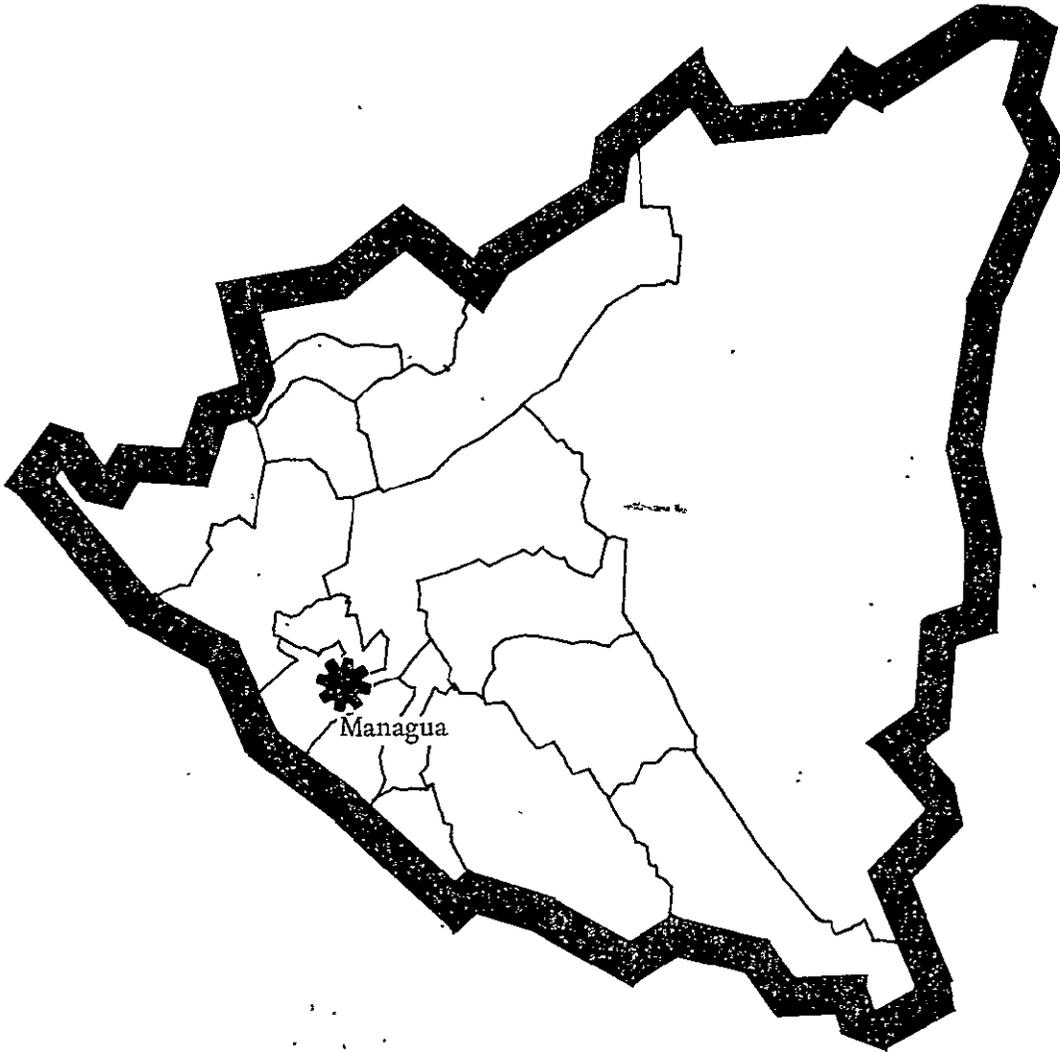


Nicaragua

A Country Profile



July 1981

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



Base 504508 5-80 (545340)

NICARAGUA: 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 Nicaragua 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, AID, as given above.

August 1981

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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

1. General Information1.1 Geographic Codes

AID	524
FIPS	NU
State region	ARA

1.2 Country Names

Official	Republic of Nicaragua
Local	Republica de Nicaragua
Short	Nicaragua

1.3 Official Holidays

1981:	Labor Day	May 1
	Army Day	May 27
	Abrogation of the Chamorro-	
	Bryan Treaty	July 14
	Managua Local Holiday	August 10
	Battle of San Jacinto	September 14
	Independence Day	September 15
	Columbus Day	October 12
	All Saints' Day	November 1
	Immaculate Conception	December 8
	Christmas	December 24-25
1982:	New Year's Day	January 1
	Air Force Day	February 1
	Holy Week	April 8-16

Several local holidays are also observed.

1.4 Currency Exchange Rates

100 Centavos = 1 Cordoba
 10.05 Cordobas = US \$ 1 (April 1981)

1.5 Time Zones

EST - 1; GMT + 4

1.6 US Mission to Nicaragua and Staff (May 1981)

Embassy of the United States
KM 4-1/2 South Hwy.
Managua
APO, NY 09885
Tel. 23061-8, 23881-7

Ambassador
Deputy Chief of Mission
Economic/Commercial Section
Political Officer
Consular
Labor Officer

Administrative Section
Regional Services Officer
Agricultural Officer

Agency for International Development
Public Affairs Officer

Lawrence Pezzullo
Thomas J. O'Donnell
Gary H. Maybarduk
Charles H. Brayshaw
Lana C. Chumley
John D. Fernandez
(resident in Tegucigalpa)
Paul H. Pina
Jerry P. Wilson
Harry C. Bryan
(resident in Guatemala)
Lawrence F. Harrison
William T. Hines

1.7 Sister Cities

Bluefields	Racine, Wi.
Corinto	Oconomowoc, Wi.
Corn Island	La Crosse, Wi.
Estele	La Habra, Ca.
Granada	Waukesha, Wi.
Jinotega	Appleton, Wi.
Leon	West Miami, Fl.
Managua	Hialeah, Fl.
Puerto Cabezas	Fort Atkinson, Wi.
Rama	Sheboygan, Wi.
	Whitewater, Wi.
Rivas	Sheboygan, Wi.
Somoto	Gonzales, Ca.
Waspam	Fon Du Lac, Wi.

1.8 Host Country Embassy and Staff in US (May 1981)

Embassy of Nicaragua
 1627 New Hampshire Ave., N.W.
 Washington, D.C. 20009
 Tel. 387-4371, 4372

Ambassador	Arturo J. Cruz
Minister Counselor	Francisco d'Escoto
Minister-Counselor	Carlos Chamorro C.
Counselor	Mario De Franco
First Secretary	Hilda Sequeira
Minister-Counselor (Economic Affairs)	Roberto Mayorga
Counselor (Economic Affairs)	Silvio Conrado
Second Secretary	Manolo Cordero
Attache	Maria Caridad Baltodano
Attache	Jorge L. Lopez
Military and Defense Attache	Donald Mendoza

1.9 Treaties and Agreements

Agricultural Agreements (Plantation/Rubber Investigations, Prevention of Hoof-and-Mouth Diseases and Rinderpest)
 Aircraft, Free Movement of Military
 Air Force and Army, US Missions in Nicaragua, Agreements
 Customs, Exemption of Diplomatic and Consular Officials
 Earthquake Emergency Shelter Agreement
 Economic and Technical Cooperation Agreement
 Highway Construction
 Investment Guaranties
 Military Assistance -- Disposition of Equipment, Establishment of Loran Transmitting Station, Performance of Advisory Group
 Naturalization Convention
 Peace Corps
 Telecommunications
 Trade and Commerce
 Visas

1.10 Organization Memberships

CACM, FAO, G-77, GATT, IADB, IBRD, ICAC, ICAO, ICO, IDA, IDB, IFC, ILO, IMF, INTELSAT, IPU, ISO, ITU, NAMUCAR (Caribbean Multi-national

Shipping Line -- Naviera Nacional Del Caribe), OAS, ODECA, SELA, UN, UNESCO, UPEB, UPU, WHO, WMO, WTO.

1.11 Travel and Visa Information

Passport and visa, 2 photos, required.

No vaccination certificates required. A yellow fever certificate is recommended by the U.S. Health Service.

1.12 Ethnic and Sociocultural Groups

70% Mestizo (European and Indian ancestry), 17% White, 9% Black, 4% Indian. Sociocultural distinctions are more significant than genetic ones: Ladinos, totally hispanicized Mestizos and Whites, predominate; the Indian population, Spanish-speaking in the west, Miskito or English-speaking in the east, may be assimilated into the Ladino majority; Black and mixed Black-Indian populations on the Atlantic coast, separated from the majority by English language and Caribbean cultural traditions, interact little with Ladinos.

1.13 Languages

Spanish is the official language. English and Miskito Indian languages, though spoken by less than 10% of the population, prevail on the east coast, where knowledge of Spanish is often rudimentary.

1.14 Religions

Roman Catholic (95%); all religions are tolerated.

1.15 Education

Free and compulsory for children between the ages of 6-13; however, inequalities exist in access to education. The enrollment rate in rural areas is considerably below that of urban areas (44% and 76% respectively)

due to a lack of facilities and qualified teachers in isolated regions. When the government began a literacy campaign in 1980, only about half the adult population was literate.

2. Government

2.1 National Government

As of July 1979, a new "revolutionary" government had been installed after the ouster of the Somoza regime by Sandinista guerrillas. Top Sandinista leaders appointed a 5-member junta (civilian and military) to restore civil order and establish a transitional government. A 33-member legislature or Council of State, representative of the various sections of society (business, military, political, etc.), is to be appointed by the junta. A provisional bill of rights, providing basic rights and promising major social programs, will serve as a constitution until it is reviewed by Council of State. Council will remain the legislative body until elections are held, projected for 2-4 years hence.

2.2 1981 Status

Local governments are in a state of disarray following the civil war. Sandinista Defense Committees (SDC) at city or neighborhood level are being formed to organize local activities and identify people in need of emergency relief. Members elect coordinators for each sphere of activity (political, economic, social); also a secretary and head of the committee.

The ruling junta, reduced in size from 5 to 3 members in March 1981, is backed by the Directorate of the Sandinista Front of National Liberation (FSLN). Sandinista membership on the Council of State has been increased from one-third to a majority. The machinery of government has been extensively reorganized, with a number of new ministries created.

The economy remains mixed, and such non-Marxist elements as the Church, La Prensa (an influential newspaper), and labor groups continue to function in society; however, at least one newspaper and several broadcasters judged "counterrevolutionary" have been banned.

2.3 Regional Organization

Before the revolution, the country was divided into 16 departments and one district, each headed by a political appointee of the President. Departments were subdivided into 123 municipalities, under mayors. (No information is unavailable on how the regional structure of government may have changed under the new regime.)

2.4 Major Government Figures (June 1981)

Coord., Junta of the Govt. of Natl. Reconstruction.....	Ortega Saavedra, (Jose) Daniel, Cdte.
Member, Junta of the Govt. of Natl. Reconstruction.....	Cordova Rivas, Rafael
Member, Junta of the Govt. of Natl. Reconstruction.....	Ramirez Mercado, Sergio
Min. of Agricultural, Cattle Development & Agrarian Reform.....	Wheelock Roman, Jaime, Cdte.
Min. of the Atlantic Coast.....	Ramirez, William, Cdte.
Min. of Construction.....	Hassan Morales, Moises
Min. of Culture.....	Cardenal Martinez, Ernesto, Father
Min. of Defense.....	Ortega Saavedra, Humberto, Cdte.
Min. of Domestic Trade.....	Marengo Gutierrez, Dionisio
Min. of Education.....	Tunnerman Bernheim, Carlos
Min. of Finance.....	Cuadra Chamorro, Joaquin
Min. of Foreign Affairs.....	D'Escoto Brockman, Miguel, Father
Min. of Foreign Trade.....	Martinez Cuenca, Alejandro
Min. of Health.....	Guido de Lopez, Lea
Min. of Housing.....	Vigil Icaza, Miguel Ernesto
Min. of Industry	Cerda Mairena, Federico
Min. of Interior.....	Borge Martinez, Tomas, Cdte.
Min. of Justice.....	Castillo, Martinez, Ernesto
Min. of Labor.....	Godoy Reyes, Virgilio
Min. of Municipal Affairs.....	Ramirez Mercado, Rogelio
Min. of Planning.....	Ruiz Hernandez, Henry, Cdte.
Min. of Social Welfare.....	Parrales Castillo, Edgardo, Father
Min. of Transportation.....	Atha Ramirez, Paul
Min. Intl. Reconstruction Fund.....	Montealegre Lacayo, Haroldo
Min. Managua Reconstruction Board.....	Santos, Samuel
Min. Nicaraguan Corporation of Mines & Hydrocarbons.....	Zarruck, Carlos
Min., Nicaraguan Institute of Fisheries.....	Coronel Kautz, Carlos
Min.-Sec., Junta General Secretariat.....	Baltodano Cantarero, Emilio
Pres., Central Bank.....	Alaniz Downing, Alfredo
Pres., Natl. Development Bank.....	Guzman, Fernando
Pres., Nicaraguan Institute of Insurance & Reinsurance.....	Arguello Ramirez, Leonel
Comptroller General.....	Baltodano Pallais, Emilio
Min.-Pres., Nicaraguan Financial Corporation.....	Cesar Aguirre, Alfredo

Dir. National Institute of Statistics
& Census.....Ocon, Jaime
Dir., Natural Resources & Environment
Institute.....Jenkins, Jorge
Dir., Nicaraguan Energy Institute.....Rappaccioli, Emilio
Dir., Nicaraguan Institute of
Aqueducts & Canals.....Arguello, Otoniel
Dir., Nicaraguan Social Security Institute.....Tefel Velez, Reynaldo
Antonio
Dir., Nicaraguan Tourism Institute.....Lewites Rodriguez, Herty

3. Disaster Preparedness

3.1 Host Disaster Plan

Host disaster plan outlined below was in force under the Somoza regime. For up-to-date information on the status of disaster preparedness check with Nicaragua desk/mission.

