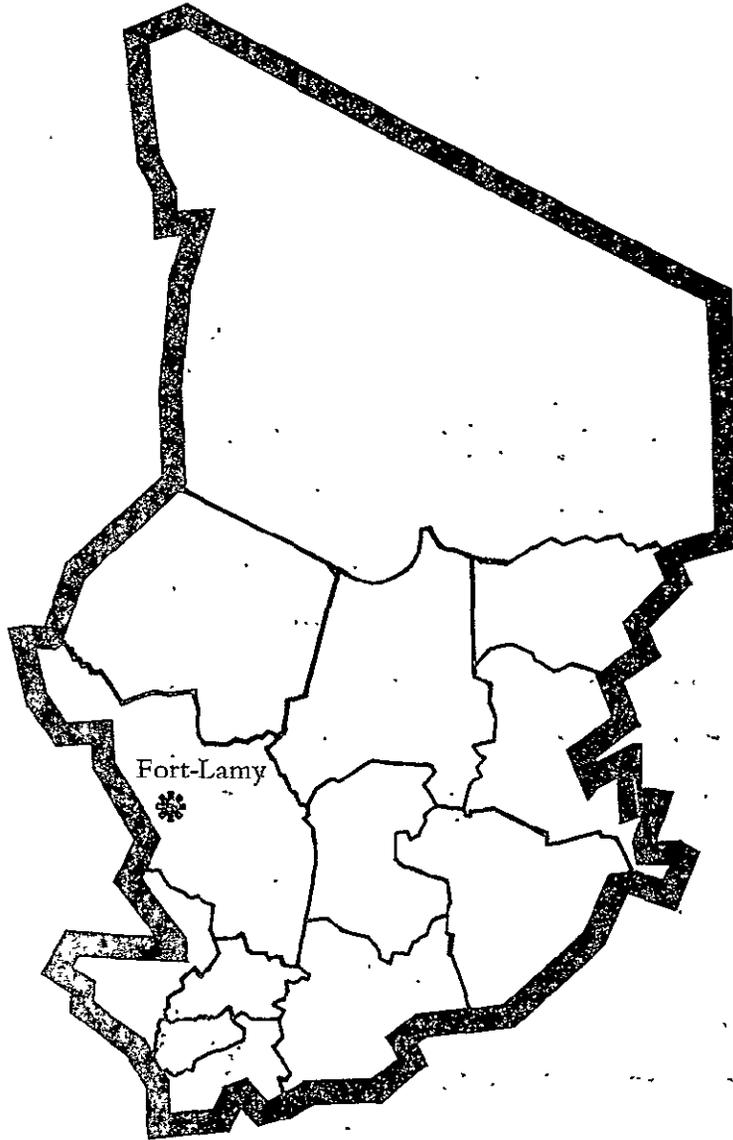


# Chad

## A Country Profile



January 1980

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

# Chad



502708 9-77 (541806)  
 Lambert Conformal Projection  
 Standard parallels 8° and 32°  
 Scale 1:8,900,000

- Railroad
- Road
- ✈ Airport

CHAD: A COUNTRY PROFILE

prepared for

The Office of U. S. Foreign Disaster Assistance  
Bureau for Private and Development Cooperation  
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, analysis 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 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, AID, as given above.

January 1980

OFDA COUNTRY PROFILES: DECEMBER 1979

AFRICA

Angola\*\*  
Cape Verde  
Chad  
Djibouti  
Ethiopia  
Madagascar  
Mali  
Mauritania  
Niger\*  
Sahel Transportation Survey  
Senegal  
Somalia  
Upper Volta  
Zaire

ASIA

Afghanistan  
Bangladesh  
Burma  
India  
Indonesia  
Malaysia  
Nepal  
Pakistan  
Philippines

CARIBBEAN

CARICOM Regional Profile  
Dominican Republic  
Haiti

LATIN AMERICA

Bolivia  
Brazil  
Chile  
Ecuador  
Guatemala  
Honduras  
Nicaragua  
Peru

NEAR EAST

Lebanon\*\*  
Turkey

SOUTH PACIFIC

Fiji  
Tonga  
Western Samoa

\* in preparation

\*\* out of print

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TO:

COUNTRY PROFILE USER Dear \_\_\_\_\_

Please use this form to note any changes, additions, corrections or suggestions you think would update and improve this country profile. Since our aim is to make these profiles as relevant as possible, your critique is essential and very much wanted. Return comments to Lucy Drobot, OFDA Country Profiles, Room 1262A.

NAME/OFFICE: \_\_\_\_\_ PHONE: \_\_\_\_\_ Date: \_\_\_\_\_

TOPIC	COMMENTS
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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 (October 1979)

211.80 CFA Francs = US \$1.00

1.5 Time Zones

EST + 6; GMT + 1

1.6 US Mission and Staff (July 1979)

Rue Du Lt. Col. Colonna D'Oranano  
BP 413, N'Djamena  
Tel: 30-91/2/3/4  
Telex: 5203 KD

Ambassador.....(vacancy)  
Deputy Chief of Mission.....Anthony S. Dalsimer  
Economic/Commercial Section.....Daniel R. Lang  
Political Section.....James L. Atwater  
Consul, Consular Section.....Philip A. Bauso  
Administrative Section.....Frank E. Rhinehart  
Agency for International Development.....David M. Wilson  
Public Affairs Officer.....Jeffrey Lite

1.7 Sister Cities

None

1.8 Host Mission and Staff in US (August, 1979)

Embassy of the Republic of Chad  
2600 Virginia Avenue, NW, Suite 410  
Washington, D.C. 20037  
Tel: 331-7696, 7697

Charge d' Affaires ad interim.....Mahamat Ali Adoum  
First Secretary.....Abdoul Ousman  
Second Secretary.....Pascal Boulo-Ndakor

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 Visa and Travel 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, D.C.; and check specific requirements.

