N I C A R A G U A

An Emergency Preparedness Profile

Office of the United Nations
High Commissioner for Refugees

June 1990

FOREWORD

This profile of Nicaragua is part of a Regional Emergency Preparedness Profile for Central America and Mexico. These profiles are designed to provide, in one accessible document, factual information on selected countries and are intended as an emergency preparedness measure in support of UNHCR planning and relief operations. The profiles are principally concerned with the kinds of information and resources needed during refugee emergencies in order to facilitate contingency planning and action along with rapid decision-making. They are designed to satisfy a number of audiences including UNHCR decision-makers, UNHCR Headquarters personnel proceeding on mission, newly-appointed UNHCR field personnel and consultants, UNHCR regional bureaux and field offices, and implementing partners. The UNHCR Handbook for Emergencies will often be able to provide complementary information.

Various sections of UNHCR have helped the Emergency Unit compile this profile. The information does not claim to be complete - indeed an effort was made to keep the profile short, readable and concise while pointing readers to additional sources containing detail they may need. The profile has been drawn up at short notice to respond to current demand and should be viewed as a draft that may still contain inconsistencies and inaccuracies. It would be appreciated if these as well as suggestions that may strengthen future editions of the Nicaragua profile could be brought to the Emergency Unit's attention.

Emergency Unit
Technical Support Service

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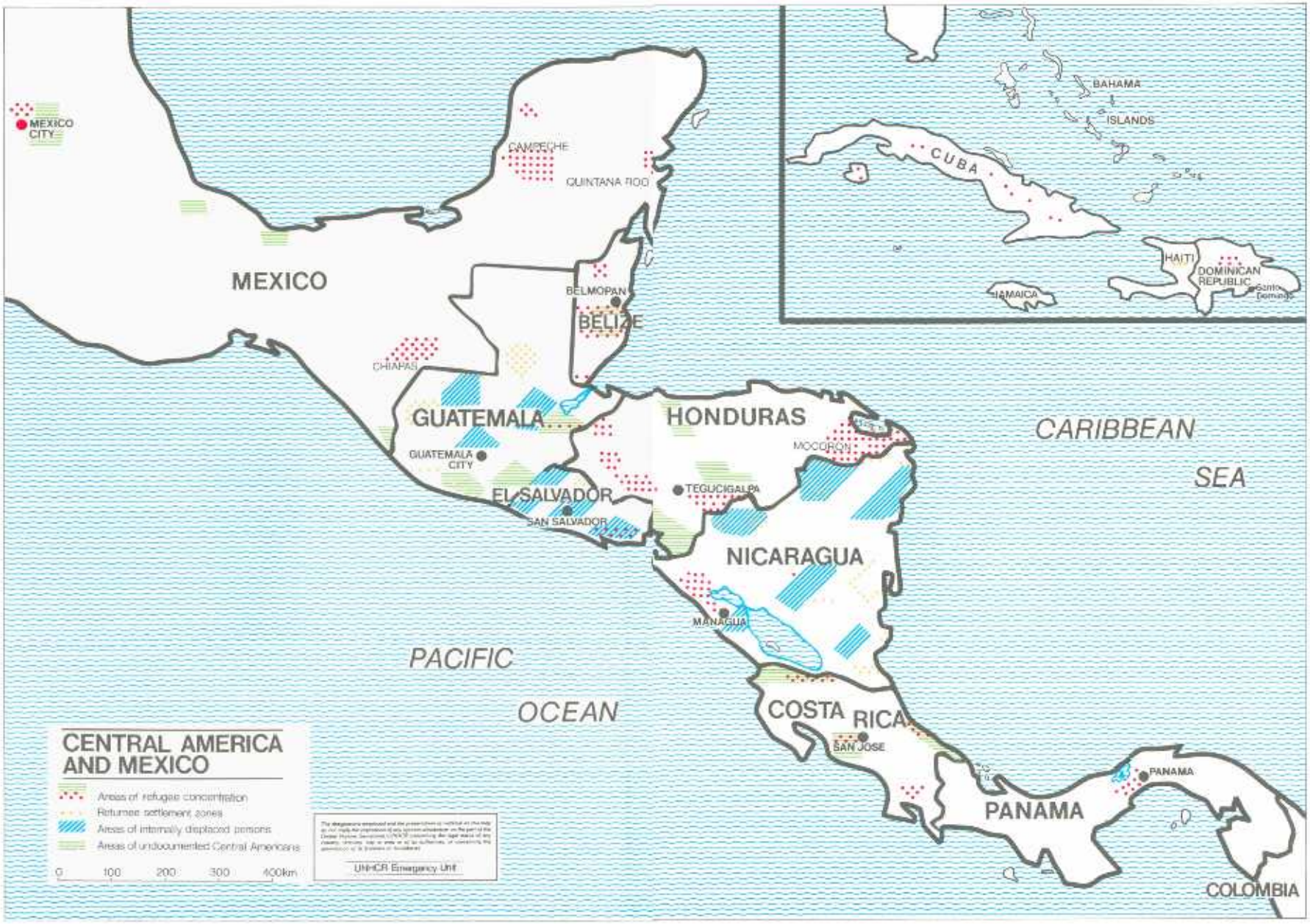
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COLOMBIA
BAHAMA
ISLANDS
CUBA
HAITI
DOMINICAN REPUBLIC
JAMAICA
CENTRAL AMERICA AND MEXICO
Areas of refugee concentration
Returnee settlement zones
Areas of internally displaced persons
Areas of undocumented Central Americans
0 100 200 300 400km
UNHCR Emergency Unit