Limited capacity to respond to disaster has improved since the 1972 earthquake. National Guard (GN), 6,000 member police and military arm, has developed civil defense plan for use in emergencies, but enabling legislation not yet passed. National Emergency Committee, organized by Junta Nacional del Gobierno after the 1972 earthquake, comprises all ministers, chiefs of government agencies, directors of semi-autonomous organizations; presided over by president. Exists on permanent standby basis.

National Social Assistance and Prevention Group (JNAPS and local affiliates (JLAPS) are responsible for public hospital system.*

Nicaragua Red Cross is closely tied to American and International Red Cross; it has a cadre of permanent volunteers experienced in disaster relief.

Central American Graduate School of Business Administration (INCAE) has post-disaster economic research and survey capability.

* JNAPS and JLAPS have been absorbed by the Single National Health System (SNUS) since the civil war. (See section 5.4, Health Services and Facilities.)

3.2 US Plan

Chief of Mission (CM) initiates, coordinates U.S. assistance, determines whether need for U.S. aid exists and if acceptable to GON.

MDRO, appointed by and responsible to CM, developed disaster plan; responsible for its revision and implementation.

CM with staff aid analyzes disaster information, alerts State/AID Washington (copy to CINCSOUTH), offers GRN survey and assessment assistance; requests U.S. SOUTHCOM-DAST assistance (reimbursable cost basis only) if needed. Establishes communication with GRN and volags.

Special mission disaster relief committee (selected by CM and MDRO) includes:

Embassy - Economic Officer, Defense Attache and Political Officer.

USAID - Assistant Director/MDRO informs AID/W; directs relief operations.
FFP Officer handles volag contacts and FFP commodities.
Controller monitors U.S. expenditures.
Chief Engineer and Public Health Officer survey effect of disaster on health, water, sanitation, shelter, infrastructure.

USICA - Public Affairs Officer handles news coverage.

JAS - Administrative Officer provides facilities, transportation, clerical support, security guards, locally available commodities.

3.3 Command Post

Embassy/AID-located Operations Center headed by MDRO, divided into sections, under chiefs, as follows: Logistics and Supplies, Communications, Records and Liaisons.

For details see Nicaragua Mission Disaster Plan on file at OFDA.

3.4 Contact List *

No contact list available at present. Following list indicates contacts of some U.S. agencies:

Mission personnel have extensive and daily contact with key ministries involved in disaster operations: Health/JANPS; Public Works/National District; Agriculture; Aguadora; ENALUF; Ministry of Finance; and continuing liaison with all volags and international agencies.

US Contacts

US Embassy:

Lawrence Pezzullo
Ambassador
Residence: Km 5-1/2 Carretera Sur, Las Piedrecitas
Home Phone: 5776

Thomas J. O'Donnell
Deputy Chief of Mission

vacant
Defense and Army Attache

Gary H. Maybarduk
Chief, Economic and Commercial Affairs

George W.F. Clift
Chief, Administrative Affairs

Charles H. Brayshaw
Chief, Political Affairs

Lana C. Chumley
Chief, Consular Affairs

USICA:

Alice Hichman
Chief, Information and Cultural Affairs

USAID:

Lawrence F. Harrison
Director, USAID

US Military:**

Lt.Col: James M. Kelly, U.S. Army
Chief, U.S. Military Liaison Office
APO/Miami 34021

* Note: Due to personnel changes and current state of flux, it is advisable to check with Nicaragua desk or U.S. Mission for up-to-date information.

** No MAG in Nicaragua at present time (1981).

3.5 Funding

Ambassador's contingency fund, AID/Washington approved FAA contingency fund, Title II Food For Peace.

3.6 US Survey Assessment

Duties: Prepare grid map of disaster zone; request information from GRN's CDC Liaison Officer on conditions in each grid; determine best methods for reaching disaster zone.

Survey personnel must not become involved in relief action.

3.7 Host Resources (1978)

ESSO owns, operates 20,000 bbls./day refinery in Managua: gasoline, diesel, jet fuel, kerosene, LP gas. Refinery supplied by pipeline from Puerto Somoza on Pacific Coast. Tank trucks, service stations concentrated in central, western Nicaragua. Bottled LP (cooking gas) available from ESSO and from Tropigas.

CARE: Dr. Gustavo A. Parayon D., President. Apartado 3091, Managua. Tel: 24330. Staff of 50 employees (40 in Managua); GRN granted them duty-free privileges for food, other aid material. Relief capabilities throughout Nicaragua.

Red Cross: Sr. Don Ismael Reyes, President NRC, Apartado 3279, Managua. Tel: 5307. During 1972 quake, NRC especially effective with ambulance service, first aid, victim census, refugee camps, and blood transfusions. With 300 employees, a key volag in Nicaragua; own disaster plan and brigade-zone organization.

UNDP: Mr. Roberto Mac Eachen, resident representative, Apartado 3260, Managua. Tel: 22558. 22 foreign technicians, 9 local staff, other specialists at UNDP/PR office. Radio communication with Nueva Segovia, Chinandega, Leon. Passenger and 4-wheel drive vehicles.

3.8 US Resources*

MDRCT members maintain inventories of material resources, their location and availability. MDRO reviews and updates list annually.

Communications - Director and Deputy Director are tied to local country team net; expansion slated to include other key disaster officers. Ham operators.

Transportation - 13 sedans, two 4-wheel drive vehicles, one medium truck all in JAS motor pool.

Also: Administration, clerical services, bilingual support personnel.

USICA:

Communications - PAO has Fox 1 walkie talkie, range 10 km; call sign ECHO 7.

Transportation - 6 passenger sedans, 6 passenger carry-all trucks.

Information - 2 local writers, radio men, one teletype operator, one photographer, 2 local secretaries, 5 bilingual personnel.

Embassy:

Communications unit.

USAID:

Food stocks include PL 480 donations provided on annual basis through agreements with GRN and CRS/CARITAS. Items: CSB, wheat flour, rolled oats, vegetable oil. Stock levels vary; on hand stocks can be diverted for emergency use. CONUS and AID/W stocks are other possible sources.

Medicine - Public Health Division USAID available for survey and assessment. No supplies stocked; requested through AID/W.

Shelter and survival supplies requested from Panama and CONUS. Engineering also handles sanitation, sewerage. Four engineers with assessment capability.

Electrical assessment: small generators available through channels.

* In-country resources are presumably reduced as of this updating (1981) since the USG no longer maintains a Peace Corps staff and has only a limited military presence in Nicaragua. The US Military Liaison Office should be consulted concerning the possibility of obtaining supplies and equipment in the event of a disaster. Information included in this section (from which references to Peace Corps and USMILGP resources have been deleted) was current in 1978.

3.9 Volags and Other Donor Assistance Capacities

CRS/Caritas - Well-organized. Fleet of 6 trucks, several small cars and jeeps; storage for food and supplies; supervisory personnel in central and western area; capacity to distribute supplies and organize/execute food distribution programs.

CEPAD - Managing and executing feeding programs through community kitchens and food for work.

CARE - Technical assistance, medical and nursing care, potable water and sewerage systems; food for work projects.

OAS- Technical and material assistance. Limited funds and staff at OAS Nicaragua Office.

UN - Emergency and reconstruction assistance.

IRC - Emergency assistance.

World Bank/Inter-American Development Bank - Major loans for reconstruction.

Bilateral Donors - Emergency and reconstruction assistance. 31 countries contributed after 1972 earthquake.

(See also section 3.7, Host Resources.)

3.10 Host Storage

GRN via INCEI operates 100-silo regional grain storage facilities. Total capacity: 12,200 tons. Terminal facilities in Chinandega, San Isidro, Managua; total capacity 52,500 tons. All the above have shelling, drying, fumigation capabilities. INCEI also controls price of grain; in emergency, could stabilize prices. Cold chain storage unreliable.

3.11 Storage (US and Volags)

USAID warehouse has very limited space. Management capability in CONT, FFP and contracting and supply.

CRS/Caritas - Storage for food and supplies.

3.12 Volags and International Organizations (Contact Addresses)

Red Cross: Nicaraguan Red Cross, Managua D.N. Cable: NICACRUZ
Managua. Tel: 25410

CARITAS: Apartado 2148, Managua. Cable: CARITAS Nicaragua. Tel:
23149.

CRS: Apartado 2617, Managua. Cable: CATHWEL Managua. Telex:
CITYBANK 8009, for Catholic Relief Service. Tel: 23978

WCC: CEPAD (Comite Evangelica Por Ayuda al Desarrollo) Apartado
Postal 9091, Managua D. H. Nicaragua. Tel: 98224.

UNDP: Bolonia, Managua. Cable: UNDEVPRO Managua. Telex: UNDEVPRO
12104 Tel: 60507.

3.13 US Volags

<u>Agency</u>	<u>Personnel Int'l/Local</u>	<u>Programs</u>
American Baptist Churches in U.S.	1/	Ed; Med & PH
American National Red Cross	/19	Equip & Mat Aid; Med & PH
Baptist World Relief	n.a.	Equip & Mat Aid; Med & PH
Brethren in Christ Missions	1/	CD; Ec & Dev Pl; Ed; Med & PH
Brother's Brother Foundation	/1	Food Prod & Ag; Med & PH

<u>Agency</u>	<u>Personnel Int'l/Local</u>	<u>Programs</u>
CARE, Inc.	8/7	CD; CHP; Food Prod & Ag; Med & PH; Nutr; Pop & Fam Serv
The Carr Foundation	n.a.	Comm; Med & PH; Nutr; Pop & Fam Serv
Catholic Medical Mission Board	n.a.	Equip & Mat Aid; Med & PH
Catholic Relief Services	/2	CD; Ed; Equip & Mat Aid; Ind Dev; Med & PH; Nutr
Central American Mission	6/6	Ed
Christian Brothers	10/52	Ed
Christian Reformed World Relief Committee	2/	Equip & Mat Aid; Food Prod & Ag; SW
Church World Service	n.a.	CD; CHP; Ed; Food Prod & Ag; Pop & Fam Serv; SW, Women; Youth
Conservative Mennonite Board of Missions and Charities	31/	Med & PH; Nutr
Direct Relief Foundation	n.a.	Med & PH
Episcopal Church of the U.S.	/35	Ed; Med & Ph; SW
Heifer Project International	1/	Food Prod & Agr
W. K. Kellogg Foundation	0	Med & PH; Nutr; Women
Lutheran World Relief	2/7	Comm; CD; CHP; Ed; Equip & Mat Aid; Food Prod & Ag; Med & PH
Map International	n.a.	Equip & Mat Aid; Med & PH
Maryknoll Fathers	n.a.	CD; Ed

<u>Agency</u>	<u>Personnel Intl/Local</u>	<u>Programs</u>
Maryknoll Sisters of St. Dominic	13/	CD; Coops & Loans; Ed; Ind Dev; Med & PH; SW; Women; Youth
Medical and Surgical Relief Committee	n.a.	Equip & Mat Aid; Med & PH
Moravian Church in America	7/50	Ed; Med & PH
National Association of the Partners of the Alliance	n.a.	Comm; CD; CHP; Ed; Equip & Mat Aid; Food Prod & Ag; Med & PH; Nutr; Women
National 4-H Foundation of America	n.a.	CD; Ed; Food Prod & Ag; Youth
Option, Inc.	n.a.	Med & PH
Oxfam-America	n.a.	CHP
Pan American Development Foundation	/17	CHP; Coop & Loans; Ed; Equip & Mat Aid; Med & PH; Youth
Salesians of St. John Bosco	10/11	Ed; SW; Youth
Seventh-day Adventist World Service	n.a.	Med & PH; Nutr
Technoserve	3/6	Comm; Coops & Loans; Food Prod & Ag; Ind Dev
Town Affiliation Association/US	5/	Equip & Mat Aid; Med & PH
United Methodist Committee on Relief	NA	CD; Med & PH
World Rehabilitation Fund	0	Equip & Mat Aid; Med & PH

Key

Comm	Communications
CD	Community Development
CHP	Construction, Housing and Planning
Coops & Loans	Cooperatives, Credit Unions & Loans
Ec & Dev Pl	Economic and Development Planning
Ed	Education
Equip & Mat Aid	Equipment and Material Aid
Food Prod & Ag	Food Production & Agriculture
Ind Dev	Industrial Development
Med & PH	Medicine & Public Health
Nutr	Nutrition
Pop & Fam Serv	Population & Family Services
Pub & Bus Adm	Public & Business Administration
SW	Social Welfare
Women	Women
Youth	Youth

3.14 Early Warning

For earthquakes' 14 radio-relayed seismic stations in west since 1975. Strong motion accelerographs and 25 seismoscopes in west.

