

8. NATURAL ENVIRONMENT

8.1. Present Natural Environmental Conditions and Environmental Policies

8.1.1. Natural Conditions and Environment

(1) Natural conditions

a. Climate

Guatemala has a dry season (May to September) and a rainy season (October to April). Guatemala is divided into four climate zones as shown in Table 8.1. The climate of El Peten is very hot (around 30 °C to 35 °C) and humid all year round. Humidity of central mountain areas, which are located in tropical cloud forests, is also very high. Figure 8.1 shows the annual average precipitation in Guatemala.

Table 8.1 Climate Zones in Guatemala

Zone	Characteristics
1) El Peten Zone	Tropical lowland: almost entirely hot and humid all the time
2) Highland Mountain Zone	Dry season: warm and delightful; rainy season: cloudy and chill
3) Pacific Coast Zone	Tropical and hot. Humid only during the rainy season
4) Caribbean Coast Zone	Tropical and hot. Humid during most of the time

Source: INSIVUMEH (Instituto Nacional de Sismología, Vulcanología, Meteorología e Hidrología)

b. Geology and soil

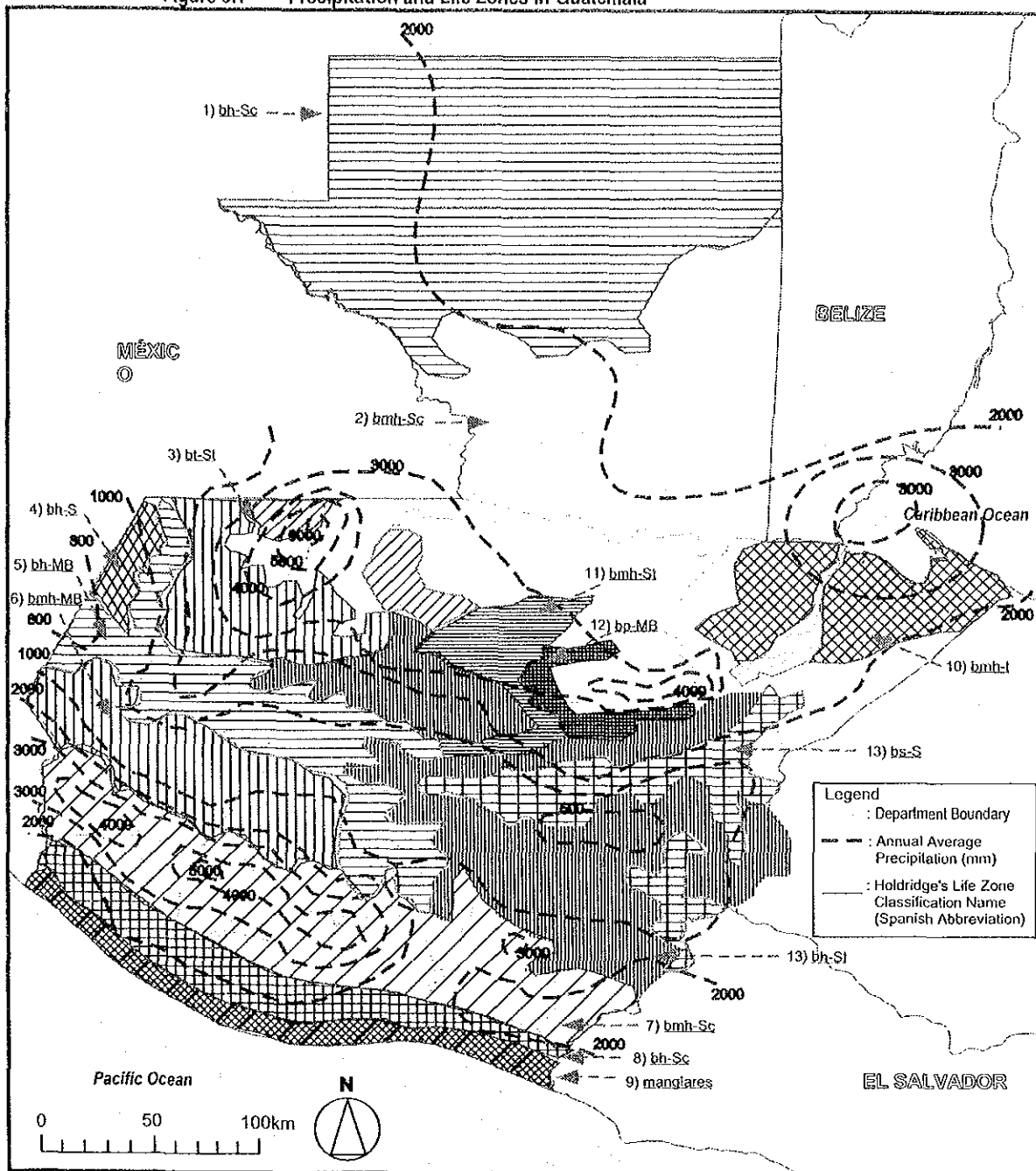
Guatemala is located at the confluence of three plate tectonics (Cocos Plate in the southwest area of Guatemala, North American Plate in the next of the Cocos Plate, and Caribbean Plate in the most southern part of Guatemala). Therefore, when any plates get frisky, earthquakes or volcanic eruptions could occur. Guatemala has many subterranean caves, which are increasingly recognized as a tourism objective. In terms of the soil condition, most of the soils are erodible due to deforestation, thin topsoil, and steep terrain.

c. Hydrology and watershed (*cuenca*)

Table 8.2 and Table 8.3 show major rivers and lakes in Guatemala, respectively. The Rio Chixoy – Rio Usumacinta Complex may be regarded as the longest river in Guatemala, the total length of which within the Guatemalan territory is 728.85km. The Usumacinta River forms part of the border with Mexico.

Guatemala is divided into 35 watersheds or cuencas. Guatemala has a watershed (*Cuenca*) conservation scheme for land management and sustainable agriculture development.

Figure 8.1 Precipitation and Life Zones in Guatemala



Source: National Strategy for Biodiversity Guatemala, 1999, Guatemala National Atlas

Table 8.2 Major Rivers in Guatemala

Name of river	Length of river (km)	Average water flow volume (m ³ /s)
Motagua	486.55	203.7
La Pasión	353.90	322.8
Cahabón	195.95	164.2
Polo chic	193.65	69.3
San Pedro	186.25	52.9
Coyolate	154.95	15.6
Samalá	145.00	8.7

Note: Average Water Flow Volume is based on the monitoring data from 1970 to 1983

Source: "Ríos de Guatemala", INSIVUMEH (Instituto Nacional de Sismología, Vulcanología, Meteorología e Hidrología)

Table 8.3 Major Lakes in Guatemala

Name of the Lake	Area of the Lake (km ²)	Elevation (m)
Izabal	589.6	0.9
Atitlán	130.1	1,562.0
Petén Itzá	99.0	110.0
El Golfete	62.0	0.0
Amatitlán	15.2	1,186.0

Note: Average Water Flow Volume is based on the monitoring data from 1970 to 1983

Source: "Ríos de Guatemala", INSIVUMEH (Instituto Nacional de Sismología, Vulcanología, Meteorología e Hidrología)

d. Natural disaster

Guatemala has been suffering from natural disasters such as earthquake, floods, and volcanic eruption. Table 8.4 shows recent major natural disasters in Guatemala.

Table 8.4 Main Natural Disasters in Guatemala

Natural Disaster	Year	Affected Areas and Main Damage
Earthquake in Quiché	Oct, 1985	A small town of Tierra Blanca was damaged.
Heavy rainfall in whole Guatemala	Sep, 1989	The rainfalls damaged main road network.
Hurricane Mitch	Sep, 1998	About 300 persons were died from the Hurricane.
Aguas Negras River Flood	May, 2000	Damaged the Escuintla area
Increase of Fuego Volcano Activities	May, 2000	No damages have been reported so far.
River Flood in Achiguate, Acome, Pantaleon, and El Naranjo	May, 2000	Several towns in the respective watersheds were flooded.

Source: CO NRED (Coordinadora Nacional para la Reduccion de Desastres), 2000

(2) Present natural environment

a. Flora

According to the National Council of Protected Areas (CONAP), Guatemala has more than 8,000 species of plants in different ecosystems. The plants range from cloud forests in high mountain areas and pine forests in the interior mountain areas, to the mangrove forests on the Pacific and Caribbean Coasts in the 14 Life Zones of the Holdridge's classification (see Figure 8.1). El Peten area, in particular, boasts of a great variety of trees, which include cedar, mahogany, and ramon. Guatemala has approximately 600 species of orchid including the national flower of the wild white orchid (*monja blanca*). One third of the orchid species are recognized as endemic.

b. Fauna

Guatemala has more than 250 species of mammals, 669 species of birds, 231 species of reptiles, 112 species of amphibians, 220 species of fresh water fish, and 259 seawater fish.

Approximately 20 birds are estimated to be endemic in Guatemala. The national bird of quetzal inhabits mainly in the cloud forest areas not only in Guatemala, but also in other Central American countries. Other birds that may be important from the viewpoint of tourism would be toucans, macaws, parrots, heron, hawks, and eagles.

8.1.2. Environmental Institutions and Tourism-Related Environmental Policies

(1) Present environmental institutions

a. Ministry of Environment and Natural Resources

Ministry of Environment and Natural Resources (Ministerio de Ambiente y Recursos Naturales - MARN) was established in December 2000 replacing the National Commission of the Environment (*CONAMA*). The ministry is responsible for environmental management including pollution control, natural resources management, and waste management as well. The former *CONAMA* was re-organized under the ministry as the Environmental Quality Department. At present, the department is responsible for the pollution control and EIA (environmental impact assessment) appraisal.

b. National Council of Protected Areas (*CONAP*)

CONAP is responsible for managing all the protected areas in Guatemala. It defines the present Guatemalan System of the Protected Areas (*SIGAP*).

c. Other related agencies

Ministry of Health is responsible for public health related to waste problems. Institute of the National Forestry (*INAB*) is responsible for forestry management in unprotected areas. Ministry of Agriculture, Livestock and Food (*MAGA*) conducts some watershed management projects.

(2) Tourism-related environmental policies and *SIGAP*

a. Tourism-related environmental policies

Former *CONAMA* has formulated "the National Environment Strategy 2000 – 2004", which refers to a sustainable nature-based tourism policy. The central parts of the policy are, i) "Tourism Policies of the Protected Areas (*Política sobre la Actividad Turística en Áreas Protegidas*)", and ii) Protected Areas Management System (*SIGAP*). There is, however, little tourism-related specific environmental policy at present. On the other hand, *CONAP* enacted the Law for Protected Areas (*Reglamento de la Ley de Áreas Protegidas*), which defines *SIGAP*. *CONAP* also provides policies on tourism activities in protected areas and takes part in strategic action programs in protected areas including those in El Peten Department.

b. Present SIGAP

CONAP established the Protected Areas Management System (SIGAP) under the Law of Protected Areas. Table 8.5 shows the present categories and types of SIGAP.

