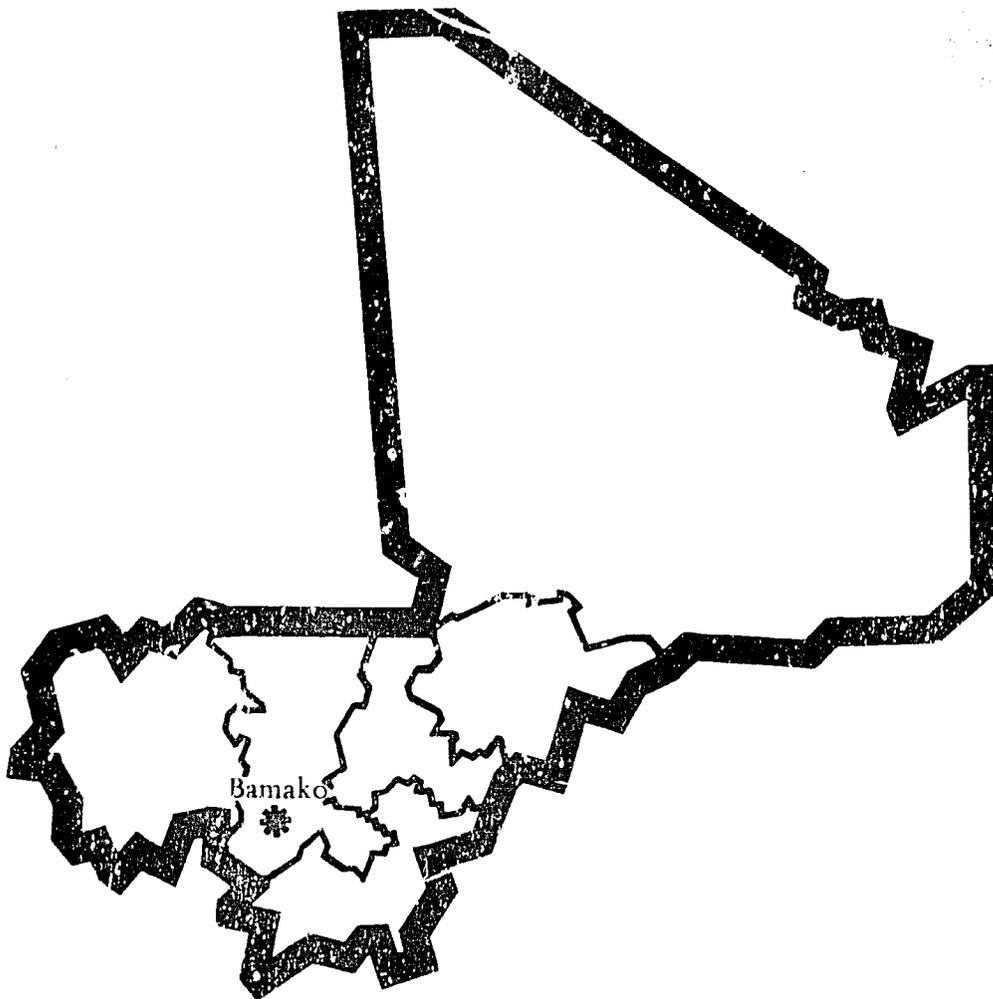


Mali

A Country Profile



Office of Foreign Disaster Assistance
Agency for International Development
Washington, D.C. 20523

Mali



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 Lambert Conformal Projection
 Standard parallels 8° and 32°
 Scale 1:11,000,000
 Boundary representation is
 not necessarily authoritative

MALI: A COUNTRY PROFILE

prepared for

The Office of U.S. Foreign Disaster Assistance
Agency for International Development
Department of State
Washington, D.C. 20523

by

Mark W. Hall

Labat-Anderson Incorporated
Arlington, Virginia
under contract AID/PDC-0000-C-00-8153

The country profile of Mali is part of a series designed to provide baseline country data in support of the planning and relief operations of the Office of U.S. Foreign Disaster Assistance (OFDA). Content, scope, and sources have evolved over the course of the last several years and the relatively narrow focus is intentional.

We hope that the information provided will also be useful to others in the disaster assistance and development communities. Every effort is made to obtain current, reliable data; unfortunately it is not possible to issue updates as fast as changes would warrant.

We invite your comments and corrections. Address these and other queries to OFDA, A.I.D., as given above.

November 1988

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1. General Information1.1 Geographic Codes

AID Standard	688
AID Region	AFR/SWA
State Region	AF/W

1.2 Host Mission to the U.S.

Embassy of the Republic of Mali
2130 R Street, N.W.
Washington, D.C. 20008
(202) 332-2249

For current information on the Malian
Embassy staff, refer to the U.S. Department
of State Diplomatic List.

1.3 U.S. Mission in Mali

Embassy of the United States
Rue Testard and Rue Mohamed V
B.P. 34
Bamako
Tel.: 22-58-34 or 22-56-63
AID Mission: 22-36-02
Telex: 448 AMEMB
(There is no direct dial service between Mali
and the United States.)

For current information on the U.S. Embassy
staff in Mali, consult the most recent
edition of Key Officers in Foreign Service
Posts, U.S. Department of State.

1.4 Time Zones

GMT; EST+5

1.5 Currency

300 CFA franc = US \$1.00 (November 10, 1988)

Mali had its own currency with its own issuing bank from 1962 to 1968. The Mali franc returned to full convertibility with the French franc in March 1968. In mid-1984, Mali decided to stop issuing its currency and adopt the CFA franc (Communauté Financière Africaine or French African Community franc).

1.6 Travel Notes

A visa is required for entry into Mali and can be obtained at the Embassy. Two application forms, two passport photos, a copy of the traveler's round-trip ticket, and a fee of \$17.00 are required. The visa is issued for a one-week stay, but can be extended for up to three months at the Office of Tourism in Bamako. A photo permit is also required to take pictures.

Yellow fever and cholera shots are required. However, no vaccination is required against yellow fever if travelers to Mali come from a non-infected area and stay less than two weeks. Inoculations against typhoid, tetanus, and polio are recommended. A gamma globulin shot and malaria suppressants are also strongly recommended. Several doctors are available in Bamako, but medical facilities are limited. Pharmacies do not always carry the simplest supplies.

1.7 Terms in French and English

Central Executive Bureau - Bureau Exécutif
Central (BEC)

Democratic Union of the Malian People -
Union Démocratique du Peuple Malien (UDPM)

Doctors Without Borders - Médecins sans
Frontières (MSF)

Early Alert System - Système d'Alerte Précoce
 Malian Office for Agricultural Products -
 Office Malien des Produits Agricoles
 (OPAM)
 Malian Red Crescent - Le Croissant Rouge
 de Mali
 Ministerial Committee - Conseil des
 Ministères
 Ministry of Education - Ministère de
 l'Education
 Ministry of Finance - Ministère de la Finance
 Ministry of Public Health - Ministère de la
 Santé Publique
 Ministry of Public Works - Ministère des
 Travaux Publiques
 Ministry of Territorial Affairs and
 Development - Ministère de
 l'Administration Territoriale et du
 Développement à la Base
 Mixed Commission for Removal of Grain and
 Food Assistance Products - Commission
 Mixte de l'Evacuation des Céréales et
 Produits de l'Aide Alimentaire
 National Committee for Aid to Drought Victims
 - Comité National d'Aide aux Victimes de
 la Sécheresse (CNAVS)
 People's Pharmacy of Mali - Pharmacie
 Populaire de Mali
 Rural Development Operations - Opérations de
 Développement Rural (ODR)
 Senegal River Development Authority -
 Organisation de Mise-en-Valeur du Fleuve
 Sénégal (OMVS)

1.8 Holidays, Calendar, and Business Hours

New Year's Day.....January 1
 Army Day.....January 20
 Labor Day.....May 1
 Day of Africa.....May 25
 Independence Day.....September 22
 Liberation Day.....November 19
 Christmas.....December 25
 Id al Fitr (end of Ramadan).....*
 Tabaski (Id al Kabir).....*
 Maulud (Prophet's Birthday).....*

* Dates vary according to lunar calendar

(The fiscal year is the same as the calendar year.)

Official working hours in Mali are:
7:30 a.m. - 2:30 p.m. (M-Th, Sa)
7:30 a.m. - 12:30 p.m. (Fr)

Banks are open:
8:00 a.m. - 2:30 p.m. (M-Th)
8:00 a.m. - 12:30 p.m. (Fr, Sa)

1.9 Treaties and Agreements

Agricultural Commodities Agreement
Economic and Technical Cooperation Agreement
Geodetic Survey
Investment Guaranties
Military Assistance
Military Equipment, Material, and Services Agreement
Peace Corps

1.10 International Organization Memberships

African Development Bank, African Groundnut Council, African Society for the Development of the Millet and Sorghum Based Food Industry (SADIAMIL), CILSS (Permanent Inter-State Committee on Drought Control in the Sahel), CEAO (West African Economic Community), ECA (Economic Commission for Africa), ECOWAS (Economic Community of West African States), FAO, GATT (de facto), ICAO, IDB (Islamic Development Bank), IFAD, ILO, IMF, INTELSAT, Non-Aligned Movement, OAS, OMVS (Organisation for the Development of the Senegal River), UN, UNESCO, UNSO (U.N. Sudano-Sahelian Office), WHO, WMO, World Bank (IBRD, IDA, IFC)

1.11 Geography

Mali is a very arid, landlocked country in West Africa, about the size of California and Texas combined. It has an area of 1,244,880 sq. km. (478,800 sq. miles), slightly smaller than its neighbor Niger, and extends about 1,600 km. north to south

with a narrow middle. Its neighbors are, starting in the north and moving clockwise, Algeria, Niger, Burkina Faso, Ivory Coast, Guinea, Senegal, and Mauritania, all former French colonies, like Mali. Most parts of Mali are at least 1,300 km. from the ports of West Africa. The northern third of the country lies in the Sahara Desert, though the desert has been creeping south of its traditional barrier, the Niger River. Much of the rest of Mali is part of the Sahel, a very dry transition zone between the true desert and the more hospitable savanna. Rainfall is sparse throughout the country. The area around the capital, Bamako, receives about 1,210 mm. of rain a year with a rainy season of four to five months, while Gao, in eastern Mali, has a rainy season of only seven weeks with an average annual rainfall of 236 mm. Temperatures are generally very high throughout the year. In the southern, more-populous half of the country, temperatures range from 24°C to 35°C (75°F to 95°F). Further north, the range is from 27°C to 60°C (80°F to 140°F).

Two major rivers flow through Mali: the Niger and the Senegal. The Niger crosses the heart of the country, flowing northeast from Guinea through such fabled cities as Mopti, Timbuktu, and Gao before continuing on its way to Niamey in Niger. The Niger has a large inland delta that covers the area between Ségou and Timbuktu during the rainy season. It is navigable from Koulikoro to Gao by large riverboats from mid-July to mid-December and by smaller vessels the rest of the year. The Senegal River crosses a much smaller portion of Mali and drains part of the western region.

Most of the country is flat, although there are a few highland areas. In the east, the Bandiagara Plateau rises 900 m. in the Hombori Mountains. There are also some significant butte outcroppings in the west between Bamako and Kayes. (See Section 2.1, Overview of the Environment)

1.12 Ethnic Groups

There are a number of ethnic groups in Mali, of which the principal ones are the Bambara, Fulani, Malinké, Songhai, Soninké, Tuareg, and Dogon. The largest group in Mali is the Bambara, who make up over 30% of the population and are found in all parts of the country. Their cultural and political influence are predominant. The Bambara are traditionally farmers.

About 200,000 Malians are of the Malinké (or Mandinka) group. Most live in extreme southern Mali, with the Guinea-Mali border area of the Niger River being the Malinké cultural homeland. The Malinké are also agriculturalists.

The Songhai (or Songhay) once ruled over an empire which stretched from western Mauritania to central Niger during the 16th century. Today, the Songhai people mainly live in two areas. The first is in Mali around the inland delta area of the Niger River, extending from Lake Débo along the river with major concentrations in Goundam, Timbuktu, Bandiagara, and Gao and smaller ones in Mopti, Ségou, and Bamako. The other area is in western Niger. The Songhai are also traditionally farmers.

In contrast, the Fulani (or Peul) and the Tuareg, are traditionally nomadic herders. After losing their herds to drought, significant numbers of both groups have settled. The Tuareg are concentrated in the Adrar Iforas near the Algerian-Malian border. They are Berbers who, the century before, had caught the imagination of the West as "men of the veil" and "guardians of the desert." The Fulani live in areas further south than the Tuareg. Several million Fulani are pastoral nomads, particularly raising Zébu cattle, while millions more of the Fulani are now sedentary farmers.

The Soninké number close to 3,000,000 with most living in Mali, Burkina Faso, and the Ivory Coast. They are usually farmers or traders.

French is the official tongue although probably less than 5% of the population can speak it. Bambara, a Manding language and native to about a third of Malians, is understood or spoken by about 80% of the population. It is also sometimes used in place of French as the language of administration. The language of the Malinké is also a Manding language, while the Soninké tend to speak the language of the majority group in the areas where they live.

Fulfulde (the Fulani language), Tamarashak, (the Tuareg language), and Songhai are also spoken in Mali.

1.14 Religion

A majority of the population, perhaps as much as 80% or 90%, call themselves Muslims. Many people have also incorporated aspects of Islam into their indigenous religions. The branch of Islam which predominates is the Malekite school of the Sunni sect. As in the rest of West Africa, Muslim brotherhoods are popular in Mali, particularly the Tijaniya and Qadiriya. Both Timbuktu and Djenne are important centers of Islamic teaching, as they have been for several centuries.

Almost all of the rest of the population follow traditional animism, with perhaps 1% calling themselves Christians.

1.15 History

The region which today forms the nation of Mali has a rich and varied history. The area around the Niger River was long a crossroads between people from the Mediterranean coast and desert in the north, and those in the Sudanese, tropical south. The three largest and most important empires in the region's history were the Ghana,

Mali, and Songhai. The Ghana Empire flourished from about 500 A.D. to 1200 A.D. and covered present-day Mauritania, Senegal, and Mali, between the gold-producing forest region and the southern terminus of the caravan trade. Gold, slaves, and salt were the most important trade commodities, making the ruling class quite wealthy.

In the 11th century, a Berber dynasty called the Almoravids, which also conquered Spain, attacked and greatly weakened Ghana, allowing it to be replaced by the founders of the Mali Empire around 1200. Mali's boundaries at its height extended from the upper Niger in the south to the Sahara in the north, and from the Senegal River in the west to Gao in the east. It was an agricultural society, with millet, rice, and fonio constituting the major crops. Trade continued to be of great importance, of course, as this area was still a major crossroads. Islam spread during this time with several Malian rulers actively supporting the religion.

The empire was not long-lived, however. Successionist struggles sapped the empire's strength and resources in the late 14th century and this allowed the Songhai, who lived around Gao, to topple it and start building their own state. At its zenith from 1493 to 1528, the Songhai empire was the largest in West African history, with Gao as its political heart and Timbuktu its religious and intellectual center. Like the previous empires, Songhai society was rigidly stratified but quite prosperous. In the late 1500s, however, a Moroccan army disturbed this tranquility and overthrew the Songhai. No strong, central authority replaced the empire and various groups fought for control of the area.

The French first established a colonial foothold on the West African coast in the mid-17th century, but they did not try to expand into the interior until the late 19th century. France's loss in the Franco-Prussian War in 1871 spurred its colonial conquests and it set out to acquire the vast and mostly desert territory between coastal West Africa and central Africa on the one hand, and its possessions in northern Algeria on the other. Timbuktu was occupied in 1893 and the Lake Chad region around 1900; much of this area, however, was not fully "pacified" until World War I.

With Europeans in control of practically the entire continent, old trade routes were radically altered to better suit the colonial masters. Mali, once an important trading center, now became part of the hinterland. Although French economic and agricultural policies had a significant, if not devastating, impact, the influence of metropolitan culture and settlement was not as great as in other colonies.

Under the French, Mali was known as the French Soudan, and from 1892 to 1899, it was administered from Kayes; after that, Mali was grouped with other units such as Senegal or Niger. When Mali received independence from France on June 20, 1960, it was connected to Senegal as the Federation of Mali. Senegal seceded two months later and the Republic of Mali was proclaimed on September 22, 1960, under the leadership of President Modibo Keita and the Union Soudanaise party.

When Mali became an independent nation, it also withdrew from the French Community and left the Franc zone. President Keita soon declared Mali to be a one-party socialist state. With most trade and businesses in government hands, the economy deteriorated and public discontent grew. On November 19, 1968, a bloodless coup installed Lt. (now General) Moussa Traoré as president. Under Traoré, Mali began moving away from a statist economy in the early 1980s (see Section 1.19, Economy).

A new constitution was promulgated in 1974 and there was official talk of civilian rule occurring within five years. However, mounting dissatisfaction caused by unemployment, the drought, and reductions in urban food subsidies caused the government to postpone this pledge. In September 1976, a new political party, the Democratic Union of the Malian People (UDPM under the French acronym), was formed, based on the concept of "non-ideological democratic centralism." Presidential and legislative elections took place in June 1979; Moussa Traoré received 99% of the vote. He was re-elected for a second six-year term in 1985.

Periods of student unrest and the threat of another military takeover were only temporarily alleviated by war in 1985 with Burkina Faso. The conflict began when Mali attacked Burkina on December 25 over a 160-km.-long border area called the Agacher strip. Fighting ceased on December 29 as both countries signed ceasefire agreements sponsored by Libya and Nigeria, and the region's defense association. A year later, the belligerents accepted an International Court of Justice ruling whereby the western half of the Agacher strip would go to Mali and the eastern half to Burkina.

1.16 Government

In the Malian system, the president is chief of state, head of government, secretary general of the UDPM (the only political party), and minister of defense. The president nominates a cabinet of 17 ministers; this body, known as the Council of Ministers, administers government policies.

