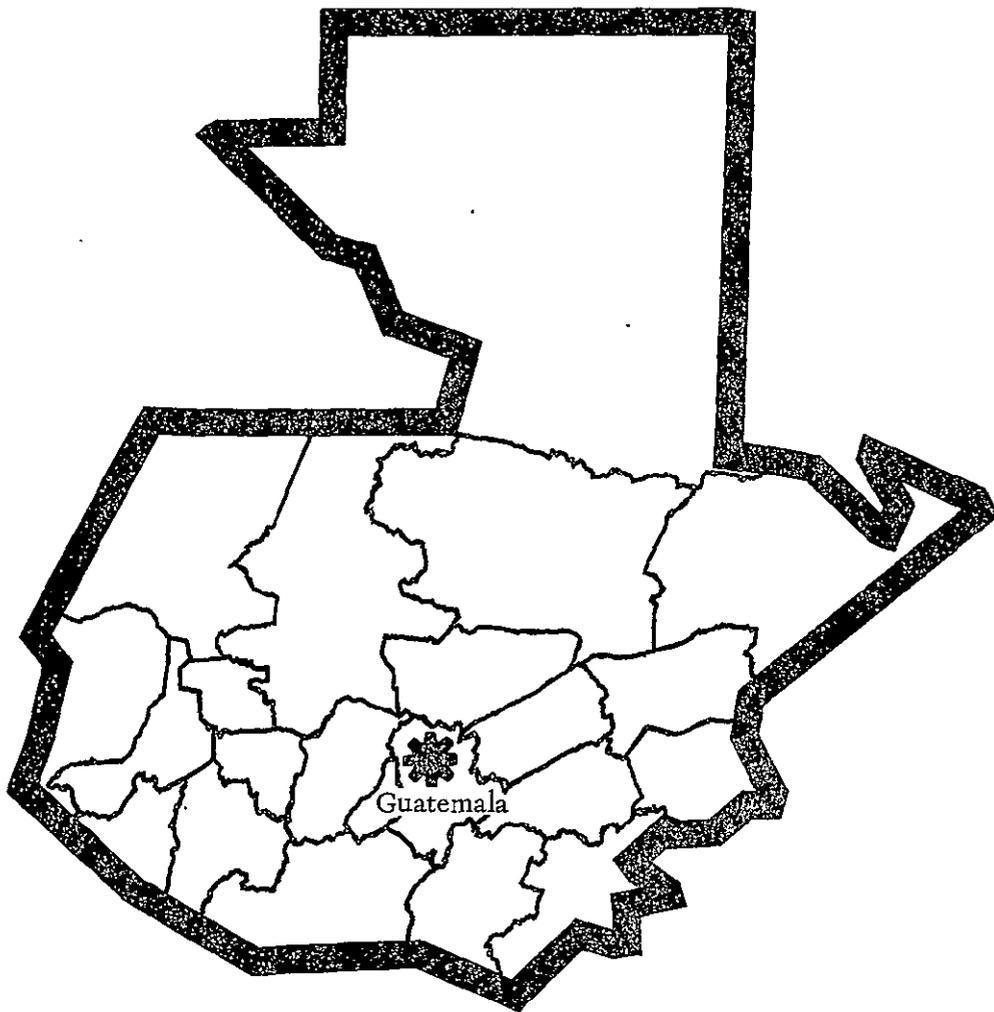


Guatemala

A Country Profile



1982

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

Guatemala



502473 1-76 (541403)
 Lambert Conformal Projection
 Standard parallels 9°20' and 14°40'
 Scale 1:2,800,000
 Boundary representation is
 not necessarily authoritative

— Railroad
 — Road
 ✈ Airport

GUATEMALA: A COUNTRY PROFILE

prepared for

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

by

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

The profile on Guatemala is one in a series designed to provide baseline country data in support of the planning and relief operations of the Office of U.S. Foreign Disaster Assistance (OFDA). The content, scope, and sources have evolved over the course of the last three years, and no doubt will continue to do so. The relatively narrow focus is intentional. To avoid redundancy, some topics one might expect to find in a "country profile" are not covered here.

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

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

July 1982

OFDA COUNTRY PROFILES: JUNE 1982

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Cape Verde
Chad
Djibouti
East Africa Regional Profile
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Ethiopia
Kenya
Somalia
Sudan
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Gambia-Senegal
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ASIA

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Haiti

LATIN AMERICA

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1. General Information1.1 Geographic Codes

AID	520
State Region	ARA
FIPS	GT

1.2 Country Names

Legal	Republic of Guatemala
Short	Guatemala
Local	Republica de Guatemala

1.3 Calendar and Holidays

New Year's Day	January 1
Easter Holy Week	Varies
Labor Day	May 1
Anniversary of the Revolution	June 30
Bank Employees Day	July 1
Assumption (Guatemala City only)	August 15
Independence Day	September 15
Columbus Day	October 12
Revolution Day	October 20
All Saints Day	November 1
Christmas	December 24 and 25

Fiscal year: January 1 to December 31

1.4 Currency

1.00 Quetzal = US \$1.00 (June 1982)
100 Centavos = 1 Quetzal

1.5 Time Zones

EST - 1; GMT - 6

1.6 US Mission and Staff (January 1982)

Embassy of the United States
 7-01 Avenida de la Reforma, Zone 10
 APO Miami 34024
 Phone: 31-15-41

Ambassador.....Frederick L. Chapin
 Charge d'Affaires.....Melvin E. Sinn
 Economic Section.....David B. Timmins
 Commercial Section.....Robert W. Miller
 Political Section.....Richard C. Graham
 Labor Officer.....Raymond J. Gonzales
 Consul, Consular Section.....Raymond M. Bailey
 Administration Section.....Walter M. Notheis
 Regional Security Officer.....Willard Marsden, Jr.
 Agricultural Section.....Harry C. Bryan
 Agency for International
 Development.....Eliseo Carrasco
 Public Affairs Officer.....Marie L. Telich

1.7 Host Country Mission and Staff In US (February 1982)

Embassy of the Republic of Guatemala
 2220 R St. N.W.
 Washington, D.C. 20008
 Phone: (202) 332-2865/2866

Ambassador*.....Jorge Luis Zelaya Cornado
 Minister Counselor.....Norma J. Vasquez
 Defense, Military, Air,
 and Naval Attache.....Colonel Mario Paiz-Bolanos
 Counselor for Commercial and
 Technical Assistance....Luis A. Noriega

* As of June 1982

1.8 Sister Cities

Antigua	Montclair, CA
	Prattville, AL
Chichicastenango	Woodland Hills, CA
Coban	Birmingham, AL
Cuilapa	Huntsville, AL
Escuintla	Montgomery, AL
Guatemala City	Auburn, AL
	Walnut Creek, CA
Jalapa	Demopolis, AL
Jutiapa	Jasper, AL
Puerto Barrios	Mobile, AL
Quezaltenango	Livermore, CA
San Juan Sacatepequez	Wilmington, DE
Santa Lucia	Tuscaloosa, AL
Soloia	Guntersville, AL
Zacapa	Selma, AL

1.9 Treaties and Agreements

Treaty of Peace, Amity, Commerce, and Navigation
 Military Air Transit
 Defense and Mutual Security
 Economic and Technical Cooperation
 Investment Guaranties
 Status of the Army and Air Force Missions to Guatemala
 Peace Corps
 Telecommunication
 Trade and Commerce
 Visas

1.10 International Organization Memberships

CACM (Central American Common Market), FAO, G-77, IADB (Inter-America Defense Board), IAEA, IBRD, ICAC, ICAO, ICO, IDA, IDB, IFC, IHO, ILO, IMF, ISO (International Sugar Organization), ITU, IWC (International Wheat Council), OAS, ODECA, SELA, UN, UNESCO, UPEB (Union of Banana Exporting Countries), UPU, WHO, WMO.

1.11 Travel and Visa Information

A passport and visa or tourist card are required. A tourist card (\$1.00) is valid for 6 months. Entry into the country must occur within 30 days of issue. Cards may be obtained from the Consulate or from airlines serving Guatemala. A personal appearance and appropriate identification (passport or birth certificate) are necessary. Check with Embassy/Consulate for specific requirements.

No vaccinations are required. Immunizations against hepatitis, typhoid and paratyphoid, typhus, polio, and tetanus are advisable for extended stays.

1.12 Ethnic and Sociocultural Groups

There are two distinct ethnic types: Ladino and Indian. Affiliation depends more on cultural behavior than on physical type. Ladino racial make-up may vary from European through mestizo to Indian, particularly in rural areas. The 1950 and 1964 censuses designated as Ladino all people not culturally Indian, including blacks and Asians. Ladino culture is Hispanic and Spanish is the primary language. A well-defined class structure is based on descent and wealth. Western family (nuclear) and community structure, religious observance (secular Catholicism), and mass-produced goods are preferred. The welfare of the individual is emphasized over that of the community. Ladino culture is also urban-oriented. Occupations fall into commercial, service, semi-professional, and professional categories.

In contrast, Indian social structure is based on the extended family and, in many highland communities, a system of religious brotherhoods or *cofradías*. Individual status depends on age and prestige earned through contributions to the community. Spanish is spoken as a second language by most men and some women, but local Indian language is used in the home. Subsistence or small scale, market-oriented farming (supplemented by handicrafts) is the main source of income. Agricultural day-labor provides additional income for some Indians and, for the poorest, it is the primary occupation. Seasonal migration to work commercial farms on the south coast is increasing. An estimated 500,000 laborers, most from the western highlands, are employed there.

Forty-three percent of the population is classed as indigenous or, Indian. Most live in small rural villages. Indians predominate in the western and central highlands, Ladinos in the capital area, the eastern desert, and on the Caribbean and Pacific coasts. Ladino elites traditionally control economic, social, and religious affairs, though the introduc-

tion of township government elections has diminished their local political power. Migration to urban areas and adoption of Spanish language and culture by many Indians has been increasing in recent years and has provided the primary route for upward mobility for Indians.

Small numbers of blacks and Carib Indians, whose cultural affinities are with the West Indies rather than Central America, live in the Atlantic coastal areas.

1.13 Languages

Spanish, the official language, is used in government, education, and commerce. Twelve to twenty indigenous languages and/or dialects, most belonging to the Maya language family, are the primary languages of unacculturated Indians. Relative isolation of Indian groups has perpetuated significant differences in local languages and customs.

1.14 Education

Two-thirds of rural 7 to 14 year-old children do not attend school. Ninety percent of the 7 to 14 year-old children in the Highlands receive no formal education. Nationwide, only 12% of all 15 to 20 year-olds attend high school or vocational school.

The overall literacy rate is about 50%, but recent surveys indicate that as much as 82% of the indigenous population may be illiterate. Literacy in rural areas, 31%, is less than half that in cities, 70%. Indian men are often fluent (though illiterate) in Spanish; Indian women and children are markedly less so.

1.15 Religions

Ninety percent of the population is Roman Catholic. Ladino Catholicism conforms to the Spanish model, but Indian rites combine Catholic and Mayan elements. Christian deities and saints are identified with and assume the attributes of their Mayan counterparts. Pre-Columbian rituals have been adapted to include appropriate saints. Religious brotherhoods (cofrades) are important in the community as well as in the activities of most Mayan groups.

Protestant sects include: Assemblies of God, Central American Mission, Evangelical Presbyterian Church, Church of God, Friends, Church of the Nazarene, and Southern Baptist Convention.

2. Government

2.1 National Government

Political power is traditionally personal rather than institutional. A President, elected to a 4-year nonrenewable term by direct vote, appoints and presides over the council of ministers, and is Commander-in-Chief of the armed forces. The unicameral legislature consists of 60 members who also serve 4-year nonrenewable terms.

2.2 Regional Organization

The 22 administrative departments are headed by governors appointed by the President. Departments are divided into 326 municipalities under elected mayors.

2.3 1982 Status

Between 1980 and 1982, guerrilla activity and political terrorism in Guatemala have continued to escalate. In the elections held on March 7, 1982, the Government-backed candidate, General Anibal Guevara, who received approximately 35% of the vote, claimed victory. However, on March 23, 1982, just sixteen days after the elections, and before the new President's inauguration, a group of junior military officers staged a coup and ousted the incumbent leader of the country, President Lucas Garcia. Charging that the March 7 elections were fraudulent, that Lucas Garcia had imposed a government that was not representative of the people, and that the Garcia administration was corrupt and mismanaged, the leaders of the coup suspended the Constitution, dismissed Congress, and banned all political activity. The junta promised to respect civil rights, organize an honest government, put an end to right-wing violence, and restore democracy. General Jose Efraim Rios Montt, a retired military officer and former presidential candidate, was named to head the new government. The junta announced that it plans to hold new elections within eighteen months.

2.4 Major Government Figures (June 1982)

President and Minister of
 Defense.....Rios Montt, Jose Efraim, Gen.*

Min. of Interior.....Maldonado Schaad, Horacio Egberto, Gen.*
Min. of Communications &
Public Work.....Gordillo, Martinez, Francisco Luis, Col.*
Min. of Foreign Affairs.....Castillo Arriola, Eduardo
Min. of Labor & Welfare.....Palma Figueroa, Otto
Min. of Public Health.....Castaneda Felice, Adolfo, Dr.
Min. of Economy.....Matheu Duchez, Julio
Min. of Agriculture.....Martinez Recinos, Otto
Min. of Education.....Merida Lopez, Luis
Min. of Finance.....Figueroa Villate, Leonardo, Col.

* Member of the military junta

Note: On June 9, 1982, General Rios Montt assumed absolute control of the Guatemalan government. The two other members of the military junta, General Maldonado Shaad and Colonel Luis Gordillo then submitted their resignations.