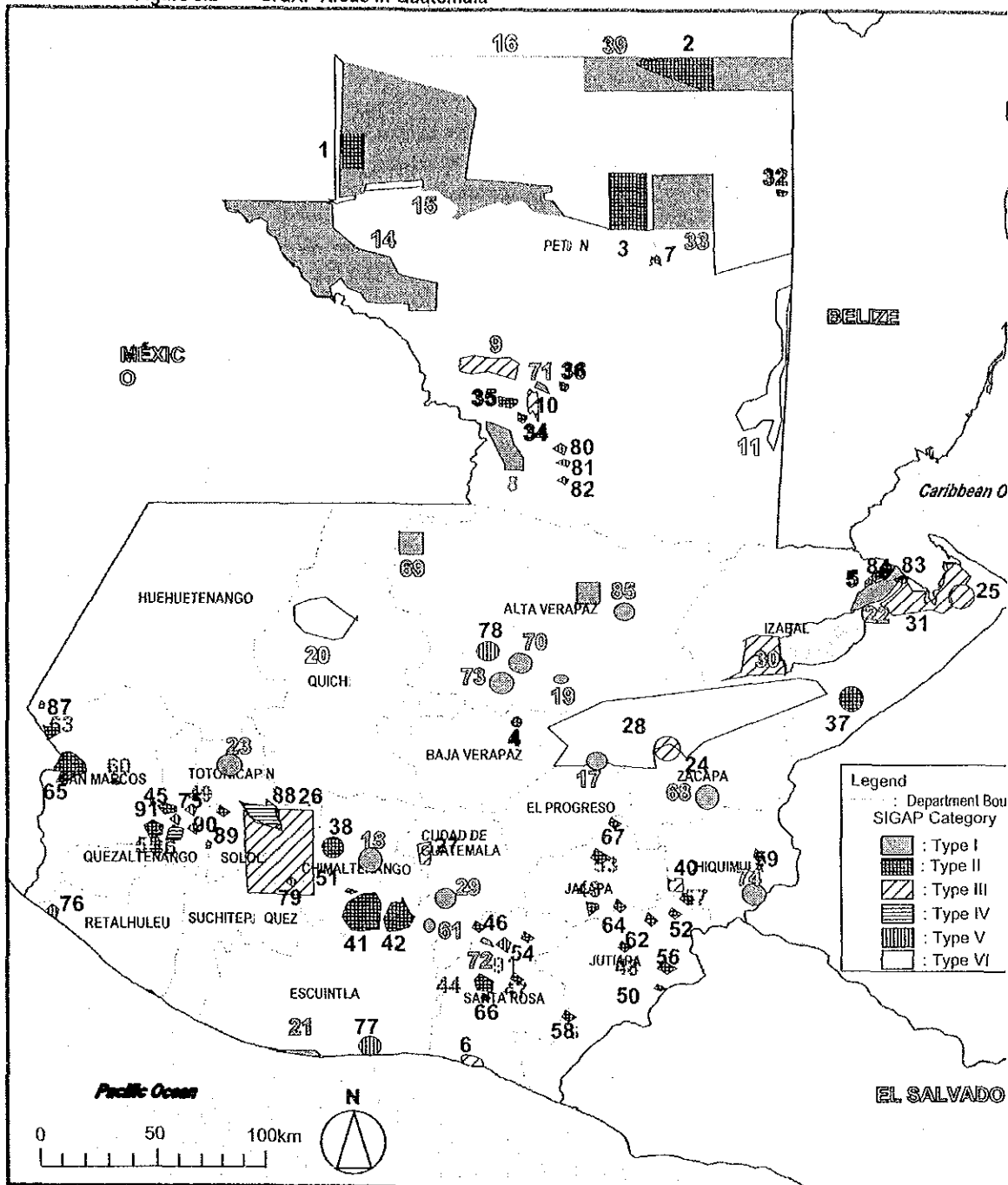
Table 8.5 Present SIGAP Areas and their Categories

Category	Type of the Area	Number of areas	Coverage (hectare)	Ratio (%)
Type I	Biological Reserve	1	18,646	0.87 %
	National Park	20	690,436	32.12 %
Type II	Protected Biotopo	6	118,663	5.52 %
	National Monument	1	34	0.001 %
	Cultural Monument	5	7,365	0.342 %
	Game Preserve	26	28,765	1.34 %
Type III	Multiple Use Area	3	67,312	3.13 %
	Spring	2	24,707	1.15 %
	Game Preserve	2	5,061	0.24 %
	Wild Life Refugee	5	77,646	3.61 %
Type IV	Recreation Natural Area	0	0	0
	Regional Park	4	26,743	1.24 %
	Scientific Routes & Roads	0	0	0
Type V	Private Natural Reserve	12	6,210	0.29 %
Type VI	Biosphere Reserve	3	252,871	11.76 %
	Multiple use Area of RBM	1	825,351	38.39 %
Total	Protected Areas	91	2,149,810	100.00 %
Total	Buffer Zones	8	948,896	

Source: CONAP, 1998

The main objectives of SIGAP are, i) to prevent biodiversity loss, ii) to manage the watershed to assure the water flow and quality, iii) to conserve the ecosystem functions, and iv) to conserve cultural resources. There are 91 areas under SIGAP in 1999 as shown in Figure 8.2. The total area of SIGAP is approximately 20 % of the total land of Guatemala. The buffer zone of SIGAP is 9 % of the total. SIGAP is managed by various entities including CONAP, IDAEH, CEBON, INAB, University of San Carlos (USAC), and some municipalities.

Figure 8.2 SIGAP Areas in Guatemala



Note: Figure does not include Special Protected Areas, Buffer Zone Areas, and Proposed Areas.
 Source: CONAP

8.1.3. Present Natural Environmental Situations

Table 8.6 summarizes present situations of the natural environment and related organizations.

<i>Environmental Items</i>	<i>Characteristics</i>
Climate	The climate such as temperature and rain of Guatemala is very diverse mainly due to the variation of the land elevation.
Geology and Soil	Unique geology of Guatemala provides many subterranean caves as one of the natural tourism resources of Guatemala. Mountain landscapes, which consist of many volcanoes, are one of the natural tourism resources.
Hydrology and Watershed (<i>Cuenca</i>)	The hydrology of Guatemala could be divided into three main hydrological systems, which consists of the Pacific System (23,380 km ²), Gulf of Mexico System (52,910 km ²), and the Caribbean System (32,610 km ²).
Natural Disasters	Earthquakes, hurricanes, and flood have destroyed many cultural tourism resources.
Flora and Fauna (Biodiversity)	Guatemala is one of the excellent biological diversity countries of the world. The Red List, which was identified endangered species in Guatemala was firstly elaborated in 1992 and updated annually by CONAP. Approximately 10 % of the species and all large mammals are reported to be endangered.
Ecosystems	There are 14 life zones by Holdridge's classifications in Guatemala. A 37 % of the total land of Guatemala belongs to sub-tropical rainforest ecosystems.
Environmental Agencies	Although MARN was established in December 2000, each task of MARN is not implemented very effectively so far. CONAP and other organizations including international GOs and NGOs conduct specific conservation projects. INAB and MAGA has specific important roles in terms of natural resources conservation through specific projects. There is no specific governmental agency, which manages coastal and marine environment in Guatemala.
Tourism related Environmental Policies	There are some policies and laws such as "Tourism Policies for the Protected Areas." "Law for the Protected Area" defines SIGAP, but is still vague for implementing protected area management in Guatemala. There is no concrete building code in protected areas in Guatemala.

Source: JICA Study Team

8.2. Critical Environmental Issues Related to Tourism Development

8.2.1. Deforestation and Soil Erosion

(1) Deforestation

a. Deforestation trends

Deforestation is the most critical environmental issues in Guatemala. There are different estimations of deforestation trends. According to the Forest Action Plan for Guatemala (PAFG), the forest coverage ratio to the total land area almost halved from approximately 65% in 1950 to 34% in 1996. Table 8.7 shows a recent PAFG's estimation for the deforestation in Guatemala, in which forest coverage ratio shrank from 31.3% of the total land in 1992 to 26.6% in 1998. It shows that deforestation is still in progress at an alarming rate.

Although the largest area of deforestation is from the latifolia forests, deforestation rate (50 %) of the conifer forest during the recent five years is more significant than that of the latifolia forest. The deforestation of mangrove forest is also in a serious situation.

Table 8.7 Recent Deforestation in Guatemala 1992-1998

Type of Forest	Forest Coverage (Km ²)		Deforestation Rate (%) since 1992
	Year 1992	Year 1998	
Latifolia Forest	30,176	26,584	12
Conifer Forest	2,282	1,150	50
Mixed Forest	1,270	1,122	12
Mangrove Forest	174	124	29
Total	33,902	28,982	15
Forest Coverage Ratio	31.3 %	26.6 %	

Source: Plan de Accion Forestal para Guatemala (PAFG), 1998

According to recent interviews with MARN and MAGA, the causes of the deforestation are, i) expansion of fields for subsistent agriculture, ii) expansion of livestock field, iii) illegal cutting, iv) firewood consumption, v) forest fire, and vi) expansion of plantation. The most significant cause was pointed out to be the expansion of fields for subsistent agriculture.

b. Soil Erosion and sedimentation

Deforestation also causes soil erosion, in particular, in steep slope areas with erodible soil. It was estimated that eroded land rate in Guatemala was between 25 % and 35 % of the total land area in 1980's. However, it was estimated that approximately 10 % of the land in Guatemala were eroded severely, and 85 % of the land were eroded slightly or moderately in 1992 as summarized in Table 8.8.

Table 8.8 Estimation of the Soil Erosion of Guatemala in 1992

Erosion Level	Estimated Eroded Area (Km ²)	Ratio for the Total Land (%)
Few eroded (0 - 4 %)	21,777.8	20
Slightly eroded (4 - 8 %)	54,444.5	50
Moderately eroded (8 - 16 %)	16,333.4	15
Significantly eroded (16 - 32 %)	7,622.2	7
Irreversibly eroded (32 % more)	3,266.7	3
Urban Areas	-	2

Source: CONAMA, 1992

8.2.2. Water Contamination and Deterioration Risks

a. Wastewater contamination risks

Most of the wastewaters in Guatemala are discharged directly into rivers and lakes. According to MARN, rivers and lakes in Guatemala City, the Coban Municipality, the Quezaltenango Municipality, the Sayaxche Municipality, and Peten Itza Lake may be severely polluted due to the wastewaters without treatment. However, there is very few data that evidences the water contamination.

b. Public health and amenity problems

Major causes of death vary according to living condition, gender, and ethnic group. In Guatemala, respiratory illnesses and diarrhea, which is water borne, are the most significant causes of death as shown in Table 8.9,

Table 8.9 Main Causes of Death in Guatemala in 1997

Cause of the Death	Incident Rate per 100,000 habitants	
	Male (1997)	Female (1997)
Pneumonia	114.8	95.8
Diarrhora	51.5	35.4
Homicide	40.7	12.6
Heart attack	23.5	16.8
Cancer	16.6	12.9

Source: Basic Regional Health Indicators, MSPAS, 1997

Urban environments in many tourism-oriented towns including Coban are far from satisfactory due to uncollected wastes, traffic noise, and uncontrolled constructions.

8.2.3. Waste Issues

a. Present situation of waste collection and disposal

Present situation of waste collection and disposal in Guatemala is awful. Except a few urban areas and developed tourism sites such as Guatemala City and Panajachel, waste collections and final disposals are insufficiently done. Quetzaltenango Municipality, however, has conducted waste collection and has analyzed municipal wastes volume since 1993 with cooperation from international organizations. According to the analyses in Quetzaltenango, approximately 67 % of the wastes are organic waste, although inorganic wastes are increasing rapidly.

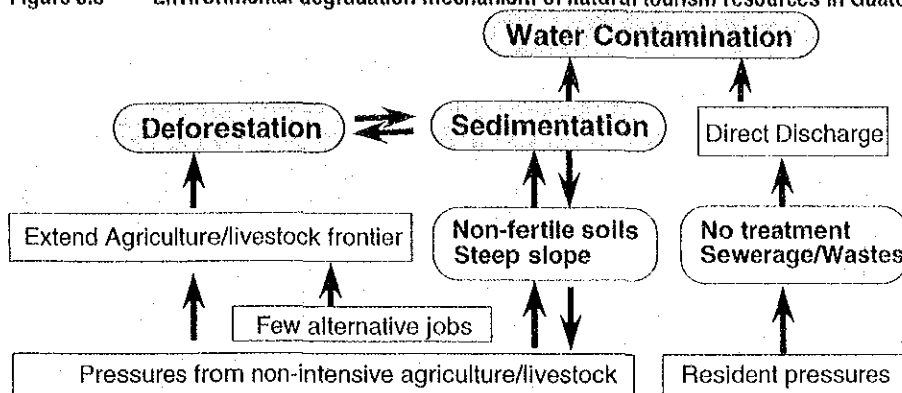
b. Open/illegal dumping problems

Solid wastes problems such as large-scale illegal dumping are one of the critical environmental issues in Guatemala. There is not any collection and disposal system of industrial and hospital wastes in Guatemala. Littering of garbage both by local people and tourists may deteriorate tourism sites such as Coban and Flores.

8.2.4. Environmental Degradation Mechanism of the Natural Tourism Resources

Table 8.7 shows a typical environmental degradation mechanism of natural tourism resources such as unique landscape, flora and fauna in mountainous areas of Guatemala.