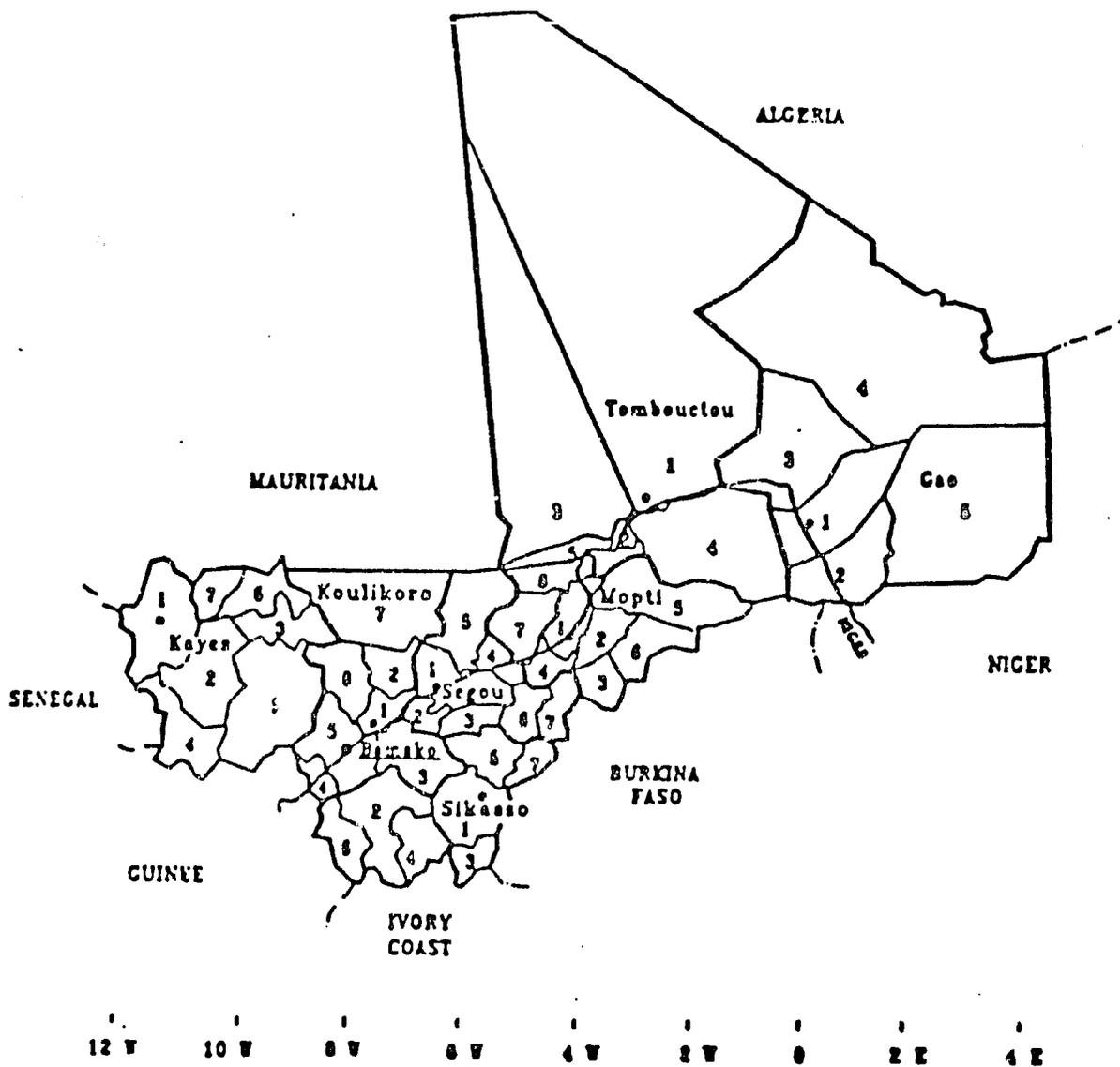
The legislative branch of the government consists of the National Assembly; it is made up of 137 deputies, each of whom represents about 60,000 people. The National Assembly meets twice a year to consider the budget and other issues presented to it. Deputies debate proposed legislation in closed session and offer advice to the government, but have never been known to reject legislation.

According to the constitution, the UDPM is the nation's sole party and the supreme political authority. A 19-member Central Executive Bureau (BEC) directs party activities at the cabinet level and, in fact, takes precedence over the cabinet. The BEC is the most powerful political institution in Mali. The party structure parallels the governmental structure from the national to the local levels.

The judiciary in Mali is an arm of the executive branch and subject to interference from it. The country's legal system is based on the French model with many laws dating from the colonial period.

Administratively, Mali is divided into seven regions and the capital district of Bamako, each under the authority of an appointed governor. Each region comprises five to nine districts, called cercles, administered by commandants (see Figure 1.1, Regions and Cercles of Mali). These cercles are divided into arrondissements, and arrondissements into villages. Most governors are appointed from the military, and some posts at the cercle and arrondissement levels are filled by military officers. On the other hand, larger towns elect their own civilian municipal councils and mayors.

1.1 Regions and Cercles of Mali



REGIONS and CERCLES

KAYES

- 1. Kayes
- 2. Bafoulabe
- 3. Diema
- 4. Kenieba
- 5. Kita
- 6. Niore
- 7. Yellmène

KOULIKORO

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

SIKASSO

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

SEGOU

- 1. Segou
- 2. Baraoueli
- 3. Bla
- 4. Macina
- 5. Niono
- 6. San
- 7. Tombléou

MOPTI

- 1. Mopti
- 2. Bandiagara
- 3. Bankessa
- 4. Djenna
- 5. Douentza
- 6. Koro
- 7. Tenenkou
- 8. Youvarou

TOMBOUCTOU

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

GAO

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

Other Int'l Boundaries

Region Boundary

Cercle Boundary

● National Capital

● Regional Capital

200 km

Source: FEWS Country Report, June 1988

1.17 Population

Population (mid-1986 estimate)	7,896,101
Population/sq. km.	5.8
Average annual growth (1965-80)	2.6%
Average annual growth (1980-85)	2.3%
Projected average annual growth (1985-2000)	2.7%
Urban population	19%
Population less than 15 years old	47%

Source: World Bank, World Development Report 1987.

The Famine Early Warning System (FEWS) Country Report #1 on Mali (see Section 3.2 Early Warning) extrapolates population figures by region as follows:

<u>Region</u>	<u>Estimated 1986 Population</u>	<u>Population Density (per sq. km.)</u>
Kayes (I)	1,089,662	5.5
Koulikoro (II)	1,650,285	18.4
Sikasso (III)	1,366,025	17.9
Ségou (IV)	1,334,441	23.8
Mopti (V)	1,381,818	15.6
Timbuktu (VI)	615,896	1.5
Gao (VII)	<u>457,974</u>	<u>1.4</u>
TOTAL	7,896,101	6.4

The largest city is the capital, Bamako, which has approximately 620,000 inhabitants. Other major population centers include Ségou (with about 65,000 people), Mopti (54,000), Kayes (45,000), and Gao (37,000). Only about 19% of Malians live in towns or villages of more than 5,000 inhabitants.

1.18 Health

Basic Indicators:

The figures are from 1985 unless otherwise indicated. Numbers in parentheses represent comparable figures for the average of low-income countries south of the Sahara.

	<u>Mali</u>	<u>Africa</u>
Life expectancy at birth-		
males	45 years	(47)
females	48 years	(50)
Infant mortality rate/1,000	174	(129)
Child (aged 1-4) mortality		
rate/1,000	43	(26)
Crude birth rate/1,000	48	(47)
Crude death rate/1,000	20	(18)
Change in birth rate	-14.6%	(-2.0%)
(1965-85)		
Change in death rate	-25.5%	(-19.7%)
(1965-85)		
Population/physician (1981)	26,450	(27,922)
Population/nurse (1981)	2,320	(3,022)
Daily calorie supply per capita		
(1983)	68%	(90%)
Population with access to potable water		
(1976)	9%	(25%)

Source: World Bank, World Development Report 1987 and Report and Recommendation to the Republic of Mali for a Health Development Project (Report No. P-3670-MLI), November 15, 1983.

Health Overview:

Demographic and health figures for Mali are very sketchy and best serve as indicators. Nevertheless, one can see that the health situation in Mali is very poor; most of the statistics rank among the lowest in the world. Gastrointestinal disorders are rampant, particularly among children, while malaria brought on by unsafe water consumption and poor sanitation affects all age groups.

Malaria, diarrhea, tetanus, malnutrition, and respiratory illnesses contribute to the high infant mortality rate. Measles, aggravated by malnutrition and diarrhea, is the primary cause of mortality in children. Other major disorders include trachoma, guinea worm infection, and onchocerciasis (see Sections 2.4, Disease and 3.4, Health Preparedness).

1.19 Education

Basic Indicators:

The figures are from 1982 unless otherwise indicated. Numbers in parentheses represent the comparable figure for the average of low-income countries south of the Sahara.

Literacy rate	10% (36%)
Boys enrolled in primary school	35% (79%)
Girls enrolled in primary school	20% (56%)
Total enrolled in secondary school	9% (14%)
Total enrolled in higher education	0% (1%)

Source: World Bank, World Development Report, 1987

Educational Overview:

Mali has one of the lowest literacy rates in the world; the level of instruction has hardly risen in the last 20 years. The country's extreme under-development and the scattered nature of its population are major causes. What formal education exists is marred by lack of relevancy to the Malian experience, inadequate training of teachers, and insufficient educational materials.

The Malian educational system is similar to those of other West African former French colonies. The Basic Education course is nine years, divided into six years of primary education and three years of lower secondary. There is a competitive examination after this course which can lead students to either a three year secondary course (from which the baccalaureate is received) or technical schools.

Mali has no university, but does have some institutions devoted to professional training. There are three schools for training teachers, a veterinary training institute, three centers for training mid-level agricultural and livestock technicians, and three centers for training agricultural extension agents.

1.20 Economy

Basic Indicators: 1985 figures unless otherwise indicated.

GDP	\$1,100 million
GNP per capita	\$150
GDP average annual growth rate (1965-85)	1.4%
Average annual rate of inflation (1980-85)	7.4%
Exports	\$172 million
Average annual growth rate (1980-85)	4.2%
Imports	\$363 million
Average annual growth rate (1980-85)	-1%
Total external public and private debt	\$1,327 million
As % of GNP	122.1%
Interest payments on debt	\$13 million
External debt service as % of GNP	3.5

Source: World Bank, World Development Report, 1987.

Economic Overview:

Geography, a harsh climate, and few resources join to make this one of the poorest nations anywhere. Mali has a subsistence-oriented economy, an extremely low rate of domestic savings, and a dependence on only a few exports. There is very little mining or manufacturing. As of 1983, agriculture, livestock raising, and fishing accounted for 46% of the GDP.

Under Modibo Keita and Moussa Traoré until the early 1980s, there was a heavy emphasis on state intervention in the economy. The government controlled most trade and industry; it subsidized inputs to agricultural production while paying artificially low prices for the end product. In 1981, reportedly under pressure from bilateral and multilateral donors, Malian authorities changed economic direction. Their country's entry into the West African Monetary Union in 1984 included conversion from the Malian to the CFA franc and compliance with that group's interest, credit, and financial practices. Between

1983 and 1985, the government initiated reforms under three IMF standby arrangements. These austerity measures have included selling off and reorganizing parastatals, reducing the civil service, and adopting a more favorable code to outside investment.

Perhaps the most important aim of Mali's reform program is to increase agricultural production. To that end, the government has liberalized the internal grain market and increased farmer incentives (see Sections, 1.20 Agriculture and 2.2 Drought). Mali's economic plan of 1987-91 stresses the need for self-sufficiency in food production and continued financial reform.

Mali depends on foreign assistance to support almost all public investment. More than half of this aid comes in the form of grants and the rest in highly concessional loans, of which two-fifths are from multilateral agencies. The World Bank is the largest such lender. Principal bilateral donors to Mali include France, the United States (especially in famine relief), the Soviet bloc, China, Arab oil-producing countries, and other European nations.

Imports and Exports: Much of Mali's foreign commerce goes unrecorded. Officially, cotton makes up 45 to 55% of exports with livestock at 15% and groundnuts at 14%. Major imports consist of manufactured goods (25%), chemicals and pharmaceuticals (25%), petroleum products (18%), and food (20%). Mali's main trading partners are France, Ivory Coast, China, West Germany, and Belgium. Recently, the world slump in cotton prices combined with the country's heavy dependence on imported energy and manufactured goods has produced a record trade deficit.

Source: The Africa Review, 1986

1.21 Agriculture

Farming:

Close to 73% of Mali's work force is engaged in agriculture, an activity comprising 42% of the GDP. Almost all (about 90%) of Mali's 1.4 million hectares under cultivation is used for subsistence farming. As in much of the arid and semi-arid Sahel, Mali's primary food crops are the relatively drought-resistant sorghum and millet, with millet the primary crop in the region between 14°N and 18°N and sorghum the principal crop further south between 8°N and 14°N. Corn and rice are also grown for food.

Principal export crops are cotton and groundnuts. Although a star performer in Malian agriculture, even during drought years, cotton has recently generated less-than-expected revenues due to a worldwide slump in prices. Rainfall is a much more determining factor for groundnuts which have fared badly during dry years and well during wet ones.

The most fertile region is along the banks of the Niger River between Bamako and Mopti and from this area extending south to the borders of Burkina Faso and Ivory Coast. Some cash crops such as cotton, groundnuts, corn, vegetables, tobacco, and tree products are grown in this region. A state-run enterprise, the Office du Niger, is in charge of rice and sugar production (the latter initiated with the building of two refineries).

The most important rice-producing area is the region north of Ségou toward the border with Mauritania. Rice is also grown extensively between Ségou and Mopti along the banks of the Niger. Finally, wheat is grown on irrigated fields near the town of Diré in the winter months.

Ninety percent of the fish produced in Mali comes from the Mopti region where the Niger and Bani rivers flood the great inland delta during the rainy season. The rest of the fish comes from the Senegal River, including some saltwater species that come with the seasonal seawater intrusion.

Livestock:

Until 1972, Mali had practically the largest herds in francophone Africa. At the time, there were approximately 5 million cattle and 8 million sheep and goats. In fact, livestock was Mali's greatest resource. Herds were decimated, however, by the great drought in 1973-74. Although much of the herd level was restored over the next decade, the 1984-85 drought proved devastating. Total livestock losses are estimated to be between 7% and 20%, but many experts suspect the loss may be even higher. Many of Mali's nomads, who traditionally depended on herding for their livelihood, have migrated to urban areas or neighboring countries (see Section 2.2, Drought).

1.22 Transportation

For Americans traveling to Mali, air connections are best made through New York City or Dakar, Senegal. Between two and four flights a week arrive in Paris from Bamako. Airlines servicing Mali include: Aeroflot, Air Afrique, Air Algérie, Air Ivorie, Air Burkina, Ethiopian Airlines, and UTA of France.

Cheap bus and taxi service (tip is 10%) is available within and between Malian towns, although private vehicles remain the most reliable. Rented cars are usually Renaults or Peugeots. Twice a week, passenger trains (with three classes, sleeping and dining facilities, and the ability to transport vehicles) leave Bamako for the 1-1/2 day journey to Dakar. The National Navigation Company, a parastatal operates three steamers between Koulikoro near Bamako and Gao on the Niger. The boats offer biweekly service on a trip lasting

seven days and including stops at the major river ports. They offer four classes; advance booking through Mali's Tourist Authority is needed for first-class.

The history of transportation in Mali corresponds with the country's overall development. Before colonialism, people traveled either on foot or with pack animals. The rich inland camel trade gave rise to several of the 13th through 18th century empires. Under colonial rule, the advent of export agriculture and administrative needs prompted investment into more modern transportation. New roads and railroads were built that linked landlocked Mali to the sea. Although the post-independence era has witnessed the formation of a national airline (now under joint ownership with the Soviets; see Section 3.9, Airports) as well as continued rail and riverboat service begun by the French, most transportation within the country still occurs by road.

1.23 Communications

- Radio:** Radio Mali operates two medium-wave transmitters at Bamako and Mopti and around 10 short-wave transmitters. There were about 102,000 radio receivers in Mali in 1983.
- Television:** Mali began a national color television service with Libyan aid in September 1983.
- Telephones:** In 1981, there were 8,930 telephones in Mali. The telephone system is operated by the Telecommunications and Post Office (OPT), a parastatal enterprise. Practically all telephone connections are in about 50 cities and towns in southern and western Mali; only 17% of the population lives in areas with any access to telephones or telegraphs. All seven regional capitals have telephone and telegraph services although only two meet satisfactory standards.

international traffic is generally operator-handled with direct links to Moscow, Cairo, and Paris. OPT operates a standard-B earth station for satellite communication with Algiers. TIM, Telecommunications Internationales du Mali (a company jointly owned by the Malian government and a French company, France Cable et Radio), operates another standard-B earth station for traffic to Europe and beyond. Almost all international traffic is handled manually although a few circuits have been made available for service with France.

The quality of telephone service in Mali is generally poor, and the waiting list for a telephone is long. The lack of available cable pairs has hindered the expansion of telephone service.

Telegraph and Telex: OPT operated 52 telegraph offices in 1981, of which three had no telephone service. The Bamako local cable network was repaired and expanded in the early 1980s, although expansion has not kept up with demand. Telex use is available from the main hotels and the Central Telex Office in the capital. Cable services elsewhere generally need rehabilitation.

Bamako has a telex exchange type TW39 of 200 lines. The 32 connected lines and 170 subscribers have pushed the system to its limits.

Press: Mali has one daily newspaper, L'Essor-La Voix du Peuple, which is an organ of the UDPM and has a circulation of barely 40,000. Mali also publishes one cultural and sports weekly and five monthlies on various subjects. One of the monthlies, Kibaru, is published in three local languages as well as French.

The Ministry of Information operates a national news agency: the Malian Press and Promotion Agency (AMPA). Agence France-Presse (French), Agentstvo Pechati Novosti and Tass (Soviet), Reuters (British), and Xinhua (Chinese) maintain bureaus in Mali.

2. Disaster Vulnerability

2.1 Overview of the Environment

Mali is one of eight countries considered to be part of the Sahel, that environmentally precarious part of Africa between the Sahara Desert and the more fertile West African coast. The other Sahelian countries are Cape Verde, Mauritania, Senegal, the Gambia, Burkina, Niger, and Chad. The vast region covers about 5.3 million sq. km., more than one-and-a-half times the area of Western Europe, and has a population of 33.4 million. Mali's area is 1,244,880 sq. km., approximately one-quarter of the total; this landlocked, vast arid country supports a population of 7.7 million.

Rainfall is the determining factor of life in Mali, as in the rest of the Sahelian countries. The amount, intensity, and distribution of precipitation varies considerably from year to year: even a slight decline can spell the difference between survival and catastrophe. Annual rainfall in Mali ranges from practically nothing in the extreme north to 1,400 mm. in the far south. The erratic spacing and timing of rainfall becomes more marked as one approaches the desert. For example, precipitation might be normal in July, but 60% below normal in August, thereby diminishing crop yields. Sahelian rainfall can also be very destructive. When a downpour comes, it often falls torrentially, washing away soil. Mali straddles five ecological zones, of which the major determinant is rainfall. (Figure 2.1, Climatic Zones of the Sahel-Sudan Region and Rainfall Isohets shows these ecological zones with the accompanying isohets, while Figure 2.2, Vegetation Types shows the corresponding vegetation types.) The five zones are described below.