Required: smallpox vaccination, 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 Nigrific cultures make for extreme ethnic diversity. Among the Muslims, dispersed sparsely over the Saharan desert regions, the Bedouin, Tuareg and Fulani are nomadic herders, the Hausa and Wadai farmers and traders, the Kanebou raise livestock and the Tubu are nomads. 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 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; in the Sahel it is often superimposed on traditional animist beliefs, persistence of which is enhanced by women's lack of participation in Islam. Animism prevails in the south, beliefs varying from tribe to tribe. Christianity has been accepted by about 5% of population, most of them southerners; Roman Catholicism dominates.

#### 1.15 Education and Literacy

As of 1977 about 41% of children enrolled in primary school; literacy rate 14%.

## 2. Government

### 2.1 National Government

On April 13, 1975, the increasingly repressive government of Francois Tombalbaye was ended by an army coup. Tombalbaye, a Christian Sara who had led the country since its independence in 1960, had instituted a one-party system, expelled French advisers from the Muslim north and, until 1971, made no provision for Muslim representation in government. Muslim discontent erupted in rioting and rebellion in Ouaddai, Salamat and Saharan regions, as well as along Central African Republic (CAR) and Cameroon borders. In 1971, Tombalbaye attempted to reconcile dissident elements by providing more Muslim representation in government, releasing political prisoners and channeling development funds into disaffected areas. National Liberation Front (FROLINAT) and Chadian Liberation Front (CLF) rebels were not appeased; fighting continued, culminating in a commando attack on Fort-Lamy in 1972 in which 1,000 rebels were arrested by security forces. In 1973, Tombalbaye again attempted to unify country through policy of "authenticity" akin to Mobutu's "Zairization". (Chad and Zaire, as members of Central African Economic Union, were allies.) "Authenticity" rejected all things French in favor of African values and traditions, alienating the President's traditional supporters among the southern Christians. The French now regarded him as a liability and made no effort to support his regime when the army rebelled.

New military regime organized as 9-member supreme council headed by General Felix Malloum, although large areas in the north and east were still controlled by opposition groups. Consolidation of power by Malloum included suspension of 1964 constitution, dissolution of national assembly and social and economic council and banning of political parties. On August 16, 1975, a provisional constitution was announced. It empowers the supreme council to elect a president who serves as head of state, presides over council of ministers and exercises executive and legislative powers. Military officers constitute majority of ministers; about 50% are Muslim. Constitution makes no provision for popular elections.

### 2.2 Current Status (1979)

Heavy fighting in January and February between FROLINAT rebels and French-supported troops of President Malloum. Peace treaty finally signed March 15, 1979 in Kano, Nigeria, providing for a cease-fire and the formation of a national unity government. On March 23rd both President

Malloum and Prime Minister Habre resigned, paving the way for a provisional government headed by Goukouni Oueddei, leader of FROLINAT. Government of National Union, including major factions and personalities, formed November 1979. Long-term hostility between religious communities, political factions and groups representing foreign interests poses continued threat to it.

### 2.3 Regional Organization

13 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 Oriental
Biltine	Mayo Kebbi
Borkou-Ennedi-Tibesti	Moyen Chari
Chari Baguirmi	Oaddai
Guera	Salamat
Kanem	Tandjile
Logone Occidental	

### 2.4 Major Government Figures (November 1979)\*

President.....	Goukouni Oueddei
Vice President.....	Kamougue Wadal Abdel Kader, Lt. Col.
State Min. for Defense & Veterans.....	Habre, Hissein
State Min. for Interior Affairs (acting).....	Mahamat Taher Saleh
Min. of Agriculture.....	Dikoa, Ouanga
Min. of Civil Service.....	Gouara Lassou
Min. of Communications & Transport.....	Taher Abdeldjelil
Min. of Economy, Trade & Industry.....	Diguimbaye, Georges

Min. of Equipment, Reconstruction  
 & Public Property.....Izzo, Abdel-Aziz  
 Min. of Finance.....Mahamat Saleh Ahmat  
 Min. of Foreign Affairs.....Acyl Ahmat Alkabache  
 Min. of Higher Education &  
 Scientific Research.....Khayar Omar Defalah  
 Min. of Information.....Brahim Mahamat Abdoulaye  
 Min. of Justice.....Goukouni Oueddei  
 Min. of Labor & Social Affairs.....Djekoundade Ie  
 Djeragoussou, Dr.  
 Min. of Land Management & Natural  
 Disasters.....Youssouf Mbadou Mbami  
 Min. of Livestock.....Maoundou, Mahamat Hassan  
 Min. of Natl. Education, Youth &  
 Sports.....Fadel, Ousmane Ali  
 Min. of Plan.....Djibrine Hissein  
 Min. of Public Health.....Asseid Gamar Sileck  
 Min. of Public Works, Mines &  
 Geology.....Izzo, Abdel-Aziz  
 Min. of Tourism, Handicrafts &  
 Natural Resources.....Maoundou, Mahamat Hassan  
 Sec. Gen. of the Govt.....Abakar, Zaid  
 Asst. Sec. Gen. of the Govt.....Acheick Ibn Oumar  
 Sec. of State for Agriculture.....Abba Oumar, Mahamat  
 Sec. of State for Economy.....Adji, Mahamat  
 Sec. of State for Education.....  
 Sec. of State for Finance .....Kaboro Hissein  
 Sec. of State for Foreign Affairs.....Mahamat Taher Saleh  
 Sec. of State for Plan & Cooperation....Dadji, Ahmat

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

3. Disaster Preparedness3.1 Host Disaster Plan

According to the Steering Committee LICROSS/Volags, a special ministry charged with coordinating and organizing relief assistance is responsible for assistance to drought victims. No further information was given. Mbadou Mbami Youssouf heads Ministry of Land Management and Natural Disasters which FAO indicates as dealing with relief food distribution.