3.15 Disaster Types and History

Earthquake, epidemic, hurricane, flood, drought, volcanic eruption.

60% of the population lives in the geologically unstable Pacific area. The earthquake of 12/72 destroyed the center of Managua. There are 22 volcanic centers on the Pacific slope. Flash floods are rare but have occurred in Chinandega, Leon, Masaya, Granada, and Rivas. The Atlantic coast is vulnerable to hurricanes. Drought from 1969 to 1973 resulted in crop losses ranging from 15-40% of normal production. (See also section 8.6, Seismicity and Volcanism.)

4. Population

4.1 National Demographic Characteristics

The Nicaraguan population, estimated at 2.73 million in June 1980 (based on 1971 national census), grew at a average annual rate of 3.2% between 1965 and 1978. The rate's rapid acceleration from 2.6% in the 1950's is due to a rising birth rate and a drastic decline in infant mortality. The median age is 15.9 years.

Though overall population density is low at 23.1 persons/sq. km., population distribution is highly uneven: 60% of the people live in the Pacific Region (15% of land area; density 83/sq. km.), while the Atlantic Region, half the total area, is virtually empty (about 8% of population; density 2.8/sq km) except for small coastal towns and mining settlements. The Central Region (35% of total area; 32% of population) is transitional, with highest densities in northwest valleys.

In a pattern of rapid urbanization, more than 48% of Nicaragua's population were urban dwellers at the time of the 1971 census; the figure is projected to rise to 54% by 1990. Managua's population, growing at an annual rate of about 6% during the 1970-75 period, had reached 450,000 persons in 1980, or about 20% of the national total. Three cities, including Managua, contain 45% of the total urban population. Economic incentive is the motivating factor for rural-urban migration (urban incomes are 3.5 times higher than rural subsistence ones). Migration to Managua slowed temporarily after the 1972 earthquake but has picked up again with one out of every 4 migrants going to Managua. Migrants are generally young single males aged 10-24 entering the work force for the first time.

Family planning has been government-sponsored since 1967; however, active users of contraceptives were few (only 6% of women of child-bearing age) in the early 1970's. The new government hopes to extend coverage of family planning services nationally as resources permit.

4.2 Regional Population

Distribution of Population by Department

<u>Department/ Municipality</u>	<u>6/30/79 Est Pop</u>	<u>Area (sq. km.)</u>	<u>Density</u>
Nicaragua	2,644,161	118,404	22

<u>Department/ Municipality</u>	<u>6/30/79 Est Pop</u>	<u>Area (sq. km.)</u>	<u>Density</u>
Pacific Zone	1,652,897	18,219	91
Department of Chinandega	214,798	4,662	46
Chinandega	68,370	625	109
Chichigalpa	30,781	253	122
Cinco Pinos	5,657	59	96
Corinto	18,842	10	1884
Morazan	4,361	224	19
Posoltega	9,527	144	66
El Realejo	2,664	100	27
San Francisco	6,217	144	43
San Pedro	4,460	76	59
Santo Thomas	4,256	34	125
Somotillo	16,009	928	17
El Viejo	33,326	1,271	26
Villanueva	10,373	794	13
Department of Leon	237,700	5,234	45
Leon	118,095	852	139
Achuapa	12,458	342	36
El Jicaral	4,098	206	20
Larreynaga	22,399	834	27
Nagarote	17,054	602	28
La Paz Central	17,133	872	20
Quezalguaque	4,661	48	97
El Sauce	18,229	700	26
San Nicolas	4,306	210	21
Santa Rosa Del Penon	5,302	204	26
Telica	13,965	364	38
Department of Managua	742,415	3,597	206
Managua	653,005	778	839
El Carmen	13,253	414	32
Mateare	6,642	248	27
San Francisco Libre	10,706	771	14
San Rafael del Sur	27,297	386	71
Tipitapa	31,512	1,000	32
Department of Masaya	141,846	581	244
Masaya	72,088	160	451
Catarina	3,705	17	218
La Concepcion	14,314	57	251
Masatepe	16,597	54	307
Nandasmo	4,139	10	414

<u>Department/ Municipality</u>	<u>6/30/79 Est Pop</u>	<u>Area (sq. km.)</u>	<u>Density</u>
Nindirí	9,822	93	106
Niquinohomo	7,091	39	182
San Juan de Oriente	1,480	12	123
Tisma	4,377	73	60
Ticuantepé	8,233	66	125
Department of Granada	108,041	964	112
Granada	72,097	509	142
Diria	3,490	30	116
Diriomo	11,639	40	291
Nandaime	20,815	385	54
Department of Carazo	104,907	1,032	102
Jinotepe	29,877	281	106
La Conquista	3,766	89	42
Diriamba	38,717	341	114
Dolores	2,199	2	1,000
La Paz de Oriente	2,316	13	178
El Rosario	2,369	9	263
San Marcos	13,346	113	118
Santa Teresa	12,317	184	67
Department of Rivas	103,190	2,149	48
Rivas	32,076	360	89
Atagracia	10,174	220	46
Belen	11,761	284	41
Buenos Aires	4,023	96	42
Cardenas	2,629	260	10
Moyogalpa	7,929	53	150
Potosí	6,534	96	68
San Jorge	5,778	30	193
San Juan del Sur	9,379	296	32
Tola	12,907	454	28
Central Zone	775,053	33,597	23
Department of Chontales	94,157	4,947	19
Juigalpa	28,064	1,065	26
Acoyapa	9,499	1,020	9
Comalapa	6,775	461	15
La Libertad	11,428	184	62
San Pedro de Lovago	6,458	428	15
Santo Domingo	9,282	603	15

<u>Department/ Municipality</u>	<u>6/30/79 Est Pop</u>	<u>Area (sq. km.)</u>	<u>Density</u>
Santo Tomas	7,470	389	24
Villa Sandino	13,181	797	17
Departamento of Boaco	85,209	4,982	17
Boaco	24,239	1,202	20
Camoapa	18,975	2,252	8
San Jose	6,005	208	29
San Lorenzo	14,902	617	24
Santa Lucia	6,319	118	54
Teustepe	14,769	585	25
Department of Matagalpa	212,271	6,794	31
Matagalpa	79,035	1,830	42
Ciudad Dario	28,315	736	39
Esquipulas	9,132	222	41
Matiguas	28,963	1,318	22
Muy Muy	7,220	378	19
Sebaco	12,054	317	38
San Dionisio	4,213	101	42
San Isidro	8,649	192	45
San Ramon	18,309	768	24
Terrabona	9,909	290	34
Rio Blanco	6,472	592	11
Department of Jinotega	119,806	9,576	13
Jinotega	92,474	8,600	11
La Concordia	5,291	176	30
San Rafael del Norte	9,207	448	21
San Sebastian de Yali	12,834	352	37
Department of Esteli	103,822	2,199	47
Esteli	47,257	826	57
Condega	16,937	474	36
Pueblo Nuevo	12,878	176	73
San Juan de Limay	10,802	478	23
La Trinidad	15,948	245	65
Department of Madriz	68,853	1,758	39
Somoto	19,489	455	43
Palacaguina	7,498	78	96
Las Sabanas	2,259	192	12
San Jose de Cusmapa	5,017	96	52
San Lucas	8,252	160	52

<u>Department/ Municipality</u>	<u>6/30/79 Est Pop</u>	<u>Area (sq. km.)</u>	<u>Density</u>
San Juan de Río Coco	6,605	205	32
Telpaneca	10,109	337	30
Totogalpa	5,359	155	35
Yalaguina	4,265	80	53
Department of Nueva Segovia	90,935	3,341	27
Ocotal	14,209	140	102
Ciudad Antigua	1,783	248	7
Dipilito	2,299	96	24
Jalapa	22,761	595	38
Macuelizo	3,192	216	15
El Jicaro	12,319	340	36
Mozonte	3,141	222	14
Murra	11,294	460	25
Quilali	5,855	238.	25
San Fernando	2,939	228	13
Santa María	3,919	160	25
Wiwill	7,224	398.	18
Atlantic Zone	216,211	66,588	3
Department of Río San Juan	27,101	7,488	4
San Carlos	10,114	1,250	8
Morrito	6,631	1,464	5
San Juan del Norte	936	2,216	1
San Miguelito	6,711	1,368	5
El Castillo	2,709	1,150	2
Department de Zelaya	189,110	59,094	3
Bluefields	34,843	11,704	3
Corn Island	2,585	12	215
La Cruz de Río Grande	15,296	11,719	1
Prinzapolka	19,860	6,140	3
Puerto Cabezas	16,839	6,963	2
Rama	41,484	5,495	8
Cabo Gracias a Dios	4,886	3,756	1
Waspan	17,331	4,308	4
Siuna	11,850	6,764	2
Muelle de Los Bueyes	24,137	2,233	11

5. Health, Nutrition, and Housing

5.1 Overall Health Status and Common Diseases

Gross under-reporting of diseases and causes of death has made identification of specific health problems difficult. Poor sanitation, inadequate nutrition, and lack of health care are indicated by the high rates (40% in 1969) of reported deaths occurring before age 5 as the result of enteric diseases (often chronic), pneumonia, tetanus, and measles. The Ministry of Health estimated that 42% of all communicable diseases and 17% of all deaths in 1976 could be attributed to contaminated water and poor sanitation. Crowded living conditions in urban and rural slums facilitate spread of respiratory diseases, especially tuberculosis, which remains highly prevalent. Active foci of typhoid are present (Ciudad Dario), and leprosy is found in Pacific Coast departments. Polio remains a threat with recent outbreaks.

High vector resistance to pesticides (malaria), increased mobility of population, and availability of antibiotics without prescription complicate efforts to reduce high rates of chronic diseases. Chagas disease is believed to be a largely underestimated problem. Leishmaniasis is probably widespread in forested areas. Encephalitis and rabies (in humans) are occasionally reported.

Underlying, and increasing susceptibility to, notifiable diseases, is widespread infection with intestinal parasites; it is estimated that 80% of the population are hosts to such parasites.

The Government Junta of National Reconstruction, in its reorganization of the health system, is expanding services in preventive medicine. Plans call for mass vaccination campaigns against polio, measles, and diphtheria, pertussis, and tetanus among measures to control communicable diseases.

5.2 Vital Statistics (1977)

Birth rate:	45/1,000 population
Death rate:	13/1,000 population
Infant mortality:	46/1,000 live births
Mortality rate age 1-4:	17/1,000
Life expectancy:	55 years

Source: World Bank

5.3 Health Services and Facilities

The health sector has been totally reorganized since the revolution. A single National Health System (SNUS) has absorbed the responsibilities of all former health agencies with the exception of a small Armed Forces medical service. The private sector takes care of the health needs of no more than 5% of the population.

In a 3-tiered health system, the Central Level consists of the office of the Ministry of Health, regulatory bureaus, and national hospitals.

The Regional Level comprises 8 regions as follows (and estimated population of each as of June 30, 1980):

- 1) North Pacific (Leon and Chinandega Departments) (438,600)
- 2) Central Pacific (Managua Department) (816,700)
- 3) South Pacific (Masaya, Granada, Carazo, and Rivas Departments) (403,200)
- 4) North Interior (Esteli, Madriz, and Nueva Segovia Departments) (312,800)
- 5) Central Interior (Matagalpa and Jinotega Departments) (327,500)
- 6) South Interior (Boaco, Chontales, Rio San Juan, some municipalities of Zelaya Department) (287,600)
- 7) North Atlantic (municipalities in Zelaya Department to north of Prinzapolka River) (82,400)
- 8) South Atlantic (rest of Zelaya Department) (63,700)

- Region 1 - Pacific North
- Region 2 - Pacific Central
- Region 3 - Pacific South
- Region 4 - Interior North
- Region 5 - Interior Central
- Region 6 - Interior South
- Region 7 - Atlantic North
- Region 8 - Atlantic South

Each Area Level (30,000-40,000 people) has a health center, providing services in medicine, surgery, obstetrics and pediatrics, and responsibil-

ity for 4-5 health posts. Twelve health fieldmen work with the health posts at the community level. Due to a lack of primary services in most of the country, the new health structure is not yet fully operational.

