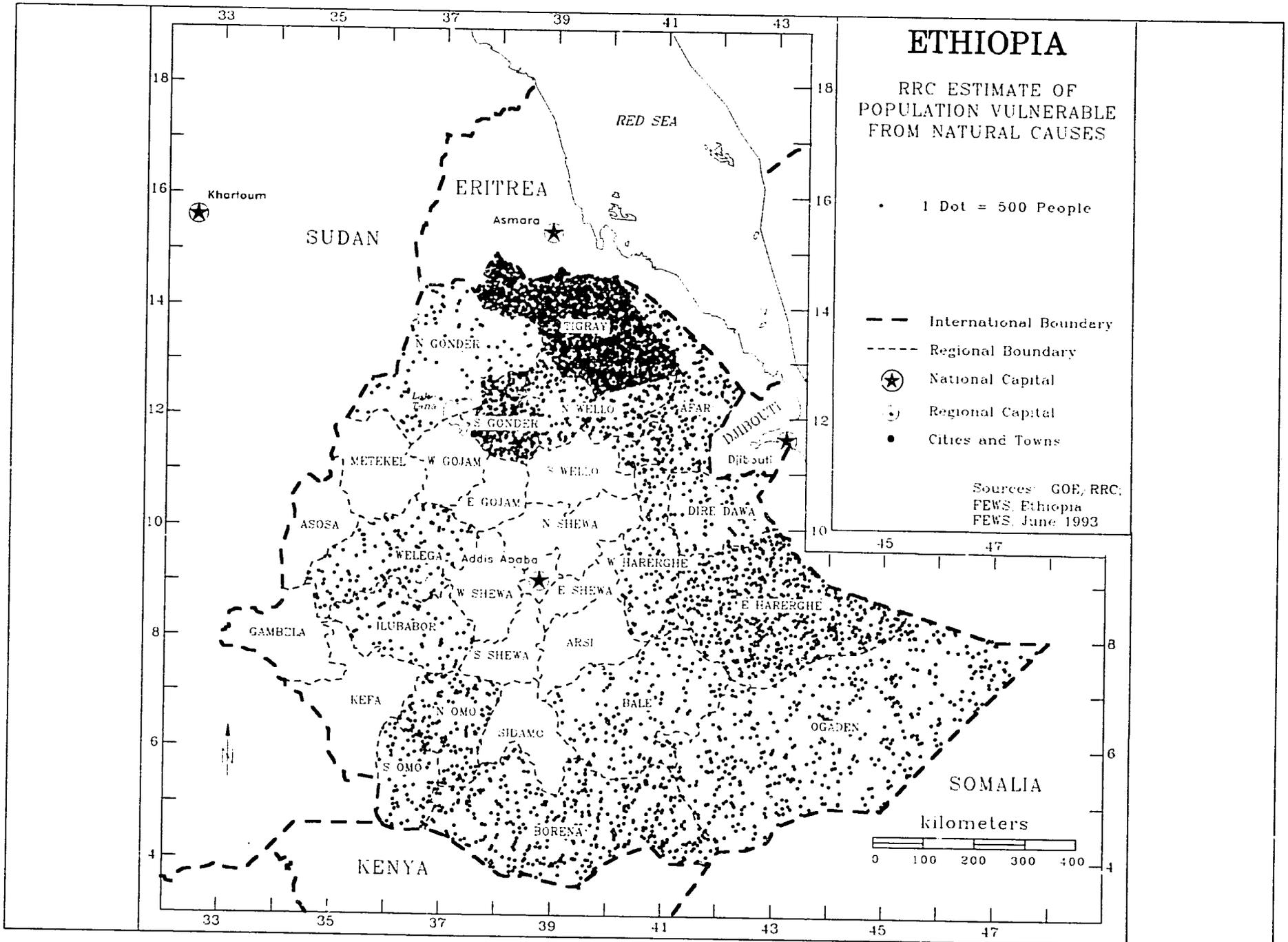
Ogaden, Borena, and South Omo have suffered extended drought in the last few years. The October/November short rains failed in parts of all these regions in 1992, causing further stress. This year water and pasture conditions are exceptionally good. Crops are even being planted in parts of the Ogaden where farming is not usually practiced. However, resource-poor groups in these areas are still vulnerable. Internal and Somalian conflicts have severely affected Borena and Ogaden. It is thought that as many as a quarter of a million “invisible” displaced may be living on the charity of relatives in the Ogaden alone.