3.2 US Volags

<u>Agency</u>	<u>Intl/Local Staff</u>	<u>Programs</u>
American & ORT Federation	4/5	Ed
CARE	7/28	CD; CHP; Ed; Food Prod & Ag; Med & PH
Evangelical Alliance Mission	30/-	Med & PH; Women
Map International	n.a.	Equip & Mat Aid; Med & PH
Mennonite Central Committee	8/-	Equip & Mat Aid; Food Prod & Ag
Seventh-Day Adventists	2/1	Food Prod & Ag; Med & PH
World Relief Commission	n.a.	Equip & Mat Aid

Key

CD	Community Development
CHP	Construction, Housing, Planning
Ed	Education
Equip & Mat Aid	Equipment and Material Aid
Food Prod & Ag	Food Production and Agriculture
Med & PH	Medicine and Public Health

3.3 Other Volags

Secours Catholique National Tchadien  
Address: BP 654, N'Djamena

Lutheran Bretheren Church of Christ  
Address: BP 29, Bongor

Red Cross of Chad  
Address: BP 449, N'Djamena  
Cable: Croixrouge N'Djamena

3.4 International Organizations

UNDP  
Address: Avenue du President Moktar, Ould Daddah, N'Djamena  
Cable: UNDEVPRO  
N'Djamena Telex: 5244KD Tel: 39-10

3.5 Disaster Types and History

Disaster types: drought, food shortage.

Summary Disaster History

<u>Disaster</u>	<u>Location</u>	<u>Strike Date</u>	<u>No. Killed</u>	<u>No. Victims</u>	<u>Dmg (\$000)</u>
Drought	Nationwide	3/00/66	n.a.	n.a.	n.a.
Food shortage	Central, E & S sections	8/00/69	n.a.	187,500	\$100
Drought	Nationwide	4/25/73	n.a.	900,000	\$83,000
Drought	Nationwide	74	n.a.	n.a.	n.a.
Drought	Nationwide	76	n.a.	n.a.	n.a.
POWS		78	0	n.a.	n.a.

#### 4. Population

##### 4.1 National Demographic Characteristics

Estimated mid-1977 population: 4.2 million (IBRD). Annual growth rate: 2.19%. Average population density: 3.2/sq. km. Urban population 15%, of which N'Djamena 34%. 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 1970's caused much population movement, particularly in the north; number and destinations have not been established.

##### 4.2 Regional Distribution

###### Population By Prefecture and Density

<u>Prefecture</u>	<u>Area (sq. km)</u>	<u>Population (1976 est.)</u>	<u>Density (Per sq. km)</u>
Batha	88,800	339,000	3.8
Biltine	46,850	166,000	3.5
Borkou-Ennedi-Tibesti (BET)*	600,350	85,000	0.1
Chari-Baguirmi	82,910	607,000	7.3
Guera	58,950	195,000	3.3
Kanem	114,520	193,000	1.7
Lac	22,230	131,000	5.9
Logone Occidental	8,695	272,000	31.3
Logone Oriental	28,035	290,000	10.3
Mayo-Kebbi	30,105	634,000	21.1
Moyen-Chari	45,180	486,000	10.8
Ouaddai	76,240	338,000	4.4
Salamat	63,000	101,000	1.6
Tandjile	18,045	284,000	15.7
Total	1,284,000	4,121,000	2.95

\*The Borkou-Ennedi-Tibesti prefecture was abolished in September 1972 and the three constituent prefectures attached to neighboring prefectures.

Source: Europa Yearbook, 1978.

4.3 Urban Areas

<u>Prefecture/ Urban Area</u>	<u>Population (1973 est.)</u>	<u>Prefecture/ Urban Area</u>	<u>Population (1973 est.)</u>
Batha		Logone Oriental	
Ati	6,995	Doba	14,694
Oum-Hadjer	6,025	Bodo	7,022
B.E.T.		Beboto	5,247
Faya	7,380	Baibokoum	6,231
		Bededjia	5,406
Bilfine		Mayo - Kebbi	
Biltine	4,459	Bongor	16,188
Chari-Baguirmi		Pala	14,865
N'Djamena	192,891	Fianga	11,238
Bokoro	8,306	Binder	
Bouso	5,182	Moyen Chari	
Guera		Sarh	44,744
Mongo	8,963	Koumra	18,153
Bitkine	4,900	Moissala	6,242
		Kyabe	5,674
Kanem		Quddai	
Moussoro	7,949	Abeche	34,617
Mao	5,568		
Lac		Salamat	
Bol	34,617	Am - Timan	4,519
Logone Occidental		Tandjile	
Moundou	45,469	Kelo	18,661
Benoye	11,739	Lai	12,332
Bebalem II	5,754	Bere	7,598

\*Fort Lamy was renamed N'Djamena in November 1973; Fort Archambault was renamed Sarh in July 1972.

Source: World Bank, Economic Memorandum, 1979.

## 5. Health, Nutrition and Housing

### 5.1 Overall Health Status

Intestinal diseases such as amebiasis and bacillary dysentery are major killers; diarrhea the first cause of death (1977). Infectious hepatitis widespread and a major risk for travellers especially in south and west (Moyen-Chari, Logone Occidental, Logone Oriental, Tandjile and N'Djamena). Measles are major cause of death among children, with peak March to May at beginning of rainy season; vaccination campaigns are under way. Malaria found countrywide; hyperendemic in south, sporadic cases in Sahara; 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; mortality about 10%.

Last reported cholera outbreak in 1974 in Lake Chad area (about 350 cases). No cases of yellow fever reported for a number of years but still a risk; vaccination program exists. Last case of smallpox 1968.

### 5.2 Diseases

Disease	1967			1973		
	cases	deaths	% D/C*	cases	deaths	% D/C
Tuberculosis	1,666	120	7.2	1,695	105	6.2
Typhoid fever	69	1	1.4	207	3	1.4
Amebiasis	24,043	164	0.7	35,983	81	0.2
Bac. dysentery	394	0		25,377	81	0.3
Pertussis	4,327	13	0.3	5,057	26	0.5
Meningococcus	657	129	19.6	2,376	216	9.1
Tetanus	267	101	37.8	521	229	44.0
Measles	2,448	21	0.8	8,239	245	3.0
Inf. hepatitis	-	-	-	8,772	195	2.2

Disease	1967			1973		
	cases	deaths	% D/C	cases	deaths	% D/C
Malaria	87,858	212	0.2	99,766	384	.4
Chicken pox	5,287	3	.1	4,784	6	.1
Pneumonia	719	11	1.5	3,416	58	1.7
Influenza	-	-	-	665	6	.9

\*Death/case ratio

Source: Hospitals, dispensaries and nutritional health units of Ministry of Health.