In 1980, the Ministry of Health managed 47 hospitals with a total of 5,115 beds (1.87 beds per 1,000 population compared with Latin American average of 3.3 beds per 1,000 population), 106 health centers, and 161 health care posts.

Hospitals, Number of Beds and Rates per 1,000 Population
by Health Care Region

<u>Region</u>	<u>Hospitals</u>	<u>No. of Beds</u>	<u>Rates per Thousand Population</u>
Nicaragua	47	5,115	1.87
Region I	9	1,028	2.34
Region II	9	1,683	2.06
Region III	6	899	2.23
Region IV	7	301	0.96
Region V	5	502	1.53
Region VI	5	335	1.16
Region VII	5	192	2.33
Region VIII	1	175	2.75

Number of Health-care Centers and Posts and Average
Population per Unit

<u>Region</u>	<u>Health Care Centers</u>	<u>Health Care Posts</u>	<u>Average Population Per Unit</u>
Nicaragua	106	116	10,234
Region I	10	25	12,531
Region II	18	12	27,223
Region III	31	33	6,300
Region IV	19	12	10,900
Region V	13	12	13,100
Region VI	6	36	6,848
Region VII	5	26	2,658
Region VIII	4	5	7,078

Source: IDB, Nicaragua: Health Services Improvement and Expansion Program, November 1980.

5.4 Health Facilities Data

The following hospitals are presumably now sponsored by SNUS. While the information is not completely up-to-date, it should serve as a guide to available health services.

- 1) Name: Hospital San Pablo
Location: Bluefields
Capacity and capability:
 - A) No. of beds: 158
 - B) Operating rooms: 1
 - C) Specialization: surgery, pediatrics, obstetrics
 - D) Staffing:
 - Doctors: 7
 - Anesthetists: 1
 - Nurses: 3
 - Auxiliaries: 39
 - X-rays: 1
 - E) Diagnostic lab: 2
 - Other: blood bank, morgue, pharmacy
 - F) Ambulance service: yes

- 2) Name: Jose Nieborowski
Location: Boaco
Telephone: 134
Capacity and capability:
 - A) No. of Beds: 66
 - B) Operating rooms: 1
 - C) Specialization: surgery, gynecology, pediatrics
 - D) Staffing:
 - Doctors: 16
 - Anesthetists: 1
 - Nurses: 2
 - Auxiliaries: 10
 - X-rays: 1
 - E) Diagnostic lab: 1
 - Other: pharmacy
 - F) Ambulance service: yes

- 3) Name: Hospital San Vicente
Location: Chinandega
Telephone: (0341) 3523
Capacity and capability:

- A) No. of beds: 271
 - B) Operating rooms: 2
 - C) Specialization: rehabilitation, emergency room,
radiotherapy
 - D) Staffing:
 - Doctors: 45
 - Anesthetists: 3
 - Nurses: 12
 - Auxiliaries: 53
 - E) Diagnostic lab: 1
 - Other: blood bank, delivery suite, pharmacy, morgue
 - F) Ambulance service: yes
- 4) Name: San Juan de Dios
Location: Esteli
Capacity and capability:
- A) No. of beds: 137
 - B) Operating rooms: 1
 - C) Specialization: gynecology, pediatrics, surgery
 - D) Staffing:
 - Doctors: 13
 - Anesthetists: 3
 - Nurses: 4
 - Auxiliaries: 25
 - X-rays: 1
 - E) Diagnostic lab: 1
 - Other: blood bank
 - F) Ambulance service: yes
- 5) Name: Hospital San Juan de Dios
Location: Granada
Telephone: (072) 2209 - 2208 - 2207
Capacity and capability:
- A) No. of beds: 367
 - B) Operating rooms: 1
 - C) Specialization: gynecology, obstetrics, pediatrics,
surgery, TB
 - D) Staffing:
 - Doctors: 16
 - Anesthetists: 3
 - Nurses: 3
 - Auxiliaries: 65
 - X-rays: 2
 - E) Diagnostic lab: 1

Other: morgue, blood bank

F) Ambulance service; yes

6) Name: Hospital Victoria

Location: Jinotega

Telephone: 6

Capacity and capability:

A) No. of beds: 92

B) Operating rooms: 1

C) Specialization: gynecology, pediatrics, surgery

D) Staffing:

Doctors: 13

Anesthetists: 1

Nurses: 2

Auxiliaries: 27

X-rays: 1

E) Diagnostic lab: 9

Other: pharmacy

F) Ambulance service: yes

7) Name: Hospital Santiago

Location: Jintepe, Carazo

Telephone: (041) 611

Capacity and capability:

A) No. of beds: 175

B) Operating rooms: 4

C) Specialization: gynecology, obstetrics, pediatrics,
surgery

D) Staffing:

Doctors: 18

Anesthetists: 4

Nurses: 12

X-rays: 5

E) Diagnostic lab: 9

Other: blood bank, pharmacy

F) Ambulance service: yes

8) Name: Hospital San Vicente

Location: Leon

Telephone: (031) 2916

Capacity and capability:

A) No. of beds: 271

B) Operating rooms: 4

C) Specialization: rehabilitation, radiotherapy

-
- D) Staffing:
Doctors: 84
Surgeons: 12
Anesthetists: 5
Nurses: 14
Auxiliaries: 151
X-rays: 3
- E) Diagnostic lab: 1
Other: blood bank, delivery suite, morgue
- F) Ambulance service: yes
- 9) Name: Hospital Bautista
Location: Managua, Nicaragua
Telephone: 24154 - 26913 - 23345
Capacity and capability:
A) No. of beds: 52
B) Operating rooms: 4
C) Specialization: gynecology, pediatrics, traumatology,
general surgery, etc.
D) Staffing:
Doctors: 60 visiting = 10 staff
Anesthetists: 10 visiting
Nurses: RN 20
Auxiliaries: 50
X-rays: 1 radiologist, 4 technicians, 1 pathologist,
4 technologists, 6 lab. aux.
E) Diagnostic lab: 1
Other: pharmacy, emergency service, blood bank
F) Ambulance service: no
- 10) Name: Hospital San Antonio
Location: Masaya
Telephone: (071) 2231
Capacity and capability:
A) No. of beds: 159
B) Operating rooms: 1
C) Specialization: pediatrics, gynecology, surgery
D) Staffing:
Doctors: 14
Anesthetists: 2
Nurses: 6
Auxiliaries: 59
X-rays: 4
E) Diagnostic lab: 6

Other: pharmacy

F) Ambulance service: yes

11) Name: Hospital San Vicente

Location: Matagalpa

Telephone: (06) 211 - 212

Capacity and capability:

A) No. of beds: 131

B) Operating rooms: 1

C) Specialization: pediatrics, surgery, gynecology

D) Staffing:

Doctors: 24

Anesthetists: 2

Nurses: 6

Auxiliaries: 60

X-rays: 4

E) Diagnostic lab: 4

Other: blood bank, pharmacy

F) Ambulance service: yes

12) Name: Hospital San Jose

Location: Rivas

Telephone: (081) 461

Capacity and capability:

A) No. of beds: 132

B) Operating rooms: 1

C) Specialization: pediatrics, surgery, gynecology

D) Staffing:

Doctors: 12

Anesthetists: 1

Nurses: 5

Auxiliaries: 29

X-rays: 1

E) Diagnostic lab: 2

Other: blood bank, pharmacy

F) Ambulance service: yes

13) Name: Hospital Adventista

Location: Trinidad, 25 km south of Esteli on Pan Am Highway

Telephone: Trinidad # 2

Sponsor: Seventh Day Adventists

Capacity and capability:

A) No. of beds: 60

B) Operating rooms: 2

- C) Specialization: general
 D) Staffing:
 Doctors: 7
 Anesthetists: 1
 Nurses: 8
 Auxiliaries: 12 to 20
 E) Diagnostic lab: yes
 Other: blood bank, pharmacy
 F) Ambulance service: yes
 G) Food: vegetarian

5.5 Health Personnel

The country has a total of 1,229 physicians (425 per 10,000 population), most concentrated in Managua. The ratio of dentists and nurses per population is considerably lower.

Distrust of modern medicine in rural areas is reflected in preference for midwives and curanderos (lay medicine men) over physicians. GRN has made no attempt to integrate folk healers into its health programs.

Number and Rates per 10,000 Population of Human Resources and Targets of the Ten-Year Health Plan for the Americas

<u>Profession</u>	<u>Number</u>	<u>Rate</u>	<u>Targets of the Ten Year Health Plan</u>
Physicians	1,229	4.5	8.0
Dentists	130	0.5	2.0
Nurses	603	2.2	4.5
Nursing Aides	3,162	11.6	14.5

Source: IDB, Nicaragua: Health Services Improvement and Expansion Program, November 1980.

5.6 Diet Summary

The staple, maize, is used in several forms: mature and dry (maiz), fresh and green (elote), and immature (chilote). Corn flour (masa) is used in the preparation of tortillas and tamales. Several beverages are also made from corn. Rice, sorghum, wheat (in urban areas) and small amounts of barley are other preferred grains. Beans (red kidney

preferred, dried black, and white) are the ubiquitous accompaniment to maize in rural areas. Consumption of plantains, potatoes, cassava, some sweet potatoes, and yams is more localized. Meat consumption is generally low; fish is eaten almost exclusively in coastal areas. Tomatoes and onions are widely used but overall consumption of vegetables is low. Fruits are consumed in small quantities in season.

Taboos: A hot/cold system of food classification, derived from the ancient Hippocratic concepts of inherent natural qualities, is widely accepted among poorer people. There is considerable variation among individuals and localities in how foods should be classified. These qualities appear to be only significant, however, as they apply to the diets of children, pregnant and postpartum women, and people who are ill.

5.7 Food and Drink

Staples: corn, beans, rice. Corn (masa) and wheat flour, baked as tortillas and bread respectively.

Cooking fat: cottonseed oil; animal fat in rural areas.

Meat: fresh beef, pork, rabbit.

Poultry: chickens, ducks.

Milk: small amounts of whole pasturized cow's milk and of hard and soft cheeses.

Fish: fresh, in coastal areas only.

Vegetables: fresh-carrots, beans, radishes, cabbage, tomatoes, potatoes, yuca, greens (quequisqua), corn, squash.

Fruits: fresh-mangoes, oranges, "jocotes", bananas, pineapple, mandarins, melons, "guayaba", lemons, avocados.

Other: eggs, game-rabbit, deer, iguana, turtle, guardatinaja.

Beverages: coffee, chocolate, corn-based atoles, sodas; milk rarely consumed.

5.8 Meals

Three meals a day is the normal consumption pattern, with a mid-morning and mid-afternoon snack sometimes added. The mid-day meal appears to be the main meal.

Breakfast: coffee or chocolate; bread, rice, and beans ("gallo pinto").

Lunch: rice, beans, plantain or tortillas; pinolillo (drink made of toasted corn and cacao).

Dinner: coffee, tortillas, cheese, beans.

Local foods: (corn-based), green ears (chilotes, elotes); masa-flour made from dry corn, used in tortillas, tamales, nacatamales (latter two w/meat, vegetables) rosquillas (with cheese).
Drinks - atol, atolillo (from masa); pinol; pinolillo, from toasted corn; chicha, fermented corn and sugar; cususa (distillation of chicha).

Luxury additions: eggs (2-3 weekly), meat, and poultry.

5.9 Nutritional Deficiencies

Malnutrition is common in children under 15 years; nutritionally based anemias and avitaminosis associated with other symptoms of malnutrition are important causes of death in 0-14 year age group. Goiter is endemic, afflicting nearly 1/3 of the population. However, subclinical level of malnutrition is a larger problem in that it results in apathy, decreased productivity, low resistance to disease, and mental and physical retardation in children.

Major deficiencies include animal protein (most protein derived from beans), B vitamins (riboflavin, thiamine, niacin) and vitamin A. Anemia is a common problem, especially among pregnant and lactating women. Poor nutrition is exacerbated by seasonal fluctuations in the supply of staples (diet restricted to food in season) and general unpopularity of fruits and vegetables. Many important sources of protein (eggs, poultry, meat, fish) are reserved for local or export sale, or are unavailable because of inadequate storage facilities.

Distribution of foods in both quantity and quality is noticeably uneven. Variety of foods and total calories (2,108) are highest in urban Pacific Zone area; Atlantic Coastal region is the most deprived with

average consumption 20% lower (1,086 calories) than in western cities. Approximately 57% of rural population do not have adequate caloric intake and 40% do not consume protein in adequate quantities or quality. Amount and quality of food consumed is determined by: availability and relative prices; family income; food habits; level of education and available information on nutrition. Storage is also a problem as most homes have no cold storage. Loss of stored staples is estimated at 25%-49% (1972) due to insects and rodents.

