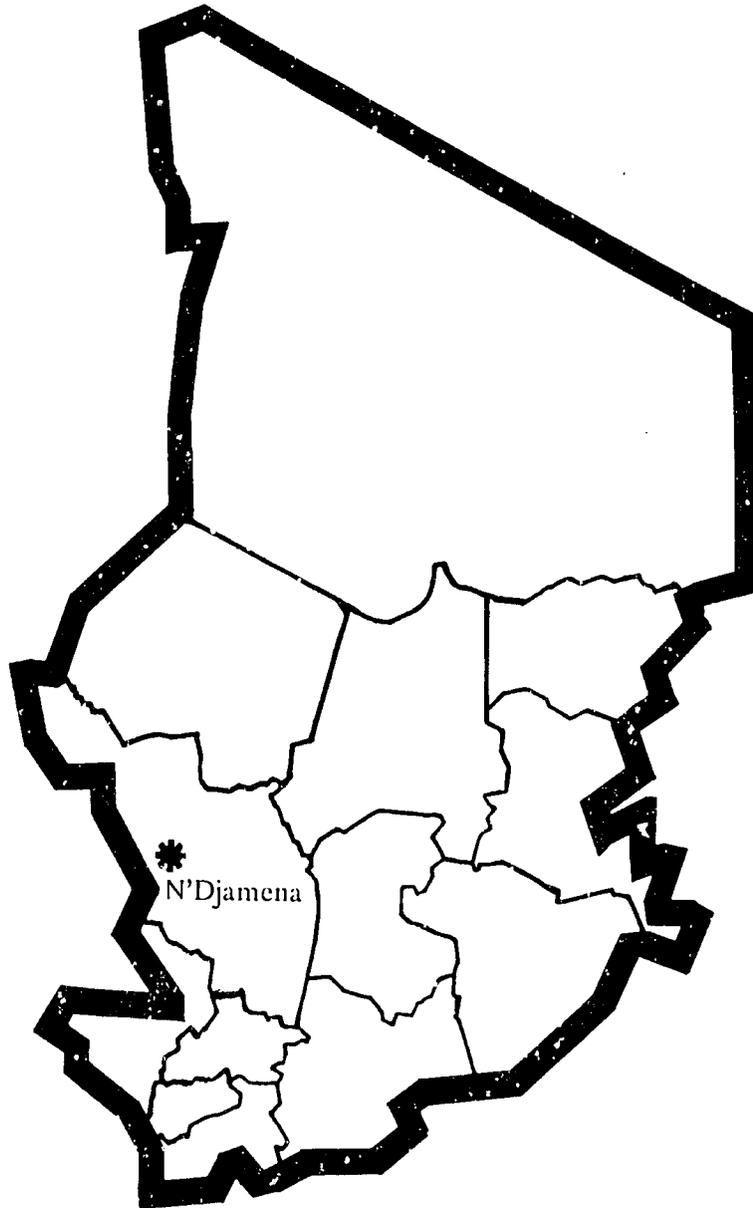


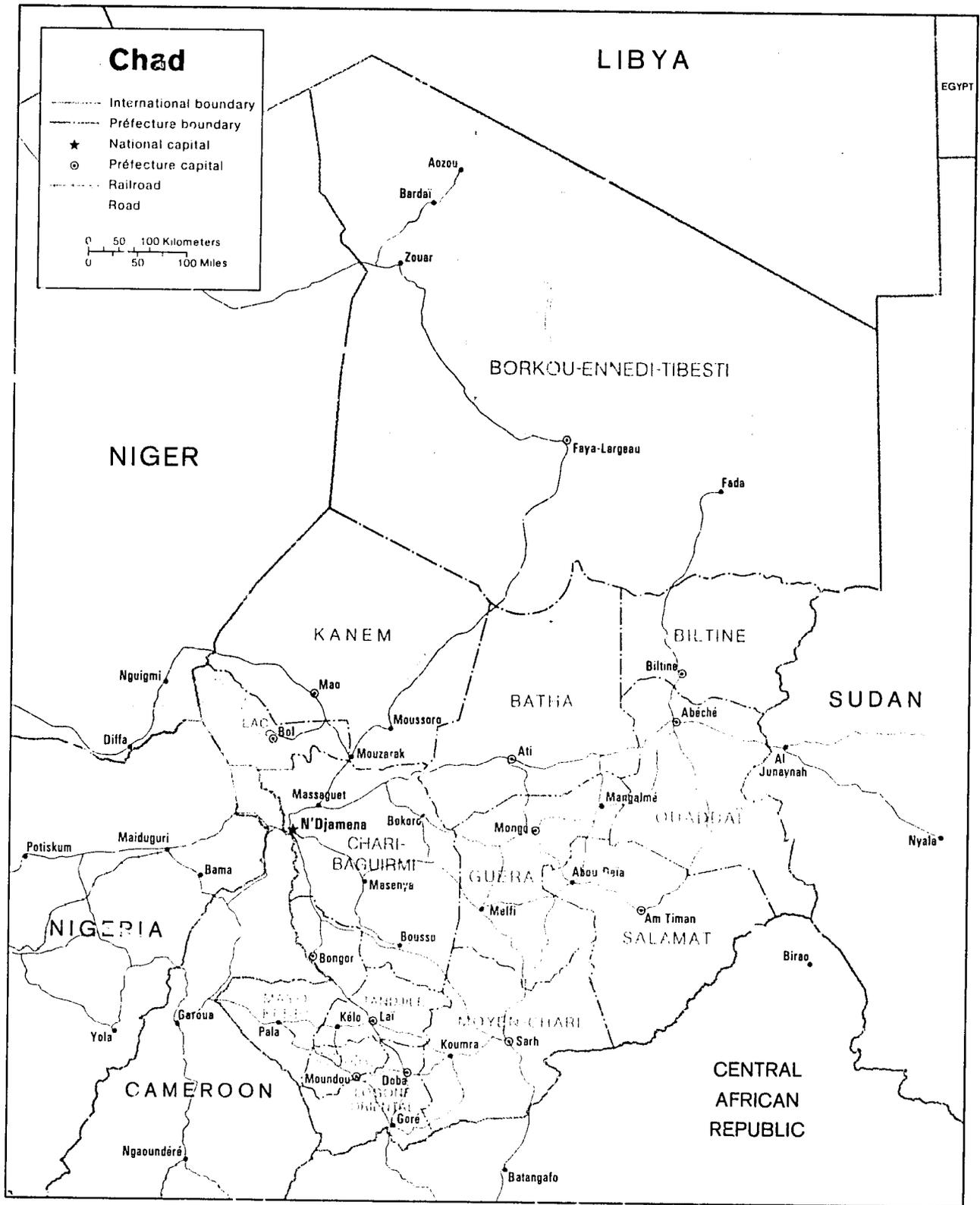
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4/2/86

# Chad

## A Country Profile



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



CHAD: 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

Evaluation Technologies, Inc.  
Arlington, Virginia  
under contract AID/SOD/PDC-C-0283

The profile on Chad is one in 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). The content, scope, and sources have evolved over the course of the last three years, and no doubt will continue to do so. The relatively narrow focus is intentional. To avoid redundancy, some topics one might expect to find in a "country profile" are not covered here.

If the information provided can also be useful to others in the disaster assistance and development communities, so much the better. Every effort is made to obtain current, reliable data; unfortunately it is not possible to issue updates as fast as changes would warrant. A cautionary note, therefore, to the reader: statistics are indicators at best, and if names and numbers matter, the bibliography will point to a current source.

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

March 1982

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1. General Information1.1 Geographic Codes

Aid Standard	677
FIPS	CD
State Regional	AF

1.2 Country Names

Official	Republic of Chad
Local	Republique du Chad
Short	Chad

1.3 Calendar and Holidays

New Year's Day.....	January 1
National Holiday.....	January 11
Independence Day.....	April 13
Labor Day.....	May 1
Assumption.....	August 15
All Saints Day.....	November 1
Proclamation of the Republic.....	November 28
Christmas.....	December 25

Moveable Holidays: Id-al-Fitr, Id-al-Adha, Milad-i-Nabi, Easter Monday, Ascension, Pentecost Monday.

Fiscal year: calendar year.

1.4 Currency (January 1982)

280 CFA Francs = US \$1.00

1.5 Time Zones

EST + 6; GMT + 1

1.6 US Mission and Staff (March 1982)

In January 1982, the U.S. Embassy in N'Djamena was reopened, fourteen months after activities were suspended and all American personnel were withdrawn. The Embassy is now headed by Charge d'Affaires Peter Moffat. USAID is represented by the Food for Peace representative, Les McBride.

1.7 Sister Cities

None

1.8 Host Mission and Staff in US (November 1981)

Embassy of the Republic of Chad  
2002 R Street, N.W.  
Washington, D.C. 20009  
Tel: 462-4009

Charge d' Affaires ad interim.....Youssef Abakar  
First Secretary.....Hassan Mady

1.9 Treaties and Agreements

Economic and Technical Cooperation  
Investment Guaranty Agreement  
Peace Corps

1.10 International Organization Memberships

UN and related agencies except International Atomic Energy Commission and International Maritime Organization; Organization of African Unity (OAU); Common Organization of African, Malagasy and Mauritius States (OCAM); Club Du Sahel (CILSS); Lake Chad Basin Commission (LCBC); African Development Bank and Fund; African States Associated with EEC-ACD States; Agency for Cultural and Technical Cooperation of French Speaking People; IBRD, IMF, Niger River Commission.