3. Disaster Preparedness

3.1 Disaster Types and History

The major disasters that are likely to occur in Guatemala are earthquakes, floods, volcanic eruptions, and hurricanes. Guatemala City and the old capital of Antigua have been severely damaged by earthquakes at least 15 times since the early 16th century. The epicenter of the last major earthquake (February 4, 1976) was located in the Motagua River Valley, the least active of 3 seismic zones that transect the country. However, this earthquake proved to be the most destructive in recent Guatemalan history. Figures for total destruction included 22,868 killed, 1.07 million homeless, 254,000 houses destroyed, and \$1.1 billion in damages. In Guatemala City 1,200 were killed and 45% of the city was destroyed. Thousands of landslides (secondary effects of the shock) blocked roads and cut surface communications throughout central Guatemala and between Guatemala City and the deepwater Atlantic Ocean ports. Major slides formed dams and upset the normal drainage pattern, resulting in added danger of flooding from newly created lakes and streams.

Disaster History

<u>Disaster</u>	<u>Location</u>	<u>Date</u>	<u>Killed #</u>	<u>Victims #</u>	<u>Damage (\$000)</u>
Volcanic Eruption	Santa Maria	4/08	1,000	NA	NA
Fire	Guatemala City	7/60	225	1,600	NA
Fire	Guatemala City	1/68	2	150	20
Epidemic	Countrywide	6/69	0	NA	NA
Civil Strife	Chiquimula	7/69	0	5,500	NA
Hurricane	Pacific Coast	9/69	269	8,521	15,000
Flood	SW Coast, Pantaleon River	6/73	6	1,000	2,500
Earthquake	Guatemala City and Surrounding Region	2/76	23,000	3,750,000	1,000,000
Earthquake	Southeast	10/79	0	2,040	NA

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

3.2 Host Disaster Plan

A National Emergency Committee, located at the La Aurora Airport, (Tel. 62003; 62716), is responsible for coordinating and carrying out disaster relief operations. Established in 1969, the Committee is permanently attached to the Office of the President. It is headed by the Minister of National Defense, and includes the heads of several government ministries, business leaders, and representatives from private organizations. A General Coordinator is responsible for day-to-day operations. During a disaster, he will coordinate the distribution of all emergency relief and direct the efforts of national and international voluntary agencies.

The Committee is organized into sections for distribution, engineering, intelligence, and warehousing. Among its functions are the provision of advance warnings, refuge for disaster victims, communications, evacuation, restoration of services, and administration of emergency relief. After the 1976 earthquake, the Committee also became involved in longer-term planning for reconstruction.

General Coordinator: Gen. Guillermo Echeverria Vielman
Sub-Coordinator: Capt. Mauro Jose Humberto Fuentes Soria
Office Tel: 62003
Home Tel: 41133

3.3 U.S. Plan

The most recent U.S. Mission Disaster Relief Plan was prepared in 1978. The U.S. Ambassador is listed as the principal liaison between the USG and the GOG. He determines the extent and timing of USG relief activities after a formal request for assistance has been made by the GOG. The USAID Director, with support from the Mission Disaster Relief Officer (MDRO) and the U.S. disaster team, mobilizes and directs disaster relief activities. A disaster relief operations center will be established at the Embassy or airport to facilitate disaster relief activities. Field inspectors will be dispatched to survey the damage and collect relevant information. Appropriate use will be made of available U.S. military resources. (For additional details, see USAID/Guatemala, Mission Disaster Plan, 1978.)

3.4 U.S. Disaster Relief Team

MDRO: Richard D. McLaughlin Alternate MDRO: Clara Carr
Chief of Mission: Frederick L. Chapin, Ambassador
Mission Director: Eliseo Carrasco

In the event of a disaster, mission staff would be responsible for the following functions:

Food and Water Preparation, Treatment and Distribution
Medical Services
Shelter and Survival Supplies
Engineering, Sanitation, Electrical Problems, Debris Clearance,
Building Inspection and Condemnation, Road and Bridge Inspection
and Clearance
Communications
Consular Affairs
Transportation and Logistics, Fuel, Supplies and Distribution
Rescue and Relief Assessments/Operations
Coordination Activities
Security
Monitoring Overall Activity
Administration and Reporting
Information
Clerical and Typing

3.5 Peace Corps

In June, 1982, there were 84 Peace Corps Volunteers (PCVs) and 11 administrators in Guatemala. Most of the PCVs are working in the eastern part of the country and are engaged in agricultural, health, forestry and conservation, public works, and other economic development projects. The Peace Corps program is coordinated from a central headquarters in Guatemala City.

Ronald Arms, Director
6a. Avenida 1-46, Zona 2
Guatemala City
Tel: 311541

3.6 U.S. Volags

Agricultural Cooperative Development International
David C. Fliederjohn, Cooperative Advisor
c/o American Embassy
7-01 Avenida da la Reforma, Zona 10

Guatemala City
(APO New York 09891)
Tel: 80881
Assists local cooperatives in promoting colonization of virgin lands.

Agua del Pueblo
Carlos Gomez, Executive Director
41 Calle 5-01, Zona 8
Guatemala City
Tel: 40913
Assists communities in designing, constructing, and improving rural water supplies and sanitation systems.

AMG International
Rev. Robert McRae
Apartado Postal 2936
Guatemala City
Operates a medical clinic in Guatemala City. Regularly sends medical teams on visits to outlying areas. Also operates schools and day care centers.

Benedictine Fathers
Monasterio Benedictino
La Resurreccion
Apartado Postal 19
Coban, Guatemala
Provides assistance in integrated rural development including giving medical assistance in rural clinics, agricultural extension work, and social work.

CARE, Inc.
Virginia Ubik, Country Director
Edificio Amado, 5th floor
6a. Avenida 6-47, Zona 9
(Apartado Postal 1211)
Guatemala City
Tel: 316192
Constructs water systems and sanitary facilities and provides health education to 7,500 rural villagers. Distributes PL 480 food to mothers and pre-

school-aged children through hospitals and maternal and child health centers. Operates a fisheries project to increase the nutritional status and incomes of 3,000 rural families. Also implementing forestry and soil conservation practices to improve agricultural productivity of small farmers.

Catholic Relief Services

Gustavo Carion, Program Director

CRS/Guatemala

11 Avenida 31-86, Zona 5

(Apartado Postal 739)

Guatemala City

Tel: 310945 Cable: CATHWEL, Guatemala Telex 245 Estamas GU

Supports water, health, and food production projects. Assists in the construction of rural schools and multipurpose community/ health/nutrition centers. Also distributes medicines, food, clothing, and agricultural tools.

Christian Children's Fund, Inc.

Lenore Powell

Edificio Camara de Industria, Piso 6

Calle Mariscal Cruz 9-21, Zona 4

(Apartado Postal 2542)

Guatemala City

Provides health clinics with funds for medicines, and health education. Assists in training community medical auxiliaries. Provides adult education programs in literacy, nutrition, health, and home management.

Church World Service

Edgar Fuentes, CWS Representative

Apartado Postal 2579

Guatemala City

Provides support for a potable water project at the Behrhorst Clinic in Chimaltenango. Also assists the Maria Amaya nutrition and health education project in rural areas.

Direct Relief Foundation

Supplies pharmaceuticals, medical supplies, and equipment. Operates a volunteer service where doctors and nurses donate their services for short periods of time.

The Episcopal Church in the U.S.A.

Armands R. Guerra

Apartado Postal 960

Guatemala City

Conducts a coordinated rural development project at Lago Izabal (head-

quartered in Mariscos). Activities include emergency aid, an outpatient clinic, instruction in agronomy, and coordinated community programs.

Food for the Hungry International

Raymond Hastings

24th Avenue 30-40, Zona 7

Kaminal Juju 2

Guatemala City

Operates an integrated rural development program in the villages of La Sargua and Monte Oscuro including medical clinics, nutrition education, and agricultural extension activities.

Habitat for Humanity

Pedro Castro

Aguacatan, Huehuetenango

Edgar Fuentes

Apartado Postal 2579

Guatemala City

Assisting 53 families in Aguacatan build earthquake resistant homes. Developing plans to provide potable drinking water. Supporting an experimental agricultural program in crop planting, fertilization, pest control, and soil testing.

International Institute of Rural Reconstruction

Gustavo Herrera, Chairman

Juan E. Cordova, Executive Director

Guatemala Rural Reconstruction Movement (GRMM)

11 Calle 8-14, Of. #43

(Apartado Postal 1697)

Guatemala City

Tel: 22801

Conducts a program of preventive medicine, inoculations, health, and sanitation projects. Cooperates with the Government in programs on malaria and parasite eradication, tuberculosis control, potable water, family planning, and medical consultation and treatment. Sponsors special programs on child health and nutrition. GRMM's activities are concentrated in the San Antonio Las Flores and La Montana de Santa Maria Xalapan regions in the southeastern state of Jalapa, an area containing 60 villages and 22,000 persons.

Lutneran World Relief, Inc.

Rev. John Durkovic

Apartado Postal 234

Guatemala City

Provides financial assistance and material aid to the Association of Community Health Services. Conducts workshops, trains local health care workers, and provides educational materials. Has also established a centralized pharmacy and a storage facility.

Maryknoll Sisters of St. Dominic

Colegio Monte Maria

Km 8 1/2 Carretera

Amatitlan, Zona 12

(Apartado Postal 1121)

Guatemala City

Operates a 50-bed hospital in Jacaltenango which also serves people in remote areas through mobile clinics. Trains health promoters in Huehuetenango, La Libertad, and Peten.

Mennonite Central Committee

Rich Sider, Director

Apartado Postal 1779

Guatemala City

Trains and supervises rural health promoters among the Kekchi Indians. Promotes sanitation and nutrition; teaches maternal and child health care; provides technical, material, and financial assistance to refugee and displaced persons projects. Operates a technology development and training center focusing on household improvement activities (water storage, earthquake-resistant housing construction, solar water heaters, and improved wood-burning stoves).

The People to People Health Foundation, Inc.

(Project Hope)

Dr. Alfonso Loarco, Field Coordinator

International Rural Development Project

Edificio Capuano 3A Nivel

Quetzaltenango

Provides primary health care, works to control communicable diseases, trains rural health technicians and local midwives. Conducting a survey to determine the prevalence of tuberculosis. Also involved with irrigation, water supply, food production, and road construction projects. The program assists approximately 10,000 people in the Department of San Marcos in the Western Highlands.

Primitive Methodist Church in the U.S.A

Rev. Donald Lawrence

Naboj, El Quiche

Operates a 25-bed hospital in Chichicastenango, El Quiche, providing both in-patient and out-patient services. Provides extension clinic programs in remote villages, transporting personnel by plane to areas with landing strips.

Project Concern, Inc.

Clinica Santiaguíto

Santiago Atitlan, Solola

Operates a primary health care program in Santiago Atitlan, with out-patient care and emergency hospitalization. The program includes a small hospital with X-ray and laboratory facilities, pharmacy, and emergency room provision for surgery. A public health program includes operation of nutrition centers, a maternal and child health clinic, and a tuberculosis treatment center. Local residents are trained as paramedics.

Rotary International

Bernardo Neumann, Chairman

Patronato Pro-Nutricion Infantil

7a. Avenida 6-26, Zona 9

Guatemala City

Supports a malnutrition prevention project in Guatemala City.

Salesians of St. John Bosco

Colegio Salesiano Don Bosco

26 Calle 2-46, Zona 1

Guatemala City

Operates 2 clinics in Guatemala City and 1 each in San Pedro Carcha and Campur. Assists agricultural development through provision of seed, fertilizer, and technical assistance.

The Salvation Army

Captain S. Melton, Regional Officer

Salvation Army Guatemala Region

15 Calle 8-39, Zona 1

Guatemala City

Operates a child care center in Tecpan and a community center in Guatemala City. Installed a large cement block plant in 1976 and is continuing to assist with housing construction projects.

Save the Children Federation, Inc.

Thomas B. Lent

ALIANZA

32 Calle 7-28, Zona 10

(Apartado Postal 2903)

Guatemala City

Participates in integrated rural development program in El Quiche (Joyabaj and Chiche), Chiquimula (San Jacinto), and San Marcos (San Miguel Ixtahuacan).

Seventh-day Adventist World Service, Inc.

Luis Alana

Apartado Postal 35-C

Guatemala City

Provides medical supplies, bedding, and clothing to social agencies throughout Guatemala.

World Vision Relief Organization, Inc.

Involved with development of water supply and irrigation systems; supports the training of health promoters in Las Cruces, Peten, Chimazat, and Balanya;; assists health education programs in San Juan Sacatepequez, Santa Brillas, and Quiche and supports a child care project in San Martin.

Please note - For a more detailed listing of U.S. Voluntary Agencies active in Guatemala see the American Council of Voluntary Agencies in Foreign Service, TAICH Country Report: Guatemala, 1982.

3.7 Other International and Voluntary Organizations

Guatemalan Red Cross

3a. Calle 8-40, Zona 1

Guatemala City

Tel: 24648 Cable: GUATECURZ, Guatemala

Caritas de Guatemala

11 Avenida 31-86, Zona 5

Guatemala City

Tel: 60642

UNDP

7a. Avenida 6-53, Zona 4

Edificio El Triangulo, 15th floor

Guatemala City

Tel: 62033 Cable: UNDEVPRO, Guatemala Telex: U18, UNDP, GU

OAS

3a. Calle 5-43, Zona 9

Guatemala City

Tel: 65095

UNESCO

3a. Avenida 13-28, Zona 1

Guatemala City

Tel: 82609, 534786

UNICEF

8a. Avenida 17-32, Zona 1
 Edificio el Cielito, Apt. 214
 Guatemala City
 Tel; 25118, 537055, 22253, 86461/5

FAO

7a. Avenida 6-53, Zona 4
 Edificio el Triangulo
 Guatemala City
 Tel: 310597

PAHO/WHO

12 Calle 6-15, Zona 9
 Guatemala City
 Tel: 310980

Rockefeller Foundation

5a. Avenida 12-31, Zona 9
 Guatemala City
 Tel: 310803

Volunteer Fireman (Cuerpo de Bomberos Voluntarios): have nationwide capabilities to respond to emergency situations, and did so in 1976.