The Afar have suffered heavily from the major famines of the 1970s and 1980s, they are estimated to have lost 25-30 percent

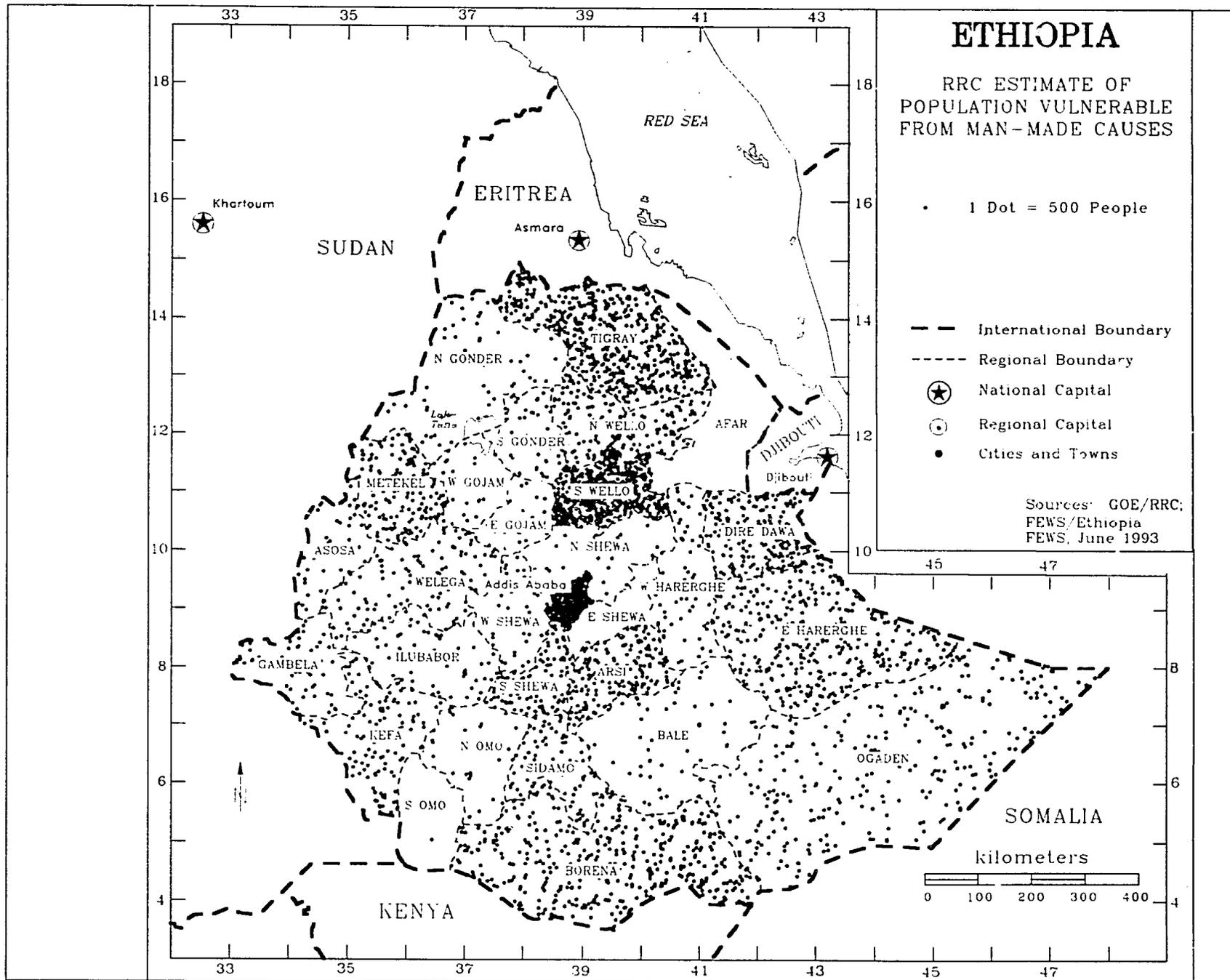
Figure 8. Ethiopia: Structural Food Gap



Map 12. Ethiopia: RRC Estimate of Population Vulnerable from Natural Causes



Map 13. Ethiopia: RRC Estimate of Population Vulnerable from Man-made Causes



of their human population in 1973-75, and substantial livestock resources since then. The apparent breakdown of market exchange links with the grain-producing highlands has further contributed to their current high vulnerability.

### **Urban Poor and Food-insecure**

The urban poor are highly vulnerable to food price and policy changes—the characteristics of urban vulnerable groups are therefore different from rural groups, although the problems are interlinked and the same people may move between categories. Estimates of the extent of urban food insecurity in Ethiopia vary from 30 percent to 65 percent of the urban population. By far the largest concentration of urban food insecurity is in Addis Ababa (population around 2 million in 1992), but the problem is by no means limited to the capital.

Recent policy reforms and withdrawal of subsidies have thrown poor urban consumers onto the open market for food supplies. It is estimated that the ending of Agriculture Marketing grain supplies to the *kebele* shops alone resulted in an effective 10 percent loss of income for poorer households.

The most vulnerable urban groups are the destitute (including street children), female-headed households (perhaps a third to a half of Addis Ababa households), and the unemployable categories of the elderly, handicapped and mentally ill.

The current situation is difficult to quantify. The most visible destitute groups in Addis Ababa (those living on the streets) seem to have fallen in numbers in recent months, possibly due to war-displaced returning to rural areas, and some towns (notably Mekele) are experiencing post-war construction, and therefore employment, booms. However, poverty remains endemic.