### 5.3 Vital Statistics (1977)

Birth rate/1000 population	45
Death rate/1000 population	21
Infant mortality/1000 live births	180-200 (1963-64)
Life expectancy at birth	43 years

Source: World Bank, Development Report, 1979.

### 5.4 Health Services and Facilities

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

Endemic disease service comprises six sections and two subsections, located in N'Djamena, Sarh, Moundou, Bongor, Abeche, Ati and Am Timan; each unit is charged with detecting, treating and preventing communicable diseases (e.g., trypanosomiasis, yaws, leprosy, tuberculosis, venereal diseases, smallpox, yellow fever, measles, meningitis) and reporting prevalence of malaria, onchocerciasis, schistosomiasis and intestinal

parasites. 1.4 million people were examined in mobile clinics (1970); mass vaccinations have affected prevalence of smallpox, but campaigns against measles have been less successful.

### 5.5 Health Personnel

#### Health Personnel as of 1970

	MD*	Numbers		Total Population	Population Per:		
		Nurses	Midw*		Doctor	Nurse	Midw*
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	261,889	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	4,278	41,502
Ouaddai	5	60	4	344,007	68,801	5,666	86,001
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 Diet

#### Average Daily Intake, 1964-66

Calories	2371	Phosphate	800mg
Carbohydrates	166.7g	Iron	14mg
Protein	45.8g	Sodium	-
Fat	118.6g	Potassium	-
Calcium	800 mg	Vitamin A	-

Source: Sahel Nutrition Survey, 1974.

Average daily intake (1969-71)*:	calories	2110	(89% of re- quirements)
	protein	75g	
Growth rates (1969-71):	population	2.3%	
	food production	-2.1%	
	domestic demand	-1.2%	
	for food		

\*World Bank gives 1970 per capita calorie consumption as 86% of MDR, protein intake as 73g/day, of which 33g is of animal or pulse origin.

Source: Sahel Nutrition Survey, 1974.

### 5.7 Staple Foods

Staple foods vary with occupation: farmers' diet 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 hot spring months when milk animals go dry, farmers in summer rainy season before harvest. Calorie levels may drop to half of normal at this time.

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 used primarily in cities. (Quality usually not high enough for export to coastal rice-eating countries.) Average annual grain consumption is estimated at 260kg per capita in food and beer (home-brewed). Cassava and sweet potatoes are staples in extreme SW. Cowpeas, pumpkins, beans, peanuts and fish provide additional nutrients.

In north, milk, fresh or curdled, provides bulk of nomadic caloric intake. Goats, sheep and camels occasional sources of meat as well as milk; most beef cattle are slated for export. Dates, millet and other produce may be raised as single crop by semi-nomadic groups or obtained in trade from oasis farmers. Despite caloric deprivation during drought, in 1974 CDC 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.

### 5.8 Housing

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

Rural homes 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 usually adobe, built around interior court.

## 6. Economy

### 6.1 Overview of Economy

Chadian economy is handicapped by lack of natural and human resources. Marginal climatic conditions for agriculture prevail over most of territory; geographic isolation increases transport costs; 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 stockraising or agriculture (former 10%, latter 80%); these sectors account for nearly half the GDP. Subsistence agriculture contributes three quarters of value of annual crop production, but cotton is primary export crop; meat and live animals also important exports.

Limited resources have been further curtailed by Sahelian drought, which was responsible for several thousand human deaths, most in desert north, and loss of half the national herd. Twelve years of guerilla warfare have diverted scarce GOC revenues from development to defense. Real growth of GDP declined 1.5 to 1.8%/annum between 1967-75; low level of income and limited capacity to mobilize savings have caused heavy reliance on external aid. Public finance has been dominated by internal security costs and despite increased taxation and austerity measures which stabilized deficit, commercial and debt service arrears remain.

### 6.2 Industry

Industry, accounting for 8.0% of GDP, mainly comprises processing operations engaged in production of ginned cotton, meat, sugarcakes, textiles and beverages. Growth is hindered by remoteness of export markets, transport costs and scarcity of raw materials. Oil exploration, started in 1968, conducted by Continental Oil on behalf of an international consortium. 8 wells have been drilled in the south and west revealing proven reserves of about 1/2 billion barrels. However, one billion barrels of reserves are needed before exploitation is economically feasible.

Capacity and Production of Major Industries

<u>Product</u>	<u>Unit</u>	<u>Production capacity</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
	1000 metric tons				
Ginned cotton		62.0	38.9	43.0	52.9
Meat		13.6	8.0	11.0	7.7
Sugar		18.0	17.0	15.3	17.6
Wheat flour		24.0	1.3	2.5	2.7
Rice		16.8	n.a.	n.a.	n.a.
Feed Cakes		2.0	1.3	1.6	1.9
Sweets		1.5	1.2	1.1	1.1
Perfumes		1.4	0.5	0.6	0.8
Soap		0.3	- - -	industry closed	- - -
Printing		0.2	0.1	0.1	0.2
Cigarettes		0.5	0.3	0.3	0.3
Textiles		2.5	1.8	2.4	2.4
	1000 hectoliters				
Beer		140.0	101.7	132.3	135.2
Groundnut oil		33.0	-	-	-
Cottonseed oil		6.0	0.5	0.5	0.8
	pair/units				
Shoes		400,000.0	148,535.0	152,750.0	108,166.0
Radio sets		20,000.0	19,426.0	16,462.0	13,345.0
Bicycles		8,000.0	6,601.0	6,433.0	10,211.0
Furniture		n.a.	7,128.0	4,380.0	6,288.0

Source: World Bank, Economic Memorandum, 1979.