Figure 8.3 Environmental degradation mechanism of natural tourism resources in Guatemala



Source: JICA Study Team

8.3. Environmental Conservation Strategies for Tourism Development

8.3.1. Strategic Management of Protected Areas as Natural Tourism Resources

(1) Strengthen the on-going SIGAP and biological corridor management

a. Prioritized SIGAP management

Although SIGAP was introduced, the following fundamental management issues remain unsolved:

Incomplete designation of vulnerable areas as SIGAP

Although a future extension plan of the SIGAP may cover all the unique and vulnerable ecosystems in Guatemala, SIGAP does not cover all the unique and vulnerable areas of Guatemala. For example, cloud forests that exist from “Sierra de los Cuchumatanes” to San Cristobal Verapaz in Quiche Department are not included in the present SIGAP areas. It is necessary to redefine the SIGAP areas based on the vulnerability of the ecosystems.

Unclear definitions of land tenure in SIGAP areas due to the customary land tenure rights

The legal situation of communal properties of the land in Guatemala is complex and unclearly defined under the existing land registration systems. Many customary land tenure rights, which could not be disregarded, are causing land tenure conflicts. Some of the SIGAP areas are invaded by those who have customary land tenure rights.

Management conflicts in protected areas

Although 77 % of the SIGAP territory is under CONAP’s management, it does not have sufficient management capacity. It is reported that almost half of the SIGAP territory are not managed properly mainly due to conflicts among management authorities. It is unclear whether CONAP or IDAEH has the responsibility for managing archaeological sites within SIGAP areas. Conflicts are also reported among relevant municipalities over the management authority of a SIGAP area.

As it is likely to take more time to solve the above-mentioned conflicts, it is necessary to prioritize the present SIGAP areas based on the rapid diagnostic in order to clarify the ecological vulnerability and tourism values.

b. Mesoamerican Biological Corridor (MBC) Project

The MBC Project, which is implemented jointly by NASA and the *Commission Centro Americano de Ambiente y Desarrollo (CCAD)*, includes some unique natural tourism sites of Guatemala. The main objective of the project is to monitor forest condition and environmental changes throughout Central America, and to develop a regional database using advanced satellite images. The project has been focusing on the Peten Department in Guatemala.

It may be possible to consider and implement appropriate environmental conservation measures in the nature tourism sites based on the progresses and the results of the MBC Project throughout the cooperation with the Project.

(2) Natural environmental guidelines concerning tourism development

Although a total of 91 areas are identified for *SIGNAP*, concrete management criteria and methods are not clearly defined. It is recommended that an environmental guideline for the protected area should be created in order to implement appropriate and effective management, in particular, in nature tourism sites within the protected areas. Possible indicators are as follows.

- Soil conditions (It will be categorized based on the data by the *MAGA*;
- Slope range (0% - 6%, 6% - 12%, 12% - 30%, 30% more); and
- Elevation (0- 300m, 300 - 500m, 500 -1000m, 1000- 2000m, and 2000m and more).

The environmental guideline should be supported by a certain law. Each management entity, however, should be given a certain level of flexibility in applying the guidelines for the management of protected areas.

8.3.2. Sanitary and Water Quality Improvement of the Tourism Centers and Sites

(1) Waste management and wastewater treatment in priority tourism centers

Sanitation is a very important factor, or it should be called as a prerequisite, to attract the visitors. Basic waste collection and disposal systems are essential for the potential and developed tourism centers in Guatemala. Municipalities and *INGUAT* local offices should make efforts to improve sanitary conditions of tourism sites.

There are few wastewater treatment systems in the main residential areas of Guatemala. Direct discharges of the wastewaters into the rivers and lakes causes water contamination. Wastewater treatment facilities should be planned before the visitors starts thinking to escape the site.

(2) Basic and continuous water quality monitoring in the priority areas

Drinking water quality and wastewater treatment is not in a good condition, in particular, in residential areas of Guatemala. However, it is very difficult to identify pollution sources of water contamination at present due to the lack of data. It is necessary to conduct a basic water quality monitoring of drinking water and wastewater in the

susceptible contamination areas as well as in important tourism areas. Also a continuous water quality monitoring would contribute to the improvement of tourism sites.

8.3.3. Natural Environmental Certification and Basic Carrying Capacity

(1) Natural environmental certificate concerning tourism development

Many of the tour agents and guides JICA Study Team encountered during the site surveys do not have sufficient knowledge about tourism resources. For example, a tour guide did not know the rarity of the fauna and flora under international level as well as the international or domestic tourism value of the sites. An authorization system by an appropriate organization such as *INGUAT*, *MARN* and *CONAP* would be conducive to nature-based tourism development and strengthen Guatemala's advantage over competitor nature destinations.

(2) Basic carrying capacity indices in natural tourism sites

It is necessary to consider setting basic carrying capacity indices such as maximum visitors in a tourism site in order to prevent degradation of the natural environments and the congestion of the tourism site. Some of the tourism sites are already suffering from adverse impacts such as damages to monuments and degradation of nature areas.

9. TOURISM INFRASTRUCTURE AND FACILITIES

9.1. Transportation

9.1.1. Road Network

(1) Administrative organization

a. Road classification

Road classification in Guatemala is made up of a hierarchy of Central American Road, National Road, Department Road, and Rural Road. There is a total length of about 14,270km of roads in Guatemala, of which 15.0% are Central American roads, 16.0% are national roads, 46.6 % are department roads, and 22.4% are rural roads.

b. Administration

Table 9.1 shows the outline of road conditions in Guatemala by Region. The three Priority Development Areas (PTDAs) belong to Region II (Coban), Region VI (Quezaltenango), and Region VIII (Peten), respectively.

All the roads in Guatemala are under the control of the Ministry of Communications, Infrastructure and Housing (MICIVI). The ministry also has responsibility for the management/ maintenance of the roads except Rural Roads that are managed by respective municipalities.

Table 9.1 Road Density by Region

Region	Department	Area [km ²]	Population [person]	Population Density [Person/km ²]	Total Length of Road [km]	Road Density	
						[Per 100 population]	[Per 100 km ²]
Total or Average		108,889	11,385,337	105	14,270	0.13	13.11
I	Metropolitan	2,126	2,578,528	1,213	794	0.03	37.35
II	North	11,810	1,017,732	86	1,526	0.15	12.92
III	North-East	16,026	1,003,096	63	1,783	0.18	11.13
IV	South-East	8,237	975,778	118	1,906	0.20	23.14
V	Central	6,828	1,170,634	171	1,718	0.15	25.17
VI	South-West	12,097	2,837,359	235	3,446	0.12	28.48
VII	North-West	15,778	1,468,820	93	2,064	0.14	13.08
VIII	Peten	35,854	333,390	9	1,033	0.31	2.87

Note: Population in the year 2000 by National Statistic

Source: Division of Construction and Supervision, Department of engineering for Transportation, Ministry of Communication, Infrastructure and Housing

(2) Existing road network

a. East-west link

There are two major roads connecting to Mexico and El Salvador. One is Central American Highway No.1 (CA-1) between La Mesilla at the Mexican border and San Cristobal Frontera at El Salvadoran border, the other is Central American Highway No.2 (CA-2) between Tecun Uman at the Mexican border and Pedro de Alvarado at the El Salvadorian border.

b. North-south link

At present, the north-south link is poor compared with the east-west link. Central American Highway No.9 (CA-9) connects to the Caribbean seaport of Puerto Barrios and the Pacific seaport of Puerto San Jose. CA-9 connects to CA-13 that diverts from CA9 at La Ruidosa and connects to Melchor de Mencos at the Belizean Border via Flores. It is the only north-south route with asphalt surface, which is a long way round to get to Peten from Guatemala City.

There is, however, an ongoing project to improve the road between Coban and Flores via Sayaxche, which will be completed by the year 2002 except a long-span bridge in Sayaxche across the Rio de la Pasion. The completion of the new road is expected to improve the north-south link by reducing the travel time and improving accessibility to some archeological sites along the route.

c. Road network for tourism development

Road network is essential for tourism development, and the road condition in the northern part of Guatemala is poorer compared with its southern part. Most of all, access roads to potential tourism sites in El Peten Department need much improvement. In this sense, the Coban - Flores road should be given a high priority of development from a viewpoint of tourism development.

Arterial roads concerning in this Study are as follows:

- CA- 1: Mexico * [La Mesilla] - [Guatemala] - [San Cristobal] * EL Salvador
- CA- 2: Mexico * [Tecun Uman] - [Escuintla] - [Pedro de Alvarado] * EL Salvador
- CA- 9: Pacific Ocean * [Puerto San Jose] - [Escuintla] - [Guatemala] - [El Rancho] - [La Ruidosa] - [Puerto Barrios] * Caribbean Sea
- CA-13: (CA-9) [La Ruidosa] - [Modesto Mendez] - [Sta. Elena/Flores] - [Melchor de Mencos] * Belize
- CA-14 (CA-9)s, RN-1, RN-5, RN7w, FTN

(3) Outline of existing road conditions

Existing road conditions according to road surface type are shown in Table 9.2. It is apparent that the non-hard-surface road (gravel or rough) ratio is very high in both of Region II (Las Verapaces) and VIII (Peten).

Figure 9.1 shows the major existing roads.

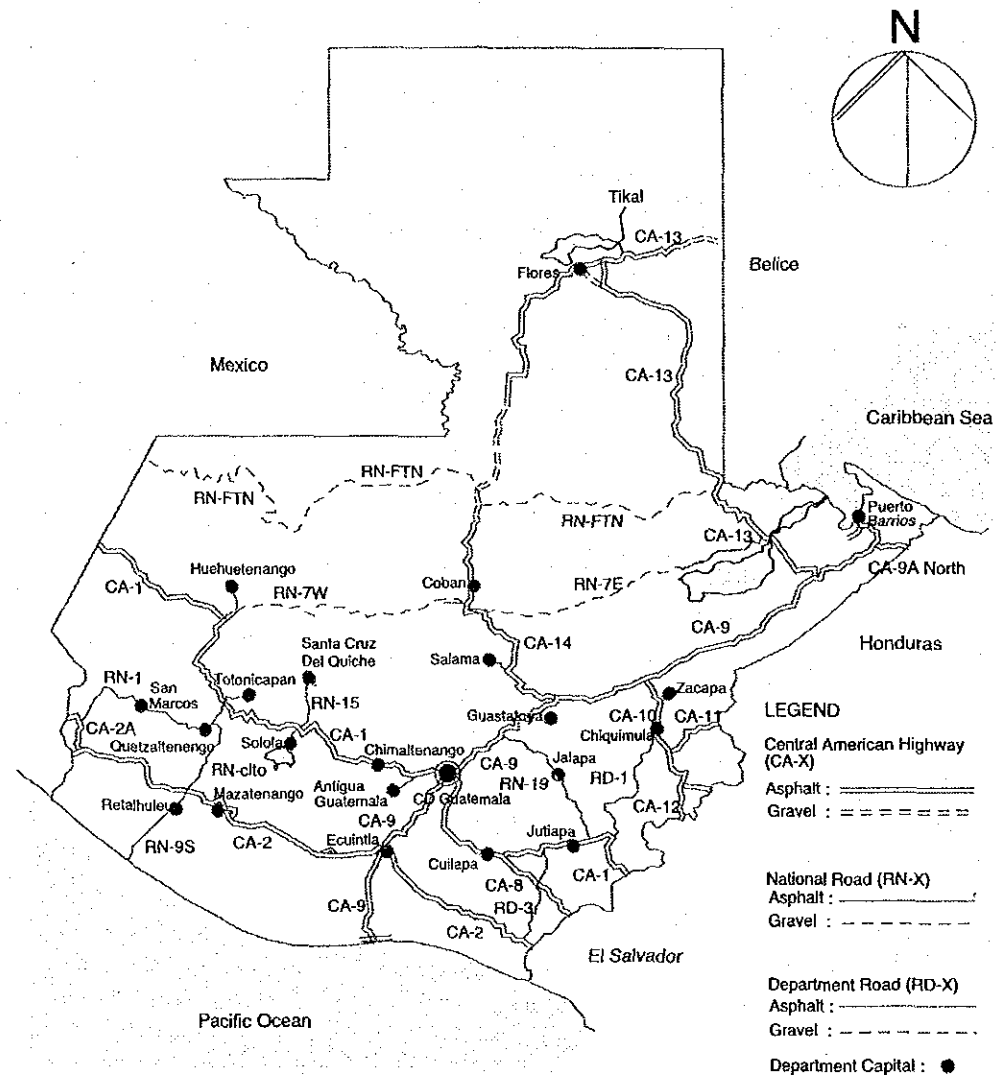
Table 9.2 Existing Road Conditions According to Road Surface Type

Region	Total Length (km)	C.A. Highway, National, Department Road				Rural Road	
		Surface Type		Surface Type		Surface Type	
		Asphalt / % in Total		Gravel, Rough /% in Till		Gravel, Rough /% in Till	
Total	14,270	4,977	35%	6,100	43%	3,193	22%
I	794	482	61%	270	34%	42	5%
II	1,526	170	11%	989	65%	367	24%
III	1,783	904	51%	731	41%	148	8%
IV	1,906	678	36%	661	35%	567	29%
V	1,718	718	42%	647	38%	353	20%
VI	3,446	1,344	44%	1,216	35%	895	21%
VII	2,064	313	15%	931	45%	820	40%
VIII	1,033	378	36%	655	63%	-	-

Note: Population in 2000 is based on National Statistic

Source: Division of Construction and Supervision, Department of engineering for Transportation, Ministry of Communication, Infrastructure and Housing

Figure 9.1 Road Network in Guatemala



Note: FTN=Franja Transversal del Norte (Northern Transversal Belt)

Source: Ministry of Communication, Infrastructure, and Housing

9.1.2. Airport

There are two major airports in Guatemala. Detailed information of airport facility is described below.