Desert Belt: The desert, which comprises close to 36% of the total area of the Sahelian countries, receives less than 100 mm. of rain per year and generally has fewer than ten rainy days per year. Parts of the Sahelian wedge of northern Mali receive virtually no rain. Temperatures often soar above 40° C while daily fluctuations can exceed 35° C. The plants and animals which survive in this area have adapted to the most extreme desert climatic conditions in the world. (On Figure 2.2, Climatic Zones, the area labeled "A" represents absolute desert, while "B" denotes "desert dunes without vegetation.")

Subdesert Belt: Average annual rainfall of between 100 and 300 mm. characterizes this area with about 10-25 rainy days occurring in July and August. Although less inhospitable than the desert, the subdesert belt is still a harsh environment. (Areas "C" and "D" on Figure 2.2, Vegetation Types) denote "desert dunes with vegetation." The sand desert areas, "C", are called "ergs" and some may exhibit a flush of grass after a heavy rain. Area "D" comprises gravel desert, called "regs." Ergs and regs form in depressions with no outward drainage. Between these depressions can be found "wadis," dry ravines or valleys that become streams during the rainy season. The only woody vegetation in this belt is found in these wadis. This area is incapable of sustaining any settled agriculture, although animal husbandry is widespread.

Sahel Belt: The average rainfall in this region is between 300 and 650 mm. per year and is concentrated in 26-46 rainy days in June, July, August, and September. In the northern Sahel ("E" on Figure 2.2, Vegetation Types), average annual rainfall is 300-400 mm., making agriculture possible but precarious. Millet and sorghum are grown more extensively in the south Sahel (region "F"). Grasslands in the Sahelian zone are also used extensively by pastoralists.

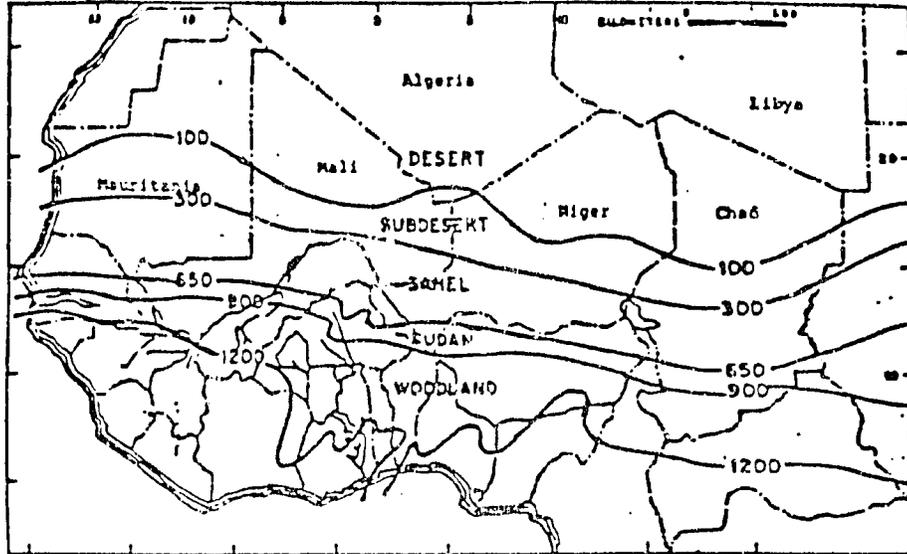
Sudan Belt: The Sudan belt receives between 650 and 900 mm. annually and has 50-65 rainy days per year in a rainy season stretching from May to October. This region (designated by "G" on Figure 2.2, Vegetation Types) has undergone centuries of cultivation, woodcutting, grassfires, and grazing. Millet and sorghum are grown in the lower rainfall part and some cash crops are grown in the higher rainfall area while animal husbandry is practiced throughout. The Sudan belt is sometimes referred to as the savannah region.

Woodland Belt: This area receives between 950 and 1,400 mm. annual rainfall and has about 65-90 rainy days per year occurring in a rainy season from May to October. However, the woodland belt covers only the southernmost portion of Mali (represented by "H" on Figure 2.2, Vegetation Types).

Two major rivers flow through Mali, the Niger and the Senegal. The Niger is the larger, and has played an important role in the geography and history of West Africa. It begins in the Fouta Jallon highland plateau in Guinea and flows northeastward through Mali until it reaches Timbuktu, where it turns southeast, flowing through a small portion of Niger and through Nigeria to the Gulf of Guinea. It is approximately 4,169 km. (2,600 miles) long, of which more than 1,700 km. is in Mali. The river is divided into two navigable sections by its fall over a sandstone outcrop below Bamako. The stretch around the southwestern section above the falls is known as the Upper Valley and is partly managed by canals and simple barrages. Then from Koulikoro to Sansanding north of Ségou the river flows in a slightly confined valley, restricting flooding. This region is intensively cultivated. Next, the Niger winds through the inland delta area. This stretch is quite large and is believed to be the site of an old lake in pre-Tertiary times. From Lake Débo to Kabara, the riverport for Timbuktu, the Niger meanders through a series of streams and lakes. There is a dam at Sansanding and a network of irrigation canals in this section, and the area supports agriculture, pasturage, and fishing. The inland delta area goes as far as Diré, a little southwest of Timbuktu. There, the river's course turns mostly eastward, and at Bourem, it makes a great bend to the south. The Niger's current changes erratically, making maritime navigation more difficult; differences of up to 11 meters (35 feet) have been recorded between its high and low levels. Maximum flooding of the Niger takes place in October and November.

The source of the Senegal River lies also in the Fouta Jallon highland plateau of Guinea. Its 4,000-km. length winds first northward and a little east; in Mali, it continues north but turns toward the west. At Kayes, it turns more west and flows out to the Atlantic at St. Louis,

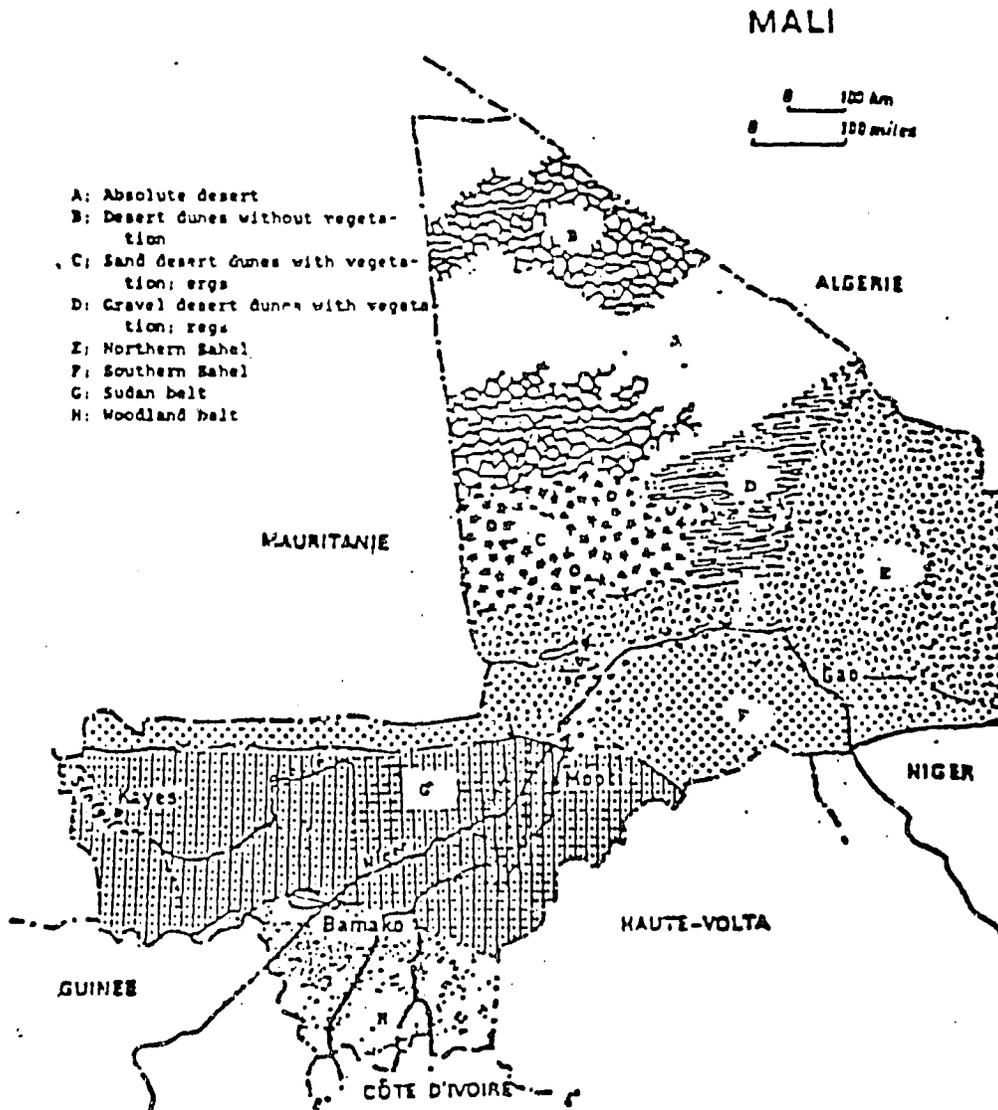
Figure 2.1 Climatic Zones of the Sahel-Sudan Region and Rainfall Isohets



Source: International Disaster Institute, *The Sahelian Drought in Perspective*, March 1979

Vegetation Types

Figure 2.2



Source: University of Arizona, *Draft Environmental Profile of Mali*, May 1980

forming the border between Senegal and Mauritania. Although the Senegal River normally acts as a barrier to the desert, during severe drought, the desert crosses the river. Close to 155,000 sq. km. of the river's 330,800-sq.-km. watershed falls in Mali. Because of its flat gradient, low water ocean tides are felt as much as 480 km. upstream, and the river water becomes saline for nearly half that distance. While one advantage is that some saltwater fish can be caught far upstream, a drawback is the harm this causes to agricultural production.

2.2 Drought

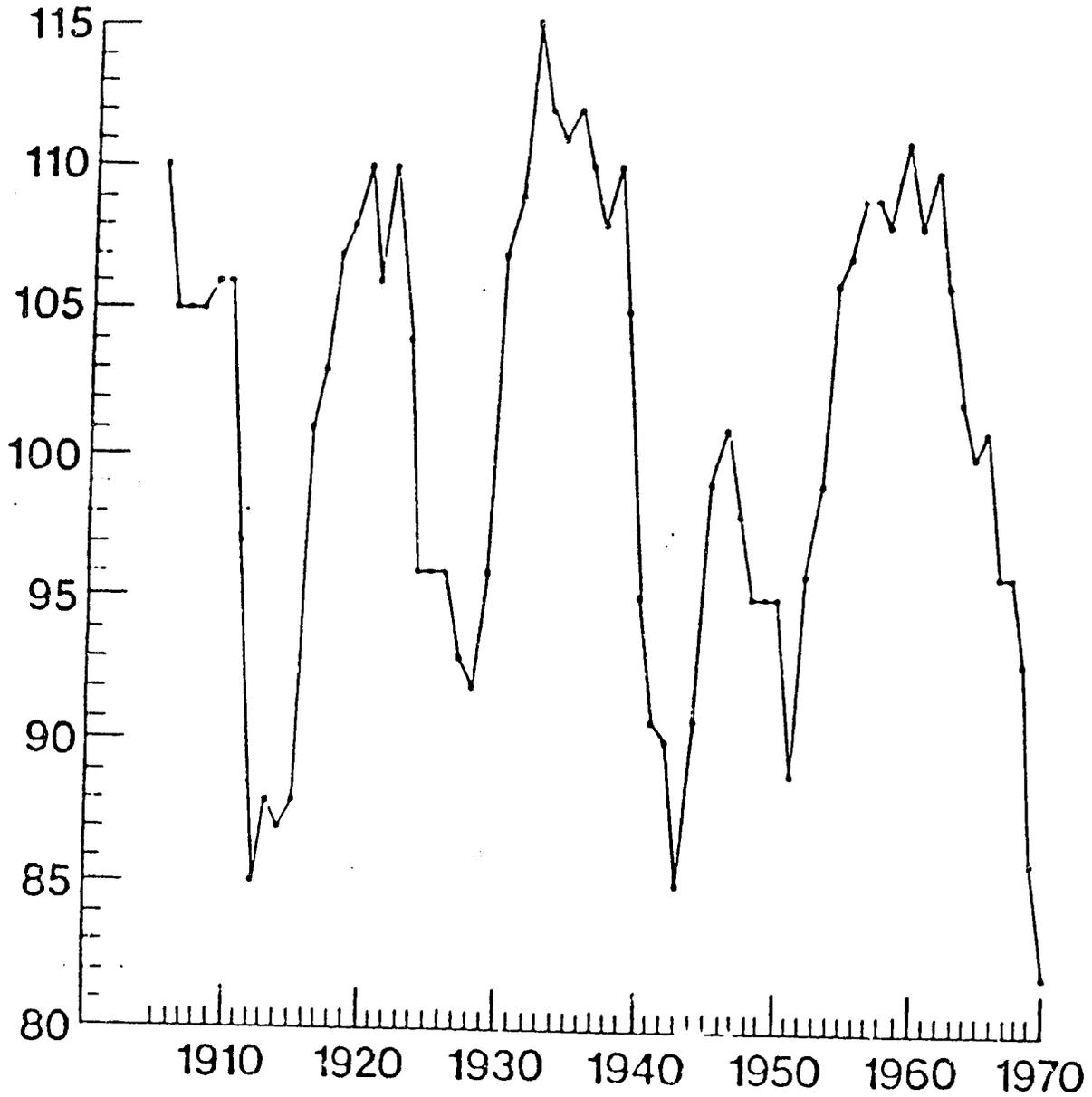
Lack of precipitation over a period of time long enough to considerably damage crops and livestock constitutes a drought. Whereas an earthquake or tidal wave is an abrupt, irregular happening, scant rainfall in a place like Mali can stretch on year after year, growing season after growing season. Drought acts as a creeping phenomenon whose cause and effect remain very much interwoven into human practices. For its most vulnerable victims, the effects of this disaster linger even after ample rains have returned.

Continuous periods of drought fit into a larger pattern of desertification afflicting the Sahel in general and Mali in particular. Where verdant vegetation flourished, only desert scrub or sand remain. Timbuktu, for example, is a place rapidly being taken over by its harsh environment. Once an intellectual center to rival medieval Europe, the city was surviving as of 1988 through a mixture of outside aid and national pride. The trade and livestock-raising that gave its inhabitants an income had all but vanished. Camps of displaced Tuareg nomads rang the outskirts, almost doubling the population and adding to social tensions. With its airport closed in 1984 and boat traffic stymied by a low Niger River, the city was becoming more and more inaccessible to travelers. The desert's march was putting Timbuktu's very survival at stake.

Despite continued dryness in the Sahel, a common misperception has persisted over what constitutes "average" weather. Before the period of independence in 1960, drought had visited the region during the years 1910-1914, around 1930, and 1940-1944 (see Figure 2.3, Rainfall in the Sahel). Because of exceptional rains in the 1950s and early 1960s, however, local inhabitants, national authorities, and development experts based their weather expectations on higher rates of moisture than what occurred after 1965. For the years up to 1988, averages slackened off considerably. What was "abnormal" had become "normal." Gradually, observers have come around to a reinterpretation of the "temporary" dry spells. Although sufficient rains in the mid-1970s gave hope to those of the more optimistic outlook, the second recent drought only confirmed what others long suspected. Far from being "over," the problem of too little moisture was only beginning.

Figure 2.3 Rainfall in the Sahel

The following chart measures annual precipitation in millimeters for the Sahel from 1900 to 1970. As shown here, periods of drought have afflicted the area between 1910-14, around 1930, and between 1940-44.



Source: Nigel Twose, Behind the Weather, May 1984

What are the effects of this major climatic change? Tangible manifestations include withered crops, impoverished soil, bone-dry wells, abandoned villages, and animal skeletons blanched by the sun. With so little nourishment, the landscape of the Sahel has become more and more barren since the late 1960s, seemingly rejecting most forms of life. One visitor to Mali in 1988 recalled seeing not one living tree between Mopti and Gao. In addition to such visible scars, continued drought has also cut deeply into the societal fabric, disrupting local economies and cultures. Price increases, population displacements, and increased dependence on outside help all testify to no rain. As livestock and crops die, famine grips the land. Emergency food helps alleviate immediate hunger pangs, but highlights the nation's mendicant status. Inhabitants suffer a lowered standard of living, while policymakers must reevaluate priorities in anticipation of continued aridity. In the process, long-range development stagnates and recedes.

Sahelian drought traces its origins to a mixture of natural and man-made causes. A warm air mass called the Intertropical Discontinuity (ITD) migrates upward from the equator each April laden with moisture. However, since 1965, cooling temperatures further north have consistently blocked this air mass and the rain it carries. A decrease of 1° C in the ITD's movement results in 17.88 cm. less rain for the Sahel. With every 1% drop in precipitation comes a corresponding 1% loss in sorghum and millet staple harvests. When a country like Mali experiences a 20%-80% plunge in rainfall, as has happened during major droughts, tremendous shortages of food result.

Environmentally harmful human activities also increase the process of desertification. Destruction of trees for firewood, overcultivation, faulty development projects, and a lack of soil and water conservation contribute to the cycle of aridity. Because of improved medical and veterinary services, annual population growth in the Sahel soared 1.8% from 1935 to 1970 while the number of cattle doubled. Such population pressures meant that lands normally left fallow for 10-15 years were being used by the mid-1950s every two or three years. Additionally, colonial authorities built hydraulically pumped boreholes which caused many transhumance groups to abandon traditional migratory routes for the new wells. The result was overgrazing. With the loss of vegetative cover, wind erosion reduced the former pastures to barrenness. Once the rains of the 1950s and early 1960s tapered off, such environmental damage could no longer be ignored.

Such a calamity tips over those already on the edge of survival. Subsistence farmers and herders form the overwhelming majority in Mali; yet, they suffer from a national bias towards commercial agriculture. The best terrain and most development aid go to exploitation of cash crops for export. Governments in the Sahel become dependent on the generated revenue to finance imports, including luxury goods, and pay outstanding debt. When crop earnings dip, more and better land is transferred from food to commercial uses. Poorer families then use marginal, less

drought-resistant terrain that forces more cultivation than is environmentally sound. Between 1935 and 1970, for example, pastureland in the Sahel suffered a 25% reduction to export farming. Although the 1968-1973 dryspell caused widespread famine in Mali through loss of crops and pasturage, peanut and cotton production in those years soared 70% and 400%, respectively.