TABLE OF CONTENTS

III. DESCRIPTION AND REQUIREMENTS OF AFFECTED POPULATIONS

A. Salvadorians - General
- Housing Customs
- Food Preferences
- Health Status
- Water and Sanitation

B. Salvadorian Refugees in Nicaragua
- Refugee Population
- Ethnic Origin
- Language
- Religion
- Social Origin

C. Guatemalans - General
- Housing Customs
- Food Preferences
- Health Status
- Water and Sanitation

D. Guatemalan Refugees in Nicaragua
- Refugee Population
- Language
- Religion
- Social Origin

E. Nicaraguan Returnees
- Overview
- Returnee Population
- Food Preferences
- Health Status
- Water and Sanitation

IV. INSTITUTIONAL RESOURCES/PROGRAMMES

A. Relief Machinery of the Government of Nicaragua
- Policy Towards Refugees and Returnees
- Government Organization
- Relationship with UNHCR

B. UNHCR Presence
- UNHCR Chargé de Mission in Nicaragua
- UNHCR Field Office in Puerto Cabezas

C. UN Agencies

D. Voluntary Organizations

E. Other Organizations

ANNEX I

A. UNHCR Assistance Activities

I. Basic Facts

A. Time Zone

GMT: -6 hours

B. Currency

US$1 = 50,200 cordobas (as of March 1990; for current UN exchange rate and information on parallel rates, consult UNHCR Finance Section)

C. Visa Information/ Vaccination Requirements

Visa Information: Visitors must have a passport with a minimum validity of six months. No visa is required by nationals of Central American countries, Canada, Belgium, Denmark, Liechtenstein, Luxembourg, Netherlands, Norway, Finland, Spain, Switzerland or the United Kingdom for a 90-day stay. Citizens of all other countries need a visa. These should be obtained 30 days before arriving at the border (90 days if working in an International Brigade).

Note: Visitors to Nicaragua must carry their passports (or a photocopy) with them at all times.

Vaccination Requirements: No vaccination certificates required. A yellow fever certificate is recommended.

D. Calendar and Holidays

1 January	New Year's Day
23 March	Maundy Thursday
24 March	Good Friday
1 May	Labour Day
19 July	Liberation Day
1 August	St. Domingo Day (Managua Local Holiday)
10 August	Managua Local Holiday
14 September	Battle of San Jacint
25 December	Christmas

Note: A considerable number of local holidays are also observed.

E. Recent History

Nicaragua, which became an independent state in 1838 later came under the control of the United States of America (1912 - 1933). Nationalist opposition to this occupation broke out into guerrilla warfare in 1927, under the leadership of General César Augusto Sandino.

General Anastasio Somoza García, who was appointed as supreme commander of the Nicaraguan National Guard before the withdrawal of the American forces in 1933, assumed the leadership of the country until his assassination in 1956. He was succeeded by his two sons until the deposition of the younger in 1979 by a Junta representing the Sandanista guerrillas and their civilian allies.

Elections held in 1984 saw the victory of the Frente Sandinista de Liberación Nacional (FSLN) with 67% of the vote. Daniel Ortega Saavedra was elected President. Armed opposition to the new government (the Nicaraguan resistance, Nicaraguan exiles operating out of Honduras) was supported by the US government.

Elections held in February 1990, resulted in a majority of votes being cast for a new government - a coalition of 14 political parties, the Unión Nacional Opositora (UNO), ranging across the political spectrum. While UNO holds 51 seats in the National Assembly, the FSLN with 39 seats remains the single largest cohesive political organization in the country. Without a two-thirds majority in the assembly, the Government is not in a position to make constitutional reforms. The official handover of government took place on 25 April 1990.

F. Government

Political Status: Nicaragua is a Republic.