### **Internally Displaced and Returning Populations**

#### **Victims of Ethnic Conflicts**

Outbreaks of ethnic violence, particularly in the east and south, characterized the period of the power vacuum following the fall of the Dergue. Since late 1991, civil disturbances have been reported in Arsi, Metekel, East Hererghe and, especially, the Ogaden and Borena. Concentrations of people displaced by these incidents were most visible in Addis Ababa, Dire Dawa and towns in South Shewa. At various times over the past year, as many as 50,000 people displaced by ethnic conflict were in camps in the Ogaden. In addition, there were 82,500 displaced in Eastern Hererghe (Medicins sans Frontieres/Holland), 53,000 in South Shewa (Ethiopia Red Cross Society/RRC), and 9,000 living in Negelle stadium (UN Emergency Planning and Preparedness Group). In total, as many as 600,000 may have been internally displaced by ethnic conflict.

In recent months such conflicts have been increasingly rare. Peace accords have been signed by leaders of the major groups involved, and most of those internally displaced have returned to their villages. A large number of displaced remain intermingled with refugees and returnees in camps in Bare, Dire Dawa, Gode, Dolo, Suftu and Moyale.

Among those who have returned to their home areas, most will remain dependent on food aid for the current year, because of disruption to farming in 1992 (see Table 5). The success of

the RRC's rehabilitation plans, which focus on enabling them to cultivate during the coming *meher* season, may largely determine their future vulnerability. Probably the most vulnerable, in the medium to long term, are those (such as the Kambata in southwestern Shewa) who have apparently lost their land to the victors of the conflicts. The threat of further ethnic and political instability is diminishing, but cannot be dismissed.

#### **“De-settlers” (people returning from the former government's forced resettlement areas)**

Since early 1992 significant numbers of people previously resettled in Gambela, Ilubabor, Kefa, Welega and Gojam have been returning to their original homes—mainly to the highlands of Wello and Tigray, but also in smaller numbers to North Omo and the Kambata-Hadiya areas in the south. There may be as many as 300,000 of these “de-settlers” throughout the country: approximately 187,700 have reportedly returned to the Wello Region, and about 100,000 to Tigray.