The weather and some long-term development priorities are not the only factors in triggering widespread hunger. Food that is available when a drought occurs does not always reach those in greatest need. Many traders will buy up the stocks, whether from domestic or outside sources, and charge prices out of the poor's reach. The government can add to this discrepancy by favoring certain groups, such as urban civil servants or dominant tribes, in distributing food relief.

This overview of drought in the Sahel helps put Mali's experience in perspective. During the periods 1968-1973 and 1984-1985, the country fell prey to two of the worst such catastrophes in its history.

Rains after 1965 abated considerably and between 1968-1973 virtually disappeared. Nomads and peasants who could usually cope after a few bad years found conditions unbearable. In 1973, Mali lost 40% of its millet and sorghum harvests and practically all its livestock. Many farm families were eating only one out of three days and, ominously, were consuming their seed supply. The northern livestock regions of Timbuktu and Gao especially suffered, with the Niger River--a shrunken stream-- at its lowest level in 30 years. Thousands of families flocked to cities and camps seeking relief. According to a Centers for Disease Control (CDC) evaluation, about 70% of children in nomad camps and 47% in villages experienced extreme malnutrition. For the Sahel overall in 1973 alone, CDC estimates put the number of dead, mostly children, at 100,000.

The drought of 1982-1985 paralleled in severity that of a decade before. According to an OFDA report, poorly spaced rainfall during this period tapered off to 20%-80% of the pre-1968 norm. Over 1.5 million persons in the country were affected. As before, northern Mali stood especially hard hit. The Niger River sank to its lowest level in over a century. Approximately two thirds to three-fourths of livestock herds, most still recovering from the last drought, either died or were sold. As of March 1985, six out of ten villages in northern Mali had no water. Families were consuming one meal every one to two days.

In both cases, international donors and the Malian government joined forces to head off mass starvation (see Section 3.11, USG Disaster Assistance). Temporary hardships imposed by the first drought solidified into semi-permanence under the second one. Some of Africa's most ancient cultures, like that of the Tuareg, had to drastically change their way of life. Precipitation in years since has been mixed. In 1987, rains were bad; in 1988, they picked up again.

In much of the north, such continued aridity has brought about fundamental change. Lacking self-sufficiency, many farmers and herdsmen cannot afford the high market prices for grains. Consequently, whole families have been uprooted and villages abandoned for the overflowing towns. Emigration to other countries has increased, placing strains on neighborly relations. For those herders that stay, traders (often of a different and non-nomadic ethnic group) have been buying up the remaining flocks and leasing them back to their former owners. A consolidation of wealth has occurred that transforms family-oriented enterprises into commercial ones. The long-term consequences of such socio-economic shifts remain unknown. Yet the specter of more drought for the foreseeable future may leave Malians little choice in such matters.

2.3 Pest Infestations

Mali is affected by two major locust species, the desert locust (Schistocerca gregaria) and the African migratory locust (Locusta migratoria migratorioides), several species of grasshoppers, the bird species of Quelea quelea and golden sparrow (Auripasser luteus), and rats. These pests can seriously decimate food crops, often striking at the worst possible time.

The African migratory locust affects large portions of the continent. The first good rainy season after several years of severe drought stimulates the pests. During a plague, swarms can sweep westward across Africa below the desert, through the Sahelian countries to the Horn. Furthermore, the locusts sometimes move south, inflicting damage on all sub-Saharan countries except for small areas of South Africa, Gabon, and Congo. One of the major outbreak areas for this locust is in the Niger River inland delta area in Mali (see Figure 2.4, Repartition of Grasshoppers and Locusts); the last major plague (1928-1941) began there.

Plagues of the desert locust have been known since antiquity. The insect ranges from India to the Middle East through the Arabian peninsula and across North Africa. The Red Sea Trench, the coastal area along the Red Sea and the Horn of Africa, is one of the locust's favored breeding areas. When rainfall is favorable the locusts multiply rapidly and form massive destructive swarms that may then ride prevailing winds for thousands of miles. In Mali, a critical area for accumulation of the pests is in the northeast of the country (see Figure 2.4, Repartition of Grasshoppers and Locusts).

Grasshoppers do not have the same destructive reputation as their locust cousins, but for countries such as Mali, they are a more serious problem because of their greater frequency and distribution. Unlike the more transnational locust, grasshoppers are semi-migratory or sedentary and of a national or subregional nature.

The most serious grasshopper species in Mali is the Oedaleus senegalensis (or Senegalese grasshopper). These pests caused considerable damage in late 1985, 1986, 1987, and 1988 (see below) as they had ten years before in 1974-1975. Their area of gregariousness is shown on Figure 2.4, Repartition of Grasshoppers and Locusts.

Eight other major grasshopper species populate the country. The Aiolopus simulator is frequently encountered on heavy clay soil in flood recession areas. It attacks sorghum in all stages of growth, often causing major damage to seedlings. The Aiolopus simulator has a high potential for gregariousness and can ruin an extensive area. It is difficult to control because it hides in cracks under the soil surface. Hieroglyphus daganensis lives in a humid environment and partly under water. This species can be very damaging to irrigated rice and is difficult to control. It also is prone to gregariousness, as is the species Karussaria angulifera, another grasshopper which threatens flood recession crops. The species Catantops haemorrhoidalis and C. Axillaris are found in association with O. senegalensis, mainly in sandy soil. Finally, the grasshopper species of Cataloipus cymbifera, C. Fuscoerulipes, and Jagoa gwynni also occur in Mali.

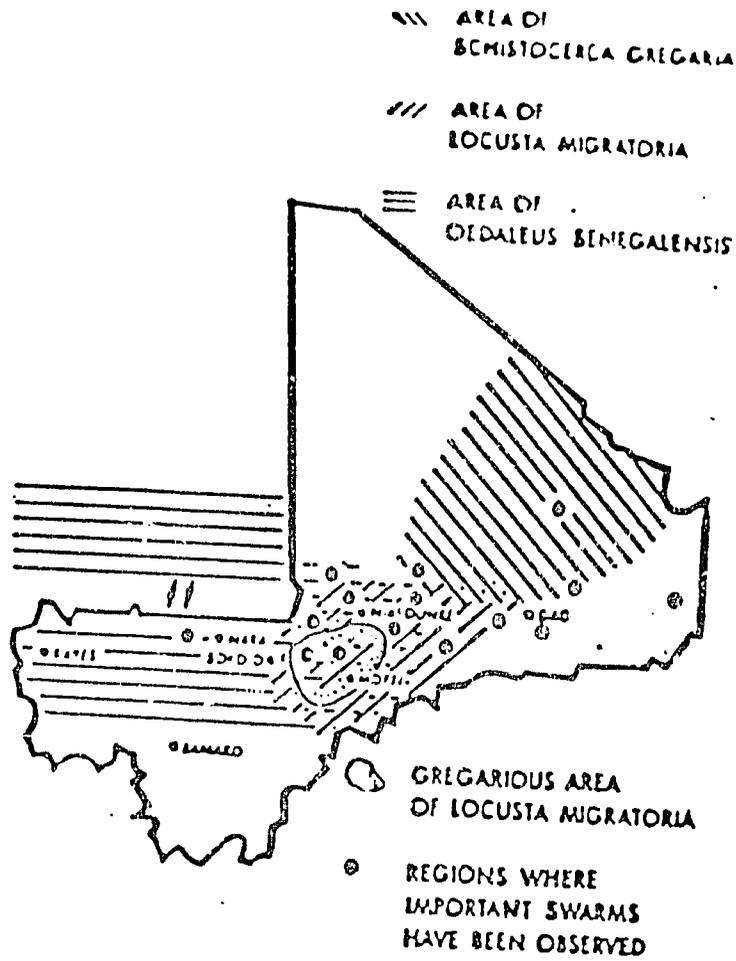
After emerging, the adult winged forms of the Senegalese grasshopper move northward into Mauritania from Mali, advancing roughly with the moist air of the ITD. In Mauritania a second generation develops, and if conditions are favorable, a third. As the ITD recedes southward, adults group into swarms and reinvade Mali's dryland crop areas as grain is maturing or as recession crops are in vegetative stages. At this point, adults can travel up to 40 km. per day and are very destructive.

The 1985-1988 infestations of mainly Senegalese grasshoppers dealt a serious blow to Malian agriculture, destroying millet and sorghum crops. Good rains following the early 1980s drought provoked this latest outbreak. Starting in 1985, the Ministry of Agriculture initiated a control program with donor support. Although ground and aerial spraying had protected more than 40,000 ha. from devastation in 1987, more than 225,000 ha. in the region remained threatened as of September 1988.

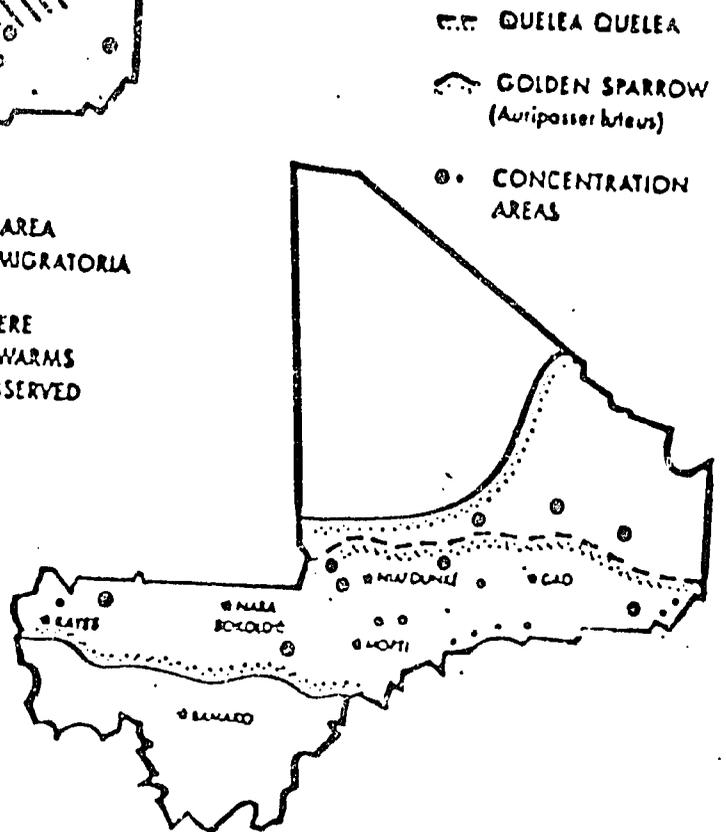
Populations of the desert locust (Schistocerca gregaria) were found in the northeastern part of Mali in late 1987. Control operations in December and January 1988 sprayed almost 15,000 ha. of hopper and adult concentrations. Some of these swarms escaped west and northwest towards Mauritania. By September 1988, good rains again provoked breeding of desert locusts, putting 100,000 ha. at risk.

Rats have struck Mali in three waves: 1965-1966 in the Ségou and Mopti regions, 1975-1976 in a huge area ranging from Kayes to Timbuktu, and 1985-1986 in the Kayes, Ségou, Mopti, Timbuktu, and Bamako regions. The area of infestation in 1986 was estimated at 200,000 ha. with young fruit trees and sorghum/millet crops especially affected.

2.4 Repartition of Grasshoppers and Locusts



2.5 Repartition of Grain-Eating Birds



Source: Gustave Mathys, Locust, Grasshopper, and Grain-Eating Bird Control in Mali, March 1986

Grain-eating birds began to be mentioned as serious pests in the early 1960s in the Niger central delta area where rice is cultivated (see Figure 2.5, Repartition of Grain-Eating Birds). There are five species in Mali: Quelea quelea, the black-faced dioch; Ploceus cucullatus, the village weaver; Quelea erythroptera, the red-headed dioch; Auripasser luteus, the golden sparrow; and Ploceus melanocephalus, the black-headed weaver. The most serious are the Quelea quelea and the Auripasser luteus. These bird pests are a particular problem for rainfed crops in June and July while food recession crops are attacked mainly by Quelea quelea and Auripasser luteus during November and December. The Quelea quelea caused serious rice crop damage in November 1985.

2.4 Disease

As might be expected in a land so poor, disease and infant mortality are endemic. Life expectancy (45 years for men, 48 years for women) and infant mortality (174 per 1,000) are lower than the average for other sub-Saharan African countries (see Section 1.17, Health). Malaria, measles, and respiratory and diarrheal diseases, the major illnesses of Mali, account for 60% of child deaths. Outbreaks of cholera and yellow fever in 1984 and 1987 respectively have reached epidemic proportions. The level of malnutrition, especially during drought, is quite high. Other common maladies in Mali include: poliomyelitis, typhoid, tuberculosis, diphtheria, whooping cough, neonatal tetanus, schistosomiasis (along the Niger and Senegal river basins), endemic syphilis (especially in Gao), filariasis (in central and southern Mali), trachoma, brucellosis (in northern grazing areas), trypanosomiasis (near Bamako and in the southeast), and onchocerciasis (or "river blindness," a disease that has caused depopulation in the Niger and Senegal river basins).

Although malaria ranks as the principal illness diagnosed by health centers in all parts of Mali, there appears to be, according to a 1987 A.I.D.-sponsored evaluation, no consistent strategy to fight it. The Ministry of Health (MOH) has put the number of workdays lost each year to this single sickness at 6,800,000; accurate mortality statistics are lacking. Health workers treat all fevers as malaria and generally prescribe prophylactics. Like most drugs, however, antimalarials remain unavailable in rural areas.

Another major disease of Mali is measles, which kills 7.2% of the 20,000 to 40,000 victims infected annually. Infants under five years account for 70%-80% of all cases. One outbreak swept the poorer sections of Bamako in 1988; 97% of the victims were non-vaccinated children. In December 1986, the Malian government, the U.N. Development Program (UNDP), the World Health Organization (WHO), and U.N. Population Fund (UNFPA) signed a protocol to launch a mass immunization campaign. Up to the 1988 outbreak, the initiative had included only a single training program for senior health personnel occurring in January 1987. With immediate action

called for in 1988, Malian authorities increased the number of vaccination centers, initiated direct coverage in remote areas, and intensified their awareness campaign for the longterm.

According to the A.I.D. report, Malian children under five are susceptible as well to severe diarrhea, suffering between 3.7 and 5.7 episodes a year. Subsequent deaths in this age group average around 50,000 per year or between 10% and 20% of the total. Severe dehydration contributes to 10%-25% of all diarrhea cases. Causes include: poor hygiene and sanitation, limited access to good water (20% nationwide, as low as 8% in some rural areas), a high incidence of measles and febrile sickness, much malnutrition (around 6% without drought), and little access to health information. In 1985, Malian authorities approved a three-year National Program for the Control of Diarrheal Diseases that has received funding and technical support from A.I.D., UNICEF, WHO, and the Peace Corps. The program emphasizes training, education, research, and local production of oral rehydration salts.

Three sicknesses that periodically strike Mali in epidemic form are yellow fever, cholera, and meningitis. An attack of yellow fever hit the outskirts of Bamako between September and October 1987. It affected mostly persons under the age of 15. The most recent plague of El Tor cholera popped up in June 1984, claiming 1,242 casualties over the following couple of years (see Appendix B). A widespread outbreak of meningitis last occurred between January and May 1981, killing 412 persons. In these cases, the USG responded with either medicine or vaccines. (See Section 3.11, USG Disaster Response). Health authorities in Mali established a surveillance system in 1986 for rapid diagnosis of such epidemics. As of July 1988, UNICEF's update on emergency assistance reported the government to have on hand 150,000 doses of type A and C anti-meningitis vaccine.

2.5 Disaster History

<u>Disaster</u>	<u>Date</u>	<u>Location</u>	<u>Impact</u>
Epidemic (meningitis)	01/69	Bamako area	500 killed; 4,000 affected
Epidemic (yellow fever)	11/69	Kati-Faladie area	13 killed; 23 affected
Drought	68-73	entire country	1.9 million affected; damage to grain, cotton, and peanut production
Epidemic (meningitis)	01/79	Koro region	30 killed; 80 affected

Disaster History (cont'd)

<u>Disaster</u>	<u>Date</u>	<u>Location</u>	<u>Impact</u>
Epidemic (meningitis)	01/81- 05/81	Bamako, Ségou, and Mopti areas	412 killed; 4,153 affected
Drought	84-85	Sahel region	1.5 million affected (see appendix A)
Epidemic (cholera)	06/84- 09/85	Gao, Ségou, Timbuktu, and Mopti regions	1,022 killed; 4,502 affected
Infestation (grasshopper locust, and bird)	85-87	Niger River Delta; Kayes, Yelimane, and Nara areas	Possibly affected as much as 220,000 ha. of rice and millet cropland
Epidemic (yellow fever)	09/87- 10/87	Bamako area	137 killed; 153 affected
Epidemic (cholera)	10/87	Western Mali	Killed 57 over a 2-month period

3. Disaster Preparedness and Assistance

3.1 Host Country Drought-Related Bodies

Mali has no overall disaster plan or organization. However, a number of governmental bodies exists to deal with drought and food shortages. (See Figure 3.1, Malian Governmental Bodies Involved in a Drought Response). Their functions range from policy-making to the nuts-and-bolts of implementation.

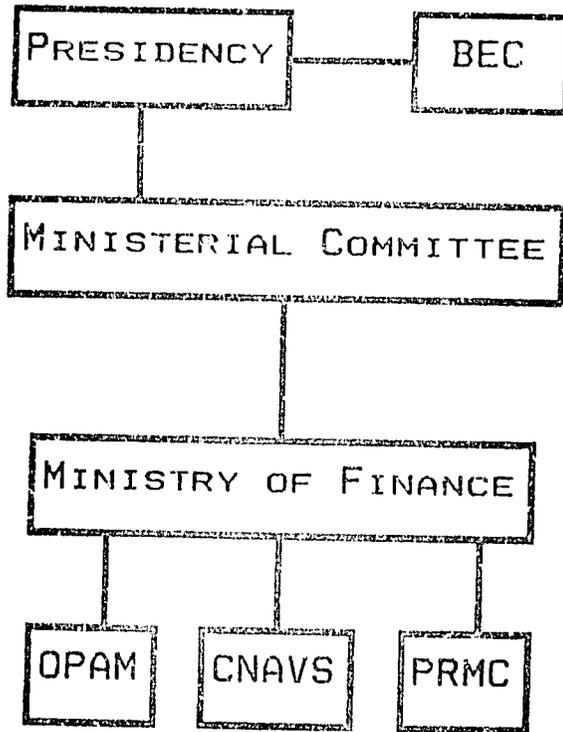
As mentioned in Section 1.16, Government, the Central Executive Bureau (BEC) handles broad political and ideological matters while the Council of Ministers under the President makes week-to-week decisions concerning government policy. This is no less true under an emergency situation, such as drought. Although concerned ministers or their representatives met in an ad hoc committee to review efforts and make relevant decisions during the 1984-1985 dryspell, ultimate power for the Malian government's response rested with the BEC and the Council of Ministers.