### 1.11 Travel and Visa Information

Transit visa without stay or stay of 2 weeks, \$6.25; onward ticket required. Visitor's visa, up to 3 months, \$6.25, 1 entry, roundtrip ticket, 3 photos. Apply embassy, Washington, DC; and check specific requirements.

Required: yellow fever for those 1 year of age and older. Recommended: cholera, typhus, typhoid and polio immunizations; malaria suppressant.

### 1.12 Ethnic and Sociocultural Groups

Chad's geographic position along the contact zone for Muslim Caucasoid North Africans and Saharan and Sudanic Negroes of the Sudanic agricultural and Eastern Nigritic cultures make for extreme ethnic diversity. Among the Muslims, dispersed sparsely over the Saharan desert regions, the Arabs and Bororo are nomadic herders, the Wadai in the east, the Hadjerai and Bilala in the center, and the Baguirmi in the west are farmers and traders, the Kanembou raise livestock, and in the extreme north, the Toubou and Gorane farm the oases and raise camels. In the more densely populated wooded savanna of the south live non-Muslim (animist) farmers, the Sara being the largest group.

North-south gradients: Caucasoid to Negroid physical types, Muslim to animist religious affiliations, nomad to transhumance to sedentary farming occupations.

### 1.13 Languages

French is the official language; however, it is spoken only by an educated minority. Chadian Arabic is probably the most widely understood language; its use in Koranic schools and identification with Islam have made it the common language for Muslim peoples and their northern neighbors. Except for Arabs, first languages for Saharan and Sahelian peoples usually belong to Nilo-Saharan language family. Sara is most widely spoken southern language with about 1/3 of population using it.

#### 1.14 Religions

Islam, adhered to by 52% of population, is dominant in the northern half of the country. Animism prevails in the south, beliefs varying from tribe to tribe. Christianity, usually Roman Catholicism, has been accepted by about 5% of the population, primarily in the South.

#### 1.15 Education and Literacy

As of 1977 about 43% of children were enrolled in the 802 primary schools in Chad. The overall literacy rate for the country is about 14%.

## 2. Government

### 2.1 National Government

The Government D'Unite Transitional, composed of a Council of Ministers and headed by the President, was established in Chad in August 1979 by the Organization for African Unity. The Council of Ministers exercises the executive and legislative functions of the government and ostensibly represents the interests of all factions in Chad. There are no political parties in Chad but a number of groups which maintain varying degrees of influence over different regions and ethnic groups throughout the country. Eleven such groups signed the accord which established the GUNT, and a representative of each group served on the Council of Ministers. The two most important groups are the Front de Liberation National du Tchad (FROLINAT) and the Forces Armees du Nord (FAN), both of which are supported by Northern Muslims.

As of March 1982, the GUNT had not drafted a new constitution for the country; the last constitution, the Charte Fundamentale, was abolished in March 1979.

### 2.2 Current Status (1982)

Long-term hostility between political factions, religious communities, and groups representing foreign interests posed a continuous threat to the stability of Chad. Tensions finally erupted in violence during March 1980 when government forces, headed by President Goukouni Oueddei, clashed with those supporting Defense Minister Hussein Habre in N'Djamena. The fighting lasted nine months and caused extensive structural damage to the downtown area and resulted in considerable loss of life, both civilian and combatant. Up to 200,000 people fled the area to neighboring countries to escape the violence. Fighting ended in N'Djamena in December 1980 when the government forces, backed by troops and equipment from Libya, succeeded in driving Habre's Forces Armees du Nord (FAN) out of the capital. The FAN retreated to the eastern region along the Sudanese border where they continue to wage guerilla warfare against government troops. The Organization for American Unity sent a peacekeeping force composed of troops from Nigeria, Senegal, and Zaire to guard the peace in Chad in November 1979. This force is now situated between the capital city and Habre's forces.

### 2.3 Regional Organization

14 prefectures divided into 54 sub-prefectures, which in turn are divided into administrative posts. Prefectures and sub-prefectures headed by civil servants, prefects and sub-prefects, appointed by and responsible to the central government. Local traditional chief usually heads administrative post.

Units of local government are cantons, village groupments and villages administered respectively by a council mayor, local chief, village chief, and elected councils. Responsibilities include public order and health, local roads, tax collection and local judicial matters.

#### Prefectures

Batha	Logone Occidental
Biltine	Logone Oriental
Borkou-Ennedi-Tibesti	Mayo Kebbi
Chari Baguirmi	Moyen Chari
Guera	Ouaddai
Kanem	Salamat
Lac	Tandjile

### 2.4 Major Government Figures (January 1982)\*

President.....	Goukouni, Ouaddei
Vice President.....	Kamougue Wadal Abdel Kader, Col.
State Min. for Foreign Affairs & Cooperation.....	Acyl Ahmat, Alkabache
State Min. for Interior Security.....	Said, el Hadj Mahamat Abba
State Min. for Rural Development.....	Naimbaye, M'Bailo Lossimian
Min. of Defense, Veterans & Disabled Veterans.....	Togoi, Adoum
Min. of Economy & Finance.....	Ngangbet Kosnaye, Michel
Min. of Information & Telecommunications..	Amane, Idriss Mahamat
Min. of Justice.....	Koumakoye, Kassire Delwa
Min. of Labor & Social Security.....	Affono, Tabori Maina
Min. of National Education.....	Ibn Oumar, Acheikh
Min. of Plan & Reconstruction.....	Souleymane, Tahir
Min. of Public Health.....	Monn-Djasngar, Garadoum
Min. of Public Works & Transport.....	Balaam, Facho, Dr.

Secretary-General of the Government.....Barka, Mahamat Nour Adam  
Secretary of State of Defense Charged  
with Veterans & Disabled Veterans.....Djime Ngakinar, Mamari, Col.  
Secretary of State of Foreign Affairs  
Charged with Cooperation.....Passire, Yangalbe

\* Due to volatile political situation, check with Desk Officer or  
Embassy for most current government leaders.

### 3. Disaster Preparedness

#### 3.1 Host Disaster Plan (March 1982)

The Council of Ministers recently approved a resolution creating the National Committee for Reconstruction (CRN) which is composed of General Directors of each Ministry, the United Nations Development Program Resident Representative, the Minister of Planning and Reconstruction (who serves as Vice-President), and the Vice President of the GUNT (who serves as President of the CRN). When functional, the CRN, which meets weekly now, will be responsible for reception, storage, and delivery of all relief commodities. It is expected to eventually extend to the prefectural and sub-prefectural levels where local committees would organize distribution of relief commodities in areas beyond the capital.

In addition to this coordinating committee, there exists a National Disaster Relief Office (Direction de la Lutte Contre Les Calamites Naturelles - DLCCN) whose responsibility it has been in the past to communicate the extent of the disaster to donor organizations and governments, to determine in which zones assistance is most needed, to receive, store, and ultimately, to organize transport for the distribution of relief commodities.

#### 3.2 U.S. Mission Plan

As of March 1982, there was no U.S. disaster plan for the newly reopened U.S. Embassy in N'Djamena. While A.I.D. does not maintain a Mission in Chad, there is a food aid specialist working in N'Djamena on contract with A.I.D. Mr. Les McBride can be contacted through the U.S. Embassy in N'Djamena.

#### 3.3 Refugees/Displaced Persons

UNHCR has estimated that up to 200,000 persons sought refuge from the fighting in Chad in the neighboring countries of Cameroon, Nigeria, Central African Republic (CAR), and Sudan. The largest number went to Cameroon where many were accommodated at a UNHCR camp at Kousseri across the Chari River from N'Djamena. Other smaller camps and assistance programs were established in Maiduguri and Ngala in Nigeria.

In July 1981, the GUNT proclaimed an amnesty for all Chadians outside the country. UNHCR began registration for repatriation in the camps at Kousseri and Maiduguri and in the city of Bangui, CAR. Since October 1, 1981, approximately 60,000 refugees have returned to Chad under the program. Another 84,000 are believed to have returned without UNHCR assistance. Returnees are being given monthly rations of basic and supplementary foods and relief supplies at distribution points in and near N'Djamena.

UNHCR has operational responsibility for the repatriation process, however, once the returnees arrive in N'Djamena, UNHCR's role is limited to oversight and monitoring. The day to day operation of the program is the responsibility of CARE, working under contract to UNHCR.

January 1982 estimates of the number of refugees remaining in the camp at Kousseri range from 25,000 to 56,000. Most express fear about returning to Chad because they anticipate personal retribution or believe that the civil war will commence again. UNHCR and the Government of Cameroon have plans to move some of the remaining refugees to Poli, approximately 250 miles southwest of Kousseri. No date has been set for the move as the site at Poli requires extensive preparation.