### 6.3 1979 Status

Continuing political upheaval has caused economic and financial chaos; border closings and blockade of commercial routes have frozen economic activity.

### 6.4 Balance of Payments

Current balance of payments deficit has more than tripled between 1972-75. Although value of exported goods and services rose in 1974 (remaining stable in 1975), this increase was offset by a 41% rise in imports reflecting world inflation, increased external aid and intensified oil exploration.

<u>Balance of Payments</u> (in CFAF billions)					
Exports of goods & NFS	21.1	21.5	22.7	28.9	29.1
Imports of goods & NFS	28.6	28.6	33.9	42.1	45.8
Resource gap	-7.5	-7.1	-11.2	-13.2	-18.7
Factor payments	-	1.0	0.3	0.3	0.2
Current transfers	2.0	0.7	0.6	1.0	0.9
Current balance	-5.5	-5.4	-10.3	-11.9	-17.6
Grant flow	4.9	5.4	7.2	10.3	10.0
Other capital inflow (net)					
Private(a)	0.2	0.5	1.4	3.6	3.6
Public	0.8	-0.3	2.6	3.3	3.7
Net other, incl. short term capital	1.0	-1.0	-2.5	-3.9	-3.4
Overall balance	1.4	-0.8	-1.6	1.4	-1.7
Foreign assets (net)	-1.5	0.4	-1.2	0.2	-1.5

Notes: Figures for 1975 are estimates; "Net other" includes errors and omissions.

(a) Mainly direct foreign investment in petroleum exploration.

Source: World Bank, Economic Memorandum, 1979.

### 6.5 Imports

Food has accounted for largest share of imports (25% in 1974) during 1970's due to drought. France is primary source of imports, followed by Nigeria, with considerably smaller amounts being supplied by Cameroon, Congo People's Republic, Netherlands Antilles and the US. See also section 7.5, Agricultural Imports.

<u>Products</u>	<u>Imports</u> (in tons and current CFAF millions)					
	1972		1973		1974	
	<u>Volume</u>	<u>Value</u>	<u>Volume</u>	<u>Value</u>	<u>Volume</u>	<u>Value</u>
Food and beverages	42,780	3,790	53,270	6,029	45,227	6,520
of which: sugar	25,479	1,908	23,822	1,934	21,697	2,234
Petroleum products	56,100	2,219	74,510	2,951	51,554	2,977

	1972		1973		1974	
	Volume	Value	Volume	Value	Volume	Value
Equipment goods	17,996	3,966	23,579	4,698	25,980	6,038
Chemicals	6,150	1,280	3,870	1,101	4,952	1,917
Textiles	2,190	1,180	2,740	1,431	2,582	1,471
Rubber & plastics	1,030	360	980	419	1,052	451
Paper & paper products	1,170	380	910	345	1,130	453
Other mineral products	8,848	211	7,482	217	6,800	214
Metals	4,300	624	6,189	612	7,000	770
Other	1,290	1,465	9,588	1,294	12,000	2,217
Total	149,854	15,475	183,118	19,097	158,277	23,028

Notes 1. For 1975, imports are estimated at 152,000 tons and CFAF 25,000 billion.

2. Values of categories of other consumer goods and other intermediate goods are estimated as follows:

Intermediate goods	3,913	3,740	5,271
Other consumer goods	1,787	1,679	2,222

Source: World Bank, Economic Memorandum, 1979.

### 6.6 Exports

Cotton is most important export (80% of earnings), followed by meat and live animals. Value for exported goods and services rose 27% in 1974 and remained at about the same level in 1975; most of increase due to higher prices and volume of exported cotton. Neighboring African countries receive about 20% of recorded exports (although clandestine trade in live animals exceeds recorded); EEC, Japan and Yugoslavia are other export recipients.

#### Exports (in tons and CFAF millions)

Products	1973		1974		1975 Projected	
	Volume	Value	Volume	Value	Volume	Value
Cotton	36,200	6,549	41,200	11,490	47,900	10,549
Meat	3,700	743	6,900	1,207	3,000	525

	<u>1973</u>		<u>1974</u>		<u>1975</u>	
	Volume	Value	Volume	Value	Volume Projected.	Value
Livestock-(head)	(90,830)		(24,700)		(40,300)	
- tons	21,970	638	5,900	361	9,700	410
Hides and skins	1,350	219	1,211	212	1,200	220
Gum arabic	330	21	176	18	250	18
Natron	332	4	94	5	400	10
Other	4,198	731	4,237	828	4,500	921
Subtotal	68,080	8,905	59,718	14,121	66,950	12,653
Reexports	4,227	879	2,322	498	2,000	460
Total	72,307	9,784	62,040	14,619	68,950	13,113
<u>Index</u> (67-69-100)		126.7		189.3		169.8

1. "Other" includes cottonseed, groundnuts, tobacco, raw ivory, vaccines, textiles and some other manufactured goods. This category is partly estimated.
2. 1975 data are staff projections.

Source: World Bank, Economic Memorandum, 1979.

## 7. Agriculture

### 7.1 Overview of Agriculture

Though less than 20% of land receives sufficient rain for agriculture (and only half that is in use), until onset of drought in 1967, Chad was usually self-sufficient in production of food grains. However, as population increases and desert encroachment due to land misuse proceeds, 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 Chari river, relatively well-watered savannah 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 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 conflict between farmers' emphasis on subsistence crops and GOC's priority for cotton as foreign exchange source.

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

Stock raising is full-time occupation in north, part-time in south. Despite losses approaching 50% during drought years, national herd was estimated at 4.1 million head of cattle, 3.7 million sheep and goats, 330,000 camels and smaller numbers of horses and donkeys in 1974. Unfortunately, quality of animals is poor: low weight, late maturity and high calf mortality are typical. Traditionally, nomads' herds moved north in spring with rains, returning to south's permanent water in dry season; well-drilling in Sahel has interrupted this transhumance at expense of pasturage. Since nomads' subsistence is based on milk rather than meat and since large herd size enhances owner's prestige, sector has not been oriented toward marketing surplus animals. Drought has forced changes in these traditions, forcing sale of animals and disrupting migration.