Responsibility for drought relief falls more specifically to an agency under the Ministry of Finance called the National Committee for Aid to Drought Victims (or CNAVS under the French acronym). Formed in 1973 during the drought, CNAVS served then as the coordinating link between donor and host governments and was located in the Ministry of Territorial Affairs. Ministerial representatives made up the committee, which also supervised food aid sales and distribution. CNAVS continued after the crisis in the person of a single official (a conseiller technique) who reported directly to the Minister of Territorial Affairs. With the second major dryspell from 1984-1985, CNAVS changed back to its original interministerial composition and go-between role.

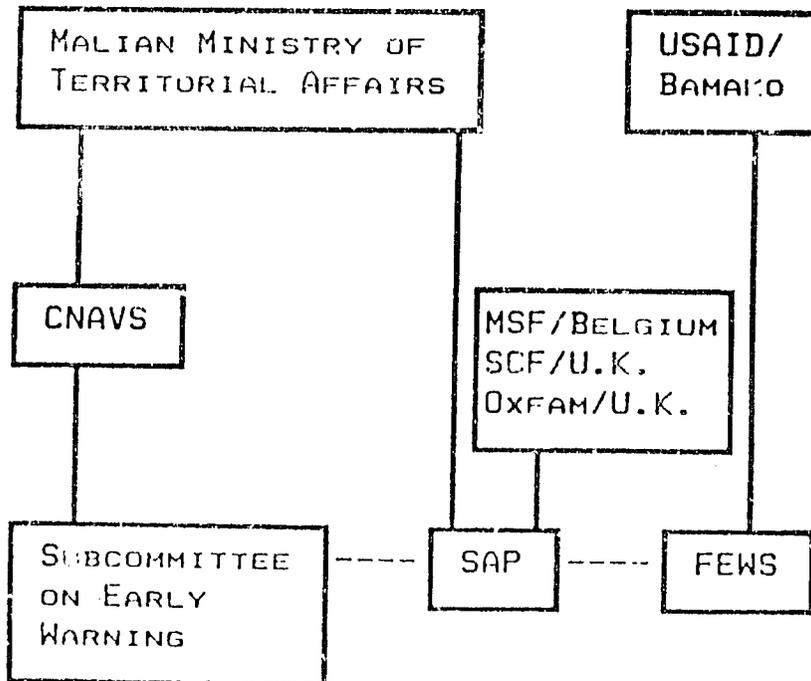
A traditional rival for influence to CNAVS has been the Malian Office for Agricultural Products (OPAM) under the Ministry of Finance. From 1965 to 1981, this office purchased and sold 25% of Mali's grain harvest and most of the irrigated rice crop. Even though OPAM's mandate included price stabilization and defense of producer income, its primary role grew to providing food supplies to urban sectors at the expense of the peasant farmers it was meant to serve. Poor management and the high cost of consumer subsidies fueled a continuous drain on public expenditures.

In 1981, the Program for Grain Market Reconstruction (PRMC) intervened. Organized as a series of donor and host-government committees under the Ministry of Finance and with funding from a consortium of multilateral and bilateral donors, PRMC set about changing the grain marketing system to decrease Mali's reliance on outside food (see Section 3.11, USG Disaster Assistance). The PRMC coordinating committee proposed a series of structural changes which the Malian government adopted. Thanks to these reforms, an almost total deregulation of the grain market occurred. OPAM saw its functions curtailed to maintenance of food

3.1 Malian Governmental Bodies Involved in Drought Response



3.2 Early Warning Networks in Mali



security stocks and provision of adequate supplies to such institutions as the Army. The office could no longer engage in buying or selling commodities, giving greater rein to market forces. OPAM retained only one holdover role from its days as a regulatory body, that of producing an annual marketing plan to project future food needs.

What different roles do CNAVS and OPAM perform during a food calamity? Fundamentally, what CNAVS approves in assistance, OPAM disposes. For instance, one of CNAVS's several technical subcommittees may report a food deficit in a given area. The full committee then works out assistance arrangements with a donor and decides on a plan of distribution. With control of over 10,000 MT of space and staff members in each administrative cercle, OPAM serves as the functional arm to CNAVS in receiving and storing relief consignments. Its network of warehouses--originally used in the marketing function--operates out of regional centers. The revenue from commodities sold under OPAM goes back into a CNAVS fund. However, OPAM does not undertake free food distribution, which is handled by local officials at the behest of CNAVS. Even though overall coordination of drought assistance clearly comes from CNAVS, OPAM holds some influence in that body through a seat on the full committee.

To meet emergency needs before donated commodities arrive, West Germany, in conjunction with OPAM, established a Security Stock of about 30,000 MT of food. These food stocks are located in remote, drought-prone areas. Withdrawals can only be made during a crisis and on the guarantee of previously secured replenishments.

Mali does not have a comprehensive food security plan. However, the government has incorporated agricultural reform into its National Five Year Development and regional plans. Initiatives undertaken or proposed in this area include restructuring rural development institutions, organizing farmers, and offering incentives to producers for better grain storage.

Getting supplies unloaded and moved from port is critical to a large, landlocked country like Mali. The Mixed Commission for Removal of Grain and Food Assistance Products deals with the physical shipment of relief, arranging for the transport of goods from ship to destination. This body keeps in close contact with Malian government representatives stationed at such foreign ports as Abidjan, Lomé, and Dakar as well as with OPAM, various concerned ministries, and private truckers (see Section 3.8, Ports).

3.2 Early Warning

Collecting drought-related data before disaster strikes is key to an effective response. Unfortunately, Mali has lacked, until recently, a sound early warning system. The authorities traditionally depended on local officials rather than on its technical ministries or non-

governmental sources for the grain production estimates published each year. Poor measurement standards, geographic inconsistencies, and political tinkering robbed the result of much reliability.

In 1985, that changed. Learning from past mistakes, donors in conjunction with the Malian government set about to improve this situation. Although it had already set up a specialized subcommittee seven years before, CNAVS encouraged the formation of a non-governmental warning network called the Systeme d'Alerte Précoce (SAP). Original funding came from the EEC.

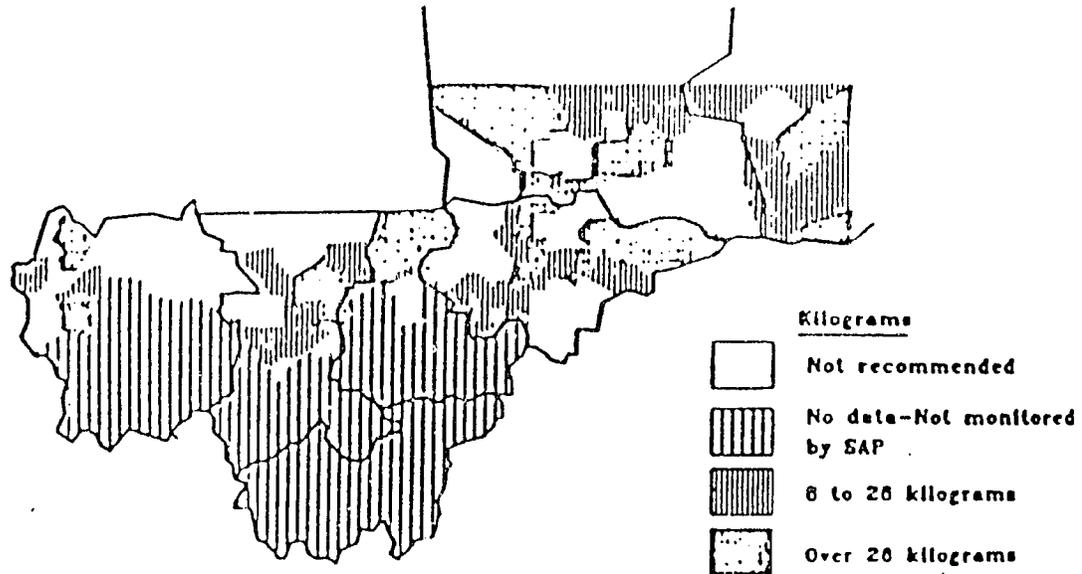
Financed as of 1988 by donors through the Program for Grain Market Reconstruction (PRMC), located administratively under the Ministry of Territorial Affairs, and managed by Médecins sans Frontières/Belgium, Oxfam/U.K., and Save the Children/U.K., SAP is the most extensive early warning system in Mali. (See Figure 3.2, Early Warning Networks in Mali). (For an example of SAP data as reprinted in a FEWS report, see Figure 3.3 Early Warning by SAP). Four mobile teams cover all the target areas, using different host-government agencies, local officials, and private groups to gather data. The information collected includes grain and livestock prices, population movements, amount of stored food, unusual activities by local people, and overall harvest figures. Key ministries, donors, and private groups receive SAP's monthly French language report, which meticulously tracks the above information by cercle. Besides providing data, SAP is also developing the capability of Malian institutions to eventually take the network's functions over.

An important source of field data for SAP are the bilateral and multilateral rural development projects throughout the country called Rural Development Operations (or ODRs under the French acronym). Smaller such programs funded by the U.N. and non-governmental organizations complement the ODRs. Their information-gathering is generally done to assess the effectiveness of a given project. Because the better funded ODRs have better monitoring facilities, there is some geographical unevenness in the extent and reliability of ODR data. Southern Mali tends to be more extensively covered, because it has more ODRs. For instance, USAID's multimillion-dollar project in the south to develop the Haute Vallée has a monitoring unit that collects information from agricultural extension agents and does direct sampling of farmer production, giving SAP a good source of base data. In contrast, the much smaller Tin Aicha resettlement program run by a non-governmental organization in the north has no monitoring component to provide early warning information.

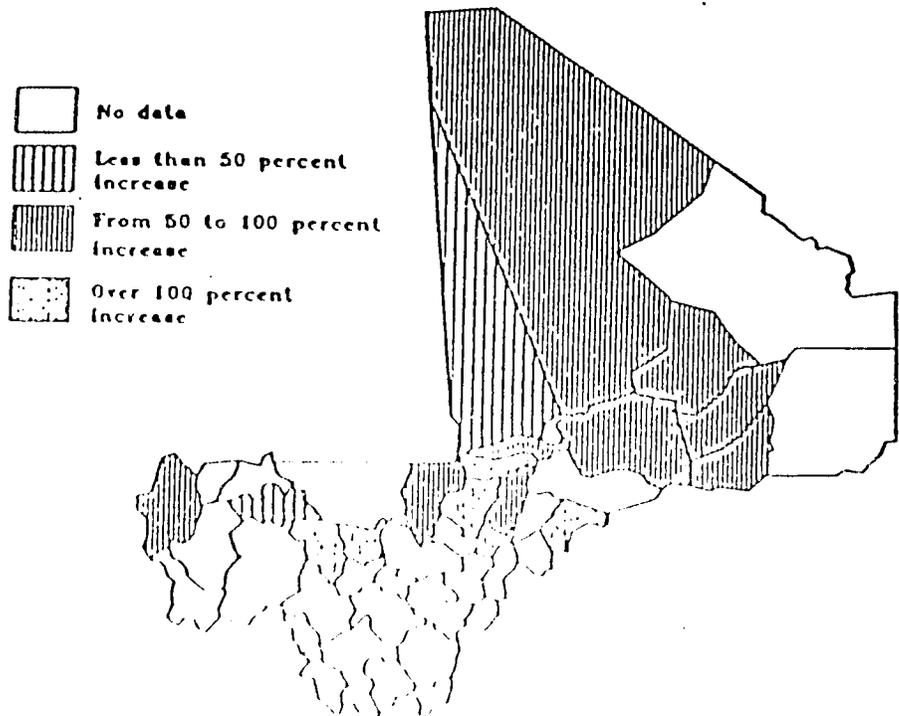
Made up of donor, PVO, and host government representatives, CNAVS's early-warning subcommittee acts on the information fed to it by SAP. Technically, this body retains the authority only to inform or advise, leaving the full committee to take action. However, the early warning subcommittee finds its drought alerts often go unheeded within the larger organization. CNAVS's staff and chairman sometimes allocate emergency grain independent of either the subcommittee or the overall committee.

3.3 Early Warning by SAP

Price Increase in Millet from April 1987 to 1988
 Percent of Increase by Cercle covered by SAP



Per Capita Recommendations for Food Assistance by SAP



Source: FEWS Country Report, June 1988

USAID's Famine Early Warning System (FEWS) also puts out early warning information on Mali. (See Figure 3.2, Early Warning Networks in Mali). Started in 1986, FEWS's stated purpose is to provide Washington decision-makers with both data and analysis on current and potential nutritional emergencies. This means pinpointing at-risk sectors of the population and their food needs. Other reporting systems, statistics and surveys, expert opinion, and satellite monitoring all provide information, which Washington can use to take action.

The FEWS network covers nine nations: Mauritania, Mali, Burkina, Niger, Chad, Ethiopia, Mozambique, Somalia, and Sudan. A.I.D.'s Office of Technical Resources in the Bureau for Africa operates the system, and maintains representatives, all privately contracted, in six of the FEWS countries (the two exceptions are Ethiopia and Mozambique). Funding amounts to \$2 million per year. The actual analysis and reporting falls under FEWS contracts with Tulane University, the U.S. Department of Agriculture, and Price Williams and Associates. As of October 1988, A.I.D./Washington was planning for a more cost-efficient FEWS that would not duplicate information from other early warning networks and would be more oriented toward long-term development than short-term emergency use.

Previously, two USG early warning reports were coming out of Bamako, one from FEWS and another from the Mission's drought office. In 1986, they were combined into a joint FEWS/Mission endeavor. USAID/Mali's agricultural officer and the FEWS representative now collaborate on a monthly bulletin, which is reviewed by the Mission's Drought Relief Action Group (DRAG) before being published. Available in French and English, this report contains data on rainfall and river levels, food production and needs, crop development, livestock conditions, health, nutrition, displaced persons, market prices, and occasional analyses of past information or inclusion of particular studies. Sources include SAP, international donors and relief agencies, academia, NGOs, U.N. groups, and government contacts.

How do FEWS/Mali and SAP compare? Although the two cooperate closely, they are not at all linked. The Mission tends to draw more from secondary sources than do the SAP teams located in the field. Some duplication of information necessarily occurs. (For an example of SAP data as reprinted in a FEWS report, see Figure 3.3, Early Warning by SAP). Yet both also deal with topics or have access to sources not covered by the other. As mentioned before, Malian authorities and others within the country rely extensively on SAP for raw data on which to make their decisions. FEWS reports, in content and format, are geared to the U.S. government, even though third parties--such as the CNAVS subcommittee--frequently use them. Between SAP and FEWS, Mali boasts one of the best early warning capabilities in West Africa.

3.3 Host Country Voluntary Organizations

1. Malian Red Crescent (Le Croissant Rouge de Mali)
B.P. 280
Bamako
Telex: 572 BAMACRED
Tel: (223)22-40-06

With chapters in regional cities, the Malian Red Crescent assists in the evaluation of disaster damage and in the provision of food and medical first aid. It is a small organization with a limited budget, a paucity of emergency supplies, and no disaster plan. In the case of a major drought, the Malian Red Crescent relies on LORCS (League of Red Cross and Red Crescent Societies) personnel and assistance to mount and manage a relief program.

2. Secama
Bamako

Associated with the Catholic Church of Mali, Secama helped with food distribution in Gao during the 1984-1985 drought.

3.4 Health Preparedness

Health care in Mali ranks as among the poorest in the world. Public health facilities exist throughout Mali, but they are badly understaffed, underfunded, and accessible to only a fraction of the population. Public health personnel went on strike in December 1986 to protest these conditions. Multilateral and bilateral donors stepped up assistance in the 1980s, with health funding in 1985 double that of 1981 and more than 40 health projects underway as of 1988.

Primary responsibility for health care in Mali resides with the Ministry of Public Health and Social Affairs (MOH). The government's health policy emphasizes planning for specific donor projects, not basic services. The MOH's plan for 1981-1990 sets out policies and goals for the public health system with emphasis on appropriate technology, equality of access, and community participation. According to a 1987 A.I.D. health evaluation of Mali, the plan's information base is relatively poor and does not include the early 1980s' drought and population migrations. Although Mali has no official population policy, government support for improved family health includes child planning and spacing.

The A.I.D. health document puts the total number of health facilities in Mali, public and private, at 391. In addition to private dispensaries (37) and maternity clinics (9), there are 12 hospitals and 333 health centers run by the MOH. No estimates are available on the number of traditional practitioners (midwives, healers, witch doctors, etc.) but they probably exceed public health employees. Other health institutions in the capital include the Marchoux Institute, IOTA Eye Hospital, Endemic

Diseases Center, the Central Veterinary Lab, and the National Institute of Human Biology. In addition to the MOH facilities, the National Institute of Social Insurance--a government-supported compensation scheme for private wage-earners--maintains 16 health centers.

MOH facilities are distributed in roughly equal percentage among Mali's administrative regions with a health center for each arrondissement. Of the 12 hospitals in Mali, three are in Bamako. The MOH has included a specific objective in its ten-year plan to renovate all 281 health centers at the cercle level by 1990. Because of scarce funding, public facilities have very few supplies, unless they are supported by donor projects.

According to the Malian government, 15% of the population lives within five kilometers of a health center. Another estimate, from the World Bank in 1986, increases this to 30%. Mali has a substantially higher ratio of population per doctor and per nurse than its neighbors Niger and Burkina Faso and than the average for other underdeveloped sub-Saharan countries. What health manpower there is remains unevenly distributed within Mali. About 61% of physicians and 73% of all midwives work in the capital. To help redress this imbalance, the Ministry now requires new medical school graduates to serve for two years outside Bamako. Mali has one medical school under the Ministry of Education that trains doctors, nurses, pharmacists, and midwives.

High costs and few pharmacies make traditional healers the primary source of medicine in most of Mali. In 1981, the government abolished the MOH's National Pharmacy for financial and managerial reasons, setting up the People's Pharmacy of Mali (PPM) in its stead. Under the Ministry of State Enterprises, PPM imports and distributes all drugs through its own 93 and 450 independent outlets. Almost half the pharmacy medicines are sold in the capital, where PPM has 30% of its dispensaries. PPM drug prices are 1-1/2 times higher than their over-the-counter equivalent in France and thus, well beyond what most Malians can afford. Because of this, the small minority that uses pharmacy medicine often purchases less than the prescribed dosage.