5.10 Utensils and Cooking

Frame of poles over hearth for storing cheese, salt, grains.

Bunques - large board boxes for storing corn, sorghum, beans.

Grinding stone for masa.

Mortar (pilon) for pounding rice, sorghum, coffee.

Brick, stone, clay, kerosene or wood burning stoves; propane stoves inside house.

Clay or metal cooking vessels (2.4 liter); the limited number of cooking pots may partially account for lack of variety in foods cooked for a single meal.

Plastic, metal, glass, clay plates, glasses and cups and huacales; forks, knives, spoons.

5.11 Overview of Housing

(See section 4, Population for demographic data and settlement patterns.)

The earthquake which devastated Managua on December 23, 1972, killing more than 11,000 people, destroyed about 45% of the housing stock or 32,000 to 35,000 units*, damaged another 22-28%, and forced the evacuation of 160,000 to 250,000 people. The heavy structural losses, combined with a large existing housing deficit, created massive shelter needs over a wide income range in the post-earthquake period. As housing problems continue, the projected new housing requirements for the country as a whole for the period 1976-1986 are 361,594 units.

Two government decisions made in the aftermath of the earthquake were to affect future housing construction and settlement patterns: 1) new building codes taking the seismic characteristics of the region into account were developed because none had been established with design and structural requirements appropriate to the risk, despite the disastrous earthquake of 1931 which destroyed the city; 2) decentralized development was encouraged in order to minimize loss of life and property from future quakes, and to promote the growth of secondary cities. The cost of extending infrastructure over a wider area and building with improved standards made strict implementation of the new regulations difficult. As a result, considerable unauthorized and unorganized building occurred, creating problems in the provision of services as well as potential hazards of unknown dimensions during future quakes.

The urban poor are generally housed in inner city rental units in cuarterias or, as city populations swell as a result of rural to urban migration, in improvised dwellings on the periphery. Various self-help construction techniques and styles of houses are found throughout the countryside. The small, square rancho type, built largely of local materials, is typical of low-cost housing in the Pacific region.

* Initial estimate of about 53,000 units was later revised downward.

Projected Requirements for Number of Housing Units
July 1976-December 1986

<u>Income Group</u>	<u>Managua</u>			<u>Required Total</u>
	<u>New Families</u>	<u>Replacements</u>	<u>Existing Need</u>	
Less than:				
400	6,010	1,450	6,250	13,710
401-675	16,490	4,000	13,360	33,850
676-1,350	22,660	5,530	9,180	37,370
1,351-2,025	5,720	1,380	660	7,760
2,026-2,700	2,260	3,540	n.a.	2,800
2,701-3,375	960	280	n.a.	1,190
3,376-4,050	850	210	n.a.	1,060
4,051 and more	1,700	410	n.a.	2,110
Total	56,650	13,750	29,440	99,850

<u>Income Group</u>	<u>Other Urban Areas</u>			<u>Required Total</u>
	<u>New Families</u>	<u>Replacements</u>	<u>Existing Need</u>	
Less than:				
400	7,265	2,350	10,070	19,685
401-675	12,970	4,190	13,980	31,140
676-1,350	19,060	6,170	10,270	35,500
1,351-2,025	5,975	1,930	920	8,825
Less than:				
2,026-2,700	3,550	1,150	n.a.	4,700
2,701-3,375	1,235	400	n.a.	1,635
3,376-4,050	1,560	500	n.a.	2,060
4,051 and more	2,205	710	n.a.	2,915
Total	53,820	17,400	35,240	106,460

Source: Bavinic-Delcanda Política Nacional de la Vivienda-Análisis

5.12 Housing Policies and Institutions *

The National Housing Bank (Banco de la Vivienda de Nicaragua-BAVINIC) is an autonomous agency established by the government in 1966 to construct and finance housing units in both public and private sectors. It incorporates three departments: Instituto Nicaraguense de la Vivienda (INVU) with responsibility for low-cost housing development and financing; Savings and Loan Department with Caja Central de Ahorro y Prestamo (CACE) having supervision over a system of private savings and loan societies; Mortgage Insurance Department (Fomento de Hipotecas-FHA). BAVINIC was experiencing financial difficulties in 1978 when over \$9 million in funds lent by the bank was in arrears.

In actual practice, most low-income families have lacked access to credit in the past, and "spontaneous construction" using family labor has been a common home building method.

5.13 Disaster/Low-cost Housing

75 to 80% of the people left homeless by the 1972 earthquake found shelter (in some cases for an extended period) with relatives on the outskirts of Managua or in more distant towns. Others took refuge in schools or other public buildings.

Perhaps because of these alternative solutions, the emergency housing provided was not fully used, including the tent cities erected in several locations with tents donated by the USG and other nations. One source suggests that the lack of receptivity was due to the layout of the camps along military lines (with the exception of that in Masaya) and the regimentation of family activities. The 500 spun polyurethane foam igloos provided by the West German Red Cross were slow in arriving and never fully occupied.

A \$3 million USAID grant helped finance the building of 11,000 low-cost temporary housing units on the outskirts of Managua (Las Americas project). The 15' x 15' huts with no electricity and shared water and sanitary facilities had rough wood siding, corrugated metal roofs and dirt floors. The low initial occupancy (30-50% in the first six months) was believed by officials to be due to the reluctance of the earthquake victims to leave the homes of relatives for the uncertainty of a new housing project and possible unemployment. Though initial poor grading and drainage problems slowed the conversion of the huts to permanent shelters, they were eventually upgraded through an AID loan and fully occupied by late 1974.

* Structure and functions as of 1973

5.14 Housing Types, Materials, Construction and Services

Urban

According to the 1971 census, over one-quarter of the housing units in Managua were makeshift shelters or rooms in cuarterias - old houses subdivided into single rental units with shared water and sanitary facilities. The typical migrant settlement pattern is to find shelter with friends or relatives in cuarterias, then move to makeshift housing on the city fringes (barrios). Unlike many Latin American cities, Managua has no tradition of illegal squatting by large, well-organized groups. 1971 census data also showed that 40% of Managua's families lived in a single room; 42% lacked sewerage service, 39% water service, 9% electricity; 48% were renters.

Although there was a considerable mix of housing by income level in Managua at the time of the earthquake and losses occurred at all levels, about 50% of those losses were lower middle-income housing in the city core.

Rural

The simply constructed traditional housing of the rural poor is mainly of two types. The small rancho, common in the Pacific lowlands, has walls of poles (sometimes mud-covered) or cane, and often a straw roof distinguished by its four sheds. There are usually two rooms: a dormitorio for sleeping and a salita (living room) which may also include a kitchen area.

The rectangular canal-type house is the common dwelling of poor people in the highlands. Additions (barjareque) with single shed roofs are attached to the short sides of the house and sometimes to the back. Walls may be of poles, cane or board, or of poles or cane covered with mud-straw mix; roofs are frequently of tile. The main house consists of one or two rooms; the kitchen and possibly the sleeping areas are in the barjareque additions.

Adobe construction is sometimes seen in large houses in coastal towns but is rare in the countryside and among homes of the poorer classes.

Materials and Construction

Building materials used in Managua in 1972 included hollow clay tile, concrete and concrete block, brick, structural steel and, to a limited extent, wood. Materials used in traditional construction were presumably produced locally; structural steel and possibly some other modern materials were imported.

Dwellings of Managua's very poor were at best crude shelters constructed with concrete floors and foundations, wood siding, tile or zinc roofs; most were shacks made of scrap materials. About half of lower middle-income housing was of wood, concrete block, or wood and block combination. The other half, mostly in the city center, was of a traditional construction called "taquezal" in which timber frame walls of widely spaced posts connected by double lathing were filled with stone and mud balls and plastered with stucco when dry. Floors and roofs were also wood framed, the latter overlaid with clay tile, cement asbestos sheeting, or corrugated metal. The outwardly substantial appearance of these houses belies their inherent weakness. With poor lateral force resisting strength and framing often weakened by termites, the structures collapsed in the earthquake, causing most of the deaths.

The extensive use of hollow clay tile as partitions and wall infills in frame buildings (reducing flexibility) also accounted for much structural damage. Many buildings of modern materials (concrete, reinforced concrete, masonry, etc.) also failed to withstand the shock, often because of inadequate attachment of roofs to walls. On the other hand, houses built to resist earthquakes generally suffered little damage.

With international agencies playing a major role in relief and reconstruction, 9,000 homes had been repaired, 27,000 new homes constructed by February 1976. Seismic resistant stock was expected to be brought up from the 15% pre-earthquake level to 40% within four years. Most new buildings were in outlying areas of Managua and in the nearby cities of Leon, Granada, and Masaya.

Services

The Managua Water Co. (EAM), with World Bank assistance, was expected to carry out a project between 1978 and 1981 to improve and expand water and sewerage service, especially to low-income families.

The second stage of the "74 communities joint program," which would provide water and sewerage service to 10 major cities and increase water availability in 64 others, was to have been undertaken by the National Office of Water and Sewerage (DENEAL) in 1978. DENEAL also planned to improve the sewerage system in Managua and the pollution control of Lake Managua.

In 1979 the new government created the Instituto Nicaraguense de Acueductos y Alcantarillados (INAA), through a merger of EAM and DENACAL. INAA's principal role is to plan, construct, operate and maintain water supply and sewerage systems. A division of the newly restructured Ministry of Health, the Area de Higiene del Medio (AMH), is responsible for rural sanitation.

74% of the urban population, 11% of rural, had access to potable water at the end of 1979. 35% of the urban population had sewerage connections.

Indicators of Potable Water and Sewerage Services
In the 20 Principal Cities of Nicaragua

Cities	Potable Water (1976)		Sewerage Service (1975)	
	<u>% Population Served</u>	<u># of Connections</u>	<u>% Population Served</u>	<u># of Connections</u>
Granada	100	7,619		
San Marcos	100	939		
Masaya	91	5,573	22.5	1,508
Esteli	82	4,000		
Ocotal	78	1,440	28.8	420
Jinotepe	75	1,880		
Somoto	73	838	28.8	315
Boaco	70	925		
Managua	68	54,360	66.0	46,473
Juigalpa	66	1,212		
Leon	60	6,232		
Rivas	60	1,186	32.3	770
Matagalpa	60	2,526		
Corinto	58	1,643		
Chinandega	57	3,405	16.6	1,029
San Carlos	49	274		
Jinotega	45	968		
Chichigalpa	42	1,321		
Diriamba	40	955		
Bluefields	30	878		

Source: Departamento Nacional de Acueductos y Alcantarillado (DENACAL) as cited in A Study of Housing and Urban Development in Nicaragua. PADCO, 1978.

(See section 10.1, Electric Power for electric services.)

6. Economy

6.1 Overview of Economy

After the 1972 earthquake and before the political crisis leading to the overthrow of the Somoza regime in July 1979, economic development was rapid but uneven. Increased population growth offset economic growth during that period and the younger urban population has placed greater burdens on social services and the economic system. Income distribution has traditionally been highly skewed.

Agriculture contributes about one-quarter of GDP and almost three-quarters of merchandise exports (cotton, coffee, sugar, and beef), supplies most of the country's food requirements and much indirect input to industry and employs 46% of the labor force.* Recent agricultural development has concentrated on expansion of the area under cultivation and pastures rather than on increased productivity per unit. Credit extension to small farmers by the Institute of National Rural Welfare (INVIERNO) has improved output and living conditions of some rural poor.

Manufacturing accounted for about 27% of GDP before the recent war but employs only 15% of the labor force and makes up only 25-27% of export earnings. Industrial development was slower in the 1970's than in the 1960's, mainly due to the saturation of the Central American Common Market (CACM) with higher value-added industrial exports such as textiles, clothing, and metal products. Little has been done to develop a market for Nicaraguan industrial exports outside CACM and the tariff structure, oriented toward domestic and regional markets, has also discouraged development of non-traditional export products.

Concentration of exports in a few primary commodities (cotton, coffee, and beef), which make up one-half of merchandise exports, and the fact that exports account for one-third of GDP, make the economy vulnerable to fluctuations, in weather and external markets.

* A high rate of farm underemployment results from the overlap of harvesting seasons (Dec./March) of major crops - coffee, sugar, cotton.