Table 9.3 Existing conditions of Aurora/ Anacleto Maza Castellanos Airports

Items	Aurora (Guatemala City)		Anacleto Maza Castellanos (El Peten)	
	Description	Remarks	Description	Remarks
Runway	2,987m x 60m	Expansion impractical	3,000m x 45m	
Passenger Terminal Apron	69,000 m ²		18,900 m ²	
Cargo Terminal Apron,	9,200 m ²		Nil	
Passenger Terminal Building	22,069 m ²		2,268 m ²	
Cargo Terminal Building	8,100 m ²		Nil	
Control Tower (height)	12.8 m		15.65m	

Source: Study for International Airport Development Plan in Guatemala, 1990, JICA

9.1.3. Railway

A private company called FEGUA (Ferrovias de Guatemala) is operating/managing the railway system in Guatemala with a concession since 1997. The railway system is working only for freight service between Guatemala City and Puerto Barrios.

The company has following short, middle and long-term plans.

- Short-term: Rehabilitation of the railway system between Tecun Uman to Puerto San Jose in the Pacific Coast, which is to be implemented from the year 2003.
- Mid-term: Rehabilitation of the railway system between Escuintla to Guatemala City, which is to be implemented from the year 2008.
- Long-term: Expansion of network between Canada and other Central American countries, therefore, there is a plan to operate between Guatemala and Port La Union in El Salvador through Zacapa (still rail line is exist). However, this plan is not approved yet due to difficulty of project feasibility. The plan will be clarified until the year 2010.

At present, FEGUA doesn't operate passenger train. Instead, there are 2 foreign private companies that operate train for tourism.

"Trains Unlimited" is a company in the USA, which organizes train tour with a close association with rail-fans clubs. They operate steam-locomotive between Guatemala City and Puerto Barrios hiring equipment from FEGUA.

Another tour company called "The Guatemala Choochoo" is operating excursions on every Wednesday and Saturday between Agua Caliente and the hot steam baths in "Tierra Caliente/ Zacapa" or the port town of Puerto Barrios. Their products target at rail-fans and student education tours by providing group discounted fares.

Train excursion is expected to add variety to existing tour itineraries utilizing existing infrastructure with minor improvement.

9.2. Utilities

9.2.1. Power Supply

Power supply system in Guatemala is administrated by the Ministry of Energy and Mining. Government owned companies at national and municipal levels and privatized companies are supplying electric power according to government instructions.

National Institute of Electrification of Guatemala (INDE) consists of a power generating company (EGEE), a transmission company (ETCEE), a distribution company (EDEEROC/EDEFEROR) and a commercialization company (INDE). These companies wholesale electricity to municipal electricity companies. Municipal electricity companies (EEM) buy electricity mainly from INDE, and distribute to subscribers.

Union Fenosa Company is the biggest private power supply company in Guatemala, which have own power stations.

Geothermal electric power plants are in operation in Zunil and Amatitlan, and their capacity is 29MW in total and supplied to the Pacific coastal area.

Installation and generation capacities are shown in Table 9.4 and Table 9.5.

Table 9.4 Installed Capacity in 1998 (Unit: MW)

	Hydroelectric	Thermal	Diesel	Total	Share (%)
INDE	417.0	40.0	83.0	540.0	48.5
Guatemala Generating Group (EEGSA)		24.0	164.0	188.0	16.9
Central Private Company	13.5		355.0	368.5	33.1
Individual Operation Plants			8.0	8.0	0.7
Municipal and Local Private Plants	5.0		4.0	9.0	0.8
Total	435.5	64.0	614.0	1,113.5	100.0
Share (%)	39.1	5.7	55.1	100.0	

Source: "EL SECTOR ELECTRICO DE GUATEMALA" by Instituto Nacional de Electrificación del Guatemala

Table 9.5 Gross Generation Capacity in 1998 (Unit: MW/h)

	Hydroelectric	Thermal	Total	Share (%)
INDE	1,695,608	204,212	1,899,820	41.5
Private	39,674	2,641,428	2,681,102	58.5
Total	1,735,282	2,845,640	4,580,922	100.0
Share (%)	37.9	62.1	100.0	

Source: "EL SECTOR ELECTRICO DE GUATEMALA" by Instituto Nacional de Electrificación del Guatemala

Recently the national grid system connected to Flores, and consequently whole Department of El Peten was connected to the system. Guatemala secures power supply with the international linkage with Mexico, El Salvador and Honduras.

The Municipal Electricity Company in Quezaltenango with the capacity of 18MW provides electricity for 30,000 subscribers in Xela, Zunil, Almoronga and Cantel. 5% of

the total capacity is generated by Samala hydropower plant in Cantel, and the remaining 95% is taken from the National Grid.

The tariff of electricity charge is as follows:

- Residential: Q0.42/kw/hr (compare with Guatemala City's Q1.19)
- Commercial: Q0.52/kw/hr
- Industrial: Q0.51/kw/hr

The rates are not sufficient to sustain the operation costs, and subscribers' disregard for the payment (5~8%) is making the situation further worse.

It is recommended to install underground supply cable in specific areas such as historical districts and archeological sites for scenic beauty as well as smooth traffic flow.

Sub-transmission lines and power plants in existing and future expansion plans are shown in Figure 9.2.

9.2.2. Telecommunication/ Internet

Guatemala has a acceptable telephone network including the one for cellular phone. But the service is not sufficient in some areas with low population density.

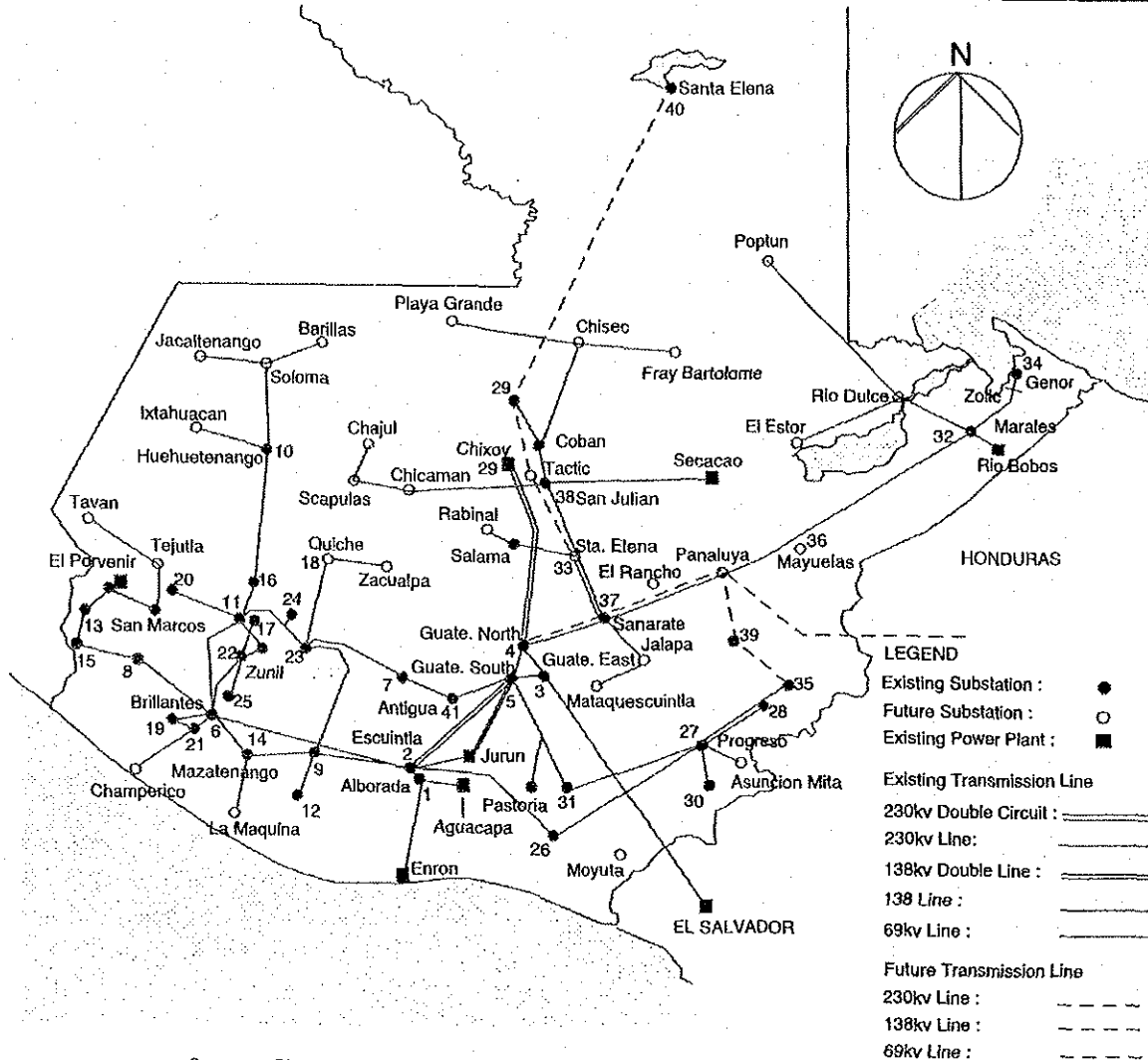
(1) Telephone

Telecommunication companies are controlled under Ministry of Communications, Infrastructure and Housing. The wired telephone services company "GUATEL" was privatized and transferred to a private company called "TELGUA" in 1999. The number of subscribers is supposed to be some 680,000 in 2000. TELGUA monopolizes most of the market.

Figure 9.2 National Power Grid System

SUBSTATIONS

No.	Name	Voltage (kv)	Potential (MVA)	No.	Name	Voltage (kv)	Potential (MVA)
1	Alborada	230		21	San Sebastian	69/13.8	10
2	Escuintla	230/138/69	21-30, 70-100	22	Santa Maria	69/13.8	1.5
3	Guatemala East	230	LInk	23	Solola	69/13.8	10
4	Guatemala North	230/69	2x150	24	Totonicapan	69/13.8, 34.5/13.8	5
5	Guatemala South	230/69, 69/13.8	150, 2x75	25	San Felipe	50/2.3	1.8
6	Los Brillantes	230/69	150	26	Chiquimutilla	138/69	10-14
7	Chimaltenango	69/34.5	20-28	27	El Progreso, Jutiapa	69/13.8, 69/34.5	10-14, 5-7
8	Costequeque	69/13.8	10	28	Aguablanca, Ipala	69/13.8	5
9	Cocales	69/34.5, 69/13.8	5-7	29	Coban	69/13.8, 69/34.5	5-7, 20-28, 5-6, 2.7
10	Huehuetenango	69/34.5, 69/13.8	2x5-10	30	El Jicaro	69/13.8	5-7
11	La Esperanza	69/34.5, 69/13.8	20-28	31	-	-	-
12	La Noria, Tiquisate	69/13.8	5-6.25	32	Los Esclavos	69/13.8	10-14
13	Malacatan	69/13.8	10-14	33	Morales	69/34.5	5-7
14	Mazatenango II	69/13.8	2x10-14	34	Panaluya	69/13.8, 69/34.5	10, 20-28
15	Melendres	69/13.8	5	35	Puerto Barrios	69/13.8	10-14
16	Pologua	69/13.8	5	36	Quezaltenango	69/34.5, 69/13.8	5-7, 5-7
17	Quezaltenango	69/13.8, 69/34.5	20-28	37	-	-	-
18	El Quiche	69/13.8	10-14	38	San Julian	69/13.8	5
19	Retalhuleu	69/13.8	-	39	Sanarate	69/34.5, 69/13.8	20, 1
20	San Marcos	69/13.8, 34.5/13.8	10-14, 5/7	40	La Cumbre, St. Elena	69/13.8	3.5, 10-14
				41	Shoropin	69/34.5	5



Source: Planning and Engineering Division, INDE

(2) Cellular phone

The number of cellular phone subscribers has increased to about 620,000 in 2000. The breakdown is follows:

- COMCEL: 250,000
- PCS DIGITAL: 220,000
- TELEFONICA: 130,000
- BELLSOUTH: 20,000

Rent-a-cellular phone is available for business travelers.