In the case of an epidemic, the MOH coordinates the relief response. In February 1986, the MOH installed a Health Surveillance System to provide early warning for diseases. Ministry representatives at the cercle level report outbreaks of measles, meningitis, and cholera by solar-powered radio to the Epidemiology and Prevention Division of the MOH in Bamako.

3.5 Shelter

Drought and rural underdevelopment have created large squatter settlements around the major urban centers. Nearly 80% of dwellings in Bamako are simple mud brick structures. Rural housing varies with

location: nomads in the north live primarily in tents; building materials of sedentary southerners include mud brick with corrugated iron or thatched roofing. Average dwelling capacity is 4.8 persons.

3.6 Roads

Approximately 1,663 of Mali's 14,045 km. of roads in 1988 were paved. Except for the section between Sikasso and Bougouni, the Bamako-Zegoua artery remained in poor shape. It was barely passable during the rainy season. Potholes riddled the road, causing wear and tear on vehicles. Several bridges along the route were in danger of being washed away from flooding or destroyed by an overloaded truck. In contrast, the Sikasso-Koutiala-Bla paved road was in excellent shape.

Conditions for vehicle travel on the eastward axis were spotty. The Bamako-Ségou-San paved road was good, with the San-Mopti stretch being improved. Long-awaited construction of an all-weather, paved artery connecting Mopti to Gao was near completion.

Mali's unpaved network included 1,704 km. of all-weather dirt roads, 3,101 km. of dirt roads accessible only during dry months, and 7,577 km. of tracks. The latter roads were easily washed out by rain, because they lacked drainage structures. The way from Timbuktu to Nioro was track, passable by truck during the dry season, and well-paved from Nioro to Ségou. Trucks could not be driven either on the sand-choked tracks linking Timbuktu to Gao (a 12-hour trek by four-wheel-drive vehicle), or Gao to Asongo. Upkeep of the route from Niger was considered important, because drought aid for the Gao region of Mali came through that country. The Public Works Department of Gao was maintaining the Asongo-Menaka and Asongo-Labezango (on the Niger border) roads with Dutch assistance.

The Ministry of Public Works (MPW) takes care of road maintenance and construction. Several projects are underway to improve the nation's network. The MPW recently set up an asphalt patch plant near Sikasso for repair of the Sikasso-Zegoua route. Another project, financed by the World Bank and expected to last four to five years, entails upgrading the Bougouni-Bamako road.

In 1978, 65% of 23,305 registered vehicles were passenger cars or buses. About 500 private truckers own close to 70% of the five-ton capacity (about 1,100 vehicles). Many of these entrepreneurs belong to regional cooperatives. State-owned companies owned the rest of the fleet.

3.7 Railroads

There is a single track of 654 km. in Mali. It is linked to the rail system in Senegal, thus providing Malian goods with an outlet to the sea at Dakar. The railroad carries about half of Mali's imports (food, salt, oil products, etc.) and exports (groundnuts, cola nuts, etc.) and almost all domestic freight west of Bamako. A spur links Bamako and Koulikoro and ties in there with seasonal river transport. The line is managed by the Railways of Mali, a state-owned firm.

3.8 Ports

Mali is a landlocked country and thus must depend on other countries to reach the sea. The two ports most accessible to Mali are Dakar, Senegal and Abidjan, Ivory Coast.

Port: Dakar, Senegal
 Coordinates: Lat 14°40'N; long. 17°24'W
 Authority: Port Autonome de Dakar, Blvd. de la Liberation, P.O. Box 3195, Dakar, Tel: 222970 and 224545, Telex: 406 PORCOMER
 Pilotage: Compulsory VHF Channel 16
 Largest Vessel: 330 m. loa, 10-5 m. d
 Storage: Covered Storage of 60,000 m. Open storage area of 360,000 m. Cold storage facilities of 15,000 m.

Port: Abidjan, Ivory Coast
 Coordinates: Lat. 5°18'N; long. 4°00'W
 Authority: Port Autonome d'Abidjan, P.O. Box V85, Abidjan, Tel: 320166, Telex: 3674 COMPORT
 Approach: Depth at entrance, 10 m. Depth on bar, 10 m. Maximum draft allowed in Vidri Canal is 11.28 m. Anchorage area off entrance channel in depth of 11-3 m.
 Pilotage: Compulsory through the Vidri Canal. Radio and VHF. 'Comport' Abidjan, Channels 12 and 16. All rates increased by 50% from 1800-0700 h; Sundays and holidays an additional 50%.
 Largest Vessel: No limit to length of vessels, but ships over 200 m. are subject to special conditions.
 Accommodation: Total number of berths available is 25.
 Storage: Total covered storage of 114,000 sq. m. and open storage area of 571,000 sq. m.

As mentioned above, Mali is connected to Dakar by rail; the route is 1,280 km. from Dakar to Koulikoro (near Bamako). Goods from Abidjan are carried by rail to Ouangolodougou (in northern Ivory Coast) and then taken by road to Mali. Bamako is closer to the ports of Conakry (Guinea), Buchanan (Liberia), and San Pedro (Ivory Coast) than to Dakar and Abidjan, but linking routes have not been developed. Goods for eastern Mali more often come through Niger from Cotonou (Benin) and Lagos (Nigeria).

Although the Niger and Senegal rivers flow over a length of about 2,000 km. in Mali, they are only passable in parts. The Niger is navigable from Koulikoro (near Bamako) to Mopti from June to December, and all the way to Gao from August to October. About 150 km. downstream from Gao are rapids which prevent further passage. The Malian Navigational Company runs regular barge and passenger service on the Niger during the rainy season. The Senegal River is navigable from the sea in St. Louis to Kayes only for two or three months a year, from August to October.

3.9 Airports

Mali has two international airports, one 15 km. from Bamako at Ségou and the other at Gao. Both have instrumental approach runways. The Bamako airport can handle B747s on its 3,200-m.-long runway and Gao can accommodate B727s on a 2,500-m.-long runway. There are about 30 others open to domestic traffic, of which seven have regular commercial traffic: Kenieba, Kayes, Nloro, Nara, Mopti, Goundam, and Timbuktu. For emergency airlifts, the Malian authorities waive normal airport fees. Permission must be granted to land at the military airports of Ségou and Sani.

Airport fuel is available in Bamako. While storage exists for fuel in Mopti and Gao, there is none at Timbuktu. Mobil is the principal supplier.

Aircraft Entry Requirements

All private and non-scheduled commercial aircraft overflying or landing for non-commercial purposes must provide 72 hours' advance notice to the Ministry of Transportation, Directorate of Civil Aviation, B.P. 227, Bamako, Mali (Telegraphic address: AVIACIVIL BAMAKO/TELEX:NONE). Advance notifications must include: (a) type of aircraft, serial number and call sign; (b) nationality of company and registration of aircraft; (c) name and address of owner or charterer; (d) purpose of flight; (e) complete route of flight including dates, time, and points of entry and exit from the airspace of Mali and airports of arrival and departure; (f) name, nationality, and title of aircraft commander; and (g) number of flight crew.

Non-scheduled commercial aircraft landing for commercial purposes must request prior permission from the Ministry at least 15 days before departure. Requests must include the above information and: (a) number,

names, and nationalities of passengers, and type and amount of cargo; and (b) name of pilot and number of crew members. All requests must include provisions for prepaid response.

Special Notices

1. Upon arrival at all locations, the pilot must immediately report to the airport administration and comply with the instructions given.

2. Onward flights to or from Israel and South Africa are not granted overflight or landing clearance, regardless of type of aircraft or purpose of flight. Flights to and from other nations are not subject to restrictions.

On Feb. 22, 1985, one of Air Mali's three passenger planes (an Antonov 24) crashed in Timbuktu, killing all but one of its 52 passengers and crew. Shortly thereafter, continuing indebtedness and poor management forced the airline to cease regular service. After lengthy negotiations with various parties, the government announced in November 1987, that Air Mali would be replaced by a joint Soviet-Mali venture. Other airlines servicing the country include: Aeroflot, Air Afrique, Air Algérie, Air Ivorie, Air Burkina, Ethiopian Air, and UTA of France. Mission Aviation Fellowship, an American non profit company, provides air transport of supplies throughout the country to USAID, the U.S. Embassy, and other non-governmental organizations.

For such a large, landlocked country, air transport has provided an important means of moving emergency supplies. During the early 1970s' drought, USAID contributed three C-130 cargo planes and helped fund an FAO airlift of seeds from Sudan. Altogether, 14 nations made 63 planes available between May and November 1973. When Vice President George Bush visited Mali in March 1985, a C-141 filled with relief items for the drought accompanied him. Another USG airlift occurred shortly thereafter, transporting an army raft to ferry supplies near Gao. Algeria and Italy also used planes to provide relief.

3.10 Water and Energy

Only 9% of Malians have access to an adequate and sanitary supply of water; sewage systems serve less than 10% of the country. The overwhelmingly rural population generally relies on river sources, which can transmit disease, or open wells, which periodically cave in or get contaminated by rain runoff. Such conditions are a major cause of disease and seriously impede social and economic development of the countryside.

Several Malian cities have running water. Although Bamako's supply is chlorinated and generally reliable, its distribution is inadequate and contamination often occurs.

Mali's primary energy source is firewood. Countrywide requirements for this fuel amount to 1.7 million tons a year. Yearly usage for the urban and rural areas respectively averages 360 kg. and 270 kg. per person.

Desertification and difficulties in transporting firewood to market raise the price while limiting the availability of this commodity. For example, annual demand in Bamako that in 1979 was 200,000 tons will reach 500,000 tons by 1990. Yet firewood production in the capital city area amounts to only 250,000 tons per year. Recent development efforts have focused on dry and irrigated tree plantations as a way of countering deforestation.

Only a handful of towns enjoys the luxury of electricity and a small percentage of individuals owns vehicles. However, due to their high cost, petroleum products as a whole take a large chunk out of Malian imports. The government has been actively casting about for alternative sources of power, including harnessing the hydroelectric potential of the country's waterways. Installed capacity from the Niger River amounted to 53 megawatts in late 1988. Of this, 48 megawatts came from the Seligué Dam, which has been in operation since mid-1981.

Construction on the gigantic Manantali Dam, a product of the international organization Senegal River Development Authority (Senegal, Mali, Mauritania) and the international community headed by the World Bank, ended in 1988. USAID aided in the resettlement of 9,600 villagers displaced by the reservoir. Located on the Senegal River in southwestern Mali, this project combined with the already completed Diama Dam in Senegal has the capacity to produce 800 megawatts per year and irrigate 375,000 ha. along the river.

3.11 USG Disaster Assistance

Mali's relations with the United States and other industrialized democracies are good. A.I.D. has maintained an active presence since the country's independence, as has the Peace Corps since 1969. A.I.D. goals for Mali consist of encouraging policy reform through agricultural reorganization, improved management through training, and strengthened research through improved systems of farm delivery. Programs in health care and economic growth target small farm families, women, and private entrepreneurs. As of September 1988, USAID/Mali's largest FY 1988 programs included: \$24.5 million for economic reform, \$20 million to develop the Haut Vallée region, \$18 million for livestock raising, and \$18 million to resettle 9,600 people displaced by the Manantali Dam project. About 75-80 Peace Corps volunteers, concentrated in the regions of Sikasso, Ségou, and Mopti, work on agricultural, forestry, water management, community development, and educational projects.

Among foreign bilateral donors, the U.S. has played the lead role in providing food relief to drought victims.

In the early fall of 1972, U.S. grain shipments to Mali, intended for the regular A.I.D. marketing and production programs, began to be drawn down rapidly. Critical food deficiencies were affecting the entire Sahelian region. As the seriousness of the situation became evident, A.I.D. shifted from grain allotments through concessional sales to emergency grants. After consulting with other donors regarding needs, the USG set up an internal task force in Washington to deal with its response.

On April 9, 1973, the U.S. Ambassador to Mali issued a disaster declaration for the country. This allowed OFDA to authorize further use of its emergency fund in responding to requests for non-food help. Throughout that year, large shipments of food, disaster supplies and equipment, technical aid, and transportation support were dispatched to Mali. A special appropriation from Congress for FY 1974-1975 funded cash grants to non-profit groups and international organizations, military airlifts of goods, purchase and delivery of medical and other supplies, provision of specialists to do assessments, and reimbursement to relief agencies for transport costs. Long-term rehabilitation projects for post-drought Mali emphasized rural health, development of water resources in villages, agricultural and livestock needs, improvement of roads to remote distribution points, and improved grain storage facilities.

Between 1973 and 1975, the USG channeled \$57,944,000 worth of assistance to Mali, \$33,831,000 of which was emergency food. Help from foreign governments, international organizations, and NGOs was substantial.

The early 1970s' response set a precedent for the subsequent emergency of 1984-1985. After the GRM launched an appeal for international aid in October 1983, the U.S. Ambassador formally declared the situation a disaster on Sept. 13, 1984. OFDA later sent a two-person team to Mali to assess the emergency and make recommendations.

USG relief efforts, not dissimilar to those of a decade ago, encompassed the sale and distribution of Title II grain, grants to international organizations and non-profit groups, technical support, and a wells project. A.I.D. hired four monitors to oversee distribution of the Title II food and a disaster relief advisor for a two-year assignment to help manage the USG endeavor. Vice President George Bush visited Mali in March 1985, accompanied by an airlift of food, medicine, and medical supplies. OFDA also funded a Department of Defense operation to dispatch a 60 MT-capacity raft to Gao where the craft ferried food across the Niger River.

Total USG emergency aid for the Malian drought during FY 1984-1985 reached \$52,211,103. U.S. private voluntary groups contributed \$3,335,783 and other international sources gave \$49,924,039 in relief. (See Appendix A for further information.)

Other disasters in Mali that OFDA has responded to include epidemics and insect infestations. Following a cholera outbreak between June 1984 and September 1985, the U.S. Ambassador authorized use of \$25,000 in emergency funds for the fielding of epidemiological teams and medical supplies. The two doctor team from the Centers for Disease Control (CDC) in Atlanta investigated the situation between November and December 1984 and recommended oral rehydration instead of mass vaccinations as a more effective means of control. Assisted by USAID health personnel, the GRM followed these recommendations for its anti cholera campaign. In August 1985, OFDA sent an additional shipment of medical supplies, bringing the total of USG aid for this epidemic to \$136,948. (See Appendix B for further information.) The USG again gave medical assistance to Mali in September and October 1987, this time for an attack of yellow fever. This aid was in the form of \$21,333 for the purchase and delivery of ped-o-jets.

USG responses to the pest problem in Mali began in FY 1986 and continued through FY 1988. During the fall of 1985, USAID/Bamako and OFDA sponsored a fact finding mission by a pest control specialist. As the grasshopper situation worsened in 1986, the USG dispatched an assessment team and entomologist who worked with the French in launching a U.S./French coordinated control operation. Assistance for FY 1986 amounted to \$1,719,365 and included the assessment team, pest experts, a grant to FAO for equipment, local support costs for French helicopters, purchase and transport of fenitrothion, and pesticide testing. The following year, the Malian government initiated a strategy that emphasized aerial and ground treatment in two distinct phases of operation. Totalling \$1,017,974 for FY 1987, USG aid in support of this campaign consisted of helicopter flying time, the sending of disaster experts and an entomologist, farmer training, the purchase and transport of malathion, aviation fuel, and relief supplies. As the problem of grasshoppers and locusts continued into 1988, OFDA funded the purchase, airlift, and inland transport of malathion. The USG also supported the services of an entomologist, greenness maps, and support for control operations. FY 1988 assistance from the USG was \$2,191,550.

When disaster strikes, the ambassador notifies OFDA and A.I.D.'s Africa Bureau by immediate cable. He or she can obligate up to \$25,000 from an emergency fund for such measures as a cash donation to the Malian government, purchase of supplies or expertise, or payment of transport for third-party assistance. In most cases, this allocation is contingent on the declaration of a state of calamity from Malian authorities. Other assistance is coordinated by OFDA and requires its approval.

Copies of the USG Mission Disaster Relief Plan are available at the Mission in Bamako and at OFDA in Washington. During an emergency, a Mission Disaster Team composed of representatives from USAID/Mali, Peace Corps/Mali, and the U.S. Embassy will assemble to map out a course of action. Some of these officials currently serve on the Disaster Relief Action Group (DRAG), the Mission's policy making body for drought. DRAG, in turn, directs the Disaster Relief Office, which works with NGOs and

international organizations to manage USG relief. During past emergencies, the Peace Corps has helped by deploying volunteers in logistics and relief.