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

A third "harvest", employing between 10,000 and 200,000 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 usually netted or trapped; catch highest in March-June, lowest during flood season. 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 rainy season. 60% of catch is consumed in country, remainder exported to Nigeria, Cameroon or CAR.

### 7.2 Constraints on Agriculture

Climate, poverty and unsettled political conditions limit Chadian agricultural potential. Drought or too much rain during planting or harvest may damage or destroy crops. Neither COC nor individuals can afford sufficient fertilizer to maintain soil fertility or pesticides to control insects. Rebel activity has interrupted marketing routes within country and for exports, impeded animal health programs and restricted area of cultivable land. Increasing animal and human populations approach carrying capacity of land in 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 fuel wood shortage; dried cowdung and crop residue, ordinarily left in fields as fertilizer, are burned instead.

### 7.3 Crop Production

<u>Production and Value of Crops</u>				
(Production unit '000 tons; producer price CFAF/kg; gross value CFAF million)				
	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
<u>Food Crops</u>				
<u>Millet and Sorghum</u>				
Production	585	415	380	531
Producer price	13	17	22	23
Gross value	7,605	7,055	8,360	12,213

	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
Paddy				
Production	41	42	30	36
Producer price	20	24	27	32
Gross value	820	1,008	810	1,152
Wheat				
Production	5	7	6	3
Producer price	34	37	40	42
Gross value	170	259	240	126
Subtotal: Cereals	8,595	8,322	9,410	13,491
Groundnuts				
Production	75	70	78	88
Producer price	22	24	27	30
Gross value	1,650	1,680	2,106	2,640
Sesame				
Production	14	19	10	8
Producer price	39	42	54	60
Gross value	546	798	540	480
Subtotal: Oil seeds	2,196	2,478	2,646	3,120
Other food crops				
Production	306	285	269	311
Producer price	25	29	31	33
Gross value	7,650	8,265	8,339	10,263
<u>Industrial Crops</u>				
Cotton				
Production	109	104	115	144
Producer price	27	28	29	41
Gross value	3,019	2,922	3,439	5,947
Gum Arabic				
Production	658	176	28	250
Producer price	40	40	50	70
Gross value	26	7	4	18
Hibiscus				
Production	31	39	2	30
Producer price	92	90	100	110
Gross value	3	4	-	3

	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
Tobacco				
Production	93	142	135	172
Producer price	58	61	63	67
Gross value	5	9	9	11
Subtotal: Industrial crops	3,053	2,942	3,552	5,979
All crops: gross value	21,494	22,007	23,947	32,853

Source: World Bank, Economic Memorandum, 1979.

#### Production of Livestock and Fish

	<u>Unit</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
<u>Livestock</u>						
Meat & offal (a)	CFAF million	7,281	8,123	10,547 (b)	8,397	8,265
Milk	CFAF million	2,347	2,612	2,143	2,617	3,506
Total	CFAF million	9,628	10,735	12,690	11,014	11,771
<u>Fish</u>						
production	'000 tons	80	120	140	160	120
producer price	CFAF/kg	40	43	46	46	46
gross value	CFAF million	3,200	5,160	6,440	7,360	5,520

a. Valued as live animals.

b. Assume 50% of the decline in the cattle herd was consumed.

Source: World Bank, Economic Memorandum, 1979.

#### 7.4 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
dry beans		H	H	H						H	H	H
peanuts										H	H	H

### 7.5 Agricultural Imports

Food imports will probably remain high until effects of drought are overcome and results of agricultural development programs implemented in 1970's become apparent. See also section 6.5, Imports.

### 7.6 Agricultural Exports

See section 6.6, Exports.

### 7.7 Current Status (1979)

Due to continuation of civil war, a comprehensive assessment of food needs has been difficult. According to preliminary Red Cross reports, the regions most in need of emergency assistance are Lac, Kanem, Bata, Ouaddai, Biltine and Bet. These areas, traditional importers of food, have been seriously affected by border closures and the blockade of commercial roads. Donations in cereals total 15,000 tons, of which 10,000 tons are from US and 5,000 tons under FAO/WFP emergency food assistance

Outlook for 1979 cereal crop uncertain. Normal rains should have favored planting in southern/central areas between mid-May and mid-June, but it is likely that sowings have been delayed and reduced owing to disruptions of civil war.

## 8. Physical Geography

### 8.1 Climatic zones

Chad's three climate zones are defined by amount and duration of annual rainfall. As in rest of Sahel, precipitation occurs almost exclusively in spring and summer as dry subtropical high pressure belt shifts northward (total 10 degrees 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 north latitude, precipitation appears relatively constant from year to year; variability (over a 10-20 year period) increases with latitude and rainfall in Sahel appears to be inversely correlated with that in wooded savannah and tropical forests between equator and 10 degrees north.

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

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

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

Beyond 16th parallel rainfall is sparse to nonexistent. This Saharan zone is a region of climatic extremes. Average daily maxima range from 80°F in coldest months to 115°F in warmest; corresponding minima are 50°F and 75°F. Mean relative humidity seldom reaches 40%. Strong northeasterly winds in dry season, carry dust, 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 Landforms

Bordered by Libya on north, Sudan on east, Central African Republic on south, Cameroon on southwest, Nigeria and Niger on west, Chad lies near geographic center of Africa. 1,284,640 kms (496,000 sq.m.) in area, it extends from 7°30' north latitude to Tropic of Cancer, 23°30' north latitude, or 1100 miles north-south and 500 miles east-west. Much of the country lies within vast sedimentary basin centered on Lake Chad and rimmed by plateau and mountains: Ubangi plateau and Adanoma ridge in south, Ennedi plateau and Tibesti range in north and the Ouaddai range in east. Sandy or rocky plains with flat, rolling or dissected surfaces in northern two thirds, and flat clay plains in south constitute primary land surfaces; sand dunes, oriented northeast-southwest, crests 1-200' high, extend from northeast border of country to Lake Chad. The Bahr El Ghazal, a long narrow depression oriented northeast-southwest, interrupts dunes; it fills with rain water during wet season, as do other smaller scattered basins. No permanent rivers in central and northern Chad; major sources for Lake

Chad are Chari and Logone Rivers which drain equatorial rainbelt in Central African Republic and Cameroon. Extensive marshes which border these water courses and their tributaries expand considerably during rainy season.