Structure: Executive power is vested in the President who is the Head of State, Head of Government and Commander-in-Chief of the Defence and Security Forces of the Nation. He is elected by popular vote for a six-year term. The President is assisted by a Vice-President and an appointed Cabinet. Legislative power is held by the

96-member National Assembly, elected by universal adult suffrage under a system of proportional representation. The Assembly, which replaced the Council of State, drafted a new constitution, which was promulgated in January 1987.

Regional Organization: The country is divided into six regions and three special zones, which in turn are subdivided into 16 departments, each headed by a political appointee of the President. The departments comprise 140 municipalities. On 7 September 1987, a law was passed granting autonomy to the regions of the Atlantic coast. The department of Zelaya was divided into two regions: North Atlantic Autonomous Region and South Atlantic Autonomous Region.

G. Language

The official language is Spanish. The languages of the ethnic minorities: Miskitos, Sumos, Creoles and Ramas have been recognized in the new constitution as official languages.

H. Religion

There is freedom of religion. The majority of the population is Roman Catholic. Some 10% are Protestant and there are small Jewish communities in the larger cities.

I. Climate and Geography

Area: 128,875 sq km

Geographical Overview: Nicaragua is the largest country of Central America. Tropical forests cover about one half of the country and include royal cedar and walnut trees; the eastern lowlands are generally covered with savanna vegetation, except on the Mosquito Coast, where rain forests prevail.
Nicaragua can be divided into three well-marked regions:

The Pacific Zone: which runs from the Gulf of Fonseca, on the Pacific, to the Costa Rican border south of Lake Nicaragua.
The Central Zone: a large triangular shaped central mountain, its eastern slopes are deeply forested with oak and pine on the cooler heights.
The Atlantic Zone: has highly dissected and thickly forested mountain ranges that alternate with basins and fertile valleys.

Rivers and Lakes:

The San Juan river links Lake Nicaragua to the Atlantic Ocean and forms the southern boundary with Costa Rica. The Coco River (425 miles long), with a drainage basin of 2,240 square miles, forms most of the boundary with Honduras. The country has two big lakes, Lake Nicaragua (Cocibolca), in the Pacific lowlands, and Lake Managua (Xolotlan), in the southwest interior. The capital of Nicaragua, Managua, is on its shores.

Mountains and Volcanoes:

The cordilleras, Isabella and Darien, are in the middle of the country. Pico Mogotón (2,107 m.) in the Dipilto Mountains, along the border with Honduras, is the country's highest point.

There is a discontinous belt of dormant and active volcanoes near the Pacific Coast. Cerro Negro last erupted in 1971; none of the small craters around Managua are active, with the exception of the volcano, Santiago (Masaya). The volcanic chain continues northwest into El Salvador and to the south into Costa Rica. The volcanic ash makes rich soil for crops.

Seismic activity is frequent, and, in 1972, an earthquake devastated much of Managua.

Climate:

Nicaragua has a tropical climate except for scattered high altitude locations in the Central Highlands which have mild (tierra templada) or cool (tierra fría) weather. The country has a dry season from January to mid-May, and a wet season between mid-May and December.

On the Atlantic coast the dry season is short and not wholly dry. The Pacific dry season becomes very dusty, especially when the winds blow in February.

During the wet season, warm winds off the Caribbean pour heavy rain on the Atlantic coastal zone, especially in the southern basin of the San Juan River. Rainfall averages more than six metres annually.

Within the tropical classification, three types of climate may be defined:

Wet tropical: Caribbean plains and eastern slopes of Central Highlands. Hot, humid with no real cool or dry season. In this area, there are occasional storms, locally called "papagayos", due to the mid-winter influx of polar air. Average annual rainfall is 150".

Tropical wet and dry: West of the continental divide in the central highlands to the Pacific coast. Western slopes of cordillera and sierras in Diriamba are driest since they are in the rain shadow of trade winds. Temperatures are warm throughout the year.

Highlands: Extensive areas exist at high elevations (Jinotega, Matagalpa) where the mean annual temperature is 25°C. Humidity is high all year round, although relatively lower in southern highlands. Rains are gentle but persistent except during rare "papagayo" storms. Local variations in climate are frequent and pronounced.

J. Disaster Vulnerability

Nicaragua has been affected by several types of natural disaster: earthquakes, epidemics, hurricanes, floods, drought, and volcanic eruption. About 60% of the country's population live in the geologically unstable Pacific area. The earthquake of December 1972 destroyed the centre of Managua and nearly 80% of the people were left homeless.

There are 22 volcanic centres on the Pacific slope. The Central American volcanic chain runs through Managua and its activity has been continuous in the country's history. The last major eruption was Cerro Negro, near Managua, in 1971.