6.2 Recent Trends and Future Prospects (1981)

The country's productive capacity and financial system were seriously damaged by the 1979 civil conflict. Direct damages to physical structures and inventories totaled \$250 million, and capital flight more than half a billion dollars. Manufacturing declined by one-third in 1979; harvest

yields were 40% below those of the previous agricultural cycle. Urban unemployment and underemployment (combined) reached 30% while GDP fell by more than 25%. A large drop in export revenues dealt a severe blow to an economy in which exports constitute one-third of GDP. Substantial amounts of external assistance have helped finance necessary imports, the availability of which has kept inflation somewhat in check (35% in 1980 compared with 70% in 1979). The trade deficit of US\$ 458 million in 1980 was over one-fifth of GDP and almost equal to exports of goods and services; the overall deficit of the central government rose from US\$ 105 million in 1979 to more than US\$ 250 million in 1980.

While aiming to achieve both economic recovery and social change, the Government of National Reconstruction has significantly enlarged the public sector's role within a mixed economy. In addition to expropriating land and commercial holdings of the Somoza family, the government has nationalized the banking system, insurance companies, and trade and mining activities. Its direct participation in agricultural production is about 18%, in manufacturing, 25%, and in the service sectors more than 50%.

The World Bank describes prospects for industry as "only fair" due to an apparent lack of private sector confidence. Outlook for the mining sector is more promising; the export value of gold could exceed US\$ 35 million in 1981. Prospects for commodity exports in 1981 are also fair. Balance of payments difficulties are expected to persist for some time, however, even when exports recover. Besides the long-term consequences of the war, obstacles to higher growth include a large inherited foreign debt (debt service in 1981 will be about 26% of export earnings) and the low rate of capital formation.

6.3 GNP/GDP

GNP at market prices (US\$ millions) and GNP per capita (US\$) in 1979:* 1,700 and 660; GNP per capita (real) growth rate 1970-78: 1.7%.

* preliminary

Source: 1980 World Bank Atlas (GNP at market prices rounded to US tens of millions. GNP per capita rounded to nearest US\$ 10.)

6.4 Balance of Payments

	<u>1978</u>	Actual <u>1979</u>	<u>1980</u>	Projected <u>1981</u>
<u>Balance of Payments</u>				
Export of goods and NFS	726.9	677.7	507.7	650.7
Goods F.O.B.	646.0	616.6	449.2	573.2
Non-factor services	80.9	61.1	58.5	77.5
Import of goods and NFS	690.5	424.8	966.2	880.6
Goods C.I.F.	593.9	360.2	885.0	807.9
Non-factor services	96.6	64.6	81.2	72.7
Net export of goods and NFS	36.4	252.9	-458.5	-229.9
Net factor income	-98.7	-110.2	-78.2	-118.1
Net transfers	9.4	91.6	123.0	25.0
Current account balance	-52.9	234.3	-413.7	-323.0

P/ Preliminary

Source: World Bank, Nicaragua: Basic Education Project (Eduction III), April 1981.

6.5 Imports

Preliminary figures show that food imports constituted 6.1% of total merchandise imports in 1980, other consumer goods 22.9%, fuel 19.6%, intermediate goods 39.5%, and capital goods 11.8%. Imports grew in 1980 to meet the demand created by a drastic drop in domestic production. Although the value of capital goods imports had not regained 1978 levels, imports of food and fuel were more than twice as high. Increases in imports of beans, rice, and edible vegetable oils were especially significant. Cuts in food imports and other non-durables, and possibly in intermediate goods, are expected in 1981; fuel and capital goods imports should increase.

The value of merchandise imports (C.I.F.) in 1980 (preliminary) was US\$ 885 million.

Major trade partners (1978): US, 31%, CACM, 23%; EC, 17%; other, 29%.

6.6 Exports

Primary commodities accounted for 77.5% of merchandise exports, and manufactures for 22.4%, in 1980 (preliminary). Prospects are fair for agricultural commodity exports in 1981 (World Bank); the value should exceed that of 1980 by more than one-quarter, while remaining 10% below record exports of 1978. Coffee production is still below normal; lower world prices could further reduce earnings. Expected higher prices for sugar may compensate somewhat. Beef and cotton exports remain below normal levels.

The value of merchandise exports (F.O.B.) in 1980 (preliminary) totaled US\$ 449 million.

Major trade partners (1978): US, 21%; CACM, 23%; EC, 28%; other, 28%.

7. Agriculture

7.1 Overview of Agriculture

The country can be divided into 3 agricultural zones on the basis of soil type and rainfall amount and distribution. The Pacific Zone has rich volcanic soils and a well-defined rainy season (May–November) averaging 1,500–2,500 mm., with marked annual variation. Small-scale farms grow corn, beans, and rice for domestic consumption while large-scale export-oriented farms specialize in coffee, sugar cane, and livestock fattening. The Central Zone has poorer lateritic soils with the exception of alluvial valleys; rainfall ranges between 500–2,000 mm. annually. Major agricultural products are coffee and livestock. The Atlantic Zone has relatively poor soils and heavy rainfall (2,500–6,000 mm.) making it poorly suited for agriculture; however, there is potential for stockraising and forestry.

Production is divided into two different sectors. The traditional sector comprises over 50,000 farms of 7 hectares or less and provides the main but inadequate support of one-third of the rural population. Corn, beans, rainfed rice, and sorghum are major crops. These are supplemented by coffee growing, livestock raising and wage labor at harvest.

Security of tenure is a problem for the small farmer, especially in the Pacific Zone. Modern inputs (credit, technical assistance, improved seed) are lacking; thus, yields are essentially unchanged since 1950. Large-scale export-oriented farms are more efficient; better land and modern inputs result in yields and production costs competitive on world commodity markets. Primary products are cotton, coffee, sugar cane, and beef cattle; lesser crops include tobacco, sesame, cottonseed, and bananas.

At present most exports are unprocessed but agricultural industries producing boneless beef and cottonseed derivatives are being developed. The sector supplies about one-third of industry's raw materials.

Area under cultivation for main crops has increased at an average rate of 4.5% per year since 1970; however, much fluctuation is seen in growth rate due to changes in international prices. For example, when world prices dropped in 1975 for rice and cotton, the land area planted in these crops fell 10%. Yields were also poor in 1974/75 and 1976/77 because of drought. Coffee yields (85,000 ha. under cultivation) have improved but they are still among the lowest in Central America. During 1967/77, favorable prices and expansion of credit allowed more fertilizer use and improved farming practices, thus increasing yields.

7.2 1981 Status

Agricultural production fell sharply in 1979 due to the effects of the civil war; the area harvested at the end of 1979/80 was 20% smaller than in the previous cycle. Especially hard hit were basic grains, cotton (drastically cut back to less than one-fifth of the area at the end of the 1977/78 cycle), and beef (virtual depletion of stocks through slaughter of immature cattle and smuggling of herds out of the country). Though rehabilitation efforts raised output in 1980 23% above the 1979 level, it was still below that of any year since 1972. Some commodities - basic grains, pork, milk, poultry - had recovered to or exceeded 1978 levels; others - beans, cotton, cottonseed oils and beef - were still below normal production. The 1980/81 coffee crop is expected to be about 15% below the record 1978/79 crop. The area planted in cotton, while 3 times the size of that in 1979, is still less than half of the peak area planted before the war.

Part of the government's agrarian reform process is the incorporation into public domain of the farm-related holdings, generally large-scale and modern in operation, of the leaders of the former regime: 2,200 farms, 65 agrobusinesses, 25 farm service companies. Public holdings represent only 7% of arable lands but 18% of total production. A series of reform measures, adopted with the aim of gradually eliminating the dual agricultural system within a mixed economy, does not include redistribution of government lands in the near future because of the overriding necessity to maintain their present productive contribution to the economy. The Ministry of Agricultural Development (MIDA), into which the Institute of Agrarian Reform (INRA) has been integrated, determines agricultural policy.

7.3 Planting and Harvesting Seasons

<u>Crop</u>	<u>Planting Season</u>	<u>Harvesting Season</u>
Beverages:		
Cacao	---	October-November January-March
Coffee	---	November-February
Cereals and Grains:		
Corn:		
First crop	May	August-September
Second crop	September	December-January
Rice	June-July	November-February

Feedstuffs:		
Sorghum	September-October	December-January
Fibers:		
Cotton	July-August	December-February
Fruits:		
Bananas	-	Throughout year
Pineapples	July-August	March-June
Oilseeds:		
Peanuts	June-August	November-January
Sesame:		
Early crop	June	August
Main crop	September	December-February
Sugar cane	May-June	December-March
Vegetables:		
Beans:		
First crop	May-June	August
Second crop	August-September	December-January
Cabbage	Throughout year	Throughout year
Onions	November	February
Potatoes:		
First crop	May	August
Second crop	November	February

7.4 Crop Production

Evolution of Farm Production 1977-81

<u>Crop</u>		<u>1977/78</u>	<u>1978/79</u>	<u>1979/80</u>	<u>1980-81</u> 1/
Maize	- Area 2/	303	325	240	340
	- Production 3/	3.9	5.5	3.8	5.8
	- Yield 4/	13.0	17.0	15.6	17.1
Beans	- Area	88	95	75	110
	- Production	.9	1.2	.9	1.3
	- Yield	10.2	12.7	11.5	12.0

<u>Crop</u>	<u>1977/78</u>	<u>1978/79</u>	<u>1979/80</u>	<u>1980-81</u>
Rice				
- Area	35.0	38.5	27.2	43.0
- Production	1.0	1.3	.8	1.3
- Yield	30.0	33.0	30.0	30.7
Sorghum				
- Area	62.0	73.0	67.0	80.0
- Production	100.7	126.0	181.9	440.0
- Yield	11.7	14.0	9.0	11.0
Coffee				
- Area	120.0	135.0	140.0	135.0
- Production	1.2	1.4	1.2	
- Yield	10.0	10.5	8.8	
Cotton				
- Area (harvested)	303.0	248.0	55.0	150.0
- Production (1,000 bales)	540	499	98	

Source: IDB, Nicaragua: Credit Program for the Revival of Agriculture and Fisheries, November 1980.

1/ Projected

2/ Thousands of manzanas

3/ Millions of quintals

4/ Quintals per manzana

7.5 Agricultural Imports

See section 6.5, Imports.

7.6 Agricultural Exports

See section 6.6, Exports.



Base 504508 5-80 (545340)

8. Physical Geography

8.1 Climate

Climate is tropical except for scattered high altitude locations in Central Highlands which have mild (tierra templada) or cool (tierra fria) weather. Within tropical classification, 3 types may be defined:

Wet tropical - Caribbean Plain and eastern slopes of Central Highlands. Hot, humid with no real cool or dry season. Occasional storms due to midwinter influx of polar air, locally called "papagayos." Rainfall 130-250" annually, averaging 150".

Tropical wet and dry - West of continental divide in Central Highlands to Pacific coast. Western slopes of cordillera and sierras in Diriamba Highlands are driest since they are in the rain shadow of trade winds, which blow from northeast in winter. Effect is mitigated on the eastern slopes of cones and cordilleras which receive trades' residual moisture. In the west, rainfall is sometimes as low as 16" yearly, otherwise averages 60-65"/year on the Pacific coast, 120" in the interior. Temperatures are warm throughout the year, averaging 81°F; winter brings periods of cooler weather, lower humidity.

Highlands - Extensive areas exist (at high elevations, e.g., Jinotega, Matagalpa) where mean annual temperature is 70°F and daily highs seldom reach 90°. Year round high humidity, relatively lower in southern highlands Feb.-May. Above 5,000', climate is marked by continuous humidity and cool temperatures. Rains are gentle but persistent except during rare papagayo storms, in contrast to marked storms in other regions. Local variations in climate are frequent and pronounced.

Temperatures *

<u>Location</u>	<u>Jan</u>	<u>Mar</u>	<u>May</u>	<u>Jul</u>	<u>Oct</u>	<u>Dec</u>
Pacific Zone						
Chinandega	26.9	29.2	28.9	27.9	27.4	26.8
Leon	27.1	28.2	29.1	27.5	26.7	26.5
Managua	27.6	29.5	29.9	28.5	26.8	26.7
Masaya	24.1	25.8	26.7	24.9	24.9	24.2
Granada	25.5	26.9	28.5	26.4	25.5	25.2
Rivas	26.0	27.0	28.0	26.4	26.6	25.6

<u>Location</u>	<u>Jan</u>	<u>Mar</u>	<u>May</u>	<u>Jul</u>	<u>Oct</u>	<u>Dec</u>
Central Zone						
Chontales	24.4	26.3	27.2	25.5	25.3	24.0
Boaco	23.4	25.5	26.7	25.0	23.3	23.2
Matagalpa	23.8	25.5	26.5	25.6	24.9	23.5
Jinotega	19.0	20.6	22.3	21.3	21.4	19.2
Esteli	22.2	24.8	24.5	24.8	24.5	22.2
Nueva Segovia	22.0	24.0	25.0	24.7	24.6	22.6
Atlantic Zone						
Rio San Juan	24.1	25.5	26.5	24.7	25.6	24.3
Zelaya	23.9	25.5	26.3	25.2	25.4	23.9

* Average centigrade temperature for period 1969-73. Temperatures recorded at various stations within departments in 1979 are listed in Anuario Estadístico de Nicaragua, 1979.