Volunteer Fire Companies

<u>Company</u>	<u>Location</u>	<u>No. Men</u>
1	Guatemala City, Guatemala	66
2	Guatemala City, Guatemala	25
4	Guatemala City, Guatemala	35
5	Quezaltenango, Quezaltenango	28
6	Mazatenango, Suchitepéquez	35
7	Puerto Barrios, Izabal	27
8	Antigua Guatemala, Sacatepéquez	15
9	Puerto de San Jose, Escuintla	29
10	Guatemala City, Guatemala	49
11	Retalhuleu, Retalhuleu	22
12	El Quiché, El Quiché	16
13	Puerto Champerico, Retalhuleu	37
14	Escuintla, Escuintla	9
15	Tiquisate, Escuintla	18
16	San Marcos, San Marcos	24
17	Huehuetenango, Huehuetenango	23
18	Santa Lucia Cotzumaiguapa, Escuintla	19

<u>Company</u>	<u>Location</u>	<u>No. Men</u>
19	San Pedro Sacatepequez, San Marcos	36
20	Malacatan, San Marcos	36
21	Chimaltenango, Chimaltenango	17
22	Mixco, Guatemala	18
23	Zacapa, Zacapa	22
24	Nueva Concepcion, Escuintla	21
25	Villa Nueva, Guatemala	32
26	Jutiapa, Jutiapa	15
27	Santa Maria Nebaj, El Quiche	26
28	San Martin Jilotepeque, Chimaltenango	23

3.8 Host Resources

GOG will need assistance with disasters of great magnitude. If a major disaster were to occur, Guatemala is not apt to have sufficient emergency supplies to meet the needs of more than 50,000 victims. In terms of food resources, the country is generally self-sufficient in corn, beans, and rice. Unless the disaster was a prolonged drought or other such phenomenon affecting available food stocks, it is not likely that food items would be immediately required from outside sources.

Medical Resources

Drugs and related medical supplies are imported through Drogueria Nacional (12 Calle 0-41, Zona 1, Guatemala City, Tel: 82295). Private importation of medicines is also permitted. The distribution of medical supplies in the private sector is accomplished through pharmacies in the larger urban centers. Special distribution centers must be used in rural areas.

An operational cold chain does not exist. However, there are cold storage facilities in Guatemala City and in some of the other important towns. There is a 10 cu. m. cold storage facility at the International Airport. Three more cold storage facilities (25 cu. m., 8 cu. m., and 8 cu. m.) are located at the General Health Services Office. Cold Storage facilities also exist in certain private industries. Dry ice can be obtained from Cerveceria Centroamericano in Guatemala City and from Fabrica de Gases Industriales de Manuel S. Ayau.

Health Facilities - See Health, Nutrition, and Housing, section 5.

Transportation and Logistics Resources

Heavy Equipment

1. The Ministry of Communications and Public Works, Direccion General de Caminos, operates a large fleet of heavy equipment. It is headed by Ing. Rodolfo Rubio, Finca la Aurora, Zona 13, Telephone 310408.
2. There are three Guatemalan Army Engineer Units.

<u>Name</u>	<u>Location</u>	<u>Primary Mission</u>
1st Engineer Co.	Modesto Mendez	Work on road from Modesto Mendez to Alta Verapaz
2nd Engineer Co.	Chahal (Alta Verapaz)	Work on road from Alta Verapaz to Modesto Mendez
3rd Engineer Co.	Chinchila (El Peten)	Work on roads in the Peten

Patrol Boats

In addition to private craft, the following Patrol boats are in the possession of the Guatemalan Navy:

2	36-footers
2	40-footers
5	65-footers
1	63-footer
2	85-footers
1	105-footer
1	LCM-6
<u>1</u>	floating workshop
15	

Military Aircraft

- 13 Jets (11 A-37 fighters; 2 5-33 trainers)
- 10 Turboprop (transports - 9 Aravas; 1 C-12 Super King Air)

- 22 Prop (12 transports - 1 DC-6B, 11 C-47's; 4 utility - 3 Cessna 206's, 1 Cessna 180; 6 trainers - Cessna 172)
- 14 Helicopters (9 UH-1, 3 Alouette III, 2 Lamas)

Construction Resources/Local Building Contractors

Name

Jose R. Castaneda	6a. Ave. "A" 35-44, Zona 11 Tel: 481300
Jorge M. Chavez	18 Calle 3-25, Zona 14 Tel: 683311
Iturbide, Toruno y cia. Ltda.	6a. Avenida 3-44, Zona 9 Tel: 64132; 65276
Alvarez, Roesch, Toledo, S.A.	3a. Calle 0-55, Zona 2 Tel: 28055

Further coordination may be provided by the Asociacion Guatemalteca de Contratistas de Construccion, 10a. Calle 7-70, Zona 9, Tel: 63923.

Note: In addition to the host country resources cited above, the Mission Disaster Plan (USAID, 1978) contains detailed information on the location of pharmaceutical laboratories, commercial trucking firms, and building supplies (roofing, cement, lumber) dealers. Refer to the Mission Plan for specific names, addresses, and telephone numbers.

3.9 Storage

Government food and grain storage facilities are operated by the Instituto Nacional de Comercializacion Agricola (INDECA).

Government Grain Silos and Food
Storage Warehouses
(capacity in metric tons)

<u>Location</u>	<u>Silos</u>	<u>Warehouses</u>	<u>Total</u>
1. Guatemala	14,490	1,731	16,221
2. Coatepeque	146	514	660

	<u>Location</u>	<u>Silos</u>	<u>Warehouses</u>	<u>Total</u>
3.	Retalhuleu	7,485	1,136	8,621
4.	La Democracia	146	514	660
5.	Chiquimulilla	146	514	660
6.	Jutiapa	7,485	1,136	8,621
7.	Quezaltenango	7,339	662	7,961
8.	Los Amates	3,707	530	4,237
9.	Tactic	3,707	530	4,237
10.	La Maquina	2,368	514	2,882
11.	Telemán	2,368	514	2,882
12.	Fray Bartoloma	2,368	514	2,882
13.	Nueva Concepcion	1,184	278	1,462
14.	Navajoa	1,184	278	1,462
15.	Montufar	577	184	761
16.	Jalpatagua	577	153	730
17.	Caballo Blanco	322	153	475
18.	Catarina	322	153	475
19.	Las Palmas	322	153	475
20.	Ipala	322	153	475
21.	Tiucal	322	153	475
22.	Monjas	322	153	475
23.	Monterrey	165	95	260
24.	La Blanca	165	95	260
25.	Seja	165	95	260
26.	San Esteban	165	95	260

Source: USAID Guatemala Mission Disaster Plan, 1978.

4. Population

4.1 National Population

With one of the world's highest population growth rates (3% per year), the Guatemalan population doubles in about 25 years. In 1981, the population was estimated at 7.5 million. Projections suggest that this figure will reach almost 13 million by the year 2000.

Between 1975-1980, the total fertility rate (TFR) was 5.7, resulting in large families and a youthful population. (A TFR between 2.1-2.5, depending on mortality, indicates "replacement.") In 1976, there were 1.3 million women of child bearing age (15-44 yrs). Forty-five percent of the population (3.3 million) is under 15 years of age. Until recently, family planning services have been carried out almost entirely by APROFAM, the local International Planned Parenthood Federation affiliate. The GOG has reversed its stance on disassociation from family planning activities, however, and the Ministry of Health now officially sanctions the delivery of family planning services through existing health facilities.

Approximately one-third of the population is classified as urban. In 1977, Guatemala City and environs, the largest metropolitan region in the country, contained more than 1.5 million inhabitants. Of the population officially classified as rural, 80% is concentrated in three areas: The Western Highlands (42%), the South Coast (22%), and the Eastern Desert (15%). The rest is distributed among the central highlands, the Capital Metro area, the Atlantic Coast, and El Peten with 11%, 5%, 4%, and 1% respectively.

Population density as of 1981: 69/sq. km.; 282/sq.km. of arable land. Densities by region (1976): Capital Metro Area, 250/sq. km.; Western Highlands, 169/sq. km. Eastern Desert, 50/sq. km.; Central Highlands, 33/sq. km.; South Coast, 31/sq. km.; Atlantic/Caribbean, 15/sq. km.; and El Peten, less than 5/sq. km.

4.2 Regional Population

1977 Population by Region and Department

<u>Department</u>	<u>Population</u> <u>(000)</u>	<u>Urban</u> <u>(%)</u>	<u>Rural</u> <u>(%)</u>
Highlands (Altiplano)	3,297.7	26.4	24.9

<u>Department</u>	<u>Population (000)</u>	<u>Urban (%)</u>	<u>Rural (%)</u>
Chimaltenango	231.6	1.4	2.2
Guatemala	1,396.0	17.7	4.0
Huehuetenango	444.0	1.2	5.7
Quezaltenango	383.3	2.4	3.5
Quiche	366.8	0.8	4.9
Sacatepequez	117.7	1.4	0.5
Solola	152.3	1.0	1.4
Totonicapan	206.0	0.5	2.7
South (Sur)	1,799.2	6.8	21.1
Escuintla	392.6	2.0	4.1
Jutiapa	284.7	1.0	3.5
Retalhuleu	169.5	0.8	1.8
San Marcos	474.5	1.0	6.4
Santa Rosa	217.8	0.7	2.6
Suchitepequez	260.1	1.3	2.7
East (Oriente)	783.1	3.2	9.0
Chiquimula	194.8	0.7	2.4
Izabal	225.0	0.8	2.7
Jalapa	142.4	0.6	1.6
Progreso	89.0	0.4	1.0
Zacapa	131.9	0.7	1.4
North (Norte)	477.7	1.0	6.4
Alta Verapaz	344.9	0.7	4.7
Baja Verapaz	132.8	0.3	1.7
Peten	78.2	0.4	0.8
Total	6,435.9	37.8	62.2

Source: National Economic Planning Council. Cuadros Estadísticos de la Población, January 1978, as cited in World Bank, Guatemala Country Economic Memorandum, 1980.

Principal Towns
(1973 census)

Guatemala City (capital)	700,504	Puerto Barrios	22,598
Quezaltenango	53,021	Retalhuleu	19,060
Escuintla	33,205	Chiquimula	16,126
Mazatenango	23,285		

Source: Europa Year Book, Vol. 11, 1981.

5. Health, Nutrition, and Housing

5.1 Health Overview

An estimated 60-70% of the population is without modern medical services. The health care system is implemented primarily by two groups: the Ministry of Health (MOH) and Private Voluntary Organizations (PVOs). PVOs provide outreach programs in rural areas and primary care in simple facilities or in the home, whereas the MOH operates mainly from sophisticated inpatient facilities in the capital area, is highly centralized, and has virtually no outreach service. Both work cooperatively at the municipal level (PVOs referring more serious cases to MOH facilities), but there has been little coordination at the departmental level and essentially none at the national level. However, PVO services are concentrated in only a few rural areas. There has been some progress in recent years in the health sector, with growing Government acceptance of a health delivery mechanism stressing preventive medicine. Nearly all of the 636 health posts and health centers now in existence have been built since 1970.

5.2 Summary of Diseases

The primary health problems are respiratory and gastro-intestinal diseases, especially among children 1-5 years old. The main reasons for seeking medical attention for children under 5 are diarrhea and enteric diseases. Substantial malnutrition in rural areas results in higher disease incidence/mortality rates than in urban areas. The five leading causes of morbidity in 1974 were enteritis and other diarrheal diseases; acute respiratory infections; avitaminoses and other nutritional deficiencies; skin infections; and anemia. In addition, the general population suffers from high rates of parasitic infections, primarily from intestinal helminths (*Ascaris*, hookworm and *Trichocephalus*), malaria, and onchocerciasis. In the first half of 1977, 6,000 cases of malaria were reported in the Department of Esquintla. The heavy use of pesticides on cotton and corn has increased not only anopheles immunity, but also toxic poisoning of the population.

5.3 Vital Statistics

Crude birth rate (1975-80)	43/1,000 population *
Crude death rate (1975-80)	12/1,000 population *
Rate of natural increase (1975-80)	3.1%/year *

Life expectancy at birth	58 years *
Ladino	60 years **
Indians	49 years **
Infant mortality rate	69/100 live births *
Population under 15 years	45% *

* Population Reference Bureau, 1981 World Population Data Sheet, 1981.

** USAID, Guatemala Country Development Strategy Statement FY82, January 1980.

Note: Actual infant mortality may be as high as 100/1,000 live births, according to the Central American Institute for Nutrition, since deaths, especially those of infants, often go unregistered. The child mortality rate for Indians is about 1.7 times greater than the rate for non-Indians. (AID, Guatemala Country Development Strategy Statement FY 82, January 1980.)

5.4 Health Facilities

Poor maintenance and underuse of equipment is a chronic problem that has increased in recent years because most MOH allocations go to building new facilities rather than repairing old ones. MOH financing heavily favors Guatemala City over rural areas, creating a serious imbalance not only for health facilities but for personnel, medicines, and infrastructure in general. Fifty-one percent of MOH budget goes to the Department of Guatemala. (See also Health Sector Overview, section 5.1 and Health Personnel, section 5.5.)

There were 131 hospitals in 1977. Thirty-seven hospitals, with a total of 9,407 beds (1.6 beds per 1,000), are run by the MOH, 60% of which are located in the capital department. The Guatemalan Institute of Social Security (IGSS) runs 35 hospitals with 1,767 beds, as well as 20 ambulatory care units. Again, half the IGSS beds are in Guatemala City. There are also 59 private hospitals with 1,200 beds, two-thirds of which are located in the capital. (For a complete list of IGSS and private medical facilities, see the 1978 Mission Disaster Relief Plan on file at OFDA/Washington.)

Other Health Facilities:

Military: Well developed health care program: 500 beds in Guatemala City and 48 clinics throughout the country, all staffed and operated by military personnel.

National Police: National hospital in Guatemala City and small clinic in Quezaltenango.

APROFAM: Guatemalan affiliate of International Planned Parenthood operates 5 clinics in Guatemala City.

Centers and Clinics:

MOH operates 470 health posts and 159 health centers located in towns of 200-2,000 people. These are staffed mainly by auxiliary nurses.