Their progress towards re-integration appears mixed. Some are reported to be slowly reaching a measure of farming self-sufficiency, while others have found seasonal urban employment. However, many arrived home completely destitute, having sold assets to pay for transport. The RRC's rehabilitation plans imply that nearly all de-settled populations lack sufficient livestock to resume productive activities. In addition, the majority of de-settlers are returning to densely-populated areas with badly degraded soils and a high risk of drought. The de-settlers in general therefore appear highly vulnerable. Those who did not return in time (or who were unable for other reasons) to cultivate in 1992 are still dependent on food aid.

Large numbers of de-settlers have turned back to Gambela, after having migrated as far north as Dese, because of poor reintegration prospect. Some are actually returning to the resettlement areas to farm, but approximately 20,000 former settlers are stranded in camps around Gambela. Malnutrition and destitution among this extremely vulnerable group are high.

#### **Demobilized Soldiers and their Dependents**

The dispersal of the former government army has been a major task. Nearly 1.3 million ex-soldiers and dependents were considered in need of food aid during 1992. This year's estimate is approximately half this figure. Of the 350,000 or so families involved, 140,000 are thought to have settled in urban areas, with the remaining 210,000 returning to their homes throughout Ethiopia's rural areas. The relocation was completed in November 1992, but assistance has been continued (by government and United Nations (UN) agencies, the Red Cross and other organizations) in the form of food relief, cash stipends in urban areas, and seed/tool packages in rural areas.

It is not clear how successful the economic reintegration of these people has been, although initial concerns about their potential disruptive impact have not been borne out. The government rehabilitation project was originally programmed for completion in 1994, but this is now unlikely to be achieved. Those considered to be still in need of food assistance are widely distributed, but 40 percent of them are in Addis Ababa and Wello. Given the levels of chronic food insecurity in these

**Table 5. Ethiopia: Populations in Need of Food Assistance During 1993**  
(preliminary Estimates, December, 1992)

	Populations requiring assistance			
	Affected by natural factors	Internal displaced	Ex-soldiers dependents	Total
Addis Ababa	0	55,162	186,761	241,923
Afar	122,931	0	0	122,931
Arsi	0	146,572	0	146,572
Asosa	0	8,668	3,940	12,608
Bale	80,378	3,940	37,037	121,355
Boren	150,118	88,061	16,548	254,728
Dire Dawa	36,249	75,650	26,005	137,904
Gambela	0	22,853	3,940	26,793
Gojam	0	1,182	13,002	14,184
Gonder	252,167	8,668	48,069	308,905
E. Hererghe	174,941	60,284	33,097	268,322
W. Hererghe	82,742	18,913	10,244	111,899
Ilubabor	20,095	0	9,456	29,551
Kefa	0	0	31,915	31,915
Metekel	0	24,429	20,489	44,917
Ogaden	199,764	44,917	0	244,681
N&S Omo	115,839	0	13,396	129,236
Sidamo	0	42,553	31,521	74,074
Shewa	0	44,129	43,341	87,470
Tigray	1,000,000	194,641	56,738	1,251,379
Welega	34,279	1,182	47,281	82,742
Wello	101,655	275,020	110,323	486,998
Total 1993	2,371,158	1,116,824	743,105	4,231,087
Total 1992	4,500,000	361,385	1,300,000	6,161,385
Percent change	-47%	+209%	-43%	-31%

Source: FAO/WFP Crop and Food Supply

regions, it is probable that some will remain moderately or highly vulnerable.

#### People Expelled from Eritrea and Asseb

This group, forced to leave the new Eritrea after the end of the war in June 1991, is thought to number nearly 200,000. They are mainly townspeople from Asmara and Asseb, and have dispersed to urban areas throughout Ethiopia. Some are skilled or semi-skilled urban workers, but few have been able to bring tools or capital with them and many are still living in tents and temporary shelters, assisted by government agencies and non-governmental organizations. As with the demobilized soldiers, the main concentrations are in Addis Ababa (up to 20,000, living in 17 shelters) and Wello (70,000 in September last year).