Flash floods are rare but have occurred in Chinandega, León, Masaya, Granada and Rivas. The Atlantic coast of the country is vulnerable to hurricanes, the most recent of which hit Bluefields in October 1988 and devastated a large part of the South Atlantic Autonomous Region. In the years 1969 to 1973, drought caused big crop losses and production levels decreased by between 40 to 15%.

K. Economy

Agriculture, including forestry and fishing, is the main economic activity in the country. It accounts for between 20% and 23% of annual GDP and employs about 45% of the working population.

The agricultural sector was severely disrupted by the revolutionary war of 1979. Following the conflict, the State expropriated one million hectares of land, of which 700,000 hectares were converted into state farms, and

the rest transferred to peasant co-operatives. As of 31 December 1986, 14% of the land was owned by the State, 26% by co-operatives and the rest by individual farmers.

The major crops are cotton, coffee (47% of total export earnings in 1987), sugarcane, tobacco, livestock, lobster, sesame and bananas. Beans, rice, maize and ipeacuanha and timber production are also important. However, fishing, forestry, grain and cattle production have been adversely affected by civil strife in the main growing areas.

Manufacturing activity in Nicaragua centres on the processing and packing of local agricultural produce, although some heavy industries, such as petroleum refining and cement production, also exist. Manufacturing's overall contribution to the GDP was estimated at 27.7% in 1986.

The mining sector, which was completely nationalized in 1979, contributed slightly less than 1% of GDP in 1986. Activity is largely centred on gold, silver, and salt mining, although workable deposits of lead, tungsten, iron ore, and zinc were discovered in 1986.

Balance of Payments: The total foreign debt was estimated in 1988 at US$ 6,000 million. In 1986, exports amounted to US$ 242.5 million compared with imports of US$ 836 million.

Exports: Cotton and coffee are the main export commodities. The country also exports meat, bananas, sugar and seafood. Principal trading partners: EEC countries, USSR, USA, China, Japan, Costa Rica and Mexico.

Imports: Principal import commodities are primary materials and intermediate products, mineral fuel and lubricants, and capital goods. Main suppliers are: the USA, Venezuela, Panama, Canada, Guatemala, and Costa Rica.

Crop Production and Livestock: Nicaragua's major crops include seed cotton, maize, rice (paddy), cottonseed, bananas and sorghum. Livestock includes cattle, pigs, horses and mules.

PLANTING AND HARVESTING CALENDAR

Commodity	Planting Season	Harvesting Season
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
Sorghum	September-October	December-January
Cotton	July-August	December-February
Fruit		
Bananas		Throughout year
Pineapples	July-August	March-June
Peanuts	June-August	November-January
Sesame:		
Early crop	June	August
Main crop	September	December-February
Sugarcane	May-June	December-March
Tobacco:		
Seeding	July	----
Transplanting	September	December-January
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

Source: Planting and Harvesting Seasons in Latin America. Foreign Agricultural Service. United States Department of Agriculture, by Mary S. Coyner. July 1958.

L. Population

Population by Departments: 1987 projections: information from INEC (Instituto Nicaragüense de Estadísticas y Censo)

Department	Population
Boaco	118,848
Carazo	138,557
Chinandega	325,236
Chontales	203,124
Esteli	153,335
Granada	150,119
Jinotega	149,261
León	283,307
Madriz	78,744
Managua	949,920
Masaya	209,178
Matagalpa	291,037
Nueva Segovia	111,182
Río San Juan	39,406
Rivas	133,119
Zelaya	172,803
Total	**3,501,176**

Population density at mid-1987 was estimated at 33.9/km^2. According to INEC projections, the country had a total population of 3,501,176 million in 1987 (estimated 3.7 million in 1989).

M. Health

Vital Statistics :

Births/1,000 population (1980-85):		44.2
Deaths/1,000 population (1980-85):		64.5
Infant mortality/1,000 live births (1980-85):		70.0
Life expectancy at birth (1982):		57.6 years
Access to safe water (% of families):	Urban	11.0
	Rural	6.0
Access to excreta disposal (% of population) (1987)		13.0
Immunization of infants (1983):		
- DPT, 3 doses		32.0%
- Measles		41.0%
- Polio, 3 doses		30.0%
- Tuberculosis		89.0%
- Pregnant women immunized against tetanus		31.1%
Physicians/1000 population (1983)		67.0
Nurses/1000 population (1983)		176.0
Hospital beds/1000 population (1983)		1.6

Health Care System:

The Ministry of Health is the central health authority with branches in the provinces. There is a three-tiered health system.