(3) Internet

The number of Internet users is supposed to be less than 100,000. Poor availability of Internet connection could be a constraint for tourism, in particular, to attract the MICE (meeting, incentive, convention, and events) market and young international tourists.

9.2.3. Water Supply

Water supply system is managed and operated by each municipality. Water is taken from various sources such as wells and rivers depending on municipality's geographic condition.

In El Peten Department, Santa Elena and San Benito has 10 wells that can supply a volume of 300 gallon/min, which covers 90% of the population. Piping lines of the two cities are interconnected. Flores Island has purification plant with 235 cubic meter tank taking water from Lake Peten Itza. Supplied water is sold at flat rates as follows;

- Domestic: Q10/month
- Domestic with Commercial Facility: Q15/month
- Commercial/Restaurant: Q60/month
- Industrial/Hotel: Q150/month
- Public facilities: Q50/month

"Flat rates" are applied in 5 categories regardless of the family size of domestic consumer, and the number of hotel rooms. Besides the rates are too low to recover the operational costs. EMAPET (Empresa Municipal de Agua del Peten) has a plan to double the price of domestic consumer to Q20/month. It is necessary to improve the piping system to reduce the high leakage ratio of 30%.

Quetzaltenango takes water from 2 sources: 30% is from the spring water at Ostuncalco, and the remaining 70% is from 62 wells that spread in and around the city. The total supply volume amounts to 32,000~36,000cu.m/day. Although the water leakage ratio is 10%, only 30% of the supplied water is paid due to illegal tapping (10,000 houses are

assumed to take water illegally). The municipality has prepared a master plan issued in 1998 to solve the problem. As part of the master plan, meters were newly installed at 20,000 households for Q890 (Q550 for the right of tapping, Q110 for installation cost and Q230 for meter price).

9.2.4. Sewerage

Almost all sewerage works in Guatemala are of a combined type in general, which handle both storm and wastewater (including kitchens, laundries and bathrooms) discharged into ditches, street gutters and other forms of open drainage. Septic tanks are used at private houses, high-rise apartments, office buildings, public facilities in urban areas. A serious problem is that untreated wastewater overflows into streets from the septic tanks due to periodical floods and overloading, which is causing serious pollution of drinking water. Introduction of efficient septic tank, small-scale treatment plant, oxidation pond, and aeration pond should be seriously considered.

Some large cities are considering to introduce a centralized sewage treatment system, which is constructed and managed by municipal water company that charges a cost to its subscribers. This system will be expanded gradually in the near future.

A construction project of a sewage system is in progress in Quetzaltenango assisted by an IDB fund. The project constructs a piping system and a treatment plant in the eastern part of the city along the Samala River.

9.2.5. Solid Waste Management

In general, urban solid wastes are collected and dumped in controlled sites by municipality or private companies commissioned with the task. In many rural areas, individual households have their own waste pit or a place for burning/dumping.

Dumping sites, riversides, markets and sometimes roadsides are very dirty, and considered to have risk of health hazard for residents as well as for visitors. Some municipalities are considering to improve dumping sites, and reducing/recycling solid waste. However, it is difficult to set up a practical plan due to the lack of a comprehensive management system. Accordingly it is necessary to consider the followings:

- Establishment of a collecting and disposal system,
- Reduction of the quantity of solid waste, and
- Introduction of incinerate facilities.

9.3. Building Design Control Measures

9.3.1. Design Criteria/Standards

There is a necessity to introduce design criteria for the construction of buildings. Standardized building designs would increase the attractiveness of an area through the

creation of harmonious townscape. Use of design criteria would also improve building's functionality and efficiency in management and maintenance.

The followings are examples of discrepancies in building designs JICA Study Team encountered during the site surveys:

- A hotel in a 4-story building has no elevator while other hotel in a 4 story building has installed a lift,
- One local museum building use Spanish tiles for roofing, while other buildings use thatched roof and tin roof, and
- Some restaurants have hand washbasin in dining space while others have it only in toilet.

Based on the second category of the above, INGUAT has set the building criteria for accommodation facilities in the following four categories.

Table 9.6 Groups and Categories of Accommodation

	Group	Category
1	Hotel	1, 2, 3, 4, 5 star
2	Motel	1, 2, 3 star
3	Pension	A, B, C
4	Economy Lodge	A, B, C

Source: Regulation for Establishment of Accommodation, INGUAT

Regarding the general regulation for construction, only the municipal government of Guatemala City has established an original regulation, that is, "Regulatory Guideline for Guatemala City; Regulation for the Construction, Presidential Decree No.583." The regulation is often used by other cities in Guatemala. It would be necessary to set a national standard for construction, which would meet the actual circumstances of different types of places in the country.

In case of developing local museums, their design should comply with the national standard that specifies basic elements such as structural design and utilities work design. Other detailed design aspects should be controlled by local and municipal regulations to comply with the government policy of decentralization.

9.3.2. Evaluation of Building Conditions

Colonial buildings are used for different purposes. The law of Cultural Heritage stipulates management policies for colonial monuments, but there are no specific mechanism to maintain the monuments.

Table 9.7 Existing Conditions of Colonial Buildings

Property	Type of Use	Management Conditions
Public Property	Government Buildings	Most of government buildings in major cities built during the colonial period. Many of the buildings still used for the original purposes with minimum maintenance.
	Museum Buildings	Some buildings have been transferred to museums. But their functions as museum are often very poor because these buildings are not built for museums. It is not rare to find collections are exposed to humidity, inadequate lighting, heat, and insect.
	Churches	Many of the churches built in the colonial time are used for the original purpose, and maintained by respective churches' management bodies.
Private Property	Housing/Offices Buildings	Many colonial buildings are used as private homes or offices, and their maintenance conditions depend on their owners' will. Establishment of guidelines and urgent actions for conservation is required.
	Museum Buildings	Some of private buildings had been converted to museums. They need regulation for conservation.
	Tourism Services	Stylish colonial buildings are adequate for use as hotels and restaurant etc. Classification of buildings and assessment of its value are the initial requirements.

Source: JICA Study Team

9.3.3. Conservation Measures for Historical Buildings

There is neither national codes nor measures for the conservation of historical buildings. For the wise use of historical buildings, minor modification of internal functions without changing external appearance may need to be tolerated to conserve historical assets. Excessively strict rules for conservation could deteriorate historical buildings as it hinders their sustainable use.

As an example, it is reported that a hotel using a historical building in Quezaltenango is having a difficulty, as the municipality does not allow the hotel to install bathroom in their rooms. In this case, the municipal rules may need to have more flexibility to allow minor internal modification. Otherwise, the building's value may depreciate, which leads to a difficulty to obtain maintain fees for the buildings, and shorten its life cycle.

Antigua City is a World Heritages Site and each building and townscape is controlled by the municipal regulations with assistance from UNESCO. Other cities that maintain many historical buildings such as Quetzaltenango and Guatemala City also should improve conservation measures as early as possible.

9.3.4. Encouragement of Using Local Materials and Techniques

Use of local construction materials and techniques would benefit local economy, revitalize local cultural traditions, and give tourism destinations a sense of authenticity. It should be encouraged after evaluating local skill levels, quality control measures of the materials, and supply capacity to meet the demand.

9.3.5. Collaboration among Museums

Ministry of Culture and Sports defines the four categories of museums based on managing entity:

- Public Museum (Central, Local, Army),
- Community Museum (including NGO's),

- Private Museum, and
- University Museum (Public, Private).

Guatemala Museum Association, which is a NGO with a membership of 62 public and private museums, has set up the 10 museum categories as follows:

- Religious Arts Museum,
- Community Museum,
- Science and Technology Museum,
- Indigenous Cloth Museum,
- National Historical Museum,
- Children Museum,
- Painting Arts Museum,
- University Museum,
- Clothes Museum, and
- Casa MIMA.

Museum is an important element of tourism. The following aspects are essential to operate museum.

- Facility standards: quality of architecture, level of equipment, fittings and fixtures,
- Services and supports for the visitors: information materials, devices, and qualified guides,
- Theme of exhibition: themes for permanent and temporary displays, and
- Promotion program: establishment of promotion programs and provision of public relations.

It may be difficult for an individual museum to cover all of the above-mentioned subjects; therefore it is important to promote collaboration among museums, and strengthen an organization that coordinate among museum programs and projects.

9.4. Urban Planning Guidelines

9.4.1. Considerations for Tourism

Towns all over the world with adequately controlled townscape have been attracting a great number of visitors. Therefore, it is necessary to issue urban planning laws and guidelines that would increase the attractiveness of towns in Guatemala.

Introduction of community tourism is one of the central planning themes of the JICA Study. To introduce a Live Museum in a community, there must be guidelines for landscaping, building design, policy for using materials, signs and so on. A key consideration for introducing community tourism is to modify a certain area to have a consistent appearance with minimum investment rather than investing a huge amount of money for new construction.

The same goes for Flores, which is the capital city of El Peten Department located on an island in the Lake Peten Itza connected by a causeway to her sister town of Santa Elena. The city is unique in its setting, is an ideal accommodation base for visiting archaeological sites in El Peten, and most of its inhabitants depend on tourism-related businesses such as souvenir shops, restaurants/ café, tour operators as well as hotel. In this context, there exist strong reasons to improve its townscape. Although the streets in the island are paved with cobblestone and most of the houses use red color for roofing, the material of the roofing is tin. If the houses use Spanish roof tile, it will greatly increase the attractiveness of the town, which will imply the increase of tourism.

9.4.2. Coordination among Organizations Involved in Urban Planning

Several organizations are involved in urban planning, and each organization should have respective roles. Although every government organization mentions about the necessity of demarcation, in many cases, coordination mechanism is insufficient and roles of respective organizations are poorly defined.

In this sense, establishing a coordination mechanism would one of the most critical issues for planning tourism destinations and implementing proposed plans and projects.

9.4.3. Control of Townscape

Townscapes that could be tourism objectives range from historical districts of large cities to unique towns and small villages in rural areas. Neo-classical ornamental buildings, Spanish colonial architecture, churches facing the central park, as well as Mayan houses in indigenous communities are also tourism objectives. However, they are not fully utilized for tourism. With the introduction of guidelines to control townscape, they can be used as tourism products, which in turn would contribute to their conservation.

The townscape guidelines should not only refer to conditions of superstructure (buildings) but also other elements that constitute the townscape such as stone-paved streets and scenery of surrounding areas.

10. MACRO AND SOCIO-ECONOMIC CONDITIONS

10.1. Prevailing Macro and Socio-economic Conditions

10.1.1. Medium to Long-term National Level Development Objectives

(1) The Peace Agreements

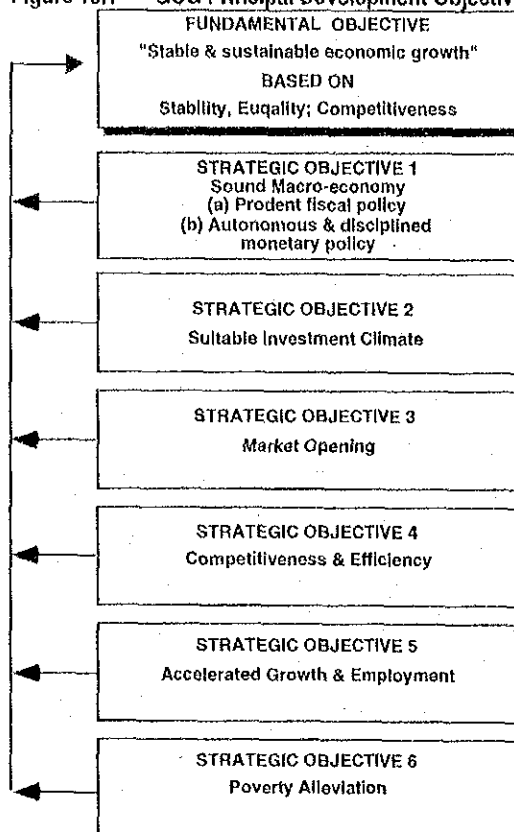
Guatemala's current policy and development agenda can only be understood comprehensively and clearly within the context of the Agreements on a Firm and Lasting Peace (AFLP) that was signed on December 29, 1996 between the Government of Guatemala and the Unidad Revolucionaria Nacional Guatemalteca (URNG). That peace agreement ended thirty-six years of internal armed conflict. AFLP brought into effect numerous previous agreements negotiated before that date between GOG and URNG in the political, military, legislative, social, economic, agrarian, cultural and ethnic fields.