5.5 Health Personnel

In 1977 there were 928 MOH physicians, 410 in Guatemala City, which has 15% of the total population but 40% of the doctors, 43% of the dentists, and 45% of the nurses and lab technicians. For the country as a whole there are approximately 2,000 active physicians, but estimates vary widely. MOH physicians are required to work four hours a day for the Ministry, but few keep regular hours, and most supplement their incomes with private practice.

Despite vociferous protest from medical organizations, the GOG is increasing the number and training of rural health technicians (TSRs) who act as mid-level health workers and community organizers, and serve in predominantly Indian areas. Thirty percent speak Indian languages, all speak Spanish. TSRs were instrumental in assisting devastated communities during the 1976 quake. They identified community leaders, gave first aid, and organized committees.

Healers (curanderos) and midwives (comadronas) are still ubiquitous providers of health care, especially in rural areas. There were approximately 9,000 healers and 16,000 midwives in 1975.

Location of TSR Graduates By Department

<u>Departments</u>	<u>TSR</u> <u>Graduates</u>	<u>Department</u>	<u>TSR</u> <u>Graduates</u>
Totonicapan	8	Sacatepequez	10
El Quiche	21	Solola	8
El Peten	3	Jutiapa	7
El Progreso	13	Suchitepequez	4
Zacpa	15	Jalapa	4
Alta Verapaz	16	Izabal	4
Baja Verapaz	13	Guatemala	1
San Marcos	13	Indaps, Quirigua	5

<u>Departments</u>	<u>TSR Graduates</u>	<u>Department</u>	<u>TSR Graduates</u>
Chiquimula	11	Academy of Medical, Physical	
Huehuetenango	8	Natural Sciences	3
Quezaltenango	24	Division of Human Resources,	
Chimaltenango	17	MOH	1

<u>Medical Personnel</u>	<u>Dept. of Guatemala</u>	<u>Rest of the Country</u>
Doctors	410	518
Professional nurses	312	241
Auxiliary nurses	1,163	1,502
Sanitary inspectors	63	127
Rural health technicians	--	102
Supervisors	46	6
Laboratory technicians	254	96
Dentists	44	49
Total	2,292	2,641

Source: Health Unit of the Planning Council

5.6 Nutrition and Diet

Nutritional deficiencies are a major problem. The caloric deficit of the poorest half of the population is estimated at 40% of the minimum daily requirement. Using the Gomez classification of malnutrition, studies have found that 81% under 5 years of age are malnourished, 30% severely. GOG has assumed responsibility for a school nutrition program. Also, Title II food commodities are distributed to pre-schoolers and nursing mothers through village outreach programs. Use of Incaparina, a fortified corn product, has had little nutritional impact despite price subsidies, as prices are still too high relative to purchasing power. Other MOH programs include the fortification of sugar with vitamin A and the iodization of salt.

Corn (as tortillas) is the dietary staple of much of the population. Wheat bread is eaten in urban areas. Black beans and broad beans are also eaten daily. Tomatoes are widely consumed; fruits only in small amounts.

Meat is used in soups or served with staple foods. Generally, consumption of milk and eggs is low.

Potatoes are basic in the diet of some Indians living at high altitudes. Wheat, plantain, cassava (as tortillas), and rice constitute the main elements in the diet of Black Caribs; fish and pork complement staples.

Meals:

Breakfast - Beans, tortillas or bread; coffee, cheese, if available. Milk, eggs, and cream are luxuries.

Lunch - Caldo (soup) containing meat leftovers, vegetables, rice, and tortillas. Coffee.

Dinner - Leftovers from lunch, beans, tortillas, possibly fried plantains. Coffee.

5.7 Staple Foods

Flour - Corn, wheat. Latter used in French-type bread or buns; cassava (Caribs).

Fats - Animal and vegetable (especially cottonseed oil); lard used in rural areas because it is less expensive than butter, margarine, and oil.

Vegetables and Fruits - Vegetables grown in highlands - cabbage, potatoes, tomatoes, peas, beans, carrots, radishes, beets; consumed fresh because there are no storage facilities; seasonal fruits eaten fresh: banana, papaya, oranges, pineapples.

Milk - Milk, perhaps goat's, is drunk when available, but is too expensive for most families. Cream is sometimes used with mashed black beans. Cheese is liked.

Meat - Consumed fresh. Mostly beef but also pork, mutton, goat. Chicken is the only commonly eaten fowl.

Fish - Both fresh and salt water fish is available, but not widely consumed. Dried fish used in sauces; otherwise it is served fresh.

Beverages - Coffee is the most common drink. If available and affordable, colas and fruit drinks are consumed.

Children's Diet - Infants breastfed until 2 years old; supplementary foods include bananas, weak coffee from bottles; children's diet is like parents', but meat usually is reserved for adults.

Acceptable Emergency Foods - rice, wheat flour, oats, pulses, milk powder.

5.8 Cooking/Utensils

Urban households cook inside, using kerosene stoves or burners. In rural homes, open adobe ovens fueled by wood or charcoal are used.

Cooking pots are frequently made of clay, less often of metal. Serving utensils may be of metal, china, glass, or wood. Gourds cut in half are used by the very poor. Cutlery is of cheap light metal. Plastic and clay jugs are used for carrying water.

5.9 Housing Overview

Because the country's surplus rural population is forced to migrate to urban centers to secure jobs, Guatemala City and other cities are growing faster than the nation as a whole. Urban population has grown from 25% of the total population in 1950 to about 36% in 1980.

The production of minimum standard shelters has lagged far behind this rapid urban population growth. Despite large national and internationally assisted efforts to build housing for victims of the 1976 earthquake, current production reaches only one quarter of the housing goal set forth in the National Development Plan. As a result, the population has resorted to informal solutions, with an average housing production of over 18,000 units a year. The geography of Guatemala City, public policy, and the skyrocketing cost of land around Guatemala City have severely constrained even these informal housing solution possibilities.

5.10 Housing Policy and Institutions

At present the GOG has two major housing or housing-related agencies: the FHA (Instituto de Fomento de Hipotecas Aseguradas-Institute of Insured Mortgages) and BANVI (Banco Nacional de la Vivienda-National Housing Bank). The FHA, created in 1962, issues insured home mortgages representing up to 95% of the value of the house, and attempts to attract private capital to

the housing market. BANVI was founded in 1973 and, as a federally owned development and finance institution, is responsible for formulating national housing policy.

The attention of these two agencies is focused primarily upon housing needs in urban areas, especially Guatemala City. Although other institutions indirectly affect rural housing, no agency has been specifically designated to respond to rural housing needs.

Private commercial banks are the primary source of credit for housing in Guatemala, along with private insurance and finance companies. When these institutions are associated with FHA, risk-free investment with high rates of return is guaranteed. However, there is a strong indication of a significant informal financing system operating outside the formal housing finance system. Short-term expensive credit serves middle and lower income groups and small entrepreneurs.

BANDESA, the National Agricultural Development Bank, is mandated to provide assistance for agricultural activities and rural housing. The cooperative movement also contributes to filling the housing need in rural areas. The federations of cooperatives that represent credit unions and agricultural cooperatives, the National Federation of Credit Unions (FENACOAC), and the Federation of Regional Agricultural Cooperatives (FECOAR) constitute 85% of all legalized cooperatives.

There are about 90 construction firms registered with the Guatemalan Chamber of Commerce, the majority of which have the capability to work in housing construction. The firms are concentrated in the Guatemala City metropolitan area but only about 10 of them have experience with large scale housing projects. (The Guatemalan Chamber of Commerce should be contacted for current information on construction firms. See also Host Resources, section 3.8.)

Engineering analysis indicates a dangerous lack of construction industry standards, especially building codes and specifications. Among them: widespread failure to use non-structural masonry walls in reinforced-concrete framed structures (vulnerable to lateral loads and displacement); lack of reinforced-concrete columns (framing masonry vulnerable to collapse); and preference for buildings with heavy parapets (extremely dangerous to people at street level). Following the 1976 earthquake, the US Geological Survey strongly recommended that the GOG adopt and enforce minimum standards for structural reinforcement, regardless of the material used.

Note: In rural highland areas, most families traditionally construct homes of materials produced (adobe) or gathered (wood) by family members. Only roofing is likely to be purchased.

5.11 Disaster/Low Cost Housing

Most damage from the 1976 earthquake and previous earthquakes was caused by the collapse of massive adobe brick walls and heavy tile roofs. Also, deaths resulted when squatter homes, built on ravine slopes, slid down following earthquake-induced landslides. The earthquake was characterized as "class conscious" in that the poor were most adversely affected as they lived in the most vulnerable areas, and low-income individuals were the least able to afford the quality of construction which would ensure survival of their dwellings.

As a result of the earthquake 258,000 housing units were damaged seriously or destroyed, 58,000 in Guatemala City alone, of which 80%, about 46,000, are estimated to have belonged to the urban poor. Many of these units were already included in the housing deficit, but it is clear that the housing problem was seriously aggravated by the earthquake. Since the earthquake, several large housing reconstruction loans have been made to Guatemala.

5.12 Housing Types, Materials, Construction and Services

In rural areas, housing typically consists of one room, covered by thatching. The floors are generally earthen, and the walls are built of cane and mud plaster or adobe. Services are lacking, with only 9% of rural housing having access to piped water, 40% to electricity, 10% to latrines.

Urban housing is characterized by concrete slab or corrugated asbestos cement-sheet roofing (although the second material is not accepted by the FHA). Walls are fabricated of clay blocks with "mochetas" or light columns of steel rods and concrete filling the clay block cavities. The wall is capped by a reinforced concrete tie beam. Floors are concrete slabs covered with cement floor tiles in the living areas and with ceramic tile in the bathrooms. Concrete is utilized for footings, while typical windows are iron framed glass; doors and door frames are wood. Squatter settlements and lower income housing are constructed typically of adobe, which is especially vulnerable to earthquake damage.

Typical Materials for Rural and Urban Housing Components

<u>Component</u>	<u>Rural</u>	<u>Urban</u>
Roof	- thatched with straw in highlands or	- concrete slabs

<u>Component</u>	<u>Rural</u>	<u>Urban</u>
	palm leaves in eastern region; used by a minority of the population	- duralite (corrugated asbestos-cement panels); not accepted by FHA
	- tile (1000-3000 tiles at a cost of Q20 - Q30 per 1000 tiles)	- tile; cardboard or lamina for squatter settlements
	- lamina - corrugated steel sheeting galvanized with zinc	
Walls	- adobe bricks (mud, straw, pine needles)	- clay blocks with "mochetas" (light columns of steel)
	- cane; walls made of cornstalks, lined up and bound together (considered low prestige and used only by people who could not afford more expensive material)	- unreinforced adobe for squatter settlements; Also, cardboard and wood
	- bajareque; walls made with rows of cane or wood filled with mud	
	- cement block (high prestige: very few houses)	
	- no corner posts with exception of cement	
Floor	- earthen	- concrete slabs covered with cement floor tiles in living areas and with ceramic tile in the bathroom
		- earthen for squatter settlements.
Window	- open air, may be barred or shuttered; highland Indian houses often windowless	- iron framed glass
		- open air for squatter settlements.

In 1976, the overall material supply was about equal to the total construction demand. Total installed cement production capacity was more than adequate; however, sand and stone production were pressed. Precast concrete supply was less than the demand, and lumber has been scarce.

* Note: For more detailed information on Guatemalan housing, see Housing Survey for Disaster Relief and Preparedness: Latin America 1981.

5.13 Water and Sanitation

Water - The drinking water supply is inadequate. Only 40% of the population has either piped water or easy access to other safe water sources. Drinking water quality is generally poor and is the source of much of the disease that affects the Guatemalan population, especially in rural areas. Although the number of individuals served by water supply and sewerage systems has increased in recent years, the proportion of the population served has remained about the same or even decreased slightly as in the case of the total urban population with access to safe water supplies. The danger of contamination is especially great in urban areas where cross connections between water and sewer lines can occur.

In Guatemala City, only 80% of the water needs are satisfied. Considerable leakage is found in the water distribution system and illegal taps and connections are common. Guatemala City relies on groundwater for much of its water supply. Groundwater quality is not well monitored. Water treatment plants in the city, deriving most of their water from wells, have interrupted withdrawals as a result of inadequate supply, and function for only about 12 hours each day.

In areas affected by the 1976 earthquake, extensive damage to the water supply systems occurred. Seventy-five urban and 240 rural systems were either partially or totally destroyed. The waterworks in Guatemala City suffered considerable damage.

Sewerage - Wastewater treatment is almost non-existent. There are only three sewerage treatment plants in the entire country, none in the capital. Only 11-14% of the population is served with sewers. Guatemala City has a sewage collection system for storm runoff and domestic wastes, but does not have a treatment plant. Sewage is dumped directly into the lakes and streams, causing extensive pollution.

Rural streams are used for washing and bathing, in addition to serving as sources of drinking water. Lack of sanitary facilities, potable water, and washing and bathing in polluted water result in a high incidence of gastrointestinal diseases and skin infection, especially in young children.

6. Economy

6.1 Overview of Economy

The economy is based on agriculture (principal exports: coffee, cotton, sugar, beef), manufacturing, and tourism. Mining and petroleum production are potentially important. Resources include large areas of high-quality farmland on the Pacific Coastal Plain and in the Peten, commercially exploitable oil, nickel, copper, and other minerals, pine and hardwood forests, fish and shellfish, and exceptional location and sites for tourism.

Manufacturing concentrates on production of consumer goods (75% of output and value-added). Food processing, beverages, clothing and footwear, and metal products are important industries. There is a chronic shortage of skilled and semi-skilled workers. One fourth of the production is exported, half to Central American Common Market countries.

Infrastructure connects major production and consumption centers and the principal ports, but does not serve the Atlantic departments or Peten adequately. A serious shortage of rural all-weather farm-to-market roads exists.

In the two decades leading up to the mid-1970s, the economy was characterized by steady and substantial economic growth, averaging 5.7% per year. Government deficits were small in comparison to GDP. Central Bank financing was minimal. In combination with a relatively liberal trade policy, the above factors kept inflation very low until the 1973 oil crisis. External borrowing was minimal due to a low current accounts deficit, and major economic fluctuations were avoided.