### 8.5 Waterways

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

### 8.6 Mountains

Highlands rise along edges of Chad basin in north (Tibesti massif), east (Ennedi and Biltine highlands) and south (Guera and Abou Telfane massifs). Tibesti massif, elevations averaging 3200-6500', highest over 10,000', is of volcanic origin, though no recent activity has been noted, extends 300 miles east-west and 150 north-south. Slopes: 10-30% in hills, 30-45% in mountains. southeast highlands consist of rocky sharpcrested hills, slopes 10-30%, about 1,000' above surrounding plateau. Guera massif's mountains are conical, maximum height 2,000' above plain, with slopes often greater than 30%, elevations 2-3,000' above sea level.

### 8.7 Land Use

#### Land Use (1972, '000 hectares)

Arable and under permanent crops.....	7,000
Permanent meadows and pastures.....	45,000
Forest land.....	16,500
Other land.....	58,500
Inland water.....	1,400
 Total area.....	 128,400

Source: Europa Yearbook, 1978.

## 9. Transportation and Logistics

### 9.1 Road Network

Road transport is by far the most important mode used; nevertheless, network is unevenly distributed with most classified roads located in the south. Of a total of 31,269 kms 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 rainy season. In addition, seasonal flooding of lowlands of southwestern Chad, where road network is concentrated, necessitates numerous crossings, many of which are in poor repair.

Since 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 south, particularly cotton growing areas. WB project aimed at upgrading 800 kms of feeder roads in Logone-Chari basin is scheduled for completion in 1980.

	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
<u>National Roads</u>							
Paved	242	242	242	242	242	253	253
Gravel and earth	1,738	1,838	2,438	4,320	4,320	4,309	4,309
Subtotal	1,980	2,080	2,680	4,562	4,562	4,562	4,562
<u>Prefectural Roads</u>							
Earth	4,150	4,050	3,500	2,630	2,630	2,707	2,707
Total	6,130	6,130	6,180	7,192	7,192	7,269	7,269
<u>Tracks</u>	24,000	24,000	24,000	24,000	24,000	24,000	24,000

Source: World Bank, Highway Maintenance Project, 1978.

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 kms 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, 1790 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

### Growth in Vehicle Fleet, 1970-1975

<u>Vehicle Type</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>Growth Rate Per Annum</u>
Light vehicles (less than 3-5 t)	4023	4765	5250	5770	6225	6627	10.5%
Trucks	5336	5794	5891	6009	6162	6266	3.3%
Buses	108	126	133	144	147	152	7.0%
Trailers and semi-trailers.	400	448	620	664	834	875	17.0%

Source: World Bank, Highway Maintenance Project, 1978.

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

#### 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. Possibility of Sudanese or Nigerian lines being extended into Chad is under discussion.

#### 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, 4 miles from Forcados.
- Accommodations: Entrance channel 400-700 ft. wide, depth 21 ft. draft HWOSt. Anchorage on good holding ground in mid-river opposite port; space for 3 ocean going vessels; 14 ft. depth LWOSt. Main wharf 725 ft. long and new wharf 325 ft. long; both 21 ft. depth LWOSt. Depth that a ship may load is controlled by Burutu flats, 13 ft. Loading/ discharging by ships gear. Covered storage for 30,000 tons African produce, open storage for 15,000 tons of oil.
- Shiprepairs: Four slipways, 50 to 550 tons lifting power; maximum length, 220 ft. Machine and plating shops.
- Pilotage: Not compulsory, available.

##### Douala, Cameroon

- Coordinates: Lat. 4°N; long. 9°40'E. 15 miles from river mouth.
- Accommodation: Entrance is well marked. Depth of channel 14 ft. 8 in. at LW. Spring rise of the tide 7 ft. 4 in., neap rise 5 ft. 2 in. Maximum safe draft, from 21 ft. nt to 22 1/2 ft. st. The first bouy, called "A" bouy, is 3°45' N and 9°24' E (white light 6 seconds). Other bouys 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 and one of 7 m. at Bonaberi for loading bananas. Four berths with four sheds totalling 15,000 SW 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. No refrigeration space on quay. 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.
- Development: Depth of the channel to be increased to 8.4 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.
- 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 2:00 to 5:30. Restrictions on work during night, Saturdays or holidays.

#### Lagos, Nigeria

- Coordinates: Lat. 6°27'N; long. 3°24'E
- Accommodation: Bar draft 30 ft., LW entrance protected by moles. The port can accommodate up to 18 vessels alongside three at buoys and four at anchorages. Fresh water available.
- Apapa quay: 5,000 ft. length, will berth up to 10

main line vessels with maximum draft of 27 ft. Ample transit shed space with nine large sheds serving the quay berths and four large warehouses available for storage. Lighter berth additional to main berths, 370 ft. long with 10 ft. at LW. Served by transit shed.

Customs Quay: Three 500 ft. vessels can be berthed. Maximum drafts at berths, 19 ft. 6 in. and 22 ft. 6 in. Berths each served by transit shed. Quay is road served only. Small berth available for lighters.

Other quay berths: Wharf of bulk oil plants of Nigeria Ltd. will take vessels up to 500 ft. length with maximum draft of 25 ft.; petroleum wharf, Apapa, for vessels up to 580 ft. with 25 ft. maximum draft and a small berth of 315 ft. with 17 ft. maximum draft; Ijora coal wharf, total length of 400 ft. with maximum draft of 19 ft.