#### 3.4 Civil Strife/Drought Victims

A major food shortage exists in Chad which affects a large portion of the population outside the southern regions. The causes for the food shortage include a breakdown in normal distribution mechanisms (commercial as well as governmental), the return of the refugees, disruption of agricultural production by the war, and a poor harvest due to below normal rainfall. Compounding the shortage are food storage and transport problems which hinder distribution of emergency food aid. Another problem that could perpetuate the shortage of food is a shortage of appropriate seeds in parts of Chad for farmers to plant before the next rains.

A final group in need of assistance are residents of N'Djamena who stayed in the city throughout the conflict. These people have suffered from the destruction and looting which accompanied the war as well as from the general lack of public services. Their needs include reconstruction programs, restoration of health and sanitation facilities, and rehabilitation of the public and private sectors.

### 3.5 Host Resources

Because of the recent fighting, the GUNT has little in the way of resources to assist the returning refugees/displaced persons and the war victims within N'Djamena. Most government warehouses suffered from looting, shell damage, and lack of maintenance during the nine month conflict. In addition, the theft and/or destruction of almost all government vehicles have left the DLCCN with no capability to receive or distribute relief goods. The UNDP intends to help revitalize this government office by providing training for its personnel, repairing some of its warehouses, and contributing three or four trucks.

#### Food Storage Capacity (Prior to 1980 civil disturbance)

N'Djamena.....	8,900 MT	(Chagoua complex)
	2,500 MT	(Milezi complex)
Prefectures.....	<u>10,400 MT</u>	
	21,800 MT	

All nine warehouses of the Chagoua complex were damaged during the war. The UNDP plans to fund the repair of two warehouses belonging to the DLCCN. The World Food Program (WFP) and the National Cereals Office (ONC) also have warehouses in this complex. The Milezi complex is used by CARE.

Practically all government vehicles were destroyed or stolen during the war. Likewise, the fleet of the private Chadian Truckers Cooperative (CTT) was reduced by 50%. As a consequence, the availability of trucks to deliver relief supplies to the war-affected and drought-stricken areas of Chad is a major problem. At the present time DLCCN has 5 trucks in Daka and the ONC has 4 in the south. See also section 9.2, vehicles.

### 3.6 U.S. Voluntary Agencies

Currently, CARE is the only U.S. voluntary agency operating in Chad. They maintain a staff of six expatriates and employ approximately 220 Chadians. Under contract to UNHCR, CARE is responsible for the refugee repatriation and feeding program which will probably continue through May 1982. CARE has 14 13-ton trucks, nine of which are new Volvos. Some or all of these trucks will be given to the GUNT after completion of the UNHCR program.

### 3.7 Other Volags

Secours Catholique National Tchadien  
Address: B.P. 654, N'Djamena

Lutheran Brethren Church of Christ  
Address: B.P. 29, Bongor

Red Cross of Chad  
Address: B.P. 449, N'Djamena  
Cable: Croixrouge N'Djamena

Medecins Sans Frontieres

Medecins du Monde

Hopital Sans Frontiere

### 3.8 International Organizations

UNDP - B.P. 906, N'Djamena  
Telex: 5244KD; Tel: 39-10

UNHCR - B.P. 906, N'Djamena

As of January 1982, UNHCR had a staff of 5 officers and 2 secretaries to monitor the food distribution program operated by CARE. During the week of December 14, 1981, UNHCR issued a Special Appeal for Chadian Repatriation amounting to \$24 million (\$15.7 million in cash and \$8.3 million in food).

The World Health Organization (WHO), the International Committee of the Red Cross (ICRC), the League of Red Cross Societies (LORCS), UNICEF, the World Food Program (WFP), and the Food and Agriculture Organization (FAO) have also been active in Chad.

### 3.9 Disaster Types and History

Disaster types: drought, food shortage, civil disorder, floods, epidemics.

Summary Disaster History

<u>Disaster</u>	<u>Location</u>	<u>Strike Date</u>	<u>Affected</u>
Drought	Nationwide	66/03/00	NA
Drought	Central, E, S	69/00/00	187,500
Epidemic		70/00/00	7,476
Drought	Entire Country	73/04/25	900,000
Drought		74/00/00	NA
Drought	Entire Country	75/00/00	NA
Drought	Nationwide	76/00/00	NA
Drought	N & C	77/00/00	1,600,000
Drought		77/00/00	300,000
Storm	Moundou Region	77/05/20	NA
Drought		78/00/00	NA
Civil Strife		79/02/00	3,000,000
Civil Strife	N'Djamena	80/04/00	400,000
Civil Strife	N'Djamena	81/00/00	800,000
Drought	Sahelian Zone	81/00/00	NA
Civil Strife/ Drought	Entire Country	82/01/00	NA

Source: Disaster History data base on file at the Office of U.S. Foreign Disaster Assistance in Washington, D.C. Covers 1900 to present.

#### 4. Population

##### 4.1 National Demographic Characteristics

Estimated mid-1979 population: 4.4 million (IBRD). Annual growth rate: 2.0% (1970-79). Average population density: 3.4/sq. km. Urban population 18%, of which N'Djamena 39%. Urban growth rate: 6.5% (1970-80). Approximately 2.1 million live in the zone north of the Chari River (Sahara and Sahelian regions); 1.9 million live in the south. Drought of 1970s caused much population movement, particularly in the north; number and destinations have not been established. The war has also contributed to large-scale population movement, especially to Cameroon.

##### 4.2 Regional Distribution

###### Population and Density By Prefecture

<u>Prefecture</u>	<u>Area</u> (sq. km.)	<u>Population</u> 1979	<u>Density</u> (Per sq. km)
Batha	88,800	354,000	4.0
Biltine	46,850	175,000	3.8
Borkou-Ennedi-Tibesti (BET)	600,350	88,000	0.1
Chari-Baguirmi	82,910	676,000	8.1
Guera	58,950	207,000	3.5
Kanem	114,520	200,000	1.7
Lac	22,230	135,000	6.0
Logone Occidental	8,695	295,000	33.9
Logone Oriental	28,035	307,000	10.9
Mayo-Kebbi	30,105	684,000	22.7
Moyen-Chari	45,180	524,000	11.6
Ouaddai	76,240	347,000	4.6
Salamat	63,000	107,000	1.7
Tandjile	18,045	302,000	16.7
TOTAL	1,284,000	4,405,000	3.4

Source: Africa South of the Sahara, 1981.

4.3 Urban AreasMajor Towns  
(estimated population in 1979)

N'Djamena*	303,000	Koumra	27,000
Moundou	66,000	Bongor	24,000
Sarh*	65,000	Pala	22,000
Abeche	54,000	Doba	21,000
Kelo	27,000		

\*Prior to November 1973, N'Djamena was known as Fort Lamy.  
Prior to July 1972, Sarh was known as Fort Archambault.

Source: Africa South of the Sahara, 1981.

## 5. Health, Nutrition and Housing

### 5.1 Overall Health Status

Intestinal diseases such as amebiasis and bacillary dysentery are major killers; diarrhea was the first cause of death in 1977. Infectious hepatitis is widespread and a major risk for travellers especially in the south and west (Moyen-Chari, Logone Occidental, Logone Oriental, Tandjile and N'Djamena). Measles are the major cause of death among children, with the peak at the beginning of the rainy season in May and June. Malaria is found countrywide; it is hyperendemic in the south, more sporadic in the Sahara. There are no significant control measures.

Other diseases include: tetanus; TB (no significant control); leprosy (about 1% of population affected); venereal diseases; yaws; trachoma (in south); rabies and anthrax in humans; schistosomiasis, both vesical and intestinal; onchocerciasis (mainly in south) and trypanosomiasis. Sporadic cases of viral encephalitis, louse borne typhus and relapsing fever identified. Annual outbreaks of cerebrospinal meningitis (March-April) with major epidemics every 4 to 5 years.

Last reported cholera outbreak was in 1974 in Lake Chad area (about 350 cases). No cases of yellow fever reported for a number of years but have been still a risk. The last case of smallpox was in 1968.

### 5.2 Current Health Situation (1982)

The Central Hospital in N'Djamena is operating with the assistance of European and Chadian volunteers. Other hospitals and dispensaries are being supported (staff, medicines, medical supplies) by UNICEF, WHO, Medecins Sans Frontieres, Medecins du Monde, Hopital Sans Frontiere and the Chadian Red Cross. Maternal-child health care is being provided at social centers (supported by UNICEF and WFP and staffed by French technicians) where malnourished children are fed twice a day, weighed, and given medical care. Medical services outside the capital are reported to be minimal. Water is available in N'Djamena. Garbage disposal, a responsibility of the N'Djamena Mayor's Office, is inadequate due to a lack of resources. When the rainy season commences in May/June health problems caused by the lack of proper sanitation may arise.

### 5.3 Vital Statistics

Birth rate/1000 population	44 (1979)
Death rate/1000 population	24 (1979)
Life expectancy at birth	41 years (1979)
Infant mortality/1000 live births	180-200 (1963-64)

Source: World Bank, Development Report, 1981.

### 5.4 Health Services and Facilities

Chad's four hospitals are located in N'Djamena, Abeche, Moundou, and Sarh. (The last is a new European style facility which required half the country's fixed health investments for 1960-1970 development plan to construct.) Only N'Djamena and Sarh are equipped and staffed to provide a full range of services. Forty-two clinics and 104 dispensaries serve smaller prefectures and administrative posts, but distribution is skewed toward the south; the Sahel has few and northern provinces almost none. Storage and transport of refrigerated biological material is only possible through "services des Grandes Endemies" (mobile teams); there is no refrigeration at present in clinics or dispensaries.