The limited role of the public sector in development continues to reinforce the isolation of the rural indigenous population (over 40% of nation) outside the monetized economy. The gap between Ladino and Indian in health, education, and income has changed little since the 1950s. Low productivity in traditional agriculture and weak domestic demand for traditional consumer products are significant constraints on growth and necessitate expansion of economic and social services.

The economically active population is only 29.9% of the total population, one of the lowest rates in Latin America. There is 13% open unemployment (unemployment and underemployment are probably substantially higher, as much as 12% in urban areas and 42% in the countryside). Growth rates for employment are low, especially in agriculture, in comparison with other economic growth rates. The reverse of this situation is true in most

Latin American countries. Income distribution is heavily concentrated at the upper end of the scale, with relative equality in the lower 3 quarters. Productivity and income disparity between rural and urban economic activities, and great differences within urban areas, are probable causes.

6.2 Recent Trends and Future Prospects

Despite the loss of some \$750 million in assets during the 1976 earthquake, the country's economy expanded during 1976-77, the rate of increase exceeding 8% during the latter year. Primary factors were the extensive reconstruction activities and higher export earnings, especially from coffee, reinforced by large inflows of foreign aid, an expansionary credit policy, and increased Central American trade. The growth rate fell to 5.2% in 1978 with the passing of the reconstruction boom and falling coffee prices, and dropped even further to an estimated 4.5% in 1979.

Oil self-sufficiency is not expected in the near future, despite continuing exploration and estimated production of 18,000-20,000 bpd. The tourist industry, second to coffee in foreign exchange earnings in 1975, was hurt by the earthquake and the country's political unrest.

In 1980, there was a marked deterioration in the financial situation. GDP grew at an annual rate of 4.0%, representing the continuation of a downward trend begun in 1978. The finances of both the national government and the public sector as a whole showed large deficits as a result of a relative decline in tax receipts coupled with increased public expenditures. Furthermore, because of an outflow of private capital, the balance of payments showed a deficit and net international reserves fell by \$250 million.

Through 1981, Guatemala's economic situation continued to decline. Resources have been drained to finance anti-guerrilla activities. Foreign exchange holdings decreased from \$603 million in 1980 to \$207 million in 1981. Export earnings declined 50% to \$185 million while imports remained the same, resulting in a trade deficit of \$200 million. Tourism was especially hard hit, declining 27% from the same period in 1980.

With economic activity traditionally reflecting export earnings, lower GDP growth rates are projected for the next few years. The emphasis of the 1979-82 Development Plan on opening new agricultural areas and decentralizing industry shows a growing GOG willingness to address social and economic inequalities. Given the serious social tensions within the country, major investment in social development programs is also needed. To cope with these difficulties, Guatemala will undertake an economic program of expand-

ing public expenditures to partially offset the decrease in private investment activities and to provide capital to the private sector.

6.3 Gross Domestic Product (GDP)

Gross Domestic Product by Sector (1958 Market Prices) (millions of Quetzales)

<u>Sector</u>	<u>1970</u>	<u>1975</u>	<u>1978</u>
Primary Production	491.4	662.0	751.5
Agriculture	489.7	659.9	745.9
Mining	1.7	2.1	5.6
Secondary Production	332.9	433.0	599.5
Manufacturing	283.0	356.3	467.0
Construction	28.4	43.9	88.1
Public Utilities	21.5	32.8	44.4
Service	968.5	1,257.7	1,527.8
Transport & Storage	98.2	150.8	195.9
Commerce	517.9	648.7	798.6
Banking, Insurance & Fin.	42.3	61.3	91.1
Housing	124.8	138.7	128.5
Public Admin. & Defense	86.3	118.2	141.5
Personal Services	98.3	140.0	172.2
Gross Domestic Product	1,792.7	2,352.7	2,878.8

Source: Bank of Guatemala as cited in World Bank, Guatemala Country Economic Memorandum, 1980.

6.4 Balance of Payments

The balance of payments prospects appear favorable for the near future. Despite the drop in coffee prices from their peak in 1977, the level of earnings from coffee should be higher than before 1977. Other major exports also have reasonably good prospects. Reducing imports relative to GDP so that they are more consistent with export earning capabilities, while not adversely affecting growth, is a present challenge. The World Bank expects a more or less spontaneous adjustment as economic

growth slows. Chances for limiting import growth are enhanced, for example, by the expected slower growth of capital goods imports as several infrastructure projects are completed, as well as by the discovery of oil in the Peten and the GOG's emphasis on replacing oil-fired thermal power plants with hydropower facilities.

The 1979 trade deficit of about \$250 million was largely covered by capital inflows. Preliminary estimates for 1980 indicate that total debt increased 14% to around \$950 million. The public debt service ratio, which was a low 2.1% of exports in 1978, was about 3.3% in 1980.

6.5 Imports

Imports have grown rapidly in recent years with the largest increases in capital goods for industry (especially for Exmibal and oil exploration). With the completion of major projects in mining, hotels, and hydropower, the World Bank expects slower growth in that category. Intermediate imports should also grow more slowly due to inventory buildup in 1978. The structure of imports has remained relatively constant with similar increases in value in most categories. Higher prices, especially for petroleum, raised the value of imports 17% in 1979 to \$1.45 billion. This figure was forecast to reach \$1.6 billion in 1980.

Major trade partners (1978): US, Federal Republic of Germany, El Salvador, Japan, Venezuela.

6.6 Exports

Economic performance has traditionally been closely tied to export activity. Lower world prices for coffee (the major export) since mid-1977 have contributed to the country's economic slowdown. Diversification and expansion of exports have again become an issue. Most manufactured exports go to other Central American countries, but prospects for increased trade in that market are dimmed by market saturation, fragmentation, and political violence in the region.

In 1978, exports were valued at \$1.16 billion. The main export commodities were bananas (288,000 MT.), sugar (163,000 MT), coffee (125,000 mt), cotton (132,000 MT) minerals (24,000 MT), and beef (14,000 MT). The value of exports grew only slightly (to \$1.2 billion) in 1979. However, in 1980, exports were valued at \$1.5 billion, a 25% increase from the previous year.

Major trade partners (1978): U.S., Federal Republic of Germany, El Salvador, Japan, Costa Rica.

7. Agriculture

7.1 Overview of Agriculture

Agriculture contributes over 25% of the GDP, three fifths of the total employment, and two thirds of export value. Export agriculture has contributed a substantial share of investment resources. Agricultural raw materials (sugar cane, cattle) serve as a base for industrial expansion. Nevertheless, limited public and private investment in agriculture, especially in traditional crops (coffee and basic grains) is a major cause of lagging productivity and stagnating incomes for grain producers.

Land tenure, land use, and the government's role in agriculture were dominant themes of the 1970s. Land distribution is highly skewed as land ownership is concentrated in the hands of a privileged few. In the Western Highlands, 60% of the population is on 26% of the land area. Half of the farms are less than one hectare (3 acres). Often they are fragmented into noncontiguous plots. The average family does not have enough land to provide for basic needs. In recent years, the problem has been exacerbated by increased population pressure. Erosion and reduced productivity are the consequences of overuse of mountain terrain. In contrast, coastal and Peten lands, more suited to farming, are under-used. Recent high prices for exported crops, combined with GOG marketing policy of providing imported grain below cost in urban areas, resulted in a shift from grains and beans to sugar and cotton by Pacific Coast growers. In 1974, a revised government policy 1) demanded that large farms have at least 10% of land under basic grains; 2) made available improved credit for grain production; 3) prohibited grain exports; and 4) raised the guaranteed price of basic grains by as much as 100%. By 1976, IBRD reported substantially increased production. As of 1977, GOG had also increased appropriation of funds for agriculture and provided larger grain storage capacity. The government controls prices for many raw and processed food commodities (meat, grains, and cereals, vegetable oils, sugar, milk), as well as import and export licensing and quotas.

Crops planted and production techniques used vary by region, ethnic affiliation, and the socioeconomic status of the producers. Most basic grains are grown by traditional subsistence methods (slash and burn agriculture, intensive cultivation, hand labor) on small family plots in the Western Highlands. In the drier Eastern Altiplano, tropical fruits and livestock are the primary products, since grains and tobacco require irrigation there. The Pacific Coastal region produces coffee on mountain slopes, sugar cane, cotton and livestock in the Transition Zone, and cotton, rubber, bananas, sugar cane, tropical fruits, and cattle on large farms of the Coastal Plain. The Peten and Northern Slopes (over 40% of the national

territory) have good agricultural potential, but are little developed at present, due to lack of infrastructure.

Cultivated Area, Production and Yield of Principal Crops
(000 hectares; 000 metric tons; kg/ha)

<u>Product</u>	<u>1970</u>	<u>1975</u>	<u>1978</u>
Basic Grains			
Corn			
Cultivated Area	693.4	561.7	498.9
Production	718.8	659.5	572.5
Yield	1,036.6	1,174.1	1,147.5
Beans			
Cultivated Area	185.0	84.9	134.2
Production	62.5	58.5	35.1
Yield	337.8	689.0	261.6
Rice			
Cultivated Area	9.4	12.2	10.7
Production	14.5	19.4	17.3
Yield	1,542.6	1,590.1	1,616.8
Wheat			
Cultivated Area	30.3	43.5	25.4
Production	31.2	50.4	32.9
Yield	1,029.7	1,158.6	1,295.3
Sorghum			
Cultivated Area	51.3	74.0	50.4
Production	45.1	60.8	74.6
Yield	879.1	821.6	1,480.1
Export Products			
Coffee			
Cultivated Area	219.3	247.8	244.5
Production	115.2	140.6	145.2
Yield	525.3	567.4	593.9
Cotton			
Cultivated Area	84.6	111.0	127.2
Production	62.8	105.0	141.2
Yield	742.3	945.9	1,110.1
Sugar Cane			
Cultivated Area	21.5	64.2	97.8
Production	1,688.0	4,170.0	5,135.0
Yield (Mt/Ha)	78.5	65.0	63.0
Bananas			
Cultivated Area	5.0	5.0	5.2
Production	284.5	272.2	246.3
Yield (Mt/Ha)	56.9	54.4	47.3

<u>Product</u>	<u>1970</u>	<u>1975</u>	<u>1980</u>
Rubber			
Cultivated Area	3.5	10.6	10.6
Production	2.9	8.5	8.5
Yield	816.0	800.0	802.0
Sugar			
Sugar Cane	1,688.0	4,170.0	5,135.0
Refined Sugar	184.6	384.0	444.5
Yield (Kg/Mt)	109.3	92.0	86.6
Total Area Cultivated	1,303.3	1,214.9	1,205.0
Basic Grains	969.4	776.3	719.6
Export Crops	333.9	438.5	485.4

Source: CNPE Marco Cuantitativo Del Sector Agrícola, 1978 as cited in World Bank, Guatemala Country Economic Memorandum, 1980.

7.2 Pesticide Use

Since 1950, heavy use of insecticides (estimated at 80 kg./ha., among the world's highest) on the cotton crop, to control naturally occurring severe insect infestations, has resulted in increasing pest resistance and loss of natural predator/parasite controls. The rise in the number of sprays needed per season, from 8 to 30-40, has been paralleled by a rise in the cost of production. However, yields are falling. Human poisonings, most from parathion, are common among farm workers. There are high residues of insecticides in beef and milk. Beef exports are periodically affected. Development of resistance to insecticides among mosquito vectors of malaria on the Coastal Plains (only Landrin may still be effective) increases the cost of mosquito control and threatens a resurgence of this disease.

7.3 Crop Dates

<u>Commodity</u>	<u>Planting Season</u>	<u>Harvest Season</u>
Beverages:		
Cacao:		
First Crop	---	August - March
Second Crop	---	February - April

<u>Commodity</u>	<u>Planting Season</u>	<u>Harvest Season</u>
Coffee (Field Plantings of seedlings):		
Lower Elevation	April - May	August - December
Higher Elevation	April - May	October - March
Cereals and Grains:		
Corn:		
First Crop up to 5,500 feet	April - May	August - September
First Crop over 5,500 feet	March - May	October - January
Second Crop up to 4,000 feet	September - November	January - March
Grain Sorghum:		
Main Crop	May - July	September - October
Secondary Crop	November - February	May - June
Rice	April - May	August - December
Wheat:		
Lower Elevation	May - July	October - November
Higher Elevation (Main Crop)	May - July	December - January
Feedstuffs:		
Grain Sorghum	May - July	December - February
Fibers:		
Cotton	May - June	November - February
Abaca	---	Throughout Year
Fruits:		
Bananas:		
Atlantic Coast	---	Throughout Year
Pacific Coast	---	Throughout Year
Oilseeds:		
Peanuts	April - July	November - December
Sesame	May - September	October - January
Sugar Cane (Cuttings)	April - May	December - April
Vegetables:		
Beans	May - June	August - January
Sweet Potatoes (Slips)	March - April	Throughout Year

7.4 Agricultural Imports

Agricultural imports were valued at \$105 million in 1979, about 7% of total imports. Grains, especially wheat, constituted the largest item, valued at \$28 million. Dairy products, cereals, and feedstuffs were others. Wheat imports were expected to increase to 100,000 tons in 1980. Corn imports, reduced somewhat in 1979 because of the good 1978 harvest and extensive drawdowns in stocks, were also expected to increase.

7.5 Agricultural Exports

Agricultural exports, worth \$870 million, made up 72.5% of total exports in 1979. They included coffee (\$485 million), cotton (\$195 million), beef (\$42 million), cardamom (\$43 million), sugar (\$30 million), and bananas (\$30 million). Earnings were expected to be even greater in 1980 due to higher coffee prices and increases from sugar, beef, bananas, and spices. Cotton exports were expected to drop from the 1979 level. Non-traditional products being promoted include rubber, pineapples, sesame, and cardamom, the latter having become a significant export item since 1970.