A significant and highly vulnerable sub-group of expellees are women, many of whom had liaisons with Ethiopian soldiers stationed in Eritrea, and have borne their children. At least 1,500 are believed to be still living in shelters in Dese (South Wello). It is not clear how much double-counting there may be between this category and the dependents of demobilized soldiers.

#### Ethiopian Returnees from Somalia, Kenya and Sudan

Ethiopians who fled into Somalia after the Ogaden (Ethiopian-Somali) war in the mid-1970s began to return in 1991, following the collapse of the Barre regime. Recent returnees from Kenya, by contrast, left within the past two years because of ethnic violence. Since March 1991 over 600,000 Ethiopian returnees have been issued with travel grants to enable them to

return to their home villages. The United Nations Food and Agriculture Organization, combined with the United Nations World Food Program (FAO/WFP), estimate that as many as 240,000 were repatriated in 1992.

In early March 1993, the United Nations High Commission on Refugees (UNHCR) completed the repatriation of over 44,000 Ethiopians from Walda camp (Kenya) to Moyale camp (southern Ethiopia). However, it is estimated that only half of those people have subsequently been re-integrated into their original home areas, with the rest remaining in the Moyale camp. Plans are also underway to repatriate Ethiopians from the Banissa camp in Kenya, where over 45,000 people have registered. UNHCR believes that the actual number of returnees will be between 10,000 and 20,000 people.

The vulnerability of the re-integrated returnees is extremely difficult to gauge. Recently improved pastoral conditions may help the rehabilitation of those with livestock resources. Those remaining in camps are obviously dependent on aid.

Ethiopian refugees wishing to return from Sudan were thought to number around 160,000 in July 1992. More recent estimates are between 60,000 and 90,000. The actual number eventually returning may be even smaller, and seasonal labor migration across the border is sure to continue. Hence, this is likely to be a much smaller real influx of people than originally thought. Negotiations between the two governments and the UN are currently stalled, and the repatriation is not now expected to begin until next year.

#### Refugees from Somalia and Sudan

The refugee situation in Ethiopia is currently low-key, populations of most camps have declined and a number of feeding operations have been discontinued. All the border camps marked on the summary map have mixed populations of non-Ethiopian and Ethiopian displaced making refugee numbers difficult to verify.

Estimates of the number of Somali refugees currently in camps in Ethiopia range from 170,000 to 395,000. Even the lower figure may well be an over-estimate (one problem being the difficulty in distinguishing between Ethiopian and non-Ethiopian ethnic Somalis). The majority of these refugees are from "Somaliland" (northwest Somalia) and are located in camps in eastern Ethiopia. However, refugees from southern Somalia were also arriving in the Dollo area (see summary map) from February 1992 on. By May 1992 they numbered as many

as 70,000, and the influx continued through December at a rate of up to 100 daily. At the same time, however, people have been moving back across the borders for over a year. UNHCR recently estimated that 100,000 to 150,000 Somali refugees had spontaneously returned home, due to improved conditions in southern Somalia and, in part, to the availability of food aid from Ethiopian feeding camps flowing across the border.

The number of Sudanese refugees in Ethiopia has fallen significantly in recent years, although the rate of new arrivals increased in mid-1992 due to poor harvests and the continuing war in southern Sudan. Latest estimates suggest there are about 21,000 southern Sudanese refugees now in the Gambela area (compared to the 400,000 reported by FEWS/Ethiopia at the end of 1990), and that about 200 continue to arrive each week—a rate well below previous expectations.

Both border situations are volatile. While the situation is relatively calm at present, future influxes of extremely vulnerable refugees cannot be ruled out.

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### Conclusions

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The current situation is positive. The outlook for the *meher* harvest and pastoral conditions are promising. No real emergency situations are expected in the near future, though there are continuing food aid needs and pockets of acute stress. Food security at national and sub-national levels remains precarious, due to chronic problems of structural deficits and poverty.