### 5.5 Health Personnel

#### Health Personnel as of 1970

	<u>MD*</u>	<u>Numbers</u>		<u>Total</u>	<u>Population Per:</u>		
		<u>Nurses</u>	<u>Midw*</u>	<u>Population</u>	<u>Doctor</u>	<u>Nurse</u>	<u>Midw*</u>
Batha	2	28	3	328,472	164,000	11,714	109,000
B.E.T.	1	22	2	83,228	83,228	3,783	41,614
Biltine	1	13	5	143,151	143,151	11,011	28,630
C. Baguirmi	26	219	26	446,100	17,157	2,030	17,157
Guera	2	23	3	176,442	88,500	7,500	66,614
Kanem	1	28	6	188,649	188,649	6,739	31,361
Lac	1	10		127,615	127,615	12,760	
L. Occidental	6	77	9	210,843	35,140	2,738	23,427
L. Oriental	2	36	4	261,389	130,944	7,274	65,472
Mayo Kebbi	3	57	4	538,314	179,171	9,461	134,828
Moyen Chari	6	97	10	415,028	69,171	4,273	41,502
Ouaddai	5	60	4	344,007	68,801	5,666	86,001

	Numbers			Total Population	Population Per:		
	MD*	Nurses	Midw*		Doctor	Nurse	Midw*
Salamat	1	14	3	93,215	93,215	6,658	31,071
Tandjile	1	24	2	253,012	253,012	10,542	126,506
Total	58	708	81	3,610,965	62,250	5,100	44,580

\*MD - doctors; Midw - midwives

Source: Area Handbook, 1972.

### 5.6 Staple Foods

Staple foods vary with occupation: the farmers' diet is based on millet or sorghum, supplemented by vegetables or fish, while nomads depend on milk, supplemented by meat, dates and cereals. Both groups suffer seasonal shortages: nomads in the hot spring months when milk animals go dry, farmers during the summer rainy season before the harvest. Caloric intake may drop to half of normal at these times.

The typical southern meal is based on "boule," a paste of millet or sorghum meal cooked with groundnut oil and water into a stiff porridge which is served with milk or with sauce made from groundnuts, vegetables and meat, or fish when available. Millet and sorghum are preferred cereals except in Lake Chad area where maize is liked; rice, less nutritious than millet and sorghum, is eaten primarily in the cities. Average annual grain consumption is estimated at 260 kg per capita in food and beer (home-brewed). Cassava and sweet potatoes are staples in the extreme south-west. Cowpeas, pumpkins, beans, peanuts, and fish provide additional nutrients.

In the north, milk, fresh or curdled, provides the bulk of nomadic caloric intake. Goats, sheep and camels are occasional sources of meat as well as milk; most beef cattle are slated for export. Dates, millet, and other produce may be raised as a single crop by semi-nomadic groups or obtained in trade from oasis farmers. Despite caloric deprivation during drought, in 1974 U.S. Centers for Disease Control investigators found few gross signs of vitamin or protein deficiency in Chadian children, though 22.5% of those examined were definitely undernourished in caloric terms.

### 5.7 Acceptable Emergency Alternatives

Wheat flour is an acceptable alternative to the major staples in the south. Red sorghum in ground form will be accepted. Rice and milk powder are acceptable to the northern pastoralists. Fish is not eaten by the pastoralists. Tinned fish (mackerel, sardines, pilchard) is acceptable in the south.

### 5.8 Housing

Arabs and Toubou are tent-dwellers, some only seasonally. Tents, the personal property of women, consist of light framework covered with woven mats or nides. Quonset-hut shaped, about twice as long as wide, they are arranged around a central space in which animals are kept at night. Encampment is ringed with protective thorn fence.

Rural nomads may be round or, less often, rectangular in shape with clay or straw walls, thatch or galvanized iron roofs. Floors are generally dirt or sand, though "modern" houses may have cement floors.

Urban houses are usually adobe with corrugated metal roofing built around interior court.

The fighting and looting in N'Djamena left many buildings damaged, but relatively few destroyed. As of December 1981, shelter materials were available and could be purchased (at a high price) in the markets. UNHCR was working through the voluntary agencies to repair some of the damaged houses in N'Djamena.

## 6. Economy

### 6.1 Overview of Economy

The Chadian economy is handicapped by a lack of natural and human resources. Marginal climatic conditions for agriculture prevail over most of the territory; geographic isolation increases transport costs; and most of population has no access to education or modern work skills. Industrial and commercial sectors are small and prospects for growth limited. Nearly 90% of population is engaged in agriculture or stockraising (former 80%, latter 10%) and these sectors account for nearly half the GDP. Subsistence agriculture contributes three quarters of the value of annual crop production. Cotton is the primary export crop; meat and live animals are also important exports.

During the early 1970s, Chad's limited resources were further curtailed by the Sahelian drought which was responsible for several thousand human deaths, primarily in the desert north, and loss of half the national herd. Sixteen years of guerilla warfare have diverted scarce government revenues from development to defense. Public finance has been dominated by internal security costs and, despite increased taxation and austerity measures, deficits remain high. The low level of income and limited capacity of the government to mobilize savings have caused heavy reliance on external aid. A four-year (1973-81) National Plan that concentrated on infrastructure projects was suspended because of the civil conflict.

### 6.2 Industry

Industry, accounting for 7.0% of GDP, mainly comprises operations engaged in processing of agricultural products. The principal industry is cotton ginning; others include sugar refineries, textile factories, slaughterhouses, refrigeration plants, a brewery, a flour mill, rice mills, brick factories, groundnut and cotton oil mills, a cigarette factory, a soft drink plant, and assembly and construction enterprises.

Growth is hindered by the remoteness of export markets, transport costs, and the scarcity of raw materials. There is little mining at present, although deposits of petroleum and other minerals, notably uranium and tungsten, offer prospects for future exploitation.

### 6.3 Balance of Payments

Chad's chronic balance of payments deficit has been financed primarily by external assistance. In 1980, the transitional government inherited an internal public debt of about 10,000 million francs CFA, while the external balance was aggravated by a large loss of foreign exchange caused by departing businessmen. The civil war halted delivery of all normal government services, while creating a large refugee and displaced person population in need of assistance. The government has been attempting to function without basic human and physical resources on revenues limited to import taxes collected at the N'Djamena ferry.

### 6.4 Imports

Food has accounted for the largest share of imports during the last 12 years due to drought and civil strife. Other imports include petroleum and petroleum products, machinery, transport equipment, metals, and textiles and clothing. France is the primary source of imports, followed by Nigeria, with smaller amounts being supplied by the Netherlands, the United States, the United Kingdom, Cameroon, and Italy.

### 6.5 Exports

Cotton is the most important export (80% of earnings), followed by meat (13%), and live animals (5%). Neighboring African countries receive about 20% of recorded exports (although clandestine trade in live animals exceeds recorded); the EEC, Japan and Yugoslavia are other export recipients.

## 7. Agriculture

### 7.1 Overview of Agriculture

Though less than 20% of the land receives sufficient rain for agriculture (and only half of this is in use), until the onset of drought in 1967, Chad was usually self-sufficient in the production of food grains. However, as population increases and desert encroachment due to land misuse proceeds, the potential for self-sufficiency declines. Moreover, mechanisms for distributing grain outside producing areas are few, prices to producers are low except in times of shortage, and government incentives are directed toward producing cotton for export.

Agricultural activities vary with climatic zone. South of the Chari River, the relatively well watered savanna produces millet and sorghum, the staple food crops. Rice, especially in Logone River flood plain, and maize, grown in plots near homesteads, are also cultivated. Cotton, grown in rotation with sorghum, is the primary cash crop, and the few modern techniques used in Chad are applied to cotton cultivation. Groundnuts and cowpeas are minor food crops, while rice and taro are additional cash crops exported to Cameroon. Normally, southern prefectures are self-sufficient in grain and can market small amounts to northern urban areas. Drought has aggravated the conflict between farmers' emphasis on subsistence crops and government's priority for cotton as foreign exchange source.

The northern agricultural zone (including Chari-Baguirmi, Kanem, and Lac prefectures) has a Sahelian climate; rainfall variability is higher than in the south. Maize and cowpeas are grown along the shores of Lake Chad, millet and sorghum in Massakory, and irrigated rice and vegetables in seasonally flooded areas in Moussoro. Wheat is grown in polders on the north shore of Lake Chad, but most of the crop is smuggled across the lake into Nigeria, where prices are higher. Small quantities of dates, durum wheat, and vegetables are grown in Saharan oases.

Stock raising is a full-time occupation in the north, part-time in the south. Despite losses approaching 50% during drought years, in 1979 the national herd was estimated at 4.1 million head of cattle, 4.5 million sheep and goats, 410,000 camels, and smaller numbers of horses and donkeys. Unfortunately, the quality of animals is poor: low weight, late maturity, and high calf mortality are typical. Traditionally, nomads' herds moved north in spring with the rains, returning to the south's permanent water in the dry season. Because the nomads' subsistence is based on milk rather than meat and because a large herd size enhances the owner's prestige, the sector has not been oriented toward marketing surplus animals. Drought has forced changes in these traditions, forcing the sale of animals and disrupting migration.