The Government and people's organizations, acting through the Ministry of Health, have two basic objectives: preventing the deterioration of health conditions and making the best possible use of the current capacity of the national health system.

According to official figures, in 1988 there were 1,734 doctors in the country, 1,300 nurses, and 3,846 auxiliary personnel.

Major Causes of Death:

High infant mortality is due mainly to preventable diseases such as acute diarrhoeal diseases, acute respiratory infections, septicemia, malnutrition, and neonatal death. The mortality rate for 15 to 49 year-olds, 10 per 1000, is mainly due to wounds inflicted by firearms.

Protein energy malnutrition continues to affect children under six years old and pregnant and nursing women. Studies conducted during 1988 showed that 22% of the school-age population suffer from malnutrition, vitamin A deficiency, and nutritional anemia.

N. Housing

Rural:

There are two types of traditional rural housing, the small rancho and a rectangular canol-type house.

The small rancho which is 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 contain a kitchen area.

People in the highlands live in a rectangular canol-type house. Additions (bajareque) 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 tiled. The main house consists of one or two rooms, the kitchen and sleeping areas are usually in the bajareque 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.

Urban: According to the 1971 census, over one quarter of the housing units in Managua were makeshift shelters of rooms in cuarterias, old houses subdivided into single rental units with shared water and sanitary facilities. Building materials used in Managua include hollow clay tile, concrete and concrete block, brick, structural steel and, to a limited extent, wood.

The homes of the very poor are constructed with concrete floors and foundations, wood siding, tile or zinc roofs. Most are shacks made of scrap materials. About half of lower middle-income housing is of wood, concrete block, or wood and block combination.

The other half, most of the city centre, uses a traditional construction called "taquezal" in which timber frame walls of widely spaced posts connected by double lathing are filled with stone and mud balls and plastered with stucco when dry. Floors and roofs are also wood framed, the latter overlaid with clay tile, cement, asbestos sheeting, or corrugated metal.

O. Transportation

Roads: In 1984, there were some 14,575 km of roads and tracks. Of these, 1,549 km were paved. The Pan American Highway runs for 384 km in Nicaragua and links Managua with the Honduran and Costa Rican frontiers. The Atlantic and Pacific highways connect Managua with the coastal regions.

Ports: Corinto, Puerto Sandino, and San Juan del Sur on the Pacific, and Puerto Cabezas, Bluefields, Puerto Arlen Siu, and Puerto General Benjamin Zeledón on the Atlantic, are the principal ports. Corinto deals with about 60% of trade. A deep-water port, under construction at El Bluff, was due to be completed in 1988.

Railroads: There is only one railway, the Ferrocarril del Pacifico, which is 343 km long and single track, with a gauge of 1.067 metres. The León-Corinto (56 km) portion was destroyed during the Alleta floods in 1982.

Airports: The international airport, Augusto César Sandino, in Managua, is the major airport. The country has a total of 197 airfields: nine with runways averaging in length from 1,220 to 2,439 m.; 186 are agricultural airfields.

Airlines: Domestic: Aeronica (Managua, D.N.) provides domestic and international services to El Salvador, Guatemala, Mexico and Panama.

International: Nicaragua is also served by Aeroflot (U.S.S.R.), Compañía Panamena (COPA), Cuba de Aviación, Iberia (Spain), LACSA (Costa Rica),and SAHSA (Honduras).

P. Communications

There are two television channels of the Sistema Sandinista de Televisión. Because of the high cost of television sets (estimated in 1985 to number 160,000), use is concentrated in large urban centres and the upper income group.

The post and telecommunications directorate (TELCOR), an autonomous public enterprise, supervises the telecommunications system. The present system includes a low capacity wire and radio-relay network, connection into the Central American microwave net, and a satellite ground station.

In Managua, telephone services are unreliable between Managua, León, Chinandega and Corinto. In 1981, there were 55,800 telephones in the country, averaging 2.2 per 100 population.

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II. Infrastructural Resources of Nicaragua as Concern Refugees

A. Health System

Structure:

A single national health system (SNUS) is responsible for providing health care and education. The private sector takes care of the health needs of no more than 5% of the population.

In a three-tiered health system, the central level consists of the office of the Ministry of Health, regulatory bureaux, and national hospitals.

The regional levels comprise eight regions as follows (1980 population):

Region 1: Pacific North (León and Chinandega departments)- 438,600.

Region 2: Pacific Central (Managua department)- 816,700.

Region 3: South Pacific (Masaya, Granada, Carazo and Rivas departments)- 403,200.

Region 4: North Interior (Esteli, Madriz and Nueva Segovia departments)- 312,800.

Region 5: Interior Central (Matagalpa and Jinotega departments)- 327,500.