Rainfall
(In mm.)

<u>Location</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>
Pacific Zone												
Chinandega	8	7	8	50	281	213	181	306	269	382	65	18
Leon	2	4	4	18	238	200	117	238	302	273	70	16
Managua	7	2	2	18	179	159	149	269	272	266	67	21
Masaya	25	7	5	18	241	450	92	323	424	385	79	20
Granada	15	2	10	2	164	148	152	269	311	266	99	21
Carazo	10	3	8	26	177	221	176	116	306	310	86	21
Rivas	60	12	20	17	170	270	184	231	378	366	149	55
Central Zone												
Chontales	79	27	18	29	121	241	268	258	294	270	114	83
Boaco	55	27	13	23	117	214	252	225	262	232	102	81
Matagalpa	54	21	21	34	167	227	211	223	275	300	93	68
Jinotega	38	23	13	27	139	215	201	228	218	263	112	81
Esteli	3	2	6	18	170	131	99	159	232	175	38	7
Madriz	39	22	18	36	142	132	155	178	233	248	80	50
Nueva Segovia	31	12	11	31	178	192	181	190	190	183	71	51

<u>Location</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>
Atlantic Zone												
Rio San												
Juan	188	66	45	83	177	313	382	278	346	288	271	200
Zelaya	190	70	40	63	222	382	671	340	375	275	274	257

* Precipitation amounts recorded at various stations within departments in 1979 are listed in Anuario Estadístico de Nicaragua, 1979.

8.2 Land Forms

Area: 57,000 sq. mi., of which Rift lakes represent about 3,000 sq. mi; bounded on the north by El Salvador and Honduras, on the south by Costa Rica, with 220 mile Pacific coastline and 340 mile Atlantic coastline.

Four sociopolitical regions: 1) west, consisting of Pacific Highlands and lakes, and lowlands of Rift Valley; 2) highland frontier, new settlements in north and west Central Highlands; 3) empty lands of eastern highlands and most of Caribbean coastal plain; 4) east, scattered settlements at river mouths along east coast.

The western coastal regions, northern extension of Costa Rican highlands, are of volcanic origin. The Rift depression, formed when land subsided between 2 fault zones, extends from central Guatemala into northern Panama, separates Pacific ranges from Central Highlands, the southern extension of Central American Highlands, which begin in Chiapas, Mexico. Rift lowlands extend to Pacific Coast north of Leon. Central Highlands slope toward Caribbean, merging with coastal plain. Most of the Rift drains into the Caribbean via the San Juan River. Several large permanent rivers cut through the eastern coastal plain from the Central Highlands. There are no significant streams in the west.

Geologic regions include an active area in the west comprising new volcanics of coastal ranges and the Rift Valley. Older inactive weathered volcanics of the Central Highlands run as E.-W. ridges and valleys, highest in northwest, toward the Caribbean. The Miskito coast, alluvial plains and valleys, separated by low watershed hills, with numerous bays, lagoons and salt marshes, has a high water table, which poses construction and cultivation problems.

8.3 Land UseLand Use, Nicaragua, 1980

<u>Use</u>	<u>Pacific</u>		<u>Inland</u>		<u>Atlantic</u>		<u>Total</u>	
	<u>1,000</u> <u>MZS</u>	<u>% of</u> <u>Total</u>						
Annual crops	488	19.0%	125	2.0%	98	1.1%	711	4.2
Perennial crops	63	2.0	96	1.7	9	0.4	168	1.0
Forage	1,194	48.0	3,306	59.7	1,465	17.0	5,964	35.5
Woodland	752	29.0	2,000	36.0	6,037	69.5	8,789	52.4
Rock/swamp	57	2.0	13	.6	1,084	12.0	1,154	6.9
Total	2,554	100.0%	5,540	100.0%	8,693	100.0%	16,786	100.0%
% of total	15.2%	-	33.0%	-	51.8%	-	100.0%	-

MZS=Manzanas (unit of land measurement just over two acres)

8.4 Waterways

Principal Rivers

East-flowing, all partially navigable

San Juan
Escondido
Grande
Prinzapolca
Coco

West-flowing, intermittent

Negro
Viejo

Lakes

Historically important for local navigation. Lake Managua is 38 mi. long, 10-16 mi. wide; drains via 10 mi. long Rio Tipitapa into larger Nicaragua, 100 mi. long and 45 mi. wide.

8.5 Mountains

In the coastal block west of the Great Rift, altitudes to 3,000', the most important range is Diriamba Highlands (locally, "Sierras") between Managua and the Pacific.

Central Highlands rise north and east of the rift; heights are up to 7,000'; volcanic ridges and plateau trending E.-W. as ridges alternating with river valleys are as follows: Rio Coco, S-shaped Cordillera Isabelia, Rio Tuma, Cordillera Dariense, Rio Grande, Montanas de Huapi, Cordillera de Yolaina, San Juan.

8.6 Seismicity and Volcanism

Circumpacific belt of seismic activity passes through western Nicaragua. The Rift depression is bounded on the southwest and the northeast by active fault zones, total offset along which has been estimated in excess of 1,000 meters. Occasionally volcanic centers have developed in fault zones, but most volcanism occurs in a narrow zone, part of the Central American volcanic chain, which runs through Managua. Its activity has been continuous in the country's recorded history. Both lava and pyroclastic eruptions have occurred. Last major eruption was that of Cerro Negro, 70 km. northwest of Managua, in 1968.

Volcanoes

<u>Name</u>	<u>Height</u>	<u>Location</u>	<u>Activity Dates</u>
Cerro Negro	3,204'	50 mi. N.W. of Managua	1850-52, 1867, 1946, 1960-68, 1971
Concepcion	5,106'	S.E. of Managua	1883-85, 1902-05, 1957
Cosiguina	5,106'	140 mi. N.W. of Managua	1952
El Viejo	5,840'		1971
Las Pilas Mombacho		20 mi. S.E. of Managua	1850-52
Momotombo	4,199'	30 mi. N.W. of Managua	1850-52, 1883-85, 1902-05, 1952

<u>Name</u>	<u>Height</u>	<u>Location</u>	<u>Activity Dates</u>
Nindirí		15 mi. S.E. of Managua	1772
Santiago	1,969'	S. of Managua	1902-05(formed), 1946, 1965
Telica	3,409'	S. of Managua	1965, 1971

225	190	140	164	245	254	177	37	273	156	140	260	La Trinidad
262	175	177	201	30	39	392	178	58	115	133	45	Leon
172	93	87	111	120	129	302	88	148	43	43	135	Managua
174	63	89	113	150	159	302	90	178	29	13	165	Masaya
227	192	142	166	247	256	223	39	275	158	142	262	Matagalpa
215	134	130	154	151	160	345	131	179	74	86	166	Nagarote
205	32	120	144	173	182	335	121	201	28	18	188	Nandaime
324	289	239	263	344	353	226	236	372	255	239	359	Ocotal
282	45	197	221	250	259	412	198	278	105	95	265	Penas Blancas
296	261	211	235	316	325	116	108	344	227	211	331	Pueblo Nuevo
243	156	158	182	69	78	373	159	97	96	114	84	Puerto Somoza
247	10	162	186	215	224	377	163	243	70	60	230	Rivas
293	258	208	232	313	322	173	105	341	224	208	328	San Juan De Limay
275	38	190	214	243	252	405	191	271	98	88	258	San Juan Del Sur
192	63	107	131	146	155	322	108	174	11	19	161	San Marcos
219	96	134	158	135	144	349	135	163	36	56	150	San Rafael Del Sur
61	286	160	145	341	350	451	237	369	252	236	356	Sto. Domingo
21	246	120	105	301	310	411	197	329	212	196	316	Sto. Tomas
203	168	118	142	223	232	199	15	251	134	118	238	Sebaco
316	281	231	255	336	345	86	128	364	247	231	351	Somoto
489	454	404	428	509	518	140	301	537	422	404	524	Tegucigalpa, Honduras
270	183	185	209	22	31	400	186	50	123	141	37	Telica
150	87	65	89	142	151	280	66	170	53	37	157	Tipitapa
262	227	177	201	282	291	258	74	310	193	177	297	Tuma
305	270	220	244	325	334	97	117	353	236	220	340	Yalaguina

Esquipulas

112	Esteli											
125	167	Granada										
124	104	179	Jinotega									
134	176	43	188	Jinotepe								
173	215	156	227	165	Juigalpa							
238	280	221	292	230	65	La Libertad						
187	229	126	241	109	218	283	La Paz Centro					
88	24	143	80	152	191	256	205	La Trinidad				
197	239	136	251	119	228	293	32	215	Leon			
107	149	46	161	47	138	203	80	125	90	Managua		
109	151	20	163	25	140	205	110	127	120	30	Masaya	
90	70	141	34	154	193	258	207	46	217	127	129	Matagalpa
150	192	89	204	78	181	246	111	168	121	43	73	Nagarote
140	182	25	194	24	171	236	133	158	143	61	31	Nandaime
187	75	242	179	251	290	355	304	99	314	224	226	Ocotal
217	259	102	271	101	248	313	210	235	220	138	108	Penas Blancas
159	47	214	151	223	262	327	276	71	286	196	198	Pueblo Nuevo
178	220	117	232	100	209	274	29	196	39	71	101	Puerto Somoza

182 224 67 236 66 213 278 175 200 185 103 73 Rivas
 156 44 211 148 220 259 324 273 68 283 193 195 San Juan De Limay
 210 252 95 264 94 241 306 203 228 213 131 101 San Juan Del Sur
 127 169 36 181 7 158 223 106 145 116 44 18 San Marcos
 154 196 73 208 40 185 250 95 172 105 47 55 San Rafael Del Sur
 256 298 239 310 248 83 18 301 274 311 221 223 Sto. Domingo
 216 258 199 270 208 43 22 261 234 271 181 183 Sto. Tomas
 66 46 121 58 130 169 234 183 22 193 103 105 Sebaco
 179 67 234 171 243 282 347 296 91 306 216 218 Somoto
 352 240 407 344 416 455 520 269 264 479 389 391 Tegucigalpa, Honduras
 205 247 144 259 127 236 301 40 223 8 98 128 Telica
 85 127 40 139 49 116 181 102 103 112 22 24 Tipitapa
 125 105 180 69 189 228 293 242 81 252 162 164 Tuma
 168 56 223 160 232 271 336 285 80 295 205 207 Yalaguina

Matagalpa

170 Nagarote
 160 102 Mandatme
 145 267 257 Ocotal
 237 179 77 334 Penas Blancas
 117 239 229 38 306 Pueblo Nuevo
 198 102 124 295 201 267 Puerto Somoza
 202 144 42 299 35 271 166 Rivas
 114 236 226 95 303 67 264 268 San Juan De Limay
 230 172 70 327 43 299 194 28 296 San Juan Del Sur
 147 75 31 244 108 216 97 73 213 101 San Marcos
 174 78 64 271 141 243 86 106 240 134 37 San Rafael Del Sur
 276 264 254 373 331 345 292 296 342 324 241 268 Sto. Domingo
 236 224 214 333 291 305 252 256 302 284 201 228 Sto. Tomas
 24 146 136 121 213 93 174 178 90 206 123 150 Sebaco
 137 259 249 30 326 30 287 291 87 319 236 263 Somoto
 310 432 422 165 499 203 460 464 260 492 409 436 Tegucigalpa, Honduras
 225 129 151 322 228 294 47 193 291 221 124 113 Telica
 105 65 55 202 132 174 93 97 171 125 42 69 Tipitapa
 35 205 195 180 272 152 233 237 149 265 182 209 Tuma
 126 248 238 19 315 19 276 280 76 308 225 252 Yalaguina

Sto. Domingo

40 Sto. Tomas
 252 212 Sebaco
 365 325 113 Somota
 538 498 286 195 Tegucigalpa, Honduras
 319 279 201 314 487 Telica
 199 159 81 194 367 120 Tipitapa
 311 271 59 172 345 260 140 Tuma
 354 314 102 11 184 303 183 161 Yalaguina

9.4 Railroads

The only rail carrier, Nicaraguan Pacific Railroad, serves a small area in the Pacific region. Since completion of the road network in its service area, rail traffic has declined to about one-quarter its volume in the early 1950's. The rail system cannot compete with roads for several reasons: 1) short distances involved in both passenger and freight traffic; small size of rail system (317 km. of main and branch lines); 2) high rail operating costs due to antiquated equipment; 3) competition in road haulage business; 4) greater flexibility of road transport.

Rail line runs approximately from Chinandega through Leon and Managua to Masaya where branches continue to Granada and Jinotepe.