Most animals are marketed on the hoof and trekked to Chadian slaughterhouses or into Nigeria, the major consumer of Chadian beef, or into the Central African Republic. As in the agricultural sector, application of technology has been minimal, though vaccination has reduced animal mortality somewhat.

A third "harvest," employing between 10,000 and 20,000 people and producing considerable export and tax revenue, is gathered from Lake Chad, one of the richest fishing grounds in Africa, and adjacent river basins. Fish are usually netted or trapped, with catches highest during March-June. Nearly all fish is marketed dried; 40-70% spoils because of insufficient drying and fly infestation. Losses could be controlled by using salt or solar ovens to speed processing, but costs are prohibitive. Marketing is also hampered by impassable roads during the rainy season. 60% of the catch is consumed in country, the remainder is exported to Nigeria, Cameroon or CAR.

### 7.2 Constraints on Agriculture

Climate, poverty, and unsettled political conditions limit Chadian agricultural productivity. Drought or too much rain during planting or harvesting may damage or destroy crops. Neither the government nor individuals can afford sufficient fertilizer to maintain soil fertility, or pesticides to control insects. Military activity has interrupted domestic and export marketing routes, impeded animal health programs, and restricted the area of cultivable land. Increasing animal and human populations approach the carrying capacity of the land in the Sahel. Traditional practices become unworkable as population increases: for example, cutting of trees by nomads for fodder and by farmers for slash-and-burn agriculture has resulted in a fuel-wood shortage; dried cowdung and crop residue, ordinarily left in fields as a fertilizer, are burned instead.

### 7.3 Marketing Network

Only 10-20% of the grain produced enters the market system; the rest is consumed by the producers. The grain which does enter the system is either sold in small quantities at local markets or is given to local traders as repayment for merchandise advances. Once the grain enters the system, it is bought by dealers who transport it to distant markets where prices are higher. In general, grain flows from the surplus areas of the

south and southeast to the deficit areas in the north and northwest. The lack of a viable transportation system, exacerbated by the dearth of paved roads, renders efficient movement of grain extremely difficult. Added to this is the current reluctance of southern authorities to allow grain to leave their areas for the north. See also Section 9.1, Road Network.

#### 7.4 Crop Production

Principal Food Crops\*  
(1000 hectares, 1000 metric tons, kg. per hectare)

	<u>1977</u>	<u>1978</u>	<u>1979</u>
Wheat			
Area	2	2	2
Production	6	6	6
Yield	4,000	4,000	4,000
Rice (paddy)			
Area	17	50	50
Production	20	40	30
Yield	1,190	800	750
Maize			
Area	10	10	10
Production	10	10	15
Yield	950	1,000	1,150
Millet & Sorghum			
Area	1,133	1,140	1,140
Production	574	580	580
Yield	507	509	509
Sweet potatoes, yams			
Area	6	6	6
Production	33	34	34
Yield	5,690	5,695	5,700
Cassava			
Area	48	49	50
Production	170	175	180
Yield	3,542	3,571	3,614
Pulses			
Area	137	138	138
Production	56	56	56
Yield	409	408	408

	<u>1977</u>	<u>1978</u>	<u>1979</u>
Groundnuts (in shell)			
Area	40	40	40
Production	85	85	85
Yield	2,125	2,125	2,125
Sesame seed			
Area	28	28	28
Production	9	10	11
Yield	327	364	400

\* FAO estimates

Source: The Europa Yearbook, 1981.

Livestock  
('000 head--FAO estimates, year ending September)

	<u>1977</u>	<u>1978</u>	<u>1979</u>
Cattle	3,954	4,012	4,070
Goats	2,230	2,254	2,278
Sheep	2,230	2,254	2,278
Pigs	6	6	6
Horses	154	154	154
Asses	271	271	271
Camels	400	405	410
Chickens	2,860	2,900	2,940

Source. FAO, Production Yearbook as cited in The Europa Yearbook, 1981.

### 7.5 Crop dates

<u>Crop/location</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
wheat			H									
maize							H	H	H			
sorghum & millet										H	H	
rice										H	H	
dates							H	H				
cotton		H	H									H
pigeon peas		H							H	H	H	H

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<u>Crop/location</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
dry beans		H	H	H						H	H	H
peanuts										H	H	H

\* H - harvested

### 7.6 Agricultural Imports

Food imports will remain high until effects of the current drought and civil strife are overcome. In addition to the UNHCR feeding program, a FAO/WFP emergency food assistance program was approved on July 1, 1981 and expanded in September.

### 7.7 Agricultural Exports

See section 6.6, Exports.

### 7.8 Current Agricultural Status (1982)

Bad crop conditions around Lake Chad and in the "millet basket" to the east of N Djamena are reflected by the current high prices for grain. In addition, government reports indicate that rainfall in the LAC and Kanem regions is 100 mm. below normal. Although food also enters Chad from Cameroon, a drought in northern Cameroon has reduced grain supplies there, making large purchases difficult.

## 8. Physical Geography

### 8.1 Climatic zones

Chad's three climate zones are defined by the amount and duration of the annual rainfall. As in the rest of the Sahel, precipitation occurs almost exclusively in the spring and summer as a dry subtropical high pressure belt shifts northward (total  $10^{\circ}$  latitude between April and October), permitting warmer moist air from Gulf of Guinea to move inland. Rain decreases from south to north about 1mm/1.4km. At about  $10^{\circ}$  north latitude, precipitation appears relatively constant from year to year; variability (over a 10-20 year period) increases with latitude and rainfall in the Sahel appears to be inversely correlated with that in the wooded savannah and tropical forests between the equator and  $10^{\circ}$  north.

The five southernmost prefectures receive 35-50" of rain from April through October; temperatures are warm to hot year-round; the coolest months, January and August, have an average maximum above  $80^{\circ}\text{F}$ ; in the warmest months, March, April, and May, maxima often exceed  $100^{\circ}\text{F}$ . Humidity during rainy season fluctuates between 50 and 80%; in dry season, it falls to 30-40%. Torrential rains and thunderstorms are common.

North of the Chari River, rainfall is both lower (10-35" annually) and more irregular; the rainy season begins in June and ends by October. The mean relative humidity stands at 60-70% between July and September, falls to 25-30% January through April.

North of Lake Chad, between  $14^{\circ}$  and  $16^{\circ}$  north latitude, a transition zone of lower rainfall (10-20" annually) supports grazing during the rainy season, but during the dry season forage and surface water diminish. The Mortcha region, northeast of Biltine, normally receives about 15" of rain in July and August.

Beyond the 16th parallel rainfall is sparse to nonexistent. This Saharan zone is a region of climatic extremes. Average daily maxima range from  $80^{\circ}\text{F}$  in coldest months to  $115^{\circ}\text{F}$  in warmest; corresponding minima are  $50^{\circ}\text{F}$  and  $75^{\circ}\text{F}$ . Mean relative humidity seldom reaches 40%. Strong northeasterly winds in the dry season carry dust and occasionally engender violent sandstorms.

8.2 Temperatures (Fahrenheit)

<u>Station</u>		<u>Jan</u>	<u>Apr</u>	<u>July</u>	<u>Oct</u>	<u>Extreme</u>
Am Timan	max.	98	105	89	96	113
	min.	56	68	70	67	43
N'Djamena	max.	93	107	92	97	114
	min.	57	74	72	70	47
Largeau (Faya)	max.	84	104	109	103	121
	min.	54	69	76	72	37

Source: Commerce Department, Climates of the World, 1972.

8.3 Rainfall (inches)

<u>Station</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
Am Timan	0.0	0.0	0.1	1.2	4.3	5.0	7.3	12.3	5.8	1.2	0.0	0.0
N'Djamena	0.0	0.0	0.0	0.1	1.2	2.6	6.7	12.6	4.7	1.4	0.0	0.0
Largeau	0.0	0.0	0.0	0.0	n.a.	0.7	n.a.	0.7	n.a.	0.0	0.0	0.0

Source: Commerce Department, Climates of the World, 1972.

8.4 Land Use

Land Use  
(1978, '000 hectares)

Arable and under permanent crops.....	1,950*
Permanent meadows and pastures.....	45,000
Forest land.....	16,500
Other land.....	62,470
Inland water.....	2,480
Total area.....	128,400

\* FAO estimate

Source: Europa Yearbook, 1981.

### 8.5 Landforms

Bordered by Libya on the north, Sudan on the east, Central African Republic on the south, Cameroon on the southwest, and Nigeria and Niger on the west, Chad lies near the geographic center of Africa. 1,284,640 sq. km. (496,000 sq.m.) in area, it extends over 16° of latitude or 1,100 miles north-south and 500 miles east-west. Much of the country lies within a vast sedimentary basin centered on Lake Chad and rimmed by plateaus and mountains: Ubangi plateau and Adanoma ridge in the south, Ennedi plateau and Tibesti range in the north, and the Ouaddai range in the east. Sandy or rocky plains with flat, rolling or dissected surfaces in the northern two thirds, and flat clay plains in the south constitute the primary land surfaces; sand dunes, oriented northeast-southwest, crests 1-200' high, extend from the northeast border of country to Lake Chad. The Bahr El Ghazal, a long narrow depression oriented northeast-southwest, interrupts the dunes; it fills with rain water during wet season, as do other smaller scattered basins. There are no permanent rivers in central and northern Chad; major sources for Lake Chad are the Chari and Logone Rivers which drain the equatorial rainbelt in the Central African Republic and Cameroon. Extensive marshes which border these water courses and their tributaries expand considerably during the rainy season.