Region 6: Interior South (Boaco, Chontales, Rio San Juan, some municipalities of Zelaya department)- 287,600.

Region 7: North Atlantic (municipalities in Zelaya department to north of Prinzapolka River)- 82,400.

Region 8: South Atlantic (rest of Zelaya department)- 63,700.

Each area level (30,000- 40,000 people) has a health centre providing services in medicine, surgery, obstetrics, and pediatrics. Each health centre is responsible for four to five health posts. Twelve health workers are attached to health posts at the community level.

In 1985, the Ministry of Health managed 47 hospitals with a total of 5,015 beds (1.5 beds per 1,000 population, according to government figures). In 1985, Nicaragua had 484 health care units and 1,229 physicians, most of whom are concentrated in Managua. The ratio of dentists and nurses per population is considerably lower.

In rural areas, a distrust of modern medicine is reflected in a preference for midwives and "curanderos" rather than physicians.

Medical Supplies:

Apart from the requirements of the Ministry of Health and similar institutions, which make their own purchases, drugs are available to the public sector.

Pharmaceuticals are manufactured in Nicaragua, although production does not meet the demand. Additional medical supplies are purchased on the international market.

The quality of the drugs available in Nicaragua is a problem, and national agencies responsible for the control of drug quality lack the personnel required to evaluate pharmaceutical products.

Expanded Programme of Immunization:

UNICEF began supporting the Expanded Programme of Immunization (EPI/WHO) in 1980. At that time Nicaragua had the lowest percentage of vaccinated children in Central America.

The main activities of UNICEF in support of this programme have been: the establishment of a central pharmaceutical warehouse with four refrigerator rooms, the building of nine regional pharmaceutical storage rooms, a network covering all rural health stations, the establishment of a central workshop for cold-chain maintenance and for training regional cold-chain technicians, the services, on a joint basis with PAHO/WHO, of vaccination advisers, and grassroots vaccination education.

Cold chain:

Cold chain facilities are available at the central pharmacy warehouse in Managua, and at nine regional pharmaceutical storage rooms. A workshop for cold chain maintenance is available in Managua.

Vulnerability to Disease:

Malaria is the most serious tropical disease in the Central American region in terms of the number of cases registered, its potential for epidemics and its effect on the refugee population, displaced persons, migrants and rural population. Nicaragua has managed to stop epidemics in most of the country, although high endemic levels are still registered in marshy areas, especially on the Pacific coast. Many strains of malaria are highly resistant to pesticides.

Dengue fever: There is a dengue fever virus in the region with sporadic epidemics. Its vector, "Aedes aegypti", is also potentially dangerous for carrying urban yellow fever.
Enteric diseases, pneumonia, tetanus, measles: Poor sanitation, inadequate nutrition and lack of health care result in high mortality rates in children under five years of age.
Respiratory diseases, tuberculosis: Crowded living conditions in urban and rural slums facilitate the spread of respiratory diseases, especially tuberculosis which remains highly prevalent.
Intestinal infections: It is estimated that 80% of the population carry intestinal parasites.
Typhus and polio: are present throughout the country.
Leprosy: is found in the Pacific coast departments.
Chagas disease: Incidence is thought to be underreported.
Leishmaniasis: thought to be widespread in forest areas.
Encephalitis and rabies: occasionally reported.

Note: Gross under-reporting of diseases and causes of death make the identification of specific health problems difficult.

Source: OFDA. Nicaragua, A Country Report. USAID, Washington DC. 1981.

B. Transportation Resources

Road Network:

In recent years, the road network has deteriorated for lack of maintenance. In general, the highways and roads are in need of repair and reconstruction. Main roads link major towns in the Pacific region (83% of the highway system is in the Pacific area compared to 9.2% in the Atlantic region).