Lighters used for discharging and loading vessels at buoys and anchorages, lighterage capacity of 10,000 tons being available in port. At Apapa quay extensions to provide four additional deepwater berths, in addition to a container berth now completed. Ancillary transit sheds and warehouses are available. Fisheries wharf, 375 ft. long, now completed. At Koko in midwestern Nigeria, a first-class, deep-water berth now available.

- Developments: The six fore and aft mooring buoy berths at marina berths are being relaid and later dredged; three of them have already been relaid. Harbor approach channel to be deepened; berths to be extended into Badagry Creek.
- Tanker terminals: One berth, operated by port authority; length 580 ft.; draft 25 ft.; no night berthing; water and bunkers (subject to tidal restrictions) available.
- Shiprepairs: Available.
- Pilotage: Compulsory.
- Traffic: 1972, 1,669 cargo ships of 5,339,478 NRT; 1,331 fishing vessels of 54,207 NRT.

Airport: Ikeja, 9 miles from port.  
Local holidays: The port is always open except for Christmas Day.

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 25 ft. to 28 ft. 6 ins. Two timber export berths at mole 1, 350 m. draft 31 ft. Two buoy berths inside the port, drafts 28 ft. and 29 ft. Quay G, 210 m. 34 ft. 4 ins. draft, special terminal of COMILOG. A second berth of 317 m, draft 36 ft. 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 11 ft. 6 in. 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 stevedores. No shore cranes. Timber stacking area of 22 acres with lighter berth 190 m., draft 12 ft., and two 20-ton gantry cranes. Refrigerated space available. Cool chamber. Pipes for butane, wines, vegetable oils, molasses, etc. Railway (CFCC) from Pointe Noire to Brazzaville. Fresh water available.

Tanker terminals: 1 berth inside harbor, draft 31 ft., 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.

Shiprepairs: Repairs undertaken by Ateliers Chantiers de Pointe Noire et Marty. Floating dock of 1,400 tons is out of commission; slipway of 750 tons under construction.

Charges: Toll dues and wharfage dues calculated on ships' NRT.

Towage: Three tugs of 600, 1,000 and 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. On river Bonny, 41 miles 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 now 25 ft. (18 ft. plus rise of tide). When completed, the port will be open to ships of maximum draft of 27 ft. Total quay length 3,500 ft., allowing for accommodation of up to seven vessels with 27 ft. of water alongside. There is accommodation for another vessel at the coal conveyor berth. There are two mooring buoys S of the main wharf for tankers discharging; maximum 800 ft. length and 22 ft. draft. One vessel can also be anchored off dockyard creek. Road and rail access to all berths.

Each of the berths on the wharf extension is provided with a transit shed 350 ft. by 150 ft. The four main berths of the original quay are also served by a transit shed, two 300 ft. by 90 ft. and two 300 ft. by 70 ft. There is an additional warehouse 400 ft. by 150 ft. as well as smaller sheds and stores and an open stacking area of 100,000 sq. ft. served by a 10-ton crane. Water is available at all berths from hydrants. Oil storage: petroleum, 5,300 tons palm oil, 5,500 tons.

Development: The possibilities of providing a deeper entrance channel are being investigated. Depth alongside wharves has been increased to 27 ft. Rehabilitation of the old quay has been completed. An additional warehouse, 400 ft. by 150 ft. is under construction. The provision of additional berthage and produce storage is being considered.

Tanker terminals: One berth, operated by the Nigerian Petroleum Refining Co. length 585 ft.; draft 29 ft.; no night berthing; water (by barge) and bunkers available.

Bunkers: Available.

Shiprepairs: Available from small craft.

Pilotage: Compulsory from Bonny fairway buoy.

Airport: Port Harcourt, 7 miles from port.

Local holidays: Port always open except for Christmas Day.

### 9.6 Airports

Inter-African air transport is often less efficient than international, but sometimes 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 cost of building roads. Unfortunately, most development funds have been used at N'Djamena airport to detriment of deteriorating secondary airports, which ought to be upgraded to all weather standards, to have extended runways and updated aeronautical equipment.

Transit center and largest air freight handler in central and western Africa, N'Djamena airport is only international facility. Other major airports: Sarh, Moundou, Bongor, Abeche. D'Njamena and Sarh are maintained by ASECNA, a French managed multinational concern which also operates most important secondary airports. 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

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

Remarks: Alternate aerodromes: Bangui/M'Poko, Douala/Douala, Garoua/Garoua, Gèneina/Gèneina, Kano/Kano.

Aids: ILS-05-1, VOR, RL, SA-05, LVA-23+, LR, LTX, LB, LO, MD, MC, MT, MTX, MO. Longest runway H 92. L4, L5, L9. No telex.

## PALA

<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>		
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>	<u>CL</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.

KeyAbbreviations

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)
§	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. Smallpox 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, one Cherokee.

Chad is also served by the following foreign airlines: Cameroon Air Lines, Air Afrique, Air Zaire, Sudan Airways, 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
		<u>Domestic</u> (statute miles)		
N'Djamena to:	Pala	190		
	Sarh	307		

10. Power and Communications10.1 Electric Power

Production and distribution of electricity and water in hands of Societe Tchadienne d'Energie Electrique, N'Djamena; capital 283 million francs CFA. All electricity generated by oil-burning plants. 1975 production was 60 million kWh; capacity was 22,000 kW. Largest plant, at N'Djamena, provides more than 90% of total output. Sarh, Moundou and Abeche are only other areas with access to electric power. Electricity supply: 220 volts.

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	28,887	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.

In 1979, Nigeria's ban on energy exports to Chad (due to opposition to transitional government) has caused severe shortages of electricity in N'Djamena; water and electricity supplies limited to between 10am-1pm; during Ramadan expanded to 6:30 pm-3 am.

### 10.2 Telephone System

Fair system of radio communication stations only for inner city links; principle 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 70,000 radio receivers in 1972.

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