The AFLP forged not only a comprehensive national level agenda across the political spectrum, but it constituted and continues to constitute, at the same time, a monitoring tool, against which progress in all subject areas could be measured, since it commits the GOG to timely achievement of the overall goals and numerical targets identified in the AFLP and related agreements. It is, therefore, of utmost importance to understand fully the profound and far-reaching implications that result from the commitment of realization of AFLP.

(2) The Government's "2000 to 2004 Development Matrix"

Guatemala has no medium to long-term development plan, perhaps due to the fact that AFLP and its related agreements cover, as indicated above, in a quite comprehensive way almost all aspects of society. However, the present GOG has formulated a short- to medium term "2000 to 2004 development matrix" that identifies the objectives, measures to be realized and major stakeholders in the fields of fiscal policy, monetary and exchange rate policy, modernization of the financial sector, growth in domestic production and exports, the business and investment climate, and accelerated growth and employment. GOG realized from the outset that achievement of macroeconomic stability and public sector modernization would be prerequisites, in order to realize the numerous qualitative and quantitative targets identified in AFLP and related agreements. The major development policy objectives are illustrated in Figure 10.1, and they are elaborated on as summarized below:

Figure 10.1 GOG Principal Development Objectives



Source: JICA Study Team, based on "Matriz de Política Económica 2000 – 2004"; GOG

a. Fiscal policy.

The major policy objectives are: a) reduction of the budget deficit through increased tax collection and rationalization of public expenditures, b) optimization of public expenditures, in principal through expenditure allocation that is based on socio-economic evaluation criteria, c) restructuring of public debts; and d) use of receipts from privatization to pay for internal debts

b. Monetary and exchange rate policy

The major objectives are: a) reduction of inflation, b) reducing the volatility in interest and exchange rates; and c) elimination of the "quasi" fiscal deficit

c. Modernization of the financial sector

The principal policy objectives are: a) strengthening the capital and operational efficiency of banks and NBFJs, b) strengthening the regulatory capacity of banking supervisory entity, c) increasing the transparency in banking operations, and d) strengthening of the capital, securities and goods markets

d. Growth in domestic production and exports

The main policy objectives in these fields are: a) opening to trade and opening up of new markets, b) obtaining liberal trade treaties, c) modernizing customs, d) establishing a modern system of consumer protection; and e) providing public quality services

e. Business & investment climate

The principal objectives are: a) strengthening the "rule of law," b) broadening and modernizing the network of public infrastructure, c) establishing a statistical systems that can support management decisions, d) stimulating international quality standards to be applied for products and also enterprises; and e) promoting foreign direct investment (FDI)

f. Accelerated growth & employment

The major policy objectives in this field are outlined as: a) supporting education as a basis for higher productivity, salaries and subsequently living standards, b) improving public health services, c) boosting old and new activities that foster the rapid growth of value added, d) supporting SME development; and e) improving coordination between governmental and non-governmental organizations.

In addition to the objectives of the above "development matrix", which constitutes also the present Government's political platform, AFLP identifies clear numerical targets to be achieved over the 1997 to 2000 period in terms of real GDP growth rate, tax burden, budget expenditure targets in the fields of health, education, public security, and the judiciary and expenditure reduction for the armed forces. These numerical targets are summarized in Table 10.1.

Table 10.1 Peace Agreements Programming of Indicative Minimum Targets 1997-2000

Parameter	Unit	Base year	1997	1998	1999	2000	Minimum Targets
GDP Targets							
Real GDP Growth Rate	%		4.2	5.1	6.0	6.0	6.0
Nominal GDP	Million Q	85,880.3	115,654.0	136,841.8	161,453.2	192,720.5	n.a.
Nominal GDP	Million US \$	14,783.0	17,792.9	21,123.8	22,739.9	25,696.1	n.a.
Tax Burden Targets							
Tax burden	% of GDP	7.6	8.6	10.0	11.4	12.0	n.a.
(Percentage increase over base year)	%		13.2	31.6	50.0	57.9	50.0
Budget Targets							
(Percentage increase over base year)							
Health	%	750.4	15.0	25.0	35.0	50.0	50.0
Education	%	1,411.9	15.0	30.0	40.0	50.0	50.0
Public security	%	289.1	14.0	30.0	40.0	50.0	50.0
Judiciary/Public prosecutor	%	150.8	12.0	30.0	40.0	50.0	50.0
Armed forces	%	842.8	-11.0	-22.0	-33.0	-33.0	-33.0

Notes: 1) n.a. = not available

2) Budget figures for the base year are in million Quetzales

Source: United Nations

10.1.2. Past Socio-Economic Performance 1985 to 2000

Population size data are readily available from two population censuses conducted in 1981 and 1994, respectively. Population size data for 2000 and projected data for 2005 that are also available are based on the enumerated 1994 population census. However, there seems to be common acceptance that the 1994 census results were to some extent unreliable and, hence, data projected by the National Institute of Statistics (INE) for the year 2000 and beyond have to be treated with caution. In fact, the institute issued only recently a 1994 enumeration error corrected version of its population projections. Therefore, all following population data and performance indicators that are correlated with population data should be interpreted with caution, in spite of these efforts by the statistical institute.

There are substantial differences for the years 1981, 1994 and 2000 on the absolute population size between the figures quoted in one of the important World Bank documents³¹ and INE. For example, the absolute population size for the population census year 1981 is quoted by the World Bank document as 7.113 million people, comprising some 50.6 males and 49.4 females and reflecting an urban/rural split of 37.3 urban and 62.7 rural. The data published by Guatemala's statistics institute suggest a total absolute population size in the same year of 6.054 million people, marking a difference of some 1.059 million people in comparison to the WB quoted figure. Such difference is quite substantial, equivalent to about 15 percent of the total if the WB figure is taken as a base, or 17 percent, if the INE figure is taken as a base. Similar differences prevail also as regards the gender and urban/rural splits for that year and subsequent years. The reasons for such substantial differences in demographic data could not be established. However, since demographic data are essential base data for the determination of other socio-economic features and key-characteristics, such differences need to be pointed out and they should actually be clarified by the entities concerned. The analyzes reflected in this Report is, for practical purposes, based on data reflected in official documents of Guatemala's National Institute of Statistics (INE).

These data indicate that Guatemala's absolute population size increased from 6,054,227 people in 1981 to 8,331,874 in 1994 and an estimated 11,385,338 in the year 2000. Such increase would be equivalent to a compound population growth rate of 2.49 percent over the period 1981 to 1994, 5.34 percent for the period 1994 to 2000, and 3.38 percent over the whole 19-year period 1981 to 2000. The more than doubling of the population growth rate over the period 1994 to 2000 as against 1981 to 1994 remains so far unexplained. Not surprisingly, the long-term population growth-rate for the period 1981 to 2000 varies considerably among the Departments, with three Departments showing the highest absolute long-term population growth rate: Alta Verapaz; Peten and Guatemala City.

³¹ World Bank; Guatemala – Building Peace with rapid and Equitable Growth; Report No. 15352-GU; Washington, D.C.; 1996.

Table 10.2 groups the various Departments in accordance to their relative position to the national long-term population growth rate of 3.38 percent.

Table 10.2 Long-term Population Growth Rate by Department from 1981 to 2000

Below the national average of 3.38%	Around the national average	Above the national average
Quiche (3.13%)	Chimaltenango (3.32%)	Alta Verapaz (5.00%)
San Marcos (3.11%)	Chiquimula (3.30%)	Peten (5.00%)
Totonicapan (3.04%)	Quetzaltenango (3.29%)	Guatemala (4.32%)
El Progreso (3.03%)	Zacapa (3.26%)	Sacatepequez (4.09%)
Baja Verapaz (3.02%)		Huehuetenango (3.82%)
Izabal (2.88%)		Solola (3.70%)
Suchitepequez (2.83%)		Jalapa (3.67)
Santa Rosa (2.66%)		
Retalhuleu (2.51%)		
Jutiapa (2.29%)		
Escuintla (1.96%)		

Source: INE

The Department of Guatemala is by far the country's largest population concentration, estimated to account for about 23 percent of total population in 2000. The four most important population concentrations in 2000 after Department Guatemala are Huehuetenango (7.7 percent); San Marcos (7.4 percent), Alta Verapaz (7.2 percent), and Quetzaltenango (6.0 percent). All four Departments combined accounted in 2000 for roughly 51 percent of Guatemala's total population size.

Table 10.3 provides a ranking of Departments in accordance with the year 2000 estimated absolute population size. The table indicates that the five (5) most densely populated Departments are Izabal (2,904 persons/km²), Guatemala (1,074 persons/km²), Jalapa (934 persons/km²), Baja Verapaz (759 persons/km²), and Alta Verapaz (737 persons/km²).

An updated urban/rural split for the estimated year 2000 population sizes has not yet been made available. Hence, the enumeration error adjusted 1994 population census data are employed to obtain a first feeling on the distribution pattern among urbanized and rural Departments. The overall national level urban/rural split in 1994 according to these data was a 35 percent to 65 percent ratio. Out of the total of 22 Departments, only two have to be considered highly urbanized, i.e. Department of Guatemala with an urbanization ratio of 70.9 percent, and Sacatepequez with a ratio of 70.5 percent. Three Departments had an urbanization rate slightly above the national average, namely Chimaltenango (41.6 percent), Quetzaltenango (39.8 percent), and Escuintla (37.1 percent). All remaining 18 Departments are predominantly rural, or strongly rural Departments.

Table 10.3 Year 2000 Population Projections and Population Density by Department

Department	Rank	Land Area		Population Size			Population Density [km ²]
		Municip. [km ²]	Rural [km ²]	Male	Female	Total	
Guatemala	1	10,744		1,264,324	1,314,204	2,578,528	240
Huehuetenango	2	2,604	4,799	442,913	437,075	879,988	119
San Marcos	3	3,795		434,765	409,722	844,487	223
Alta Verapaz	4	1,105	7,581	416,546	397,755	814,301	94
Quiché	5	980		292,946	295,886	588,832	601
Quetzaltenango	6	2,111	0	342,372	335,878	678,250	321
Escuintla	7	4,384	0	248,282	235,487	483,769	110
Chimaltenango	8	1,979	0	216,638	210,963	427,601	216
Suchitepequez	9	2,424	86	205,885	197,724	403,609	161
Jutiapa	10	1,331	1,888	194,312	191,597	385,909	120
Totonicapan	11	1,037	0	179,317	181,984	361,301	348
Izabal	12	115	8,923	174,219	159,736	333,955	37
Peten	13	n.a.	35,854	177,417	155,973	333,390	n.a.
Santa Rosa	14	2,955	0	165,407	154,407	319,814	108
Chiquimula	15	753		156,637	156,513	313,150	416
Solola	16	710	0	156,773	151,018	307,791	434
Jalapa	17	289	265	134,210	135,845	270,055	487
Sacatepequez	18	429	0	132,686	126,579	259,265	604
Retalhuleu	19	1,856	0	123,911	118,010	241,921	130
Zacapa	20	386	0	107,766	105,028	212,794	551
Baja Verapaz	21	268	2,856	100,980	102,451	203,431	65
El Progreso	22	1,410	512	72,414	70,783	143,197	75
TOTAL		108,889		5,740,719	5,644,618	11,385,337	

Notes: 1) Total for the land area does not add up, since some of the municipality areas are not known exactly. Hence, population density figures are only indicative

2) Population size figures do not add up, due to unspecified reasons

3) The ranking is by absolute population size.