Ferrocarril del Pacifico de Nicaragua
Address: Antigua Escuela de Artes, Managua

Government-owned main line from Managua to the Pacific port of Corinto via Leon and Chinandega, and from Managua to Granada on Lake Nicaragua: 373 km. (1.067 m. gauge).

9.5 Rail Carriers

9 diesel-electric locomotives, 4 diesel passenger trains (26 cars), 1 passenger car, 163 freight cars, 8 dump cars, 33 tank cars, 2 petrol railcars.

	<u>1976</u>	<u>1977</u>	<u>1978</u>
Passengers	539,337	480,084	448,932
Passenger/km. ('000)	20,268	18,660	16,779
Ton/km. ('000)	12,384	11,370	10,188

Source: The Europa Year Book 1980.

9.6 Ports

The principal port is Corinto on the Pacific coast. Extensive development should enable the port to handle expected traffic until mid 1980's. Principal products handled include cotton and its by-products, coffee, lumber, wheat, agro-chemicals, petroleum products, and iron and steel products. Another important Pacific port, Puerto Somoza, handles

petroleum products through off-shore buoy and pipeline, but it cannot compete with Corinto in general terms because it is not suitable for deep water berthing facilities. Three Atlantic coast ports, Puerto Cabezas, El Bluff, and Puerto Isabel, are linked with the Pacific Zone by air, road and waterway links (Managua-Rawa-El Bluff).

Corinto

Coordinates: Lat 12° 36' N.; long. 87° 05' W.

Accommodation: Depth at entrance 7.31 m. L.W.; at quay and berth, 6.70 to 7.31 m. Special berth with conveyor belt system. Loading and unloading by ship's gear; 43 fork lifts, 10,000 pallets, seven gasoline tractors, three cranes and 100 dollies. A dolphin has recently been constructed for tankers up to 20,000 d.w.t. Pier 380 m. long with 9.14 m. M.L.W.

Provisions: Available.

Water: Available.

Container and Ro/Ro Fac.: Available.

Bunkers: Diesel oil and fuel oil available.

Towage: Compulsory.

Pilotage: Compulsory.

Airport: Las Mercedes, Managua, 160 km.

Working Hours: 07:30 to 12:00 hours; 113:30 to 17:30 hours; 19:00 to 23:30 hours.

El Bluff (Bluefields)

Coordinates: Lat. 12° N.; long. 83° 45' W.

Accommodation: Harbor situated about 7 km. from the city of Bluefields, separated by a shallow lagoon. Depth at entrance to harbor, 7.62 m. Depth on bar, 3.81 m. at H.W. Depth along side wharf, 3.66 m. Max. safe draft, beam and length, 3.50

- m. and 167.6 m. A canning factory for sea products is in operation.
- Cranes: No cranes or equipment.
- Provisions: Available.
- Water: Available in very limited quantities.
- Container and Ro/Ro fac.: Limited roll-on/roll-off facilities available at La Esperanza for vessels up to 3.05 m. draft.
- Bunkers: Only diesel fuel available.
- Development: Dredging of bar and channel up to the terminal of Rama.
- Shiprepairs: Three small slipways for handling vessels up to 3.05 m. draft, 30.48 m. Minor repairs possible.
- Towage: Not available.
- Pilotage: Compulsory. Vessels anchor outside bar and are boarded by bar pilot, who will dock vessel at Custom House wharf, where customs and sanitary officials also board.
- Airport: Local airport at Bluefields with daily service to International airport Las Mercedes at Managua, approximately 8 km. from port.
- Working Hours: 08:00 to 12:00 hours; 13:00 to 17:00

Puerto Somoza

- Coordinates: Lat. 12° 10' N.; long. 86° 50' W.
- Accommodation: Deep water channel for unloading barges onto a small dock.
- Storage: Warehouses with a total of 59,041 cu.m. space.
- Cranes: Heavy lift cranes up to 15 tons capacity; fork lifts.
- Towage: Five tugs with total barges' capacity of 2,000 tons.

Airport: 80 km.

Working Hours: 07:00 to 12:00. 13:00 to 18:00. 19:00 to 06:00.

San Juan del Sur

Coordinates: Lat. 11° 15' 5" N.; long. 85° 53' W.

Accommodation: Entrance through 0.8 km. wide opening in the cliffs which narrows at one point to 731 m. Bottom mainly sand, but some rocky patches. From the head of the bay, the depth gradually increases to 9.1 to 11 m. at the narrows and to 18.3 to 20.1 m. at the outer headlands. Vessels anchor, loading and unloading by lighters of which 15 are available with an average capacity of 40 tons.

Cranes: Four cranes from 4 to 15 tons lifting capacity.

Pilotage: Unnecessary.

Airport: Managua, 141 km.

Working Hours: 06:00/12:00 - 13:00/18:00 - 19:00/22:00. From 22:00 to 06:00 and holidays are paid as per overtime rates.

9.7 Shipping

Autoridad Portuaria de Corinto: Apdo. 11, Corinto; f. 1956; port authority.

Marina Mercante Nicaraguense, S.A. (Mamenic): Apdo. 3523, Managua, D.N.; regular services between Central America, New York, New Orleans, and Europe; roll-on/roll-off service between Managua and Miami.

Regular steamship services are provided by Grace, Holland-American, Mamenic, Pacific, Royal Mail, Royal Netherlands, Standard Fruit and United Fruit. The following lines also call at Nicaraguan ports: Azta, Cia de Navegacion Chilena, Gran Colombiana, Hamburg American, Mexicana, Mitsui O.S.K., PSNC, and State Marine Lines.

9.8 Airports

The international airport, Las Mercedes, in Managua is the major airport. The country has a total of 428 airfields (413 usable); 9 with permanent-surface runways; 9 with runways 1,220-2,439 m.

NB: For up-to-date info consult latest issue of Weekly International Notams, International Flight Information Manual, and/or ICAO's Air Navigation Plan for appropriate region.

MANAGUA/Las Mercedes

Location Coordinates	Eleva- tion M/ Temp C	Runway Characteristics			Aircraft/ Strength (1,000 kg)	Fuel/ Octane
		NR/Type	Slope %	Aircraft/ Length M		
12° 08' 30" N 86° 10' 24" W	59 30.9	09/27	0.04	2440	A	AUW 130/4 100, JA2

Remarks: Alternate aerodromes: GUATEMALA/La Aurora, SAN JOSE/ Juan Santamaria Int'l, SAN PEDRO SULA/Ramon Villeda Morales, TEGUCIGALPA/ Toncontin

Aids: RDME, RVOR, LAV 09, LR, LTX, LB, LO, MD, MC, MT, H80, L4, 5, 9. No Telex.

PUERTO CABEZAS/Puerto Cabezas

Location Coordinates	Eleva- tion M/ Temp C	Runway Characteristics			Aircraft/ Strength (1,000 kg)	Fuel/ Octane
		NR/Type	Slope %	Aircraft/ Length M		
14° 03' 06" N 83° 23' 06" W	15 30	08/26	0	1890	B	AUW 48/2 100

Remarks: Alternate aerodromes: SAN ANDRES I./Sesquicentenario.

Aids: H62. No Telex.

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)
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)

9.9 Personal Entry Requirements

Passport and visa required. No vaccinations required; yellow fever recommended.

9.10 Aircraft Entry Requirements

Private and non-scheduled (non-commercial) aircraft landing or overflying Nicaragua must advise the Ministry of Defense, Civil Aviation Section, by letter, commercial cable, or through Nicaraguan diplomatic or consular representatives of such operation at least 24 hours before estimated time of arrival. Notification should contain:

- 1) Registration and nationality of aircraft;
- 2) Make and type of aircraft;
- 3) Name of pilot and other crew members, if any;
- 4) International airport of entry;
- 5) Estimated time of arrival;
- 6) Name and nationality of persons aboard.

No reply will be provided by the ministry, unless permission is denied and payment for message is guaranteed.

Commercial, charter and travel air club flights must apply for overflight and landing permits at least 24 hours in advance.

A flight plan must be filed with ATC.

Special Notices

Pilots are advised to carry a copy of the telegraphic request, endorsed by the telegraph company, to prove that the request was transmitted if the response is not available.

9.11 Airlines

Domestic:

Lineas Aereas de Nicaragua S.A (Lanica): Apdo. 753, Managua, D.N.; domestic services and international services to El Salvador, Guatemala, Mexico, Panama, and the U.S.A.; fleet: 1 B-727, 4 DC-6, 3 C-46.

Nicaragua is also served by Aeroflot (U.S.S.R.), Compania Panamena, Iberia (Spain), LACSA (Costa Rica), SAHSA (Honduras) and TACA (El Salvador).

9.12 Air Distances (statute miles)

Managua to:

Maracaibo.....	990
Merida, Mexico.....	652
Merida, Venezuela.....	1,049
Mexico City.....	995
Miami.....	1,021
New Orleans.....	1,262
New York.....	2,110
Panama City.....	508
San Jose.....	200
San Pedro Sula.....	264
San Salvador.....	226
Siuna.....	159
Tapachula.....	451
Tegucigalpa.....	151
Vera Cruz.....	824

Puerto Cabezas to:

Waspan.....	60
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10. Power and Communications

10.1 Electric Power

The National Power and Light Company (ENALUF) has primary responsibility for generation and distribution of electric power. Though considerable progress has been made in the development of hydroelectric and geothermal power systems, the country will continue to be dependent on imported fossil fuel for a number of years. The Momatombo geothermal project, of which the first phase is now in execution, may eventually generate up to 105 MW of electric power. A single country-wide grid was established by 1958, but availability of power to consumers is much greater in the Pacific Zone than in others. By 1976, 41% of dwellings had access to electricity; 7% of rural dwellings. Major cities consumed 85.5% of electric energy; Managua alone accounted for 56.3%. Demand for power has been increasing at over 10% annually. 1977 - 358,000 KW capacity; 1.2 billion KWH produced; 520 KWH/capita. Electricity supply: 110 volts, 60 cycles.

Indicators of Electric Service in the 20 Principal Municipalities of Nicaragua in 1975

<u>Municipal- ities</u>	<u>Average Consumption in Kwh per household</u>	<u>Total Consumption 1,000's of Kwh</u>	<u># of Clients</u>
Chichigalpa	11,579	17,206	1,486
Managua	7,028	379,359	53,976
Granada	4,112	26,671	6,486
Leon	3,720	38,014	10,220
Rivas	3,327	7,546	2,268
Diriamba	2,602	5,950	2,287
Corinto	2,505	6,465	2,581
Chinandega	2,485	13,546	5,450
Boaco	2,392	3,136	1,311
Jinotepe	1,998	4,228	2,116
Masaya	1,192	6,675	5,061
Bluefields	1,145	2,205	1,925
Juigalpa	1,105	1,557	1,410
Somoto	1,068	682	639
San Carlos	817	189	231

Source: Empresa Nacional de Luz y Fuerza (ENALUF) e Instituto de Energia Electrica as cited in A Study of Housing and Urban Development in Nicaragua . PADCO, 1978.

10.2 Radio Network

Direccion Nacional de Radio y Television (address: Apdo. 209, Managua) is the government supervisory body. La Voz de Nicaragua, Managua, is the government station. Radio Ondras de Luz, Apdo. 607, Managua, is a religious and cultural station (820 KHZ, long-wave). Radio Mundial, Reparto Loma Verde, Managua, is a major commercial station. The network also includes Radio Catolica, Altamira D'Este 621, Managua; Radio Corporacion, Ciudad Jardin Q-20, Managua; Radio Sandino, Managua, a station controlled by the FSLN; and 51 other stations. There were 700,000 receiving sets in 1976.

A 1966 survey of information sources for rural families indicated that in Nicaragua 48% of families surveyed were frequent users of radio (63% made some use of it). In comparison, 9% were frequent users of newspapers, 13% of books, 7% of magazines, 12% of motion pictures and 1% of television.

Radio facilities of the US embassy are available in emergencies for communications with US, USSOUTHCOM and in-country. The Nicaraguan Red Cross has shortwave radio capability for both in-country and international communications; also 2 base stations, 3 mobile units and individual "Walkie Talkie" sets. Additional communications equipment can be requested from USSOUTHCOM.

Other sources include many local ham radio operators.

(See also section 3, Disaster Preparedness.)

10.3 Telephone System

Post and telecommunications directorate (TELCOR), an autonomous public enterprise, supervises the telecommunications system. Even before the 1973 earthquake, Nicaragua's system was relatively underdeveloped in comparison with others in Central America. Considerable reconstructive activity added to its difficulties. Present system includes low capacity wire and radio-relay network being replaced after war damage, connection into central American microwave net, satellite ground station. There are 55,800 telephones (2.2 per 100 population).

10.4 Television

Sistema Sandinista de Television, Managua. There were 3 TV stations in 1980; 120,000 receivers in 1978. Because of the high cost of television sets, use is concentrated in large urban centers and upper income groups.

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