	The Pan-American Highway from the Honduran border to Costa Rica (384 km) is paved, as is the shorter international road to the Honduran frontier via Chinandega. The new road between Managua and Rama (for Bluefields) is almost entirely paved and is in good condition. In 1988, there were 14,575 km of road, (including 1,549 km of paved roads and 1,300 km all-weather roads).
Railway Network:	There is only one railway, Ferrocarril del Pacifico (Nicaraguan Pacific Railroad) which serves a small area in the Pacific region. It is 349 km long and single track, with a gauge of 1.067 metres.
Port Facilities:	Nicaragua's principal port is Corinto on the Pacific coast. Another Pacific port, Puerto Sandino, is not suitable for deep-water berthing facilities. There are three Atlantic coast ports: Puerto Cabezas, El Bluff and Puerto Isabel. They are linked with the Pacific zone by air, road and waterway (Managua-Rama-El Bluff).
Corinto:	Situated on the Pacific coast, Corinto is the principal port of Nicaragua.
Approach:	Outer access channel dredged to a depth of 14.6 m. and the inner channel to 13.35 m.
Accommodation:	Depth at entrance, 7.31 m lowest water, at quay and berth 6.7 to 7.31 m. Special berth with conveyor belt system. Loading and unloading by ship's gear. A dolphin has recently been constructed for tankers up to 20,000 deadweight tonnage. Pier is 380 m. long with 9.14 m. at mean low water.
Storage:	Warehouse facilities available.
Cranes:	Three cranes and 43 forklifts.
Container Facilities:	Container and roll-on/roll-off facilities are available.
Airport:	Augusto César Sandino International, Managua, 160 km.
El Bluff: (Bluefields)	Situated on the Atlantic coast.
Accommodation:	Harbour situated about 7 km from the city of Bluefields, separated by a shallow lagoon. Depth at entrance to harbour 7.62 m.

Storage:	No refrigerated space available.
Cranes:	No cranes or equipment.
Container Facilities:	Limited roll on/roll off facilities available at La Esperanza for vessels up to 3.05 m draught.
Development:	Work has begun on an extension of port facilities, including new deep-water berths at the top of the El Bluff peninsula. Plans include two main wharves, one 180 m long and the other 200 m; depth alongside is 12.5 m. Vessels up to 25,000 deadweight tonnage will be accommodated. Two warehouses will be built, one of 9,360 m^2 and the other 7,200 m^2. At a later stage, it is planned to incorporate two roll on/roll off ramps and a liquid terminal.
Airport:	Local airport at Bluefields (with daily service to international airport Augusto César Sandino at Managua) approximately 7 km from the port.
Puerto Cabezas:	Situated on the Atlantic coast.
Largest Vessel:	91.4 m length overall.
Accommodation:	Government wharf with three berths. Berth 2 is operational for ocean-going vessels, having depth alongside of 5.8 m. Berth 3 is 3,102 m long with a depth of 3.7 m and is used by local vessels.
Storage:	Warehouse available for transit cargo.
Cranes:	Three cranes with capacities of 15, 25 and 30 tonnes.
Development:	A warehouse of 1,200 m and open storage are to be made available. A new wharf project is under construction.
Airport:	Approximately 1.6 km from port.
Puerto Sandino:	Situated on the Pacific coast.
Accommodation:	Deep water channel for unloading barges onto a small dock. Vessels discharge load into lighters at anchorage.
Storage:	Warehouses with a total capacity of 19,800 tonnes. Esso Oil Co. pumping station with two storage tanks of 250,000 barrels each.

Cranes: Four cranes of 8 tonne capacity and forklifts.

Airport: Augusto César Sandino International, Managua, 80 km away.

San Juan del Sur: Situated on the Pacific coast.

Accommodation: Vessels anchor, loading and unloading by lighters of which five are available with an average capacity of 150 tonnes.

Storage: Warehouse facilities available.

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

Airport: Augusto César Sandino International, Managua, 141 km away.

Note: For additional port information, see Lloyds of London, Ports of the World (Lloyds of London Press Ltd., Essex).

Airport Facilities: The international airport, Augusto César Sandino, in Managua, is the major airport. The country has a total of 428 airfields (of which 413 are usable). Of these, nine have permanent-surface runways; nine have runways with lengths between 1,220 and 2,439 m.

AIRPORT FACILITIES

Aerodrome	Elevation (ft)	Runway Length	Runway Surface	Aircraft Capacity
Bluefields	86'	6,496'	Gravel	not available
Los Brasiles	262'	3,002'	Asphalt	not available
Augusto César Sandino (Managua)	194'	7,999'	Asphalt	B707-300C
Puerto Cabezas	49'	6,200'	Asphalt	B720-59B

Source: Jeppesen Airport Directory, 1988.

For further details contact the International Civil Aviation Organization in Montreal.

C. Communications

Telephone and Telex Services:

The 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 reconstruction activity has added to its difficulties.

The present system includes a low-capacity wire and radio relay network (being replaced after war damage), connection into the Central American microwave net, and satellite ground station.

Telex services in Nicaragua are irregular.

Radio Network:

In 1985, there were an estimated 200,000 radio receivers in use. There are over 50 radio stations, run variously by the government, the Frente Sandinista de Liberación Nacional, and religious, cultural, or commercial interests.

D. Water Resources

National Water Authorities:

In Nicaragua, the water sector is the responsibility of the Nicaraguan Institute for Water Supply and Sewage (Instituto Nicaragüense de Acueductos y Alcantarillados - INAA), the Ministry of Health, and the Ministry of Planning. The INAA was created by the Government in 1979, and its principal role is to plan, construct, operate, and maintain water supply and sewage systems.