Source: JICA Study Team compilation from INE

This general pattern is complimented by Guatemala's urban structure. The urban structure was defined along six (6) categories, in order to obtain a first impression on the size and distribution of towns and/or villages. The understanding of such structure is important, since it indicates the potentials for production and consumption centers, transportation needs, and labor force limitations. The following categories were used:

- Municipalities with a population size of over one million,
- Municipalities with a population size of 0.5 to 1.0 million people,
- Municipalities with a population size of 0.1 to 0.5 million people,
- Municipalities with a population size of 50,000 to 100,000 people,
- Municipalities with a population size of 10,000 to 50,000 people, and
- Municipalities with a population size below 10,000 people.

There is no need in this context to elaborate on every detail of Guatemala's urban structure and its implications. However, the following key-characteristics should be kept in mind in the context of an overall development strategy and tourism sub-sector development. Guatemala has only one municipality with a population size over one million people, i.e. Guatemala City. There is, according to the available data, not one

municipality with a population size of between 0.5 to 1.0 million people. There are only nine (9) municipalities in the medium range of 0.1 to 0.5 million people. The larger ones in this category (i.e. between 0.3 to 0.5 million people) are all located in the Department Guatemala, making this Department by default the largest urban agglomeration center in the country.

There are a total of 330 municipalities in Guatemala. The distribution over municipality over size is provided in Table 10.4.

Table 10.4 Distribution of Municipalities over Municipality Size

Parameter	Over 1 Million	0.5 to 1.0 Million	0.1 to 0.5 Million	0.05 to 0.01 Million	10,000 to 50,000	Below 10,000
Number of Municipalities	1	0	9	36	219	65
Percent	0.3	0.0	2.7	10.9	66.4	19.7

Source: JICA Study Team

Guatemala is, as the table illustrates, dominated by a metropolitan structure that is heavily biased toward villages with a population size below 50,000 people. Such villages in rural settings accounted in 2000 for an estimated 86.1 percent of all municipalities in Guatemala.

The results of the 1994 population census allow also for identifying the share of the population that consider themselves of either "indigenous" or "non indigenous" roots by Department.

According to these data, some 42 percent of Guatemala's total population considered itself of indigenous, and some 56 of non-indigenous roots (the balance didn't know). The share between indigenous and non-indigenous persons is fairly evenly balanced in Guatemala's rural areas, in which some 51 percent consider themselves indigenous and about 47 percent non-indigenous (Table 10.5).

Table 10.5 1994 Census – Indigenous & Non-Indigenous Population Shares

	Indigenous	Non-indigenous	Doesn't know	Total
Rural	51.0	46.5	2.5	100.0
Urban	24.5	72.6	2.9	100.0
Total	41.7	55.7	2.6	100.0

Source: 1994 Population Census

In urban areas, however, the balance is shifted in favor of non-indigenous people (about 73 percent) as against indigenous (about 25 percent).

10.1.3. Real GDP Growth & Structural Features 1985 to 2000

The position of the tourism sub-sector and tourism sub-sector development has to be appraised, judged and planned within the framework of the overall economy and the economy's all-comprising regulatory and enabling environments. Easily available time-series for real GDP growth and GDP structural data over the period 1985 to 1998 are available from Banco de Guatemala in constant 1958 prices (Quetzales) and in constant

1990 US dollar prices. Aggregated GDP estimates are also available for the years 1999, 2000 and 2001.

The following approach is adopted for analyzing Guatemala's past growth performance and GDP structural features over the period 1985 to 2001:

- Absolute real GDP growth is, due to the lack of more recent constant price time series, based on Banco de Guatemala 1958 constant prices. Computing in a 43 year old price base is somewhat unusual and it must be kept in mind in this context, that a more recent year constant price-base would obviously lead to different numerical results,
- Banco de Guatemala has GDP estimates for 1999, 2000 and 2001. However, in order to maintain consistency with structural data and sub-sector growth data, GDP was estimated by JICA Study Team for these three years in a bottom-up approach, i.e. projecting sub-sector growth based on 16 year long-term sub-sector growth (1985 to 1998), with GDP growth resulting from such sub-sector growth. Hence, there may be minor differences with the aggregated GDP data provided by Banco de Guatemala for these three years,
- Also, the structure of Banco de Guatemala GDP-data does not follow the generally accepted United Nations standards for GDP data. For example, utilities (electricity, gas, water & sanitation) are grouped under the tertiary (services) sector, while standard UN-format includes utilities under the secondary (i.e. industrial) sector. JICA Study Team has regrouped the Banco de Guatemala sub-sector data to meet United Nations standards for GDP data, and
- The hotel & restaurant services sub-sector is normally used as a proxy to establish the overall position of the tourism sector in an economy. However, Banco de Guatemala data include this sub-sector under the communal, social & personal services sub-sector. This situation has resulted in some difficulties in establishing the exact size and, therefore, position of the tourism sub-sector in the economy.

The data for the period 1985 to 1998 are in constant 1958 Quetzales and constant 1990 US dollars. The long-term aggregated GDP, sector and sub-sector trend growth rate performance measured in 1958 constant prices over the 16-year period 1985 to 2001 is summarized as:

- Long-term real GDP growth has been with 3.7 percent, which is relatively modest, and
- A breakdown of this period in sub-periods shows that Guatemala's economy before and five years after the peace agreements has not yet achieved any accelerated growth path (Table 10.6).

Table 10.6 GDP Real Growth Performance by Period

	1985 to 1990	1990 to 2001	1985 to 2001	1996 to 2001
GDP Real Growth Performance	2.91	4.07	3.71	4.08

Source: JICA Study Team

- The highest absolute periodic growth rate achieved so far was over the periods 1990 to 2001 (4.07 percent) and 1996 to 2001 (4.08 percent), indicating that there is practically no difference in real GDP growth performance in the past decade,
- There is only a miniscule difference in GDP growth performance of about one (1) percent point between the pre- and post peace agreement periods,
- Long-term primary sector growth over the period under consideration has been relatively stable at around 2.8 percent to 2.9 percent,
- Long-term secondary sector growth has been recorded at around 3.97 percent. The secondary sector, too, has not achieved any accelerated growth path. The difference in real growth performance between the periods 1985 to 1990 and 1990 to 2001 is only in the order of magnitude of some 1.3 percent points,
- Sub-sector growth within the secondary sector has likewise for all sub-sectors, except "mining & quarrying" stayed over the 16 years period in the same order of magnitude, and
- Long-term tertiary sector growth has seen some increase, from about 2.86 percent over the period 1985 to 1990 to around 4.49 percent for the period 1990 to 2001. Long-term trend growth for the 16-years period under consideration is recorded at 3.98 percent, almost identical to the growth performance of the secondary sector. With the exception of the commerce sub-sector, all other sub-sectors of the tertiary sector have remained more or less at similar levels of growth performance.

Given such modest long-term growth performance of the economy, real per capita income developments (not taken into account any income distribution effects) has been slightly above the level of stagnation. The major trend in real per capita income developments over the same period is summarized as indicated below, though population data are not established with a full level of certainty as has been already observed:

- The long-term trend real per capita growth rate for the period 1985 to 2000 is established at around 0.9 percent, i.e. from 440 Quetzales (constant 1958 price base) in 1985 to around 444 Quetzales in the year 2000. It is fair to say, in light of these numbers, that per capita income has remained almost stagnant over the period under consideration, and
- Actually, real per capita income appears to have fallen slightly, if its development is compared for the 1985 to 1990 and 1990 to 2000 periods. Real per capita income had reached a level of 449 Quetzales (real 1958 price base), equivalent of a growth rate of

0.4 percent. The decline to 444 Quetzales in the year 2000 is equivalent to a decrease rate of -0.1 percent over the decade 1990 to 2000.

A dynamic structure analysis of GDP over the same 16-years period reveals a similar stagnating pattern of the Guatemalan economy, i.e. now significant shifts in the structure that are so characteristic for dynamically growing economies have occurred over the period. The primary sector accounted in 1985 and in 1995 for around 26 percent of GDP. That share has only fallen slightly to around 23 percent in 2000. The share of the secondary sector in GDP was with 19.7 percent in 1985 and 19.8 percent in 1995. Its share increased only insignificantly to 20.4 percent of GDP in 2000. The same phenomenon holds true for the tertiary sector, the share of which in GDP was 54.4 percent and 54.3 percent in 1985 and 1995, respectively. A minor increase to 56.7 percent of GDP is recorded for the year the 2000.

As has been observed already, the hotels & restaurants sub-sector is not identified separately in the Banco de Guatemala data, but included in the communal, social & personal services sub-sector. If one takes that sub-sector as a rough proxy for the "hotels & restaurants" sub-sector, the following picture would emerge:

- The long-term real growth rate for the period 1985 to 2000 is with 2.99 percent below the GDP growth rate of 3.71 percent or, in other words, growth of that sub-sector was at a 81 percent level of real aggregated GDP growth
- The share of the rough proxy sub-sector in GDP has decreased slightly from 12.9 percent in 1985 to around 11.6 percent in 2000, and
- Since the size of the communal, social and personal services sub-sector must be considerably higher than that of the "hotels & restaurants" sub-sector, it is fair to conclude that the tourism sector has played so far a minor role in terms of GDP structure and/or sub-sector growth performance.

10.1.4. Growth Performance Analyzes 1985 to 2001

Absolute real growth rates give only a partial picture of an economy's growth performance. It is, therefore, necessary, in order to gain a deeper understanding of the dynamics of such growth performance, and to undertake an additional analytical step that uses a growth-matrix approach. The approach allows insight into the following two fundamental questions:

- How much did each sub-sector and/or sector of the economy contribute to the past real GDP growth?, and
- How much output growth per sub-sector or sector of the economy would be needed to increase a particular sub-sector or sector contribution to the real aggregated GDP growth performance.

Table 10.7 presents the results in form of a ranking of GDP sub-sectors by contribution to real GDP growth over the 1985 to 2001 period under consideration.

Table 10.7 Ranking of Economic Sectors by Contribution to GDP Growth

Rank	Economic Sector	Contribution to 1 % GDP growth point	
		Absolute	Accumulated
1	Commerce	0.224	0.224
2	Agriculture, fishing, forestry	0.188	0.412
3	Banking & insurance	0.142	0.554
4	Transport & communications	0.127	0.681
5	Com., social & personal services	0.101	0.782
6	Manufacturing	0.095	0.876
7	Utilities	0.070	0.947
8	Construction	0.038	0.985
9	Mining & quarrying	0.015	1.000
	1 % GDP Growth Rate	1.000	

Source: JICA Study Team

The results are summarized as:

- The commerce sub-sector is, over the whole period under consideration, the single most important economic sub-sector having accounted for about 22 percent of real aggregated GDP growth performance, or 0.224 percent points of 1 percent real aggregated GDP growth,
- Agriculture, forestry and fishery, equivalent to the primary sector of the economy, are the second most important sector of the economy, having contributed around 19 percent to aggregated GDP growth, or 0.188 percent points of 1 percent real aggregated GDP growth,
- The banking & insurance sub-sector is the third most important economic sub-sector having contributed around 14 percent to aggregated GDP growth, or 0.142 percent points of 1 percent real aggregated GDP growth,
- The three sub-sectors referred to above combined accounted for around 55.4 percent of real aggregated GDP growth of Guatemala's economy over the reference period under consideration, and
- The communal, social & personal services sub-sector, in which the "hotels & restaurants" sub-sector is reflected, accounted for around 10 percent of real aggregated GDP growth, or 0.101 percent points of 1 percent real aggregated GDP growth.

10.1.5. Growth Targets and Investment Requirements

The above identified growth-matrix analyses results in combination with "incremental capital output ratios", or in short ICORs, for aggregated GDP and/or economic sub-sectors, would allow to estimate roughly investment requirements needed to achieve numerical growth targets either for GDP or any other sub-sector of the economy. However, ICORs by sub-sector of the Guatemalan economy are not readily available.

Available are ICORs for aggregated GDP growth and actual investment over the period 1950 to 1998. These numerical relationships are summarized in Table 10.8.