### 8.6 Waterways

There are two major perennial rivers: the Chari, which flows northwest from headwaters in the Central African Republic into Lake Chad, where its delta spans Chad, Cameroon, and borders Nigeria; and the Logone, which flows north from headwaters in Cameroon and the CAR and joins the Chari at N'Djamena. Both are navigable only during the late rainy season, August-December; then they overflow their banks and inundate surrounding countryside, closing most nearby roads. Because rainfall is irregular, domestic river transport is unreliable and expensive.

### 8.7 Mountains

Highlands rise along the edges of the Chad basin in the north (Tibesti massif), east (Ennedi and Biltine highlands) and south (Guera and Abou Telfane massifs). The Tibesti massif with elevations averaging 3,200-6,500' (highest over 10,000'), is of volcanic origin, though no recent activity has been noted. It extends 300 miles east-west and 150 north-south. The southeast highlands consist of rocky sharpcrested hills, slopes

10-30%, about 1,000' above surrounding plateau. The Guera mountains are conical, maximum height 2,000' above plain, with slopes often greater than 30%, elevations 2-3,000' above sea level.

## 9. Transportation and Logistics

### 9.1 Road Network

Road transport is by far the most important mode used; nevertheless, the network is unevenly distributed with most classified roads located in the south. Of a total of 31,269 km of road (1976), 253 km were paved, 7,016 km were gravel or earth constructed to varying standards, and the remaining 24,000 were unimproved earthen tracks. Both gravel roads and tracks are likely to be closed to traffic during the rainy season. In addition, seasonal flooding of lowlands in southwestern Chad, where road network is concentrated, necessitates numerous crossings, many of which are in poor repair. Because low population density and lack of traffic in northern and eastern regions cannot justify cost of road improvement or building, road construction and upgrading/reconstruction are confined to the south, particularly in cotton growing areas.

The inadequate road network outside the capital area has always been a major obstacle to Chad's development. As a result of the war, road maintenance has been virtually non-existent for the past two years causing severe deterioration of already poor roads. This presents not only a long-term development problem, but an immediate problem in terms of food and relief goods distribution. Poor road conditions will certainly slow distribution as private truckers are reluctant to drive their vehicles over bad roads. In addition, smaller loads will probably be carried on each trip, thereby increasing the total number of trips.

Four major transport routes provide access to west.

- Trans-equatorial route consists of 515 km on Congo-Ocean railway from Pointe Noire to Brazzaville, 1,300 km waterways from Brazzaville to Bangui, CAR, and 2 Chadian routes to N'Djamena, via Bongor or via Sarh. Total distance: 3,275 km via Sarh, 2,950 via Bongor.
- Trans-Cameroon route consists of trans-Cameroon railway from port of Douala to Belabo, very good 585 km road from Belabo to Garoua and, again, 2 routes to N'Djamena, 580 km via Maroua, now (1974) being upgraded, and 405 km via Moundou.
- Nigerian routes include alternate railroad sections: Lagos-Maiduguri, 1,790 km, and port Harcourt-Maiduguri, 1,455 km; from Maiduguri 250 km road leads to N'Djamena, Cameroon's section of which is poorly maintained.

- Benoue route combines river transport from Burutu, Nigeria, to Garoue, Cameroon, and road transport from Garoue to N'Djamena (580 km) or Moundou (405 km). Benoue river, only navigable for 2-3 months, is limiting factor.

Other less traveled routes include: Sudanese, 2,450 km railway from port Sudan to Zalingei and 200 km road from Zalingei to Abeche. Libyan route is over 3,000 km to N'Djamena, but might be used for access to northern Chad.

## 9.2 Vehicles

### Motor Vehicles in Use \*

	<u>1977</u>
Private cars	7,536
Buses, lorries and coaches	9,668
Tractors	258
Scooters and motorcycles	1,224
Trailers	<u>1,012</u>
Total	19,798

\* Many vehicles were damaged or destroyed during the civil war.

Source: Europa, Africa South of the Sahara, 1981.

UNDP has estimated that approximately 75-85% of the Ministry of Public Works' road maintenance equipment was destroyed during the war. The remaining 15-25% is presently inoperable but repairable. The repairable equipment includes: 4 bulldozers, 6 loaders, 14 graders, 7 compactors, 13 dump trucks, and 10 water tanks.

9.3 Surface Miles

<u>Domestic</u>			
<u>Road</u>	<u>Length (km)</u>	<u>Road</u>	<u>Length (km)</u>
N'Djamena - Massaguet	83	Moundou - Kelo	104
Massaguet - Bir Garat	103	Kelo - Pala	107
N'Djamena - Massenya	160	Pala - Lere - Cameroon border	122
Massaguet - Ngoura	125	Lai - Doba	108
Ngoura - Bitkine	244	Doba - Gore	95
Djermaya - Djimtilo	82	Lai - Guidari	44
Guelendeng - Bongor	83	Doba - Moundou	99
Bongor - Lai	148	Moundou - Gore - CAR border	133
Abeche - Biltine	92	Moundou - Baibokoum - CAR border	167
Abeche - Adre	167	Lai - Kelo	60
Abeche - Mangalme - Abou Deia	387	Pala - Fianga - Cameroon border	83
Bitkine - Mongo-Magalme	177	Koumra - Mouissala	74
Abou - Deia - Attaway	223	N'Djamena - Guelendeng	156
Attaway - Sarh	112	Guelendeng - Sarh	406
Sarh - Kyabe	98	Sarh - La Sido	120
Guidari - Koumra	114	N'Guere - Koumra - Doba	172
		Koutou - Bere	89

<u>International</u>			
		<u>Miles</u>	<u>Kilometers</u>
N'Djamena to:	Bangui, CAR	740	1,190
	Douala, Cam (road)	973	1,556
	(road&rail)	1,175	1,891
	Kano		860
	Lagos		1,120
	Port Harcourt		1,176
	Pointe Noire, Congo		2,600
	Rouiba, Algeria		4,840
	Yaounde, Cam		1,750
	Djermaya - Djimtilo		82
	Krim Krim - Beinar		60
	Kelo - Gounou Gaya		53

buoy, is 3°45' N and 9°24' E (white light 6 seconds). Other buoys are "B" (red light), "B1" (green light), "C" (green light), "D" (red light) and base buoy, 3°54' N and 9°32' E (white light), at which steamers await the pilot. Eleven berths of 7 m. at LW, one fishing berth, and one berth for handling aluminum and coke. Four berths with four sheds totalling 15,000 sq. m. of covered space.

- Facilities:** Labor is quite regular. Numerous gangs are available for stevedoring operations on board. For ships discharging at quay, depth alongside approximately 7.50 m; there are 11 regular customs stores, cement-built with iron roofs, which are supervised by four shipping agents. Working space between ships and sheds 20 to 25 m. Special open area for dangerous cargo unloading. Goods, except for heavy cases of motors and iron drums, must be removed from the quay at once to stores. The nearest salvage plant is at Lagos. Railway system connected to quays. Fresh water available. Refrigeration for fish is available.
- Development:** Dredging is underway to increase the depth of the channel to 7.5 m.
- Tanker terminals:** One berth, length 625 ft., depth 23 ft., for discharging petrol by pipeline.
- Bunkers:** Diesel oil available in small quantities from trucks alongside. Fuel oil now available from shore line.
- Towage:** Six tugs operated by the Cameroon National Ports Authority.
- Pilotage:** Compulsory. Ships may enter at night. Ships must wire ETA and draft to agents and await pilot at base buoy, from which point turn for berthing starts.
- Airport:** Douala Airport, 3 miles from town center.
- Working hours.** 7:30 to 12:00 and 2:30 to 5:00.

#### 9.4 Railroads

Chad at present has no railroads. Extension of trans-Cameroonian railway from Ngoundere, Cameroon, to Sarh, first agreed on in 1962, has been postponed indefinitely.

#### 9.5 Ports

Chad has no ports. Most goods entering country from Europe or the Americas come via West African ports listed below. For additional information, see section 9.1, Road Network.

##### Burutu, Nigeria

- Coordinates:** Lat. 5°21'N; long. 5°31'E. On island in River Forcados estuary, 6.4 km. from Forcados.
- Accommodations:** Entrance channel 122 m. - 213 m. wide, depth 640 m. draft HWOSt. Anchorage on good holding ground in mid-river opposite port; space for 3 ocean going vessels; 4.27 m. depth LWOSt. Main wharf 2.29 m. long and new wharf 91 m. long; both 6.40 m. depth LWOSt. Depth that a ship may load is controlled by Burutu flats, 3.96 m. Loading/ discharging by ships gear. Covered storage for 30,000 tons African produce, open storage for 15,000 tons of oil.
- Cranes:** One 25 t. and six 2 t. diesel cranes for working lighters only.
- Shiprepairs:** Four slipways, 50 to 610 tons lifting power; maximum length, 67.05 m. Machine and plating shops.
- Pilotage:** Not compulsory, available.