Access to Potable Water:

Only about 40% of Nicaragua's families have access to potable water. In rural areas, this figure is only 11%, and in especially poor rural areas, the figure is less than 6%. These figures are the lowest in Central America. The Government has made considerable efforts to provide water and sanitation facilities, but a comprehensive solution to these problems is extremely expensive and can be expected only in the distant future.

Sources of Water Supply:

Surface water: About 90% of run-off flows into the Atlantic and 10% into the Pacific. The three major watersheds of the country are the Coco River, the San Juan River (which is connected to Lake Nicaragua) and the Grande de Matagalpa River, all discharging into the Atlantic.

The 35 watercourses on the Pacific side are generally seasonal and are rather short, not exceeding 20 km in length. The chief river on the Pacific is the Estero Real which discharges into the Gulf of Fonseca.

However, these surface water sources are usually unsafe for human consumption. Water from surface sources serving the urban and peri-urban population must be chemically treated before it is drinkable. Treatment usually requires sedimentation, filtration, and disinfection.

Groundwater: Most of the groundwater extracted in Nicaragua originates from quaternary formations, all good aquifers. Most information available regarding tertiary and cretaceous aquifers is from the Pacific area. The Ministry of Economy, Industry and Trade has responsibility for groundwater exploration and development through two of its technical services: the National Geological Survey (SGN) and the Service for the Inventory of Natural Resources (CATASTRO).

With the assistance of the United Nations Development Programme (UNDP), the SGN has organized a department for Water Resources, which includes a groundwater section (four engineers, three technicians), one surface water section, one drilling section (three rigs) and laboratory facilities.

Groundwater provides most of the domestic, drinking and industrial water needs of Managua, other main cities and industries. In rural areas groundwater is used extensively for consumption and irrigation. Potential usable water in Nicaragua is estimated to be 400 million cubic metres per annum.

Problems encountered in water development are limited salt-water intrusion or other types of water contamination near the shores of the Pacific and those of Lake Managua, and mutual pumping interferences in the areas of extensive groundwater development (Managua, Granada, León and Chinandega).

Water Projects: UNICEF has a programme in Nicaragua to improve water supply and sanitation. The assistance has stressed local training in sanitation and pump maintenance, community education, latrine construction, and to a lesser degree, rural

water supply. According to UNICEF, the country needs greater assistance in furnishing its population with safe drinking water, and increased emphasis needs to be placed on low-cost technology and broad community participation.

Equipment/Parts Procurement:

Most of the equipment and chemicals used in the development of water resources in Nicaragua must be procured from international sources.

The following types of equipment are likely to be required for water supply systems in Nicaragua:

- Portable filtration tanks
- Handpumps, or monopumps are recommended
- Mobile tanker lorries for distribution to areas where no water source is available or easily accessible
- Storage tanks of 30,000 litres capacity (Rubber tanks must be ordered abroad but can be easily airlifted. Metallic or concrete tanks can be made locally although building materials are not always available)
- Individual storage containers of 10 litre capacity for individual transporting and storage
- Other well digging equipment, buckets, and eventually deep-level well drilling equipment (drilling rig, deep well pumps with fuel and/or generator, and distribution systems)
- Generator sets, distribution piping, casings, sedimentation tanks with coagulation facilities, collapsible water bladders, chlorination systems
- Other well digging equipment, buckets and deep-level drilling equipment.

Note: For a more thorough discussion of water supply in emergencies, refer to the UNHCR Handbook for Emergencies, Chapter 9.

E. Storage Facilities

Port Storage:

Port Corinto: Principal port of Nicaragua has warehouse facilities available.

El Bluff: There is no refrigerated space available. Two warehouses will be built, one of 9,360 m. and the other 7,200 m.

Puerto Cabezas: Storage warehouse available for transit cargo. A warehouse of 1,200 m. and open storage are to be made available.

Puerto Sandino: Warehouse facilities with a total capacity of 19,800 tonnes.

San Juan del Sur: Warehouse facilities available.

Voluntary Agency Storage:

Catholic Relief Services and Caritas have storage facilities for food and other supplies.

The Government of Nicaragua via INCET operates 100 regional grain storage facilities (total capacity 12,200 tonnes). Terminal facilities are located in Chinandega, San Isidro, and Managua, with a total capacity of 52,500 tonnes.

Note: Further information on supply storage can be found in the UNHCR Handbook for Emergencies, Chapter 5.

Source: OFDA. Nicaragua, A Country Report. USAID, Washington DC, 1981.