FEWS/Ethiopia will focus its monitoring efforts for the coming season on:

- The success of the *meher* agricultural season, and climatic conditions in the pastoral areas. As noted, one bad season in the vulnerable areas could still have a disastrous impact. Historically, there is no basis for assuming a good *meher* season will follow the present exceptionally high spring rainfall levels.
- The possible threat of a locust plague. As reported elsewhere by USAID/FEWS, the control of Desert Locusts in Eritrea and Sudan appears to have been largely successful, however, swarms of African Migratory Locusts were reported in the Dire Dawa Region in early May. The level of alert for Ethiopia is currently moderate, but the threat remains real and vigilance and preparedness are essential.
- The degree of speed and success in reintegrating the various categories of displaced people.

## The FEWS Vulnerability Index

Level of Vulnerability	Conditions of Vulnerability	Typical Coping Strategies and/or Behaviors	Interventions to Consider
<b>SLIGHTLY VULNERABLE</b>	<p>Maintaining or Accumulating Assets</p> <p style="text-align: center;">and</p> <p>Maintaining Preferred Production Strategy</p>	<p><b>Assets/resources/wealth:</b> either accumulating additional assets/resources/wealth or only minimal net change (normal "belt-tightening" or seasonal variations in) assets, resources or wealth over a season/year. i.e., coping to minimize risk.</p> <p><b>Production Strategy:</b> any changes in production strategy are largely volitional for perceived gain, and not stress-related.</p>	<b>Developmental Programs</b>
<b>MODERATELY VULNERABLE</b>	<p>Drawing-down Assets</p> <p style="text-align: center;">and</p> <p>Maintaining Preferred Production Strategy</p>	<p><b>Assets/resources/wealth:</b> coping measures include drawing down or liquidating less important assets, husbanding resources, minimizing rate of expenditure of wealth, unseasonal "belt-tightening" (e.g., drawing down food stores, reducing amount of food consumed, sale of goats or sheep).</p> <p><b>Production Strategy:</b> only minor stress-related change in overall production/income strategy (e.g., minor changes in cropping/planting practices, modest gathering of wild food, inter-household transfers and loans, etc.).</p>	<b>Mitigation and/or Development: Asset Support</b> (release food price stabilization stocks, sell animal fodder at "social prices", community grain bank etc.)
<b>HIGHLY VULNERABLE</b>	<p>Depleting Assets</p> <p style="text-align: center;">and</p> <p>Disrupting Preferred Production Strategy</p>	<p><b>Assets/resources/wealth:</b> liquidating the more important investment, but not yet "production," assets (e.g., sale of cattle, sale of bicycle, sale of possessions such as jewelry).</p> <p><b>Production Strategy:</b> coping measures being used have a significantly costly or disruptive character to the usual/preferred household and individual lifestyles, to the environment, etc. (e.g., time-consuming wage labor, selling firewood, farming marginal land, labor migration of young adults, borrowing from merchants at high interest rates).</p>	<b>Mitigation and/or Relief: Income and Asset Support</b> (Food-for-Work, Cash-for Work, etc.)
<b>EXTREMELY VULNERABLE or AT-RISK</b>	<p>Liquidating Means of Production</p> <p style="text-align: center;">and</p> <p>Abandoning Preferred Production Strategy</p>	<p><b>Assets/resources/wealth:</b> liquidating "production" resources (e.g., sale of planting seed, hoes, oxen, land, prime breeding animals, whole herds).</p> <p><b>Production Strategy:</b> Seeking non-traditional sources of income, employment, or production that preclude continuing with preferred/usual ones (e.g., migration of whole families).</p>	<b>Relief and/or Mitigation: Nutrition, Income and Asset Support</b> (food relief, seed packs, etc.)
<b>FAMINE</b>	Destitute	<b>Coping Strategies Exhausted:</b> no significant assets, resources, or wealth; no income/production.	<b>Emergency Relief</b> (food, shelter, medicine)