7.6 Current Status (May 1982)

Serious food shortages are reported in the northern and northwestern districts owing to civil disturbances. The affected population is estimated at approximately 250,000. Food shortages are expected to continue for some months, as farmers have abandoned agricultural areas and crops have not been sown in most cases. International organizations are supplying emergency food assistance.

8. Physical Geography

8.1 Climate

Climate varies with altitude and exposure to coastal air masses. Generally, the Pacific and Caribbean coastal lowlands have year-round high temperatures and relative humidity. Average annual temperature is 25°C on the Pacific Coast and 27°C on the Caribbean. Relative humidity averages over 80% on both coasts. Like the coasts, the lowlands of El Peten and the valleys of the Rio Motagua and Rio Dulce-Lake Izabal-Rio Polochic systems are hot and humid. Highland climates fall into the warm-cool range, cool temperatures occurring above 1,500-18,000 m. with occasional frost during the November-April dry season. The Oriente Region (east of the capital, from the Motagua River Valley south to the Sierra Madre and east to the highlands of the Honduran frontier) is hot and arid, much like the deserts of northern Mexico and southwestern U.S. An April-October rainy season prevails over most of the country, with highest rainfall occurring in August or September. Rainfall varies from less than 500 mm. annually in the Oriente to nearly 5000 mm. on the western slopes of the Sierra Madre and in the Rio Dulce Basin. Lower elevations of the highland system, shielded from Caribbean and Pacific air masses, receive 500-2,000 mm. (20-80") annually.

Climatological Data

<u>Location</u> <u>Dept/City</u>	<u>Temp°C</u> <u>Max/Min</u>	<u>Annual</u> <u>Precip(mm)</u>	<u>Days of</u> <u>Rain</u>
Santa Rosa (La Morena)	29.6/19.9	779.5	55
Quiche (La Perla)	31.2/11.0	3,228.0	140
Baja Verapaz (San Jeronimo)	27.9/13.8	1,581.6	91
Alta Verapaz (Sta Margarita)	25.6/13.9	2,056.0	138
El Peten (El Porvenir)	31.5/19.8	1,417.1	153
Guatemala (Nate Observ.)	24.2/14.6	1,398.7	125
El Progreso (Sanarate)	25.5/20.0	808.0	80
Sacatepequez (Florencia)	23.0/13.8	1,124.0	92
Chimaltenango (Los Aposentos)	21.3/ 9.0	968.1	85
Escuintla (Mauricio PMC)	33.9/21.3	825.4	39
Izabal (Pawnes Playitas)	30.7/21.8	1,383.9	132
Solola (Santo Tomas)	25.3/15.0	3,198.0	162
Zacapa (Pasabien)	33.3/20.6	867.4	75
Quezaltenango (Patzulin)	25.0/13.7	3,026.8	121
Suchitepequez (Las Nubes)	25.2/13.7	4,161.5	175
Retalhuleu (Las Delicias)	34.5/15.5	2,389.0	119
San Marcos (El Rosario)	25.9/17.6	5,885.8	213
Huehuetenango (Huehuetenango)	25.9/ 9.2	869.10	114

<u>Location</u> <u>Dept/City</u>	<u>Temp°C</u> <u>Max/Min</u>	<u>Annual</u> <u>Precip(mm)</u>	<u>Days of</u> <u>Rain</u>
Chiquimula (Camotan)	32.2/19.9	1,477.20	125
Jalapa (La Ceibita)	28.5/14.0	897.2	101
Jutiapa (Asuncion Mita)	32.1/19.9	1,579.8	128

Precipitation
(millimeters)

<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>
Guatemala (Observatorio Nacional)	1	-	-	12	155	262	187	289	374	133	25	1
El Progreso (Sanarate)	-	-	-	-	201	189	82	130	83	91	32	-
Sacatepezuec (Florenccia)	-	-	-	-	153	220	149	232	201	170	-	-
Chimaltenango (Los Aposentos)	-	-	2	3	-	248	-	332	235	116	30	1
Escuintla (Mauricio PHC)	1	-	-	315	509	-	-	-	-	-	-	-
Santa Rosa (La Morena)	780	-	2	-	-	242	249	287	-	-	-	-
Quiche (La Perla)	89	-	40	182	143	-	278	736	328	877	344	221
Baja Vera- Paz (San Jeronimo)	28	1	-	9	128	225	161	400	157	427	28	17
Alta Vera- Paz (Santa Margarita)	78	-	56	-	150	163	139	299	298	444	243	186
Peten (El Porvenir)	23	18	-	39	367	128	169	237	232	-	158	44
Izabal (Pawnes Playitas)	36	58	30	109	100	263	138	135	103	141	181	89
Solola (Santo Tomas)	2	-	1	149	364	510	529	777	412	386	60	8
Zacapa (Pasabien)	-	-	-	-	-	242	208	193	120	85	21	-
Quezaltenango (Patzulin)	-	35	15	-	509	847	579	-	-	719	227	95
Suchitepequez (Las Nubes)	-	-	14	263	791	623	497	1151	434	-	350	39
Retalhuleu (Las Delicias)	1	-	-	220	300	-	411	411	500	430	70	16

<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>
San Marcos (El Rosario)	-	18	48	434	584	779	607	957	851	940	583	85
Huehuetenango (Huehuetenango)	-	-	2	30	126	-	67	307	97	212	11	18
Chiquimula (Camotan)	-	-	1	30	197	492	227	144	136	190	57	4
Jalapa (La Ceibita)	-	-	10	2	50	251	-	184	180	198	21	2
Jutiapa (Asuncion Mita)	-	-	-	59	171	302	170	362	186	266	50	14

8.2 Landforms

108,780 sq. km. in area, Guatemala extends 450 km. N-S from 17° 49' N to 13° 42' N, and 400 km. E-W, from 92° 30' W to 88° 10' W. Bounded by Mexico on the N and W, the Pacific Ocean in the SW, El Salvador and Honduras in the SE, the Caribbean sea in the E and Belize in the NE, its landforms result from the meeting of the Caribbean and North American plates (along the Motagua fault zone) and the subduction of the Cocos plate under the Caribbean plate along the Middle American trench off the Pacific coast. The E-W ranges of the Antillean Mountain system, which extend eastward into the Caribbean as the greater Antilles island group, follow the juncture of North American and Caribbean plates. The NW-SE trending Sierra Madre ranges, which include the Central American volcanoes most active in recent geologic time, belong to the Pacific Cordillera. There is great diversity of hills, plateaus, and mountains, dissected by a network of water-courses, with steep slopes especially common in central and western Highlands. Numerous rapid-flowing streams drain Pacific mountain slopes. Large Caribbean rivers parallel the Antillean ranges. Their broad valleys extend the Caribbean coastal lowlands deep into the Eastern highlands.

The highlands constitute 50% of the total land area. The Peten lowlands and the adjacent transitional zone between Peten and the Altiplano, the Northern Slopes, make up another 40%. These northern regions are part of the vast limestone plain of the Yucatan Peninsula, which slopes from the Highlands along the Guatemala-Belize border, with elevations of 300 to 900 m., northward into the Gulf of Mexico. The region is characterized by an extensive underground drainage system. Surface water takes the form of meandering north-flowing rivers and numerous small lakes and water-filled sinkholes. Swampy areas are common, especially along the rivers.

8.3 Land Uses

By Department

1. Chimaltenango, Solola, Totonicapan, San Marcos, El Quiche, Huehuetenango, and Quezaltenango are dominated by contemporary Mayan communities. Agriculture is restricted to small family plots.
2. Escuintla, Santa Rosa, Suchitepequez, and Retalhuleu have few traditional Mayan communities. Indians are migrant workers or settled farmers.
3. El Progreso, Jutiapa, Chiquimula, and Zacapa are dominated by commercial agriculture surrounding The Motagua River and its tributaries. The few Indians who do live here are either migrant laborers or new residents.
4. Guatemala and Sacatepequez are dominated by the capital and commercial interests.
5. Alta and Baja Verapaz are populated by varied Indian groups who live and work as subsistence farmers.
6. Izaba -- 20% covered by Lake Izabal -- has few traditional Indian groups. Commercial activity is dominated by Puerto Barrios (Atlantic port of entry) and El Estor, a nickel mining area.
7. El Peten -- Subsistence agriculture with commercial activity limited to harvesting lumber, chicle, and rubber with migrant labor from neighboring departments.

Land Distribution

312,800 of the smallest farms are on lots totaling 580,325 hectares (1,434,000 acres), or 1.84 hectares (4.55 acres) per farm. Many are less than 1 hectare. 900 of the largest farms (fincas) cover 1,059,075 ha., or 1,175 ha. per farm. Almost all are located on the south coast and are export oriented.

Soil Erosion

Severe soil erosion plagues in the Western Highlands. Population pressure forces greater cultivation of steep slopes which, combined with the absence of soil conservation practices, results in sheet, rill, and gully erosion. In addition, migration to El Peten has intensified destruction of the ground cover with consequent soil erosion. 1979 was declared the year of reforestation in an attempt to remedy the erosion and water loss problems.

8.4 Rivers/Coasts

Major Navigable Rivers

The Motagua River is the principal headstream. The Rio Grande rises in the department of El Quiché near Chichicastenango. Its upper 190 km. are shallow and easily forded in the dry season. Flow and depth vary considerably with seasons. Depths average between 2 and 5 meters, with lowest levels during April-May. Widespread flooding occurs in the lower valley and delta during the rainy season. The lower 190 km. are navigable at most times. The river is paralleled by road and rail systems which link the coast and the capital. The Polochic River Basin, which includes Lake Izabal, comprises the Polochic river, rising in Alta Verapaz and flowing 240 km. into Lake Izabal (40 km. long, 20 km. wide), the lake itself, and its effluent, the Dulce River, which empties into the Caribbean at the Bahía de Amatique. Depths vary from 5-30 m. in the Dulce River, 10-15 m. in Lake Izabal, and 1-5 m. in the Rio Polochic. The Dulce and the lake are navigable year-round by small craft. The Polochic is navigable downstream from Panzos by boats of 25 m. draft and upstream by boats of .5-1 m. draft, except in very dry years.

Coasts

- Caribbean: Irregular, deeply embayed, 135 km. long. Sheltered Bahía de Amatique, into which Rio Sarstun and Rio Dulce empty, encompasses over half the coastline. The Motagua River empties into the Gulf of Honduras.
- Pacific: 265 km. long, broad coastal plain rimmed by tidal lagoons and marshes, sandbars at river mouths. Surf is sometimes heavy.

8.5 Mountains

Two major arcs of the Antillean system, each comprising 3 ranges, swing E-W across the country. The northern arc includes (W-E): the Sierra de Los Cuchumatanes, with plateaus at 2,150-2,450 m. elevations and individual peaks up to 3,650 m.; the Sierra de Chama, highest elevation 2,620 m. and the Sierra Santa Cruz, highest point 1,220 m. The Rio Selegua, Rio Salinas, and Rio Polochic mark the division between the northern and southern arcs. The Southern arc is made up of the Sierra de Chuacas, Sierra de Las Minas, and Montañas Del Mico. Altitudes range from 2,450 m. in the west, to 2,750-3,050 m. in Central Sierra de Las Minas, and 900-1200 m. in the east.

The Pacific ranges, which constitute the backbone of the country and include the water divide, contain the country's highest peaks. A chain of active volcanoes follows the SW edge of high plateau. In the east, where elevations are lower, the volcanic pattern is less regular. In the west, plateaus average 2,135-2,750 m. with peaks up to 4,265 m. Elevations in the Central Sierra Madre are somewhat lower, with peaks ranging from 2,450-4,000 m. Elevations in the east drop to 900-1,200 m. with occasional volcanic cones rising to 1,825 m.

8.6 Volcanoes

<u>Name</u>	<u>Height (meters)</u>
Tajumulco	4,220
Acatenango	3,976
Fuego	3,763
Santa María Quezaltenango	3,772
Agua	3,766 (Destroyed the old city of Guatemala in 1541)
Zunil	3,533
Atitlan	3,537
Pacaya	2,552
Tolimán	3,158

8.7 Seismicity

There are three main seismic areas: 1) the Cocos Plate thrusting under the Caribbean Plate at depths of 50-250 km; 2) at shallow depths beneath volcanoes (the source of many moderate-sized quakes; and 3) the fault system crossing central Guatemala, including the Motagua Valley.

The earthquake of 1976, measuring 7.5 on the Richter scale and affecting an area of 100,000 sq. km., occurred within the Motagua Fault Zone, along the active boundary between the Caribbean and N. American Plates. From 1902 until 1976, the Motagua Fault Zone was relatively inactive. Now, a major gap exists on the west coast of Central America between 88 and 91 degrees W. longitude.

The main fault (strike-slip type) is located in the Motagua Valley, (240 km. long) and is the most extensive surface rupture in the northern hemisphere since the San Francisco quake of 1960. Extending from Quebrados

to Patzaj, it comes within 25 km. of Guatemala City. Subsidiary faults and splays are scarce. Highly unusual secondary faults occurring 30 km. from the main fault, are rare for strike-slip types but deserve study because they pass through Guatemala City. Future moderate to major quakes are most likely to occur near Guatemala City and Puerto Barrios, at either end of the fault.

9. Transportation and Logistics

9.1 Road Network

Highway travel is the predominant transport mode. About 95% of cargo traffic and nearly all passenger traffic moves by road. All major production and consumption centers, and the principal ports are connected by a 2,800 km. paved road network. Unpaved roads total 15,300 km. The average highway density for paved roads is 25.4 km./1,000 sq. km. of area. Density is greatest in the Pacific lowlands and central highlands, lowest in the Peten and the Atlantic departments. Only in the undeveloped areas of the Peten and the Franja Transversal del Norte are substantial highway extensions needed, but there is a serious shortage of all-weather farm-to-market roads.

Major Routes:

The Pacific Highway crosses the Pacific coastal plains via Las Palmas, Coatepeque, Retalhuleu, Mazatenango, Escuintla, and Chiquimulilla to the Salvadorean border.

The Interamerican Highway extends from the Mexican to the Salvadorean borders, passing through the central highlands and Guatemala City. The Interoceanic Highway follows the Motagua River valley, and crosses the highlands via the capital to the Pacific port of San Jose.