##### Douala, Cameroon

- Coordinates:** Lat. 4°N; long. 9°40'E. 24 km. from river mouth.
- Accommodation:** Entrance is well marked. Length of channel 25 km. Depth of channel 5 m. at LW. Spring rise of the tide 2.24 m., neap rise 1.57 m. Maximum safe draft, from 6.40 m. NT to 6.85 m. ST. The first bouy, called "A"

Lagos, Nigeria

- Coordinates:** Lat. 6°27'N; long. 3°24'E. Lagos port complex is the largest in Nigeria and has direct rail connection with the main line system of the Nigerian Railway Corporation; it is also well served by road transport and inland waterway connections; nearby is the industrial estate of the Lagos State Development & Property Corporation. Apapa Quay handles three-quarters of the total seaborne trade of the country and some cargo in transit to and from the Niger, Chad, Upper Volta, and the Cameroons.
- Accommodation:** Bar draft 9.14 m., LW entrance protected by moles. The port can accommodate up to 18 vessels alongside three at buoys and four at anchorages. Fresh water available.
- Quay Facilities:** 22 berths, with lengths between 122 m. and 250 m., (most are 152 m.), with maximum draft between 5.79 m. and 11.5 m. (most are 8.23 m.). Four anchorage pools, three marine moorings buoys, plus 22 mooring buoy berths.
- Cranes:** 35 quay cranes from 2 1/2 - 5 t. capacity; two floating cranes of 50 and 100 t. capacity; 77 mobile cranes from 6-50 t. capacity. Plus 307 forklift trucks, 93 tractors, 28 caterpillars, five freight lifters. 16 conveyors and 133 trailers.
- Container and Ro/Ro Facilities:** Lagos handles 97% of Nigeria container traffic.
- Tanker Terminals:** One berth, operated by the Port Authority; length 177 m.; depth 7.62 m.; no right berthing; water and bunkers (subject to tidal restrictions) available.
- Bunkers:** Oil and coal bunkering facilities available.
- Development:** At Apapa Wharf, 1,000 m. long quay, depth 13.5 m. under construction with six berths, some for container and ro/ro traffic, and 200,000 m<sup>2</sup> of storage space. At the Ocean Terminal, ten berths under construction.

- Shiprepairs: The Nigerian Port Authority maintains a large dockyard installation including a modern floating dock with a lifting capacity of 4,000 tons. Several shipping agencies maintain smaller repairing installations, including small shipways.
- Pilotage: Compulsory, 24-hour service available.
- Traffic: 1972, 1,669 cargo ships of 5,339,478 NRT; 1,331 fishing vessels of 54,207 NRT.
- Airport: Ikaaja, 14.4 km. from port.
- Local holidays: The port is always open except for Christmas Day, Good Friday, and October 1.

Pointe Noire, Congo People's Republic

- Coordinates: Lat. 4°47'5"S; long. 11°50'E.
- Accommodation: Good anchorage in 11 to 12 m. No bar. Five berths on quay D, 720 m. with drafts ranging from 7.62 m. to 8.75 m. Two timber export berths at Mole 1, 350 m. draft 9.40 m. Two buoy berths inside the port, drafts 8.53 m. and 8.84 m. Quay G, 210 m. draft, special terminal of COMILOG. A second berth of 317 m., 11 m. draft. Lighter-berth, length 185 m.; draft 370 m., used mainly by fishing vessels until proposed fishing harbor is completed. Coastal vessels berth 90 m., draft 3.5 m. for larger fishing vessels and supply boats for offshore oil drilling.
- A large fleet of privately owned forklifts, Karry cranes, container carriers, etc., operated by stevedoras. No shore cranes. Timber stacking area of 8.9 ha. with lighter berth 190 m., 3.65 m. draft, and two 20-ton gantry cranes. Refrigerated space available. Cool chamber. Pipes for butane, wines, vegetable oils, molasses, etc. Railway (CFCO) from Pointe Noire to Brazzaville. Fresh water available.

- Tanker terminals: 1 berth inside harbor; draft 9.40 m., discharging oil products. One single mooring buoy offshore, south of Pointe Noire at Djeno. Pilot picked up at 4°47'5"E, 11°50'E. Water available.
- Bunkers: Fuel and gas oil available; connections on the quay and oil wharf.
- Ship repairs: Repairs undertaken by Ateliers Chantiers de Pointe Noire et Marty. Floating dock of 1,400 tons is out of commission; slipway of 800 ton ships is available.
- Charges: Toll dues and wharfage dues calculated on ships' NRT.
- Towage: One tug of 1,800 HP available.
- Pilotage: Compulsory for all vessels over 100 GRT, available day and night.
- Airport: Pointe Noire, 5 km away.

#### Port Harcourt, Nigeria

- Coordinates: Lat. 4°46'N; long. 7°E. 65.6 km. up Bonny estuary from Bonny. Terminus of railway and port from which coal from Udi is shipped.
- Accommodation: The maximum draft for entering port is 7.62 m. at HW (minimum depth of water in approaches 5.49 m.); Bonny Channel is 11.75 m. deep and Okrika is 9.14 m. deep at Chart Datum. The port is well served by rail and road transport and is a transit port for cargoes to and from Chad and Niger.
- Quay Facilities: Twelve berths, varying in length from 107 m. to 158 m. with maximum depths of between 6.55 m. and 7.92 m. Berth 8 (length 157 m., depth 7.62 m.) is a coal berth with conveyor to storage hoppers. Berth 9 (length 143 m., depth 7.62 m.) is a BOP berth for loading palm oil by direct pipeline, and unloading explosives.

Storage:	11 transit sheds and four warehouses available; seven stacking areas; 16 storage tanks for bulk vegetable oil at the N end of the Main Quay, and connected to the BOP Berth.
Development:	Four berths planned at a new port site.
Tanker terminals:	One berth, operated by the Nigerian Petroleum Refining Co. length 178.3 m.; draft 8.84 m.; no night berthing; water (by barge) and bunkers available.
Bunkers:	Available.
Shiprepairs:	Nigerian Ports Authority operates a small shipyard, maximum capacity 81 t.
Pilotage:	Compulsory from Bonny Fairway Buoy; 24-hour service.
Airport:	Port Harcourt, 11.2 km. from port.
Local holidays:	Port always open except for Christmas Day, Good Friday, and October 1.

### 9.6 Airports

Inter-African air transport is often less efficient than international, but sometimes the only possible mode. Thus, air transport is particularly necessary in regions north and east of N'Djamena where low traffic volumes and great distances do not justify the cost of building roads. Unfortunately, most development funds have been used at N'Djamena airport to the detriment of deteriorating secondary airports.

The transit center and largest air freight handler in central and western Africa, N'Djamena airport is Chad's only international facility. Other major airports: Sarh, Moundou, Bongor, Abeche. N'Djamena and Sarh are maintained by ASECNA, a French managed multinational concern which also operates the most important secondary airports. The civil aviation division of Ministry of Public Works maintains secondary airports.

NB: For up-to-date information, consult latest issue of weekly International NOTAMS, International Flight Information Manual, and/or ICAO'S Air Navigation Plan for appropriate region.

## ABECHE

<u>Location</u> <u>Coordinates</u>	<u>Eleva-</u> <u>tion M/</u> <u>Temp C</u>	<u>Runway Characteristics</u>				<u>Aircraft/</u> <u>Strength</u> <u>(1,000 kg)</u>	<u>Fuel/</u> <u>Octane</u>
		<u>NR/Type</u>	<u>Slope</u> <u>%</u>	<u>Aircraft/</u> <u>Length M</u>	<u>CL</u>		
13°51'N 13°51'E	547	NA	NA	NA	NA	NA	100

Remarks: Longest runway-H 59. Aerodrome of entry during daylight hours with prior notice. Emergency lighting. No telex.

## BONGOR

<u>Location</u> <u>Coordinates</u>	<u>Eleva-</u> <u>tion M/</u> <u>Temp C</u>	<u>Runway Characteristics</u>				<u>Aircraft/</u> <u>Strength</u> <u>(1,000 kg)</u>	<u>Fuel/</u> <u>Octane</u>
		<u>NR/Type</u>	<u>Slope</u> <u>%</u>	<u>Aircraft/</u> <u>Length M</u>	<u>CL</u>		
10°17'N 15°23'E	331	NA	NA	NA	NA	NA	none

Remarks: Longest runway S 52. No facilities or services. Aerodrome of entry during daylight hours with prior notice. No telex.

## FAYA/Largeau

<u>Location</u> <u>Coordinates</u>	<u>Eleva-</u> <u>tion M/</u> <u>Temp C</u>	<u>Runway Characteristics</u>				<u>Aircraft/</u> <u>Strength</u> <u>(1,000 kg)</u>	<u>Fuel/</u> <u>Octane</u>
		<u>NR/Type</u>	<u>Slope</u> <u>%</u>	<u>Aircraft/</u> <u>Length M</u>	<u>CL</u>		
17°55'N 19°07'E	237	NA	NA	NA	NA	NA	None

Remarks: Longest runway S 75. Aerodrome of entry during daylight hours with prior notice. Closed to private aircraft. No telex.