U.S. Disaster Assistance to Mali 1967-1988

<u>Year</u>	<u>Disaster</u>	<u>Commodity/Service</u>	<u>Provided Thru</u>	<u>Cost</u>
1967	Drought	10,000 MT of food Food transport	GRM	\$1,075,000 <u>\$610,000</u> \$1,685,000
1969	Meningitis epidemic	Medical supplies and medicines		<u>\$10,500</u> \$10,500
1969	Drought	15,000 MT of food Food transport		\$840,000 <u>\$850,000</u> \$1,690,000
1970	Drought	Food distribution 300 MT of food Food transport	GRM	\$25,000 \$227,800 <u>\$30,000</u> \$282,800
1970	Yellow fever epidemic	100,000 doses of yellow fever vaccine		<u>\$26,050</u> \$26,050
1971	Drought	25,105 MT of food Food transport	GRM, WFP	\$1,454,000 <u>\$2,018,500</u> \$3,472,500
1973-1975	Drought	152,455 MT of food Grants	PVOs	\$33,831,000 <u>\$24,113,000</u> \$57,944,000
1979	Meningitis epidemic	Medical personnel 100,000 doses of meningitis vaccine	CDC	\$5,538 <u>\$69,650</u> \$75,188
1981	Meningitis epidemic	100,000 doses of meningitis vaccine		<u>\$25,242</u> \$25,242

<u>Year</u>	<u>Disaster</u>	<u>Commodity/Service</u>	<u>Provided Thru</u>	<u>Cost</u>
1984- 1985	Drought	Agricultural project	Africare	\$1,723,000
		Airlift of food and medicine that accompanied Vice President Bush	DOD	\$64,224
		Airlift that included support costs of Army raft for Gao	DOD	\$510,000
		Assessment team		\$23,193
		Disaster experts and engineers		\$211,000
		Feeding projects	UNICEF, CARE	\$999,806
		Support costs for GAO ferry, including 15 engineers	DOD	\$559,653
		Food monitors		\$140,000
		141,218 MT of Food	LORCS, WFP, GRM, AALC, WVRD	\$28,852,700
		Food transport	WFP, GRM, AALC, CCAU, UNDRO, LORCS	\$27,888,100
		Road project	WFP	\$80,000
		Vehicles	CARE	\$2,154,786
		Wells project	UNICEF, CARE	\$77,660
				<u>\$63,983,062</u>
1985	Cholera epidemic	Medical personnel	CDC	\$12,475
		Medical project to support government cholera program	GRM	\$100,000
		Medical supplies	UNICEF	\$12,500
		Medical supplies	Fisher Labs	\$11,973
		Medical transport	U.S. carrier	\$872
				<u>\$137,820</u>
1986	Bird and insect infestation	Ambassador's auth. Entomologists	GRM	\$25,000
		Malathion for experimental use	MASI	\$69,790
		Aircraft		\$90,000
		Assessment team and disaster experts		\$364,000
		Grant for equipment	OFDA/USFS	\$46,282
		Personnel support	FAO	\$88,008
		50,000 l. of fenitrothion	Sumitomo Co.	\$240,000
				\$459,305

<u>Year</u>	<u>Disaster</u>	<u>Commodity/Service</u>	<u>Provided Thru</u>	<u>Cost</u>
1986	Bird and insect infestation (continued)	Transport of pesticide		\$308,460
		Radios	N&G Dist. Co.	\$24,840
		Transport of radios		\$2,145
		Technicians	USFS	\$1,535
				<u>\$1,719,365</u>
1987	Insect infestation	Helicopter flying time	Evergreen	\$456,629
		Entomologist and disaster experts		\$174,000
		Aviation fuel		\$87,000
		60,000 l. of malathion	Cyanamid Co.	\$117,554
		Transport of pesticide		\$5,541
		Relief projects and supplies		\$162,250
		Training of farmers		\$35,000
			<u>\$1,017,974</u>	
1988	Cholera epidemic	Medical supplies	DOD	\$21,333
				\$21,333
1988	Insect infestation	50,000 l. of malathion	Cyanamid Co.	\$471,000
		100,000 l. of malathion	Cheminova Co.	\$350,000
		Transport of pesticide		\$175,000
		Inland transport of pesticide and equipment		\$25,000
		Operational support for action plan		\$500,000
		Supplies (Greenness maps)	USGS	\$50,000
		Entomologist	FAO	\$65,000
		Miscellaneous		\$555,000
			<u>\$2,191,550</u>	
				<u>\$134,282,384</u>

3.12 U.S. Private Voluntary Agencies

U.S. voluntary agencies that have given emergency assistance to the country include: Adventist Development and Relief Agency (ADRA), Africare, American Friends Service Committee, American ORT Federation, American Freedom from Hunger Foundation, Baptist Mission, CARE, Catholic Relief Services (CRS), Christian Reformed World Relief Committee, Church World Service (CWS), Foster Parents International, Lutheran World Relief (LWR), MAP International, Mennonite Central Committee, Operations Cross Roads Africa, Southern Baptist Convention, World Vision Relief and Development, and YMCA.

1. Africare
440 R St., N.W.
Washington, D.C. 20001
(202) 462-3614

B.P. 1792
Bamako

Involved in Mali for 14 years, Africare is conducting several projects. One four-year program near Timbuktu funds training and irrigation systems for peasant cooperatives. In Ségou, Africare has a two-year commitment to help small farmers dig wells and build a dam. Another two-year project promotes improved health and sanitation for villagers near Oulessebouyou in southern Mali. During the 1984-1985 drought, Africare donated measles vaccine and high protein bars for the USG airlift.

2. CARE
660 First Ave.
New York, N.Y. 10016
(212) 686-3110

B.P. 1766
Bamako
Telex: CARESAHEL

CARE maintains a heavy presence in the country. In Macina cercle, CARE/Mali is involved in three long-term programs concerning well construction (1986-1989), food self-sufficiency through gardening and improved storage (1986-1990), and child health (1986-1991). Another project (1983-1990) introduces farmers in Koro cercle of the Mopti region to the use of trees as a guard against soil erosion. In Timbuktu, CARE began assisting 40 communities in 1986 to improve their food and water capacities. During the 1984-1985 drought, this organization made surveys of stricken areas, distributed food in the Timbuktu, Mopti, and Niore regions, and donated 2.3 MT of yellow cornmeal on the USG airlift.

3. Foster Parents Plan
155 Plan Way
Warwick, R.I. 02887
(401) 738-5605

PLAN/International
Plan de Parrainage International
B.P. 1598
Bamako

Programs cover community development (construction of infrastructure and housing, access to potable waters, and improved agricultural production), family livelihood (income generation and technical aid to entrepreneurs), health (ORT, breast feeding, and immunization), and education (construction and maintenance of school buildings, equipment procurement, and adult literacy). Foster Parents has Malian offices in Bamako, Banamba, and Kangaba. After the 1981 meningitis epidemic, this group supplied 50,000 doses of vaccine.

4. Lutheran World Relief
360 Park Ave. South
New York, N.Y. 10010
(212) 532-6350

B.P. 9051
Bamako, Mali

Lutheran World Relief, active in the country since late 1986, gives grants to local groups working on dry-season gardening and well construction in the Mopti, Timbuktu, and Ségou regions.

5. MAP International
2200 Glymco Parkway
Brunswick, Georgia 31520
(912) 265-6010

P.O. Box 21663
Nairobi, Kenya
Tel: (254)25-64-355
Telex: (963) 25-327

MAP has no long-term presence in Mali, but sends medical supplies and medicines upon request to hospitals and Christian missions in the country. This PVO provided medical supplies on Vice President Bush's airlift for the 1984-1985 drought.

6. Southern Baptist Convention
Foreign Mission Board
3806 Monument Ave.
Richmond, Virginia 23230
(804) 353-0151

B.P. 2017
Bamako
Tel: (223) 22-67-45

Baptist Mission operates an adult educational center in Bamako that teaches public health, literacy, and vocational skills. In Keneiba, this PVO runs community development, agricultural, and well-drilling programs. During the 1984-1985 drought, Baptist Mission distributed food in the areas of Mopti, Segou, Koulikoro, and Nioro, and provided trucks for inland transport.

7. World Vision Relief and Development, Inc.
919 W. Huntington Dr.
Monrovia, California 91016
(818) 357-7979

Vision Mondiale, Int.
B.P. 2347
Bamako

World Vision's initial presence in the country centered around relief activities of the drought in the early 1980s. In 1985, the group opened a program office in Gao that focuses on food distribution, malnutrition, and agricultural issues.

Since the drought, World Vision/Mali has shifted its emphasis to long-term development. The Gao/Menaka Outreach Project promotes self-help to drought victims through reforestation and agricultural activities. Another program in Gao provides health services to children while encouraging better sanitation and immunization practices. Following the most recent yellow fever outbreak in Koutiala cercle in March 1988, World Vision vaccinated 86,710 children.

3.13 International Programs

Foreign Governments

Countries that assist in Mali's long-term development and have donated emergency assistance include Canada, France, West Germany, Italy, the Netherlands, Norway, Switzerland, and the U.K.

In response to the 1984-1985 drought, Algeria provided wheat worth \$200,000 and furnished three C-130s in Mopti to airlift 2,000 MT of grain, Canada donated support for rice and millet seed acquisition from surplus areas, and gave 24,194 MT of corn; France donated 15,000 MT of corn; West Germany gave 12,000 MT of corn and sorghum and provided an engine for the Gao ferry; Italy contributed assistance totaling \$8 million and airlifted commodities within Mali; the Netherlands supplied rice and corn valued at \$1.5 million, and \$141,666 in cash; Norway furnished food and medicine worth \$803,571 and made cash contributions of \$742,333 to Norwegian Church Aid and to Stromme Memorial Foundation; Switzerland donated \$17,000 to the Office of the U.N. Disaster Relief Coordinator (UNDRO); and the U.K. contributed 1,890 MT of rice.

International Organizations

The following organizations have assistance programs in Mali: the European Economic Community (EEC), Food and Agricultural Organization (FAO), International Labor Organization (ILO), League of Red Cross and Red Crescent Societies (LORCS), United Nations Development Program (UNDP), United Nations Industrial Development Organization (UNIDO), United Nations Children's Fund (UNICEF), World Food Program (WFP), the World Bank, and the World Health Organization (WHO).

1. European Economic Community (EEC)
B.P. 115
Rue Gegau
Bamako
Tel.: (223)22-20-65
Telex: 2526 DELAGSED

The EEC has an active presence in Mali. During the 1984-1985 drought, the EEC gave assistance for the local purchase of food and seed, contributed to an MSF/Belgium health program, and procured engines for river transport of relief.

2. FAO
B.P. 1820
Bamako
Tel: (223)22-63-33
22-65-76
Telex: UNDEVPRO

FAO programs include livestock improvement, technical assistance for motorpump-driven irrigation, beekeeping, and a study to develop fishfarming. FAO coordinated U.N. efforts during the 1968-1973 drought, established information exchanges among donors, facilitated airlifts, and organized ground transport. For the 1984-1985 emergency, the international body conducted an assessment of the food shortage in conjunction with WFP.

3. League of Red Cross and Red Crescent Societies (LORCS)
B.P. 280
Route Koulikoro
Bamako
Tel: (223)22-45-69
Telex: 2611C ROUGEMJ

LORCS activities are related to disaster relief and preparedness, including training, stocking emergency supplies, and construction of warehouses. LORCS provided supplementary feeding and medical care, sent medical teams and specialists, and airlifted supplies for the 1968-1973 drought. During the 1984-1985 emergency, LORCS ran a large feeding program in the Gao region, operated health and nutritional services, and furnished relief items.

4. UNDP
B.P. 120
Bamako
Tel: (223)22-20-52
22-36-94
22-37-23
Telex: 972 552

The fourth UNDP country program (1987-1991) had four goals: a) to strengthen the Malian government's capacities at the planning and management levels of development; b) to increase food and livestock production; c) to develop water resources; and d) to pursue training and employment. UNDP programs in Mali therefore encompass improving regional and national development planning, institutional reform, seed multiplication, crop protection, fisheries and livestock development, water management and research, rural education, creation of cottage industries, employment promotion for recent school graduates, nutritional surveillance, preparation of a national aeronautical plan, and updating the civil aviation code.

For the 1968-1973 drought, UNDP pursued water development projects and furnished technical assistance to road programs and river blindness programs. This international organization used emergency funds for hydro-agricultural programs and pumps during the 1984-1985 relief effort.

5. UNICEF
B.P. 96
Bamako
Tel: (223)22-44-01
Telex: 2536

UNICEF programs include helping fund the National Program for the Control of Diarrheal Diseases (see Section 2.4, Disease). UNICEF played an active role following the yellow fever outbreak of 1987 and the cholera epidemic of 1985, sending vaccine and supplies. During the 1968-1973 emergency, UNICEF expanded its mobile health program and, for the 1984-1985 drought, organized medical teams for Gao, Timbuktu, and Diré.

6. WFP
c/o UNDP
B.P. 120
Bamako
Tel: (223)22-20-45
Telex: 2447 WFP

WFP spearheads the U.N.'s food assistance to Mali during an emergency. Its long-term projects focus on price stabilization in the grain market, rural developments, animal husbandry, and forestry. In response to the 1968-1973 drought, WFP obtained grants of grain from donor countries for its projects in Mali and assisted the FAO in monitoring the situation. The international body distributed more than 100,000 MT of food and contributed 10,000 MT of corn during the 1984-1985 emergency.

7. World Bank
Immeuble CNAR
Rue Square Lumumba
B.P. 1864
Bamako
Tel: (223)22-22-83
Telex: 2402

The World Bank makes loans to Malian government development programs in the following areas: agriculture, health, education, public enterprises, banking, roads, telecommunications, urban infrastructure, and forestry.

8. WHO
B.P. 99
Bamako
Tel: (223)22-23-35
Telex: 2446 UNISANTE

Bureau Régional pour l'Afrique
Organization Mondiale de la Santé (WHO)
B.P. 6
Brazzaville, Republic of Congo
Tel: (242)81 38-60/65
Telex: 5217
5364

WHO programs include funding the National Program for the Control of Diarrheal Diseases (see Section 2.4, Disease). WHO contributed technical aid, medicines, and hospital supplies following the outbreaks of cholera in 1985 and yellow fever in 1987. The international group conducted health programs in response to the 1968-1973 and 1984-1985 droughts.

Other international organizations that have given emergency assistance to Mali include: Arab League, Caritas Internationalis, Christian Aid, U.N. Disaster Relief Office (UNDRO), U.N. High Commissioner for Refugees (UNHCR), U.N. Sahelian Office (UNSO), World Council of Churches (WCC), and World Federation of Trade Unions.

Non-governmental Organizations

1. Agency for Cooperation and Research in Development (ACORD)
B.P. 1969
Bamako
Tel: (223)22-51-99
Telex: 1200 MJ (public)

This consortium of 23 Canadian and European voluntary agencies, formed after 1973, manages programs mainly in the 6th and 7th regions which emphasize social development, technical training, agricultural cooperatives, well-digging, pasturage, and gardening.

2. Ile-de Paix/Timbuktu
B.P. 3066
Timbuktu

Active in two other countries (Burkina Faso and Guinea-Bissau), the Belgian group Ile-de-Paix concentrates its efforts in the Timbuktu area where it runs an anti-desertification project and a training program for mechanics.

3. Médecins sans Frontières (MSF/Belgium)
B.P. 2166
Bamako
Tel: (223)22-56-91
Telex: 1200 (public)

MSF/Belgium programs include fielding mobile medical units in the regions of Timbuktu, Gao, Mopti, and Ségou, constructing and managing nutritional centers near Timbuktu, and conducting vaccination campaigns against yellow fever in the area of Bamako. MSF also manages the SAP early warning system with Save the Children/U.K. and Oxfam/U.K. (see Section 3.2, Early Warning). For the 1984-1985 drought, MSF conducted nutritional surveys and health programs in the Timbuktu and Gao regions, as well as distributed food in critical areas.

4. Norwegian Church Aid (NCA)
Aide de l'Eglise norvégienne
B.P. 803
Badalabougou-Est
Bamako
Tel: (223)22-51-50
Telex: 22-62-74

Norwegian Church Aid is active mainly in the Gossi area with agricultural, irrigation, water resources, education, and training programs. In the 1984-1985 drought, the organization handled food assistance and feeding centers. NCA also operated mobile medical units in the 6th and 7th regions in conjunction with Médecins sans Frontières/Belgium.

5. Oxfam (U.K.)
B.P. 209
Bamako
Tel: (223)22-61-73
Telex: 1200 (public)

Oxfam/U.K. programs include agriculture (animal traction, irrigation, gardening) and community outreach through women's groups. Like OXFAM/U.S., Oxfam/U.K. makes loans for projects with Malian and international NGOs. This organization helps Save the Children/U.K. and MSF/Belgium manage the early warning network called SAP (see section 3.2, Early Warning).

6. Save the Children Fund (U.K.)
B.P. 2145
Bamako
Tel: (223)22-30-16
Telex: 1200 (public)

Save the Children/UK programs focus on training, immunization, and water resource development. SCF/U.K. also helps MSF/Belgium and Oxfam/U.K. run the early warning network called SAP (see Section 3.2, Early Warning).

7. Stromme Memorial Foundation (Norway)
Foundation Commémorative de Stromme
B.P. 3203
Bamako
Tel: (223)22-38-84
(223)22-76-48
Telex: 22-38-91

Stromme Memorial Foundation has a health and agriculture program in the western part of Mali and is active in the locust campaign. During the 1984-1985 drought, this Norwegian group worked with Baptist Mission in distributing food and provided mechanics, drivers, logisticians, and nutritionists to the relief effort.

8. Volunteers from France (L'Association française des Volontaires de Progrès), the Netherlands, West Germany, and the U.K. (United Nations International Service of Great Britain) also serve in Mali.

Appendices A and B

The attached appendices give examples of two common disasters to Mali: drought and epidemic.

MALI - Drought

(Please note: This disaster was declared near the close of FY 84, and remained active throughout FY 85.)

Date: June 1984 - December 1985

Location: Countrywide, particularly the regions of Gao (Region VII), Timbuktu (Region VI), Mopti (Region V), northern Kayes (Region I), and northern Koulikoro (Region II)

No. Dead: Not reported

No. Affected: 1,500,000

The Disaster

Much of Mali lies in the Sahara Desert or in the dry Sahelian zone and is very susceptible to the vagaries of rainfall. Both 1982 and 1983 saw insufficient rainfall in the Sahel, which particularly affected the Gao and Timbuktu regions. When the rains failed again in 1984, the food shortage situation became disastrous, not only in Gao, Timbuktu and Kayes-- often affected by drought-- but also in Mopti and Ségou. In the remote region of Gao, where distances are great and transportation links poor, normally about 49% of the population are nomads, but during this prolonged drought, some of the normally sedentary population had to migrate in search of water. On the other hand, most of the migration in drought-stricken Gao was from the rural areas to encampments either inside cities (where that has been allowed) or on the outskirts of cities. The uprooted population in Gao was estimated at greater than 40,000 in mid-March and at 52,000 in Timbuktu.

In general, the impact of the drought was most severe in the north with conditions improving marginally towards the south. Women and children were most at risk; many nomad and village men left their families to seek work but had not returned by the spring of 1985. Médecins sans frontières (MSF), a French PVO, reported serious nutritional deficiencies in the affected areas. In a survey taken of children younger than five years old, the following regional populations were found to be below 80% of normal weight-height ratios: Timbuktu: 18-52%; Gourma Rharous (along the Niger River, east of Timbuktu): 27-70%; Diré (southern Gao): 12-47%; Niafunké (northern Mopti): 7-18%; and Goundam (southern Gao): 15-38%.

USAID estimated the national food deficit to be 440,000 MT in February 1985. Of this amount, only 210,000 MT were covered by on-farm stocks and commercial imports.

Many Malians have a precarious economic existence in the best of times and several years of insufficient rainfall, coupled with years of deforestation and erosion, pushed the country toward disaster.

Action Taken by the Government of the Republic of Mali (GRM)

In October 1983, the GRM launched an appeal for international aid. It also formed a national commission to aid victims of the drought. The FAO estimate of a 481,000 MT cereal deficit and its recommendation of 202,000 MT of food aid were endorsed by the GRM, and its requests for emergency food followed the recommendations.

The GRM has tried to schedule food aid deliveries in the most efficient manner while all government-to-government food aid is received and accounted for by the Office des Produits Agricoles du Mali (OPAM), the government's agricultural office, was responsible for food aid donated to the GRM. OPAM was charged with selling 10,000 MT of USG-donated rice, the proceeds of which were placed in a joint USAID-GRM bank account and later applied to cover the cercle-to-village-level transport costs of the food for free distribution.