Additional paved road systems connect the capital and Jalapa with Jutiapa and San Salvador, El Salvador; join Zacapa and Chiquimula with San Salvador and with the Interoceanic Highway; connect Quezaltenango with Tapachula, Mexico (E-W), and (N-S) with Champerico on Pacific Coast, San Cristobal on the Interamerican Highway. A paved road runs north from El Progreso to Copan and continues unpaved to Flores on Lake Peten.

The road network was considerably damaged by the 1976 earthquake (U.S. \$48 million estimated cost). The Interoceanic Highway was closed for six weeks due to landslides and collapsed and damaged bridges. The Interamerican Highway between Antigua and the capital was also blocked by landslides.

Increased maintenance and rehabilitation of existing roads, and construction of feeder and penetration roads will be the likely future focus of the highway sector. Maintenance efforts, largely the responsibility of the General Directorate for Roads (DGC) under the Ministry of Communications and Public Works, have suffered from insufficient funding,

obsolescence of much of the DGC fleet, and a shortage of skilled workers and professional engineers. An estimated 64% of the network is in poor to fair condition.

9.2 Vehicles

Light vehicles make up 55-76% of the fleet; trucks 16-35%; buses 7-14%. (See also Host Resources, section 3.8.)

<u>Vehicle</u>	<u>Vehicle Fleet</u>		<u>Average Annual Growth Rate</u>
	<u>1966</u>	<u>1977</u>	
Automobiles	22,093	67,394	10.7%
Panel/Pick-up	17,899	49,503	9.7%
Trucks			
Trucks	6,538	18,026	9.7%
Buses *	2,879	13,308	14.9%
Total	49,409	148,231	10.5%

* Includes minibuses

Source: World Bank, Highway Maintenance Project: Guatemala, April 1980.

9.3 Surface Miles

The four charts below give approximate distances in kilometers between 45 cities in Guatemala. The distance between 2 cities is found at the intersection of the row identified by one city and the column identified by the other. Distances are based on routes considered most convenient for the traveler.

Antigua, Guatemala													
198	Asuncion												
182	262	Champerico											
23	205	204	Chimaltenango										
205	96	389	215	Chiquimula									
107	134	229	129	201	Chiquimulilla								
179	359	86	203	381	226	Coatepeque							
203	253	330	197	227	294	315	Coban						
398	571	337	376	545	471	322	359	Comitan, Mexico					
103	94	269	113	161	41	266	252	488	Cullapa				
108	122	289	118	96	172	286	130	450	132	El Progreso			
44	197	166	66	219	64	163	244	408	104	122	Escuintla		
249	128	430	259	50	235	427	278	598	195	147	265	Esquipulas	
211	152	392	221	55	259	389	222	542	219	102	227	108	Gualan
40	156	221	50	164	104	218	189	425	64	67	56	210	Guatemala
232	402	171	210	376	305	156	190	170	322	279	242	429	Huehuetenango
136	60	317	146	80	167	314	192	512	127	61	152	114	Jajapa
171	26	337	181	93	109	334	250	556	69	119	172	127	Jutiapa
80	233	150	102	255	100	147	280	392	140	158	37	301	La Democracia
237	417	144	246	436	284	59	243	352	324	342	221	485	Malacatan
117	297	66	139	319	164	63	299	308	204	222	101	385	Mazatenango
288	244	469	298	147	351	466	296	616	311	179	304	200	Morales
267	101	397	277	198	169	394	355	639	165	224	232	232	Nueva San Salvador*
60	195	182	82	203	80	179	228	424	103	106	17	249	Palin
38	220	191	16	228	144	188	210	361	128	191	81	274	Patzicia
337	293	518	347	196	400	515	210	665	360	228	353	249	Puerto Barrios
164	346	98	142	254	224	75	345	248	254	257	161	400	Quezaltenango
143	323	40	165	345	190	47	239	298	230	248	127	391	Retalhuleu
180	341	200	158	315	285	185	289	231	270	218	222	368	Sacapulas
137	187	318	131	161	228	315	129	385	188	64	180	214	Salama
94	108	275	104	110	158	272	65	464	116	13	110	162	Sanarage
93	246	215	115	268	113	212	144	457	253	171	50	314	San Jose
37	180	218	31	188	128	215	203	406	88	91	80	234	San Juan Sacatepequez
177	86	258	187	39	193	355	165	553	153	102	193	73	San Luis Jilotepeque
214	396	133	192	404	273	48	233	298	304	307	210	450	San Marcos
304	474	243	282	448	377	228	289	242	394	351	314	501	San Rafael La Indep
218	115	411	291	212	188	408	262	653	179	238	246	246	San Salvador*
214	48	360	224	145	132	357	369	599	112	171	195	179	Santa Ana
180	312	150	108	320	235	135	179	281	220	223	172	366	Santa Cruz Del Quiche
77	230	132	99	252	97	130	274	375	137	155	34	298	Santa Lucia Cotz **
303	353	430	297	327	394	415	99	461	354	230	346	380	Sebol
94	276	170	72	284	189	155	225	315	184	187	126	330	Solola
252	432	159	274	464	299	74	369	378	339	357	236	500	Tapachula, Mexico
138	320	116	116	328	243	101	213	261	228	231	180	374	Totonicapan
180	121	361	190	24	228	358	202	522	128	71	196	772	Zacapa

Gualan														
170	Guatemala													
371	259	Huehuetenango												
136	97	343	Jalapa											
149	132	290	57	Jutiapa										
261	92	226	286	208	La Democracia									
445	276	186	370	392	205	Malacatan								
325	156	142	250	272	85	119	Mazatenango							
91	249	447	228	243	340	522	404	Morales						
254	228	473	162	130	268	450	332	348	Nueva San Salvador*					
209	40	258	134	171	53	235	117	288	246	Palin				
234	65	195	159	196	114	229	126	313	290	97	Patzicia			
140	298	496	277	292	389	272	453	58	395	337	362	Puerto Barrios		
360	191	82	285	322	145	103	61	439	390	177	127	486	Quezaltenango	
351	182	132	176	298	111	103	27	430	356	143	152	477	51	Retalhuleu
310	207	62	280	338	206	213	171	386	432	238	143	433	111	Sacapulas
156	125	216	126	186	216	367	253	232	289	164	146	279	265	Salama
116	55	295	47	107	146	328	210	195	210	94	119	242	245	Sanarate
274	105	291	199	221	86	268	150	353	279	66	130	400	210	San Jose
194	25	240	119	156	116	271	153	273	250	64	46	320	172	San Juan Sacatepequez
95	138	384	40	85	229	411	293	189	188	177	202	236	328	San Luis Jilotepeque
410	241	132	335	372	194	53	110	489	439	226	177	536	51	San Marcos
443	331	73	413	462	298	256	214	519	543	330	267	566	154	San Rafael La Indep.
268	242	487	176	144	282	464	346	362	13	262	306	409	406	San Salvador*
201	175	433	109	77	231	413	295	295	52	211	239	342	355	Santa Ana*
326	157	112	251	288	156	162	121	405	382	188	93	452	61	Santa Cruz Quiche
258	89	209	183	205	18	186	68	337	263	50	97	384	128	Santa Lucia Cotz **
322	291	292	292	352	382	343	401	398	455	330	312	445	341	Sebol
290	121	149	215	252	110	183	122	369	346	142	57	416	81	Solola
460	291	212	385	407	220	25	136	539	465	252	257	586	131	Tapachula, Mex
334	165	95	259	296	164	129	87	413	390	195	101	460	27	Totonicapan
30	141	353	109	107	232	414	298	124	223	180	205	171	331	Zacapa

Retalhuleu															
161	Sacapulas														
279	153	Salama													
236	232	80	Sanarate												
176	269	229	159	San Jose											
179	186	101	79	127	San Juan Sacatepequez										
319	321	169	90	240	162	San Luis Jilotepeque									
94	159	315	295	257	222	378	San Marcos								
204	132	288	367	361	312	456	202	San Rafael La Independencia							
372	446	305	226	293	266	204	453	559	San Salvador*						
321	379	238	159	242	199	137	402	505	68	Santa Ana*					
111	49	205	211	219	138	294	109	184	398	329	Santa Cruz Del Quiche				
94	187	213	143	81	113	226	175	281	279	226	139	Santa Lucia Cotz **			
391	229	167	246	393	267	335	389	364	471	402	281	376	Sebol		
131	95	202	178	172	102	258	129	221	362	293	47	93	325	Solola	
120	239	388	345	283	288	428	79	284	481	428	191	203	469	211	Tapachula
77	83	239	219	227	146	202	75	167	406	337	35	147	313	55	Tonicapan
322	290	138	87	243	165	66	379	425	239	170	297	229	302	261	Zacapa

Tapachula, Mexico
 157 Tonicapan
 431 303 Zacapa

* El Salvador
 ** Santa Lucia Cotzumalguapa

9.4 Railroad Network

While the highway system has been expanding rapidly, railroads have been in decline. Rail freight traffic has stagnated at the 1964 level of about 650,000 tons annually, passenger traffic at about 1.7 million trips. The decline is expected to continue.

The system totals nearly 1,600 km., most of it government-owned and operated (see also Ports; section 9.6). The main line runs from Puerto Barrios to Guatemala City and San Jose on the Pacific Coast. Branch lines run from the vicinity of Masagua west along Pacific Coast to Tecun Uman on the Mexican border; from Zacapa south to the Salvadorean border; and from Puerto Barrios to Santo Tomas de Castillo.

9.5 Rail Carriers

Ferrocarriles de Guatemala -- FEGUA: Avda. 18-03, Zona 1, Guatemala City; 1,782 km. Open from Puerto Barrios and Santo Tomas de Castillo on the Atlantic coast to Tecun Uman on the Mexican border, via Zacapa, Guatemala City and Santa Maria. Br. lines: Santa Maria -- San Jose; Las Cruces -- Champerico. From Zacapa another line branches southward to Anguiatu, on the border with El Salvador. FEGUA also owns the ports of Puerto Barrios (Atlantic) and San Jose (Pacific).

Verapaz Railway: Livingston, Izabal; 46.4 km. Panzos-Pancajche; serves the coffee district.

9.6 Ports

Ports handle 90% of the country's international trade, the Central American Common Market being the major exception. Two Atlantic ports, Puerto Barrios and Santo Tomas de Castillo, both on the Bay of Amatique, are controlled by FEGUA. They also handle cargo for El Salvador. Less than 10 km. apart, they tend to be complementary in activity. Santo Tomas is a general cargo port with annual traffic of over one million tons. Puerto Barrios handles agricultural commodities (traffic was reduced 50% by earthquake damage to 330,000 tons annually). Rehabilitation/construction of the latter is expected to be completed by late 1981. Two lighterage ports on the Pacific, Champerico and San Jose, are considered inadequate. Construction of a deepwater Pacific coast port has been the subject of numerous studies. Alternatively, San Jose may be expanded.

Champerico

Lat. 14° 18' N.; long. 91° 56' W.

Accommodation -- Open roadstead subject to heavy swells. Anchorage in approx. 13.10 m., 1.6 km. from wharf. Cargo loaded and discharged by lighters. Pier, length 345 m., width 24.38 m., head 24.99 m., bridge 8.23 m. Eleven 30-ton lighters. 2,000 m. railway, four locomotives, 150 car platforms.

Storage -- 23 covered warehouses, 35,100 cu. m. Open and paved warehouses with total area of 30,000 sq.m.

Cranes -- Two 10-ton, two 15-ton and one 25-ton winch (max. capacity 40 tons). 15 truck lifts and 7 cranes of different tonnage.

Bunkers -- Not available.

Development -- The existing port facilities being developed; an inland turning basin with access channel and breakwater being built.

Shiprepairs -- Not available.

Towage -- Four tugs.

Pilotage -- Not compulsory and not necessary.

Airport -- Retalhuleu, 32 km. N.W.

Livingston

Lat. 15° 49' N.; long. 88° 52' W. On the Rio Dulce.

Accommodation -- Depth at entrance, 3.05 m., on bar 1.52 to 2.44 m. and alongside wharf 1.52 to 1.83 m. Vessels drawing more than 1.98 m. anchor 3.2 km. out, in 4 to 9 fms. Two wharves suitable only for lighters. Cargo landed by lighters of 80 tons. Municipal wharf at Customs House. Two docks, one 40.84 m. by 20.42 m. and the other 15.24 m by 9.75 m.

Private Wharf -- One private wharf available.

Bunkers -- Not available.

Pilotage -- No pilots available.

Puerto Barrios

Lat. 15° 43' N.; long. 88° 36' W.

Approach -- Depth in channel approach 9.75 m. Good anchorage SW of the pier with 9 m. of water.

Tides -- R. of T. less than 30.48 cm.

Accommodation -- One pier 304.8 m. long, property of Ferrocarriles de Guatemala, with one inner berth, depth 7.62 m. at outer end, 6.40 m. at inner end. On south side of approach to the pierhead, one outer berth with 7.01 m. and one inner berth with 4.88 m. depth.

Cranes -- No cranes on pier but 15-ton mobile crane and 5-ton crawler crane available in yards; 40-ton crawler crane available on special request.

Tanker Terminals: A pipeline from end of wharf to shove tanks available from the discharge of bulk petroleum products.

Container and Ro/Ro Facilities -- Containers can be handled by ship's tackle to flat cars on wharf alongside vessels.

Ore and Bulk Cargo Facilities -- Available for grains, copper ore concentrate, and fertilizers.

Bunkers -- Bunker, petrol and diesel oil available.

Shiprepairs -- Ferrocarriles de Guatemala may be able to handle small repairs.

Towage -- Optional.

Pilotage -- Compulsory. Launch available for handling lines.

Airport -- 1.6 km.

San Jose

Lat. 12° 55' 10" N.; long. 90° 50' W.. 107 kms. S. of Guatemala City, on the Pacific Coast

Approach -- Open roadstead; ships anchor about 0.5 km. from pierhead in about 14.5 to 16.5 m; sandy bottom, not very good holding ground. Call port on VHF channel 16.