## MOUNDOU

<u>Location</u> <u>Coordinates</u>	<u>Eleva-</u> <u>tion M/</u> <u>Temp C</u>	<u>Runway Characteristics</u>			<u>CL</u>	<u>Aircraft/</u> <u>Strength</u> <u>(1,000 kg)</u>	<u>Fuel/</u> <u>Octane</u>
		<u>NR/Type</u>	<u>Slope</u> <u>1/2</u>	<u>Aircraft/</u> <u>Length M</u>			
08°37'N 16°04'E	431	NA	NA	NA	NA	NA	100

Remarks: Longest runway-H 59. Aerodrome of entry during daylight hours with prior notice. No telex.

Aids: L4.

## N'DJAMENA/N'Djamena

<u>Location</u> <u>Coordinates</u>	<u>Eleva-</u> <u>tion M/</u> <u>Temp C</u>	<u>Runway Characteristics</u>			<u>CL</u>	<u>Aircraft/</u> <u>Strength</u> <u>(1,000 kg)</u>	<u>Fuel/</u> <u>Octane</u>
		<u>NR/Type</u>	<u>Slope</u> <u>1/2</u>	<u>Aircraft/</u> <u>Length M</u>			
12°07'30"N 15°01'34"E	295 41.2	05/23	0.036	2800	A	DC10-30	100L,JA

Remarks: Alternate aerodromes: Bangui/M'Poko, Douala/Douala, Garoua/Garoua, Geneina/Geneina, Kano/Kano. No telex.

Aids: ILS-05-1, VOR, RL, SA-05, LVA-23+, LR, LTX, LB, LO, MD, MC, MT, MTD, MS, MFD, MTX, MO. Longest runway H 92. L4, L5, L9, PAI, INSTR.

## PALA

<u>Location</u> <u>Coordinates</u>	<u>Eleva-</u> <u>tion M/</u> <u>Temp C</u>	<u>Runway Characteristics</u>			<u>CL</u>	<u>Aircraft/</u> <u>Strength</u> <u>(1,000 kg)</u>	<u>Fuel/</u> <u>Octane</u>
		<u>NR/Type</u>	<u>Slope</u> <u>1/2</u>	<u>Aircraft/</u> <u>Length M</u>			
09°23'N 14°56'E	469	NA	NA	NA	NA	NA	None

Remarks: Longest runway S 52. No facilities or services. Aerodrome of entry during daylight hours with prior notice. No telex.

SARH/Sarh

<u>Location</u> <u>Coordinates</u>	<u>Eleva-</u> <u>tion M/</u> <u>Temp C</u>	<u>Runway Characteristics</u>			<u>Aircraft/</u> <u>Strength</u> <u>(1,000 kg)</u>	<u>Fuel/</u> <u>Octane</u>
		<u>NR/Type</u>	<u>Slope</u> <u>%</u>	<u>Aircraft/</u> <u>Length M</u>		
09°09'01"N 18°22'53"E	365 39.2	04/22	0.055	1800	C SWY 04 & 22	100,JA

Remarks: Alternate aerodrome: N'Djamena/N'Djamena. Longest runway S 59.  
Aerodrome of entry on prior notice. No telex.

Aids: LR, LTX, LO, MD, MC, MT, MTX, MO, L4.

### Key

#### Abbreviations

INSTR Instrument Approach Runway  
 N-INSTR Non-Instrument Runway  
 PA I Precision Approach Runway Category I  
 PA II Precision Approach Runway Category II  
 REG-NS Intl Non-Scheduled Air Transport, Regular Use  
 REG-S International Scheduled Air Transport, Regular Use

#### Radio Aids

ILS Instrument Landing System  
 DME Distance Measuring Equipment  
 VOR VHF Omni-Directional Range  
 RL Radio Locator

#### Lighting Aids

LPA Precision Approach Lighting System  
 LSA Simple Approach Lighting System  
 LVA Visual Approach Slope Indicator System  
 LAV Abbreviated Approach Slope Indicator System  
 LR Runway Edge, Threshold & Runway End Lighting  
 LC Runway Center Line Lighting  
 LTD Runway Touchdown Zone Lighting  
 LTX Taxiway Lighting  
 LB Aerodrome or Identification Beacon  
 LO Obstruction Lighting

Marking Aids

MD	Runway Designation Markings
MC	Runway Center Line Markings
MT	Runway Threshold Markings
MTD	Runway Touchdown Markings
MS	Runway Sidestripe Markings
MFD	Fixed Distance Markings
MTX	Taxiway Center Line & Holding Position Markings
MO	Obstruction Markings

Runway Surface and Length

H	Hard Surface (numbers = ft. in hundreds)
S	Non-Hard Surface (number = ft. in hundreds)

Additional Lighting

L1	Portable Runway Lights (electrical)
L2	Boundary Lights
L3	Runway Flood Lights
L4	Low Intensity Runway Lights
L5	Low Intensity Approach Lights
L6	High Intensity Runway Lights
L7	High Intensity Approach Lights
L8	Sequenced Flashing Lights
L9	Visual Approach Slope Indicator (VASI)

9.7 Personnel Entry Requirements

Passport and visa required. Yellow fever required for individuals 1 year of age and over. Inoculations against cholera, typhus, typhoid and polio recommended. Malaria suppressive recommended.

9.8 Aircraft Entry Requirements

Private and non-scheduled non-traffic flights:

Civil Aeronautics Administration of Chad must receive advance notification at least 72 working hours prior to departure of a private or non-scheduled non-traffic flight. The advance notice, written in French, must contain the following information: Name and address of airline operator; type of aircraft and its registration marks; date and time of departure from airport in question; place or places where cargo is to be taken on or unloaded; purpose of flight; number and nationality of

passengers; nature and quantity of freight; surname, given names, and nationality of pilot and crew members; surname, address, and occupation of charterer if applicable.

#### Non-scheduled commercial flights:

Prior permission must be requested from the minister-in-charge of transportation for non-scheduled commercial flights. This request must be written in French and must be received at least 10 days prior to the proposed flight. The request must contain the same information required in the advance notification for private and non-scheduled non-traffic flights.

#### 9.9 Airlines

Compagnie Nationale Air-Tchad, N'Djamena; government majority holding with 36 per cent UTA interest; regular passenger, freight and charter services within Chad; fleet of one DC-4, two DC-3, one Baron.

Air Afrique, N'Djamena; Chad holds a 7½ share.

Chad is also served by the following foreign airlines: Aeroflot Cameroon Airlines, Air Zaire, Sudan Airways, and UTA.

#### 9.10 Air Distances

		<u>International</u> (statute miles)		
N'Djamena to:	Bangui	587	Ngaoundere	345
	Cairo	1,625	Niamey	870
	Douala	668	Paris	2,629
	Garoua	224	Pointe Noire	1,190
	Geneina	508	Port Gentil	985
	Kano	440	Rome	2,054
	London	2,477	Tripoli	1,423
	New York		Tunis	1,732
	via Paris	6,251	Yagoua	123
	via Rome	5,676	Yaounde	621
	via London	6,099	Zinder	424

Domestic  
(statute miles)

N'Djamena to: Pala	190
Sarh	307

10. Power and Communications10.1 Electric Power

Production and distribution of electricity is controlled by a public corporation Societe Tchadienne d'Energie Electrique (STEE). All electricity is generated by oil-burning plants. 1975 production was 60 million kWh; 1977 capacity was 22,000 kW. The plant at N'Djamena provides more than 90% of total output. Sarh, Moundou, and Abeche are the only other areas with access to electric power. Electricity supply: 220 volts. The electric power sector remained intact during the recent fighting and as long as fuel to run the generators remains available, electrical services in the capital should continue.

Installed Capacity and Production of Electricity

	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
<u>Installed capacity (hp)</u>				
N'Djamena	15,157	20,859	20,859	20,859
Sarh	4,980	4,980	7,020	7,020
Moundou	1,500	2,200	2,200	2,200
Abeche	828	828	828	828
Total	22,465	28,867	30,927	30,927
<u>Production ('000 kWh)</u>				
N'Djamena	35,443	38,271	42,554	42,683
Sarh	8,928	9,104	10,066	10,787
Moundou	2,984	3,202	3,393	3,413
Abeche	643	763	785	779
Total	47,998	51,340	56,723	57,708
<u>Consumption ('000 kWh)</u>				
N'Djamena	31,172	34,256	37,588	37,710
Sarh	8,371	8,645	9,471	9,785
Moundou	2,599	2,717	2,883	2,968
Abeche	540	636	578	564
Total	42,682	46,256	50,520	51,027

Source: World Bank, Economic Memorandum, 1979.

### 10.2 Telephone System

Fair system of radio communication stations only for inner city links; principal center N Djamena, secondary Sarh. 7 main and 28 secondary post offices, most of which have telegraphic facilities.

### 10.3 Radio

Radiodiffusion Nationale Tchadienne: B.P. 892, N'Djamena; government station; programs in French, Arabic and 7 vernacular languages; 4 transmitters at N'Djamena, one at Sarh and one at Abeche. AM, no FM station. There were an estimated 80,000 radio receivers in 1977.

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