A top priority for rehabilitation was procuring seeds for the 1985 harvest. OPSS, the GRM agency charged with seed supplies, worked with the Canadian government and the Fonds Europeen du Developpement (FED) to purchase the millet, sorghum, and rice seeds. Production within Mali was sufficient to meet seed requirements but it had to be purchased quickly before it was eaten by hungry farmers, as only locally-produced seed varieties are adapted to local conditions.

Finally, Secama, the Malian Catholic society, participated in food distribution to displaced nomads in Gao.

Assistance Provided by the United States Government

On September 13, 1984, Ambassador Ryan declared that the drought had caused a disaster in Mali. His disaster assistance funds were used to provide two grants of \$12,500 each to UNDRO and to the Coordinating Committee for Emergency Actions (CCAU, a group of non-governmental organizations) for inland grain transport. OFDA gave CCAU an additional \$300,000 and UNDRO \$50,000 from its special \$16 million appropriation for inland food transport.

Much of sub-Saharan Africa, particularly the Sahel zone, was in deep crisis throughout 1984 and 1985, rivalling the devastating drought of the early 1970s. Many international donors mounted a concerted relief effort, partly to prevent famine conditions from arising and partly to deal with the underlying causes of the food shortage. Consequently, in late January 1985, OFDA sent a two-person team for a month to assess the extent of the emergency in Mali and to determine the most appropriate and effective U.S. response. Their report helped OFDA to decide on what further aid should be given to Mali in FY 85.

USAID's strategy to alleviate the disaster included both the sale and free distribution of P.L. 480 Title II food grains. Sales provide the counterpart funds necessary to transport other commodities for free distribution in rural areas as well as help to meet the national cereal requirement during a time of shortage. Free distribution took place in remote rural areas. Therefore, 5,000 MT of the Government-to-Government rice in FY 84 and 5,000 MT of the rice in FY 85 were sold through OPAM's eight outlets in the region of Mopti. Net proceeds were placed in a joint GRM-USAID bank account and used to pay for free distribution of the remainder of the Government-to-Government P.L. 480 food. OPAM assigned the free distribution of the remaining 75,300 MT to several PVOs which had experience in Mali. These included the Stromme Memorial Foundation, the Baptist Mission, Norwegian Church Aid, CARE, MSF, and ASC (a Swiss PVO).

In addition to the Government-to-Government program, USAID also donated Title II and Section 416 commodities for free distribution to LRCS, WFP, and the African-American Labor Center. (For details, see below, "FFP Assistance.")

USAID arranged a barter transfer of Ghanaian maize for Title II rice assigned to Mali and Burkina Faso. Under the contract, 9,202 MT of Title II rice was exchanged for 15,000 MT of Ghanaian white maize, 10,000 MT of which was trans-shipped to Mali (8,000 MT went to WVRO's program in Gao and 2,000 MT went to Nioro).

Four food monitors were hired by A.I.D.'s Bureau for Food for Peace and Voluntary Assistance for \$140,000 to oversee distribution of Title II food. In addition, the Africa Bureau of A.I.D. funded a Disaster Relief Advisor for a two-year assignment to help manage the entire USG disaster relief effort. This cost \$206,000 and was funded from a special portion of the supplemental funds allocated for operating expenses.

Vice President George Bush visited Mali in March during a trip to Africa. He was accompanied by a DOD C-141 filled with food, medicine, and medical supplies provided by PVOs, private citizens, OFDA, and DOD. The transport of the plane was paid for by OFDA. Vice President Bush also signed three agreements with the GRM finalizing rehabilitation projects.

As mentioned earlier, one of the most severely affected areas of Mali was the remote region of Gao. It was imperative to get food and other relief supplies to this area. The city of Gao is along the Niger River, 1,250 km from Bamako and 600 km from Mopti. During the height of the disaster, the ferry across the Niger River at Gao was frequently out of order. Therefore, OFDA funded a DOD operation to install a 60 MT-capacity raft (U.S. Army M4T6, five float reinforced raft) to carry trucks and supplies across the river until the usual ferry could be repaired. The raft was operated from May 23, 1985 until the end of October. Fifteen people from the U.S. Army Corps of Engineers worked closely with Malian engineers to maintain daily crossings.

CARE received a grant from OFDA to handle the logistics of its food program. CARE purchased nine 10-MT four-wheel drive diesel station wagons and eleven 49-cc motorized bicycles, spare parts, and garage tools. CARE handled the distribution of 22,500 MT of the Government-to-Government Title II program.

Finally, OFDA funded a self-help project to rebuild, deepen, and provide a lip and a lid for five wells in isolated Koro cercle in the Mopti region. The funds paid for cement, parts, and well diggers and their transportation. The contributions of the 3,400 villagers involved represented 25-30% of total costs.

Summary of OFDA Assistance

FY 84

Grant to UNDRO for inland transport (\$50,000 of this amount was from supplemental funds).....\$62,500

Grant to CCAU for inland transport (\$300,000 of this amount was from supplemental funds)... ..\$312,500

FY 85

Disaster assessment team visit (January 31 - March 1, 1985).....\$23,193

Cost of DOD airlift of food and medical supplies during Vice President Bush's visit to Mali.....\$64,224

DOD initial survey team of Gao ferry situation (mid-May).....\$5,000

DOD airlift of the Gao raft from West Germany and support costs (from supplemental funds).....\$510,000

Cost of in country support for DOD Gao raft team (from supplemental funds).....\$300,000

Grant to CARE for logistical support of food program (from supplemental funds).....\$2,154,786

Wells self-help project in Koro cercle in Mopti (from supplemental funds).....\$36,000

FY 86

Grant to Africare for food crop production program (supplemental funds).....\$1,723,000

Summary of FFP AssistanceFY 84

<u>Sponsor</u>	<u>MT</u>	<u>Commodity Cost</u>	<u>Freight Cost</u>	<u>Total Cost</u>
Gov't.-Gov't.	25,000	\$6,472,700	\$5,069,000	\$11,541,700
Title II				
15,000 MT corn-meal				
10,000 MT rice				
WFP	10,000	\$1,527,800	\$1,100,000	\$2,627,800
Title II				
10,000 MT corn				
AALC	4,860	\$742,500	\$1,069,200	\$1,811,700
Title II				
4,860 MT corn				
TOTAL	39,860	\$8,743,000	\$7,238,200	\$15,981,200

FY 85

Gov't.-Gov't.	60,300	\$12,917,900	\$15,354,200	\$28,272,100
Title II				
20,000 MT rice				
15,000 MT corn-meal				
25,000 MT corn				
300 MT NFDM				

<u>Sponsor</u>	<u>MT</u>	<u>Commodity Cost</u>	<u>Freight Cost</u>	<u>Total Cost</u>
LRCS Title II 405 MT NFDM 4,872 MT rice 162 MT vegoil	5,439	\$1,712,600	\$1,309,000	\$3,021,600
LRCS Section 416 840 MT NFDM	840	\$546,000	\$239,400	\$785,400
WFP Section 416 360 MT NFDM	360	\$234,000	\$102,600	\$336,000
TOTAL	66,939	\$15,410,500	\$17,005,200	\$32,415,700

Four food monitors.....\$140,000

Summary of USG Assistance

TOTAL FY 84 OFDA funds.....	\$25,000
TOTAL FY 84 OFDA-administered Supplemental funds.....	\$350,000
TOTAL FY 84 FFP funds.....	\$15,981,200
TOTAL FY 84 USG assistance.....	\$16,356,200
TOTAL FY 85 OFDA funds.....	\$92,417
TOTAL FY 85 OFDA-administered Supplemental funds.....	\$3,000,786
TOTAL FY 85 FFP funds.....	\$32,555,700
TOTAL FY 85 Special Supplemental for operating expenses.....	\$206,000
TOTAL FY 85 USG assistance.....	\$35,854,903
TOTAL USG assistance FY 84-85.....	\$52,211,103

Assistance Provided by U.S. Private Voluntary Agencies

ADRA - provided 4,050 syringes and needles, valued at \$4,800, for Vice President Bush's airlift.

ANRC - gave 1 MT of cream dry milk, valued at \$24,500, for the Vice President's airlift.

African-American Labor Center - handled 4,860 MT of Title II corn provided by the USG in FY 84.

Africare - donated 68,700 doses of measles vaccines, worth \$54,432, and 2.3 MT of high protein bars for the Vice President's airlift.

Baptist Mission - distributed USG Title II corn in FY 84 and distributed 4,000 MT of Title II corn (provided through the Government-to-Government program) in the dryland area of Hopti (Douentza and Koro), Ségou (IV), and Koulikoro (II) and in Niore (IV Region); and provided trucks for inland transport. The Mission purchased two 10-MT four wheel drive trucks to transport the grain within the country.

CARE - made surveys of drought-affected areas; distributed food and relief supplies in the VI Region (Mafunké, Timbuktu, Gourma, and Tonka), the V Region (Douentza, Hopti, and Djenné), and the IV Region (Macina and Niore); and provided 2.3 MT of yellow cornmeal, valued at \$790,000 on the Vice President's airlift.

MAP International - provided 4.5 MT of medical supplies, worth \$13,175, for the Vice President's airlift.

WVRO - distributed 90 MT of rice in Kayes and the Niore du Sahel area, and provided food aid and transport to Kayes (Region I), Kolokani, and Menaka (in Gao region where WVRO is working with LRCS), worth \$2,448,876.

TOTAL \$3,335,783

Assistance Provided by the International Community

International Organizations

Caritas Internationalis - provided \$1,443,915 in food and other aid.

EEC - donated \$1,200,000 for the local purchase of food and seed and for their transport to the affected regions; gave \$625,005 to MSF for a health program; procured two engines for a river barge at Koulikoro, and provided 23,500 MT of corn, rice, and sorghum with inland transportation, worth \$4,914,700. In May 1985, EEC had expended a total of \$31,480,050 for food aid and relief needs during 1984-85.

FAO - conducted an assessment of the food shortage situation in December 1983 with WFP.

FED - provided substantial support for rice and millet seed acquisition in surplus areas; and replaced one engine of a 40-MT ferry at Gao.

LRCS - runs the only organized, large-scale feeding program in the Gao region (concentrating in the city of Gao, Menaka, and Ansongo). In early February, LRCS operated 99 feeding centers (with a target of 160) benefiting 57,500 children, each of whom received at least one hot meal (consisting of a mixture of rice, milk, oil, and sugar) per day. Later, it expanded its feeding program to include distribution of raw grains to 40,000 family members. LRCS provided emergency health and nutrition services in Gao and Timbuktu regions. By May 1985, LRCS's nutritional

program was assisting 290,000 people. LRCS also provided eight refrigerators and 60 containers to hospitals and health posts; provided medicines and oral rehydration packs for maternal-child health clinics and first aid posts; and appealed for a 10-ton truck, two four-wheel drive Toyotas, a Land Rover, and food.

UNDP - used \$1,085,000 from its emergency funds for hydro-agricultural projects and pumps.

UNDRO - sent evaluation teams in May 1984 and in November 1984; sent a representative to Bamako to coordinate relief efforts; made an urgent appeal for 400,000 MT of seeds; distributed 5,000 MT of grain; and contributed \$9,000.

UNICEF - organized two medical teams for Gao, Timbuktu, and Diré; and UNICEF national offices in Belgium, Japan, and the U.S. contributed \$214,000.

U.N. Sahelian Office - installed 50 pumps.

WFP - distributed more than 100,000 MT of food and contributed 10,000 MT of maize, valued at \$3,480,000.

WHO - conducted a health program in the drought zones.

Governments

Algeria - provided wheat worth \$200,000, and placed three C-130s in Mopti to airlift 2,000 MT of cereal. Operations began June 21 and lasted one month. USG commodities received top priority.

Austria - donated 1,510 MT of rice.

Belgium - bought 2,500 MT of rice on the local market.

Canada - provided substantial support for rice and millet seed acquisition from surplus areas, and provided 24,194 MT of corn.

China, People's Republic - provided 2,000 MT of rice and 6,000 MT of corn.

Denmark - gave \$90,407 in cash through UNDRO and 1,125 MT of rice.

France - donated 15,000 MT of maize.

Germany, Fed. Rep. - donated 12,000 MT of corn and sorghum, and provided an engine for the Gao ferry.

Italy - contributed \$3,000,000 in FY 84 and \$5,000,000 for cereals and processed foods in FY 85; airlifted commodities from Dakar to Bamako and then from Bamako to outlying areas for one month.

Japan - provided 2,800 MT of rice through WFP, 20,000 blankets, and 24 MT of biscuits.

Korea, Dem. Rep. - gave 1,000 MT of corn through WFP.

Netherlands - provided 5,500 MT of rice and 2,024 MT of yellow corn, valued at \$1,500,000, and \$141,666 in cash.

Norway - donated food and medicines through Norwegian Church Aid (NCA) worth \$803,571, and made a cash contribution to NCA of \$611,111 and one to Stromme Memorial Foundation of \$131,222.

Pakistan - donated rice.

Switzerland - provided \$17,000 to UNDR0 for food transport.

Thailand - gave 100 MT of rice.

United Kingdom - donated 1,890 MT of rice.

Yugoslavia - contributed 50 MT of food.

Voluntary Organizations

ASC (Swiss Disaster Relief) - distributed 2,500 MT of USG Title II food in the city of Gao.

Cardinal Leger and His Works (Canada) - contributed \$304,000 in cash.

Caritas Austria - contributed \$90,000 in cash.

Caritas Belgium - contributed \$27,576 in cash, and \$3,960 in kind.

Caritas Canada - contributed \$418,000 in cash.

Caritas Germany, Fed. Rep. - contributed \$30,870 in cash.

Caritas Korea, Rep. of - contributed \$9,590 in cash.

Caritas Malaysia - contributed \$9,600 in cash.

Caritas Netherlands - contributed \$28,000 in cash, and \$215,827 in kind.

Caritas New Zealand - contributed \$7,204 in cash.

Caritas Singapore - contributed \$10,471 in cash.

Caritas Switzerland - contributed \$397,343 in cash.

Cebemo (Netherlands) - contributed \$114,000 in cash.

Coordinating Committee for Emergency Action - channelled donations to PVOs for inland transport of food.

Denmark Red Cross - donated 125 MT of rice, valued at \$90,909.

Euro-Action Accord (EAA) - provided assistance to uprooted people in the Gourma-Rharous area of Timbuktu (Region VI); managed a dried meat project founded by EEC.

Italy Red Cross - provided 200,000 liters of oil, value not reported.

MSF - conducted nutritional surveys and health programs in Gao and Timbuktu regions; supported health projects for children in Douentza (Region V) and distributed 300 MT of USG NFDM in Douentza and in the towns of Timbuktu, Goudam, and Diré (VI Region). MSF's emergency program cost \$463,000, which was financed by France, Netherlands, Switzerland, the EEC, UNICEF, UNDRO, and Oxfam/U.K.

Norwegian Church Aid (NCA) operated the major relief effort in Gossi (VI Region). NCA distributed food (including 2,150 MT of USG Title II food) to displaced persons north to Gourma, south to N'Daki (at the Burkina Faso border), west to Hambouri, and east to Doro. NCA reached 4,000 people in the immediate Gossi area and close to 100,000 throughout the entire Gourma plain. Each family of five in NCA's program received 25 kg. of food. NCA also has a fleet of nine vehicles and its staff includes an agronomist, an engineer, a mechanic, and nurses. It maintains a storage capacity of over 1,580 MT and is actively engaged in nutrition and health care intervention.

Oxfam/U.K. - provided \$32,712 for the purchase of maize and rice, and made grants to various PVOs worth \$370,950.

Stromme Memorial Foundation (Norwegian PVO) - worked with Baptist Mission in FY 84 to distribute food; distributed 2,500 MT of U.S. Title II corn in the inland delta region of Mopti from February to April 1985 and 3,000 MT of Title II corn in May, June, and July; also worked in Niore (IV Region), Nara (II), and Kayes Region (I); provided mechanics, drivers, logisticians, nutritionists, and five four-wheel drive trucks for the relief effort.

Vétérinaires sans frontières - used meat from cattle purchased for slaughter to prepare dried food in Douentza (Region V).

TOTAL \$49,924,039

MALI - Epidemic

Date: September October, 1987

Location: Kati and Kita administrative cercles

No. Dead: 137

No. Affected: 290

The Disaster

An outbreak of yellow fever on the outskirts of Bamako produced 137 deaths out of 290 cases, 80% of whom were persons under 15 years old. Despite initial concern from the government and donors that the epidemic would spread into the capital, it remained confined to rural areas.

Action Taken by the Government of the Republic of Mali (GRM)

Following an appeal for international donations on October 3, the GRM in conjunction with UNICEF launched a mass immunization program. Vaccination teams labored in the targeted areas of Kati and Kita cercles and Bamako city, reaching 1,233,000 beneficiaries. By the middle of October, the campaign's second phase--targeting 726,000--had begun within 100 km. of the capital in Bafoulabé, Kouleba, Diema, and parts of Kolokani, Koulikoro, Kengaba, and Diola.

Assistance Provided by the U.S. Government

After Chargé John H. Lewis's disaster declaration of October 9, the USG reviewed a request by UNICEF for 50 automated immunization guns of the ped o jet brand. For reasons of availability, OFDA bought 10 of these devices plus spare parts from the Department of Defense (DOD) for \$20,212. The purchase was shipped via commercial airliner from a DOD depot in Mechanicsburg, Pennsylvania, to Bamako where UNICEF delivered it to Mali's National Immunization Center. OFDA covered freight charges which amounted to \$1,121. USAID/Mali

also made available five vehicles from the pesticide testing program to the Ministry of Health. Counterpart funds went toward logistical (vehicle operation and maintenance) and field support for vaccination teams.

TOTAL \$21,333

Assistance Provided by the International Community

Canada - donated \$166,666 in logistics and equipment.

China - pledged \$15,000.

EEC - contributed \$180,379 for medical supplies.

France - gave 500,000 doses of vaccine.

Germany, Fed. Rep. - furnished 500,000 doses of vaccine and \$26,178 worth of fuel.

Iran - provided \$3,164

Italy - gave 500,000 doses of vaccine.

Netherlands - supplied 300,000 doses of vaccine and technical assistance.

Switzerland - contributed 300,000 doses of vaccine, operational costs and technical assistance.

UNDP - gave \$18,987 for operational costs.

UNICEF - provided 900,000 doses of vaccine, 10,000 liters of fuel, and 1,000,000 vaccination cards.

WHO - donated technical assistance and 300,000 doses of vaccine.

TOTAL \$410,374

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