Weather -- Infrequent heavy swells; from the middle of June until October, violent wind and rain storms of short duration, called "Chubascos," may occur, particularly at night.

Accommodation -- Steel pier owned by Ferrocarriles de Guatemala (FEGUA), but operated by Agencia Maritima S.A., serves lighters loading/discharging vessels in the roads. Three 5-ton winches and one heavy-duty winch of 20 tons capable of handling up to 22 short tons, with previous notice. Nine lighters of 35 tons capacity each; four tugs and one dispatch boat.

Container and Ro/Ro facilities -- 20 ft. containers can be handled.

Bunkers -- Unavailable.

Santo Tomas De Castillo

Lat. 15° 41' 44" N.; long. 88° 37' W.

Approach -- Situated in a well-protected bay with good anchorage. Controlling depth at entrance (Villedo Lighthouse, about 4 km. distant), 7.92 m. Depth in dredged channel 9.75 m, in turning basin 9.14 m.

Accommodation -- Depth of wharf 10.06 m. Six ships up to 10,000 tons each can maneuver at the same time. Pier 914.4 m. long.

Storage -- Warehouse area of 35,018 sq. m. and uncovered storage space and circulation area of 143,275 sq. m.

Cranes -- Stiff-leg crane on pier to lift maximum of 55 tons and portal crane of 35 tons lifting capacity.

Container and Ro/Ro Facilities -- A portal crane on rails is available for handling containers and has a capacity of 35 tons.

Ore and Bulk Cargo Terminal Facilities -- Special equipment is available. Sugar can be handled at the rate of 100 tons/hr. Ore is mostly handled by "clam-shell" trucks and pay-loaders.

Towage -- Optional.

Pilotage -- Compulsory.

Airport -- Puerto Barrios, 8 km.

9.7 Shipping Lines

Service From:

New York and North Atlantic ports

United Fruit Co.

New Orleans and Gulf ports

Flota Mercante
Grancolombiana
Lykes Caribbean Line
Standard Fruit & S.S. Co.
United Fruit Co.

San Francisco and Pacific Ports

Grace, Independence & Lloyd
Lines

Charleston and Baltimore	Costa Rica Line
Canada	Swedish American Line
United Kingdom	Royal Mail Line

Services are provided by French, German, and Dutch Lines from the continent.

Domestic Lines:

Armadora Maritima Guatemalteca S.A.: 7a. Avda. 16-45, Apdo. 1008, Zona 1, Guatemala City; cargo services.

Flota Mercante Gran Centroamericana, S.A.: 1a. Calle 7-21, 5°, Zona 9, Guatemala City; services from Europe (in association with WITASS), Gulf of Mexico, U.S., Atlantic and East Coast Central American ports, and from the Far East to West Coast Central American ports, in association with Japanese lines.

Lineas Maritimas de Guatemala, S.A.: 3a. Calle 6-11, Apdo. 1485, Zona 9, Guatemala City; cargo services.

9.8 Airports

Air transport is particularly important in the agricultural and tourist sectors. Regular air service is necessary for transport of goods and passengers to remote areas such as Peten. 381 usable airfields: 7 with permanent-surface runways, 17 with runways over 1,220 m.; 1 seaplane station. La Aurora Airport, Guatemala City, considered best in Central America, can accommodate jet aircraft. Rainy season may limit use of smaller airfields.

Development plans for 1977-82 period include construction of a new airport at Santa Elena in the Peten and the first phase of upgrading La Aurora airport.

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

CHAMPERICO

Runway Characteristics

<u>Location</u> <u>Coordinates</u>	<u>Eleva-</u> <u>tion M/</u> <u>Temp°C</u>	<u>Nr/Type</u>	<u>Slope</u> <u>‰</u>	<u>Aircraft/</u> <u>Length M</u>	<u>CL</u>	<u>Aircraft/</u> <u>Strength</u> <u>(1,000 Kg)</u>	<u>Fuel/</u> <u>Octane</u>
14° 18' N 91° 50' W	N/A	N/A	N/A	N/A	N/A	N/A	100

Remarks: Longest runway 3,600', not hard surfaced.

Aids: VFR only.

GUATEMALA CITY/La Aurora

Runway Characteristics

<u>Location</u> <u>Coordinates</u>	<u>Eleva-</u> <u>tion M/</u> <u>Temp°C</u>	<u>Nr/Type</u>	<u>Slope</u> <u>‰</u>	<u>Aircraft/</u> <u>Length M</u>	<u>CL</u>	<u>Aircraft/</u> <u>Strength</u> <u>(1,000 Kg)</u>	<u>Fuel/</u> <u>Octane</u>
14° 34' 55" N 90° 31' 39" W	1506 23.7	01/19	0.87	2987	A	AUW 160/4	100,JA1

Remarks: alternate aerodromes - COZUMEL/Intl, MANAGUA/Las Mercedes, MERIDA/Lic. Crescencio Rejon Intl, MEXICO/Lic. Benito Juarez Intl, SAN SALVADOR/Ilopango Intl.

Aids: DME, VOR, AV(01+), R, L4, L5, L9, LTX, B, LO, D, MC, T, MTD, S, MTX, MO. No Telex.

MELCHOR DE/Mencos

Runway Characteristics

<u>Location</u> <u>Coordinates</u>	<u>Eleva-</u> <u>tion M/</u> <u>Temp°C</u>	<u>Nr/Type</u>	<u>Slope</u> <u>‰</u>	<u>Aircraft/</u> <u>Length M</u>	<u>CL</u>	<u>Aircraft/</u> <u>Strength</u> <u>(1,000 Kg)</u>	<u>Fuel/</u> <u>Octane</u>
17° 03' N 89° 09' W	348	N/A	N/A	N/A	N/A	N/A	None

Remarks: Longest runway 3,000', not hard surfaced. No air-ground communications.

PUERTO BARRIOS/Puerto Barrios

Runway Characteristics

<u>Location Coordinates</u>	<u>Eleva- tion M/ Temp°C</u>	<u>Nr/Type</u>	<u>Slope %</u>	<u>Aircraft/ Length M</u>	<u>CL</u>	<u>Aircraft/ Strength (1,000 Kg)</u>	<u>Fuel/ Octane</u>
15° 44' N 88° 35' W	2 30.1	12/30	0.56	1800	B	AUW 41	100

Remarks: No alternate aerodromes listed by ICAO.

Aids: L4, MD, MC, MT. 3 hour advance notice for fuel. No telex.

SAN JOSE/San Jose

Runway Characteristics

<u>Location Coordinates</u>	<u>Eleva- tion M/ Temp°C</u>	<u>Nr/Type</u>	<u>Slope %</u>	<u>Aircraft/ Length M</u>	<u>CL</u>	<u>Aircraft/ Strength (1,000 Kg)</u>	<u>Fuel/ Octane</u>
13° 55' 50" N 90° 50' 07" W	8 30.3	15/33	0.16	1574	B	AUW 41	100

Remarks: No alternate aerodromes listed by ICAO.

Aids: L4, MD, MC, MT. No telex.

Key

Radio Aids

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

Lighting Aids

- PA - Precision Approach Lighting System
- SA - Simple Approach Lighting System
- VA - Visual Approach Slope Indicator System
- AV - Abbreviated Approach Slope Indicator System
- R - Runway Edge, Threshold & Runway End Lighting
- LC - Runway Center Line Lighting
- LTD - Runway Touchdown Zone Lighting
- LTX - Taxiway Lighting
- B - Aerodrome or Identification Beacon
- LO - Obstruction Lighting

Marking Aids

- D - Runway Designation Markings
- MC - Runway Center Line Markings
- T - Runway Threshold Markings
- MTD - Runway Touchdown Markings
- S - Runway Sidestripe Markings
- FD - Fixed Distance Markings
- MTX - Taxiway Center Line & Holding Position Markings
- MO - Obstruction Markings

Additional Aids (L)

1. Portable Runway Lights (Electrical)
2. Boundary Lights
3. Runway Flood Lights
4. Low Intensity Runway Lights
5. Low Intensity Approach Lights
6. High Intensity Runway Lights
7. High Intensity Approach Lights
8. Sequenced Flashing Lights
9. Visual Approach Slope Indicator (VASI)
(An asterisk (*) preceding the element (*L4) indicates lighting available on prior request by phone, telegram, etc.)

9.9 Personal Entry Requirements

Passport required. Visa required; however, tourist cards may be used in place of a visa for up to 6 months. No vaccinations required.

9.10 Aircraft Entry Requirements

All private and non-scheduled commercial aircraft overflying or landing for commercial or non-commercial purposes must obtain prior permission from the Directorate General of Civil Aeronautics, La Aurora Airport, Guatemala City, Guatemala (Telegraphic address: DAEROCIVIL GUATEMALA/Telex: None) at least 24 hours in advance. Requests must include: type of aircraft and registration marks, aircraft owner, origin and destination of flight, date and time of landing or overflight, name of pilot and co-pilot, purpose of flight, number of passengers, and type and amount of cargo.

A response to the request will not be received unless permission is denied or unless restrictions are placed upon the flight. If no response is received within 24 hours, the requestor may assume that permission is granted. If a definite answer to the request is desired, the requestor must include provision for pre-paid reply. A copy of the request should be kept and carried along on the flight to prove that the request has been sent.

9.11 Airlines

Aviateca -- Empresa Guatemalteca de Aviacion: Avda. Hincapie, Aeropuerto "La Aurora," Zona 13, Guatemala City: internal services and external services to El Salvador, Honduras, Mexico, and U.S.A.: fleet: 2 BAC 111-500, 2 DC-6A, 2 DC-3, 3 Fokker F27, and 4 Convair CV-340.

Foreign Airlines -- The following foreign airlines also serve Guatemala: Air Panama, Eastern Airlines (U.S.A.) Iberia (Spain), KLM (Netherlands), Mexicana de Aviacion, Pan Am (U.S.A.), Sabena (Belgium), SAHSA (Honduras), SAM (Colombia), TACA (El Salvador).

9.12 Air Distances

From Guatemala City to:

	<u>Statute Miles</u>
Houston	1,382
Managua	338
Mexico City	655
Miami	1,022

From Guatemala City to:

	<u>Statute Miles</u>
New Orleans	1,073
San Francisco	2,535
San Salvador (El Salvador)	113
Tegucigalpa (Honduras)	225

10. Power and Communications

10.1 Electric Power

About 60% of Guatemala's installed capacity is thermally generated. A large hydroelectric potential (4,300 MW) could supply all power needs. When fully operational in 1983, two hydropower projects receiving IBRD funding, Aguacapa (90 MW) and Chixoy (300 MW), will reduce share of oil-fired plants to about 30%. Due to its high sulfur and paraffin content, domestic oil produced so far cannot be processed in Guatemala's refinery, nor are potential geothermal reserves at present economically exploitable for power generation.

The National Electricity Institute (INDE) is responsible for generating power and the Guatemala Electricity Enterprise (EEG) for its distribution. Numerous small private and municipal utilities and self-producers add to the supply. The total generating capacity of 492 MW in 1978 included 314 MW (64%) from the inter-connected system, 16 MW (3.3%) from isolated INDE, privately and municipally-owned utilities, and 161 MW (32.7%) from miscellaneous producers.

Gross energy consumption, though growing, is well below the Central American average. Per capita consumption was about 188 kWh in 1975. Consumption in the area of Guatemala City is about 14 times greater than in the rest of the country. Only about 20% of the population received electric service in 1976 when industry accounted for 47% of total consumption, residential for 26%, commerce and government for 27%. Electricity supply is AC, 60 cycles, 100-220 V.

10.2 Telecommunications

A government-owned and operated organization, Guatemala Telecommunications (Guatel), is responsible for national and international communications, including connections into the Central American Microwave Net. Despite recent telephone system expansion, telephone density is still very low (8.25 lines per 1,000 inhabitants). * Modern facilities are available only in Guatemala City. The concentration of telecommunications in the capital limits development in rural areas. 92.7% of the telephones are in the capital, the remainder in other major cities. There are telephone connections with El Salvador and Mexico. Telegraphic services are widely available in the country, with connections to Mexico and the rest of Central America.

The 1976 earthquake damaged central switching stations and private installations as well as Guatel telegraph facilities. Emergency radio relay stations were used to restore basic communications.

* 70,600 telephones in 1980.

10.3 Radio Network

Dirección General de Radiodifusión y Televisión Nacional: 5A, Avda. 13-18, Zona 1, Guatemala City; Government supervisory body.

There are 5 government and 6 educational radio stations, including:

La Voz de Guatemala, 5A Avda. 13-18, Zona 1, Guatemala City: Government station.

Radio Cultural TGN-TGNA, 4A Avda. 30-09, Zona 3, Apdo. 601, Guatemala City, religious and cultural station; programs in Spanish and English, Quiche and Queqchi.

There are 77 commercial stations of which the most important are:

Emisoras Unidas de Guatemala: Ruta 4, No. 6-32, Apdo. 1466, Zona 4, Guatemala City.

La Voz de las Americas: 11 Calle 2-69, Zona 1, Guatemala City.

Radio Cinco Sesenta: 6A Avda. 12-15, Zona 1, Guatemala City.

Radio Continental: 13 Calle 9-31, Zona 1, Guatemala City.

Radio Nuevo Mundo: 6A Avda. 10-45, Zona 1, Apdo. 281, Guatemala City.

Radio Panamericana: Km. 12, Carretera Roosevelt, Guatemala City.

In 1978 there were 280,000 radio receivers.

10.4 Television

Radio-Television Guatemala, S.A.: 30A Avda. 3-40, Zona 11, Apdo. 1367, Guatemala City; commercial station.

Tele Once: 10 Calle 5-02, Zona 10, Guatemala City; commercial.

Televicentro-Canal 7: 3A Calle 6-24, Zona 9, Apdo. 1242, Guatemala City; commercial station channel 7.

Trecevision S.A.: 3A Calle 10-70, Zona 10, Guatemala City; commercial.

In 1978 there were 150,000 television receivers.

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