Table 10.8 Growth and Investment 1950 to 1998

Period	% GDP Growth	ICOR	As % of GDP			Pub.Inv./ Gross Inv.
			Priv.Inv.	Pub.Inv.	Total	
1950-54	2.3	4.9	6.1	2.8	8.9	31.9
1955-59	5.4	3.1	3.1	8.7	11.8	35.5
1960-64	4.9	2.7	7.8	2.5	10.3	24.4
1965-69	5.5	2.5	9.9	2.8	12.7	22.6
1970-74	6.4	1.9	11.4	3.0	14.4	21.1
1975-79	5.4	3.3	15.2	4.4	19.6	22.4
1980-84	-0.2	6.6	8.6	5.6	14.2	38.8
1985-89	2.2	10.1	10	2.5	12.5	20.1
1990-94	3.9	2.6	13.3	2.5	15.8	16.2
1995-98*	4.4	2.8	11.3	2.7	14.0	19.2
1950-59	4.0	3.9	7.4	3.8	11.2	33.7
1960-69	5.2	2.6	8.8	2.7	11.5	23.5
1970-79	5.9	2.6	13.3	3.7	17.0	21.8
1980-89	1.0	8.4	9.3	4.1	13.4	29.5
1990-98*	4.1	2.7	12.6	2.7	15.3	17.6

Note: *) Data for 1998 are preliminary figures.

Source: World Bank; Guatemala - Expenditure Reform in a Post-Conflict Country, February 4, 2000

It is difficult, without an in-depth analysis of the above figures, to draw any generalized conclusions. But it may suffice in the context of the present Study to highlight the following most likely relationships:

- The real GDP growth rate appears to have been relatively high when private investment was high. Hence, it is reasonable to assume that high and/or accelerated real GDP growth will depend crucially on high/accelerated private investment into the economy
- Total investment, i.e. private and public, has over the past 50 years never reached a level of some 30 percent of GDP usually needed to support an accelerated growth path, and
- Public investment as share in total gross investment has been relatively low over the past decade.

Table 10.9 reflects a rough projection of the investment requirements needed to support a real 5 percent GDP growth rate over the coming ten years up to 2010. Gross fixed capital formation (GFCF) has been used as a proxy.

Table 10.9 Assessment of Investment Requirements 2000 – 2010

Year	GDP		Gross Fixed Capital Formation					
	1958	Current	Actual					
	const.	prices	Total	Public	Private			
1995	4,179	85,157	12,360	2,098	10,262			
1996	4,303	95,479	12,728	2,346	10,382			
1997	4,469	107,873	16,689	2,742	13,947			
1998	4,693	121,127	20,785	3,235	17,550			
1999	4,872	133,737	n.a.	n.a.	n.a.			
2000	5,060	146,489	n.a.	n.a.	n.a.			
			Gross Fixed Capital Formation			Gross Fixed Capital Formation		
			Projection "A"			Projection "b"		
			Total	Public	Private	Total	Public	Private
2001	5,256	164,068	49,220	12,305	36,915	47,463	11,866	35,597
2002	5,519	183,756	55,127	13,782	41,345	53,158	13,289	39,868
2003	5,795	205,806	61,742	15,435	46,306	59,535	14,884	44,651
2004	6,084	230,503	69,151	17,288	51,863	66,682	16,670	50,011
2005	6,388	258,164	77,449	19,362	58,087	74,685	18,671	56,014
2006	6,708	289,143	86,743	21,686	65,057	83,643	20,911	62,732
2007	7,043	323,841	97,152	24,288	72,864	93,685	23,421	70,263
2008	7,395	362,701	108,810	27,203	81,608	104,922	26,231	78,692
2009	7,765	406,226	121,868	30,467	91,401	117,518	29,379	88,138
2010	8,153	454,973	136,492	34,123	102,369	131,617	32,904	98,713
Accumulated			863,754	215,939	647,816	832,907	208,227	624,680

Notes: 1) An average annual inflation rate of 7% for the period 2000 to 2010 was assumed.

2) Data for 1999, 2000, and 2001 are preliminary.

3) GFCF projection "A" assumes a 30% share of GDP

4) GFCF projection "B" uses a ICOR of 2.7.

Source: JICA Study Team

Two approaches were taken to compute the needed GFCF. Projection "A" assumes a 30 percent share of GDP, and projection "B" used the GDP ICOR of 2.7 identified earlier. The major results are summarized as:

- The difference in results of both projections is minimal (863,754 million Quetzales from 2001 to 2010 under projection "A" against 832,907 million Quetzales from 2001 to 2010 under projection "B"),
- It is estimated that over the ten years period GFCF amounting to 863,754 million Quetzales (projection "A") may be needed to support an average real GDP growth rate of 5 percent,
- The gap between actual public and private investment in previous years and public and private investment needed (assuming a 25 percent public and 75 percent private investment split) is considerable, and
- Hence, it will be quite difficult to achieve the targeted 5 percent real GDP growth rate, unless considerable increases in public and private investment are achieved over the coming years³².

³² For more details on the public investment side see Section 5.

10.1.6. Employment, Productivity, Unemployment & the Informal Sector

There are also serious concerns as to the accuracy of employment, unemployment and productivity data suggested by the figures readily available from Banco de Guatemala and INE.

The following static picture would emerge for the year 1998, if these figures reflect something close to reality:

- Guatemala's total population size in 1998 has been estimated at around 10.653 million people. The share of the population pyramid between 15 to 64 years (taken here as a proxy for the theoretical labor force) for that year is recorded at 72.3 percent, equivalent to some 7.702 million people. However, the statistics identify only about 4.913 million people as labor force, including under-employed and open unemployment. Hence, the informal sector ought to be in the size of some 2.789 million people, or equivalent to about 26 percent of the total population,
- Total formal employment for that year 1998 is recorded at around 3.364 million people, equivalent to about 32 percent of the total population, or around 44 percent of the theoretical labor force in the 15-64 years bracket,
- The primary sector is the dominant employment generator with around 59 percent of the total formal employment. No explanation is provided as to why that share has remained almost constant over the 1985 to 1999 period,
- The second most important employment absorbing sub-sectors are manufacturing (around 14 percent) and services (around 12 percent),
- The tourism sub-sector, which is included under services, thus probably makes a contribution to employment of well below 10 percent,
- The figures record only about 199,542 people as "openly" unemployed. If that is correct, it would imply that Guatemala has an open unemployment rate of only 2.6 percent if measured against the total theoretical labor force, or 4.1 percent if measured against the actual labor force, and
- Some 1.349 million people are recorded as under-employed. If that is so, the under employment rate would be around 17.5 percent if measured against the total theoretical labor force, or around 27.5 percent if measured against the actual labor force.

Table 10.10 identifies the population size economically active in the formal economy and it summarizes labor productivity, which is an important indicator for investment efficiency and growth performance.

Table 10.10 Population Economically Active in the Formal Economy and Labor Productivity Developments 1985 to 1999

	Unit	1985	1990	1995	1996	1997	1998	1999
GDP (in constant 1958 prices)								
Agriculture, forestry and fisheries	Million Quetzales	759.3	877.2	1,009.4	1,035.2	1,064.2	1,095.6	1,127.0
Manufacturing	"	464.8	510.2	589.9	601.1	617.4	637.5	653.2
Construction	"	49.7	67.4	90.4	93.2	101.9	112.0	119.2
Utilities	"	56.3	84.6	125.7	133.3	152.9	166.0	180.4
Transport & communications	"	209.8	269.9	361.1	374.2	396.3	426.2	450.1
Commerce	"	747.0	816.1	1,036.5	1,064.6	1,104.6	1,154.9	1,194.3
Banking & insurance	"	263.1	310.5	397.9	464.4	485.4	514.0	541.2
Communal, social, personal services	"	379.6	445.1	552.0	517.9	541.2	556.5	573.1
GDP	Million Quetzales	2,936.1	3,389.5	4,178.7	4,303.4	4,488.7	4,692.8	4,872.4
Economically active population								
Agriculture, forestry and fisheries	People	1,302,851	1,524,822	1,798,227	1,858,531	1,917,600	1,971,958	2,002,386
Manufacturing	People	304,970	356,929	420,928	435,043	449,930	456,077	469,266
Construction	People	91,940	107,604	126,898	131,153	136,608	132,462	141,988
Commerce, banking & insurance	People	163,698	191,588	225,940	233,517	242,146	241,469	252,225
Services*	People	269,092	314,937	371,407	383,862	397,160	401,574	414,143
Other**	People	109,880	128,600	151,658	158,869	163,720	160,552	169,249
TOTAL	People	2,242,431	2,624,480	3,095,058	3,200,975	3,307,164	3,364,092	3,449,257
Estimated labor productivity								
Agriculture, forestry and fisheries	Quetzales/Person	583	575	561	557	555	556	563
Manufacturing	Quetzales/Person	1,524	1,429	1,401	1,382	1,372	1,398	1,392
Construction	Quetzales/Person	541	626	712	711	746	846	840
Commerce, banking & insurance	Quetzales/Person	6,171	5,880	6,349	6,548	6,566	6,911	6,881
GDP	Quetzales/Person	1,309	1,291	1,350	1,344	1,357	1,395	1,413

Source: INE, Banco de Guatemala

The results of these considerations are summarized as:

- Total labor productivity measured in constant 1958 prices has increased from 1,309 Quetzales in 1985 to 1,413 Quetzales in 1999. This increase is equivalent to a growth rate in labor productivity of only 0.55 percent over the 14-years period. Such low growth would typically hint at overall inefficiency of investments (across the economy's sub-sectors) and it would explain partly the relatively modest real GDP growth performance,
- The spread in labor productivities is significant. The commerce, banking & insurance sub-sector record the highest absolute labor productivity with 6,881 Quetzales per employee in 1999. Overall growth in labor productivity of this sub-sector was also a mere 0.78 percent over the period under consideration,
- The manufacturing sub-sector recorded the second highest absolute labor productivity with 1,392 Quetzales per employed person. Overall growth in labor productivity of this sub-sector was, however, falling by -0.65 percent over the period under consideration. This would hint at serious performance problems and, therefore, profitability constraints in this sub-sector,
- The construction sub-sector is third in terms of absolute labor productivity, which was recorded at 840 Quetzales per employed person in 1999. This sub-sector is the only sub-sector that recorded with 3.19 percent a relatively positive productivity increase over the period, and
- The primary sector, which accounts for the lion share of employment, recorded a labor productivity of only 563 Quetzales in 1999. Furthermore, labor productivity in this

sub-sector has decreased over the period under consideration by an average of -0.25 percent. This decrease hints likewise at serious performance problems in the primary sector of the economy.

10.2. Peace Agreement Monitoring, Donor Coordination and Tourism Development

The Peace Agreements and its related agreements have the status of contracts under international law and their timely implementation ensures the continued support of the international community for Guatemala's development process. Monitoring of the implementation of the Peace Agreements, at the same time, puts a heavy burden, *inter alia*, on the UN-system, in terms of assisting GOG to monitor realization of targets, verifying their validity and contributing to policy formulation and, indirectly, policy implementation.

Realization of Peace Agreements objectives and targets is at a higher priority level than any sub-sector development plans including tourism sub-sector development. Furthermore, targeted tourism development programs and projects are not only directly linked to the corresponding public and private sector investments needed to support such programs and/or projects, but also indirectly to objectives and targets specified in the peace and related agreements. This is in particular so, if and when such tourism programs and/projects target indigenous people and their environments.

It is, therefore, useful to list here briefly the monitoring responsibilities and the existing working groups of the UN-system. Figure 10.2 summarizes the United Nations Coordination Mechanism for monitoring of the peace agreement objectives and targets, and Table 10.11 lists the existing mostly inter-agency coordination groups.

Subject areas, in which there is likely be a close relationship with tourism programs and/or projects are: employment & investment; education; environment; indigenous people, gender; rural development; private sector participation and SME promotion; decentralization and culture of peace.

Figure 10.2 United Nations coordination mechanism for monitoring realization of Peace Agreements objectives and targets

		MINUGUA	UNDP	HABITAT	World Bank	UNICEF	PMA	HCHR	UNESCO	UNEP	FAO	HCFR	UNV	IMO	PAHWHO	UNFPA	UNOPS	ILO	ALL	
COMPONENTS	TOPICS																			
1) Peace Agreements Verification		█																		
2) Administrative Support																				█
3) Analyses & Indicators	Interagency mechanism for followup for topics related to Peace Agreements	█																		█
	INDH																			
4) Topics related to the Peace Agreements	Specifics related to a particular mandate	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	a) Employment & investment	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	b) Education	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	c) Environment	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	d) Population & social security	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	e) Natural disasters	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	f) Housing	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	g) Refugees, migration	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	h) Health & nutrition	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	i) Indigenous people	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	j) Gender	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	k) Fiscal policy	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	l) Financial reforms	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	m) Rural development	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	n) Private sector participation, SME	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	o) Urban security	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	p) Justice	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	q) Decentralization	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	r) Elections	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	s) Human rights	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	t) Culture of peace	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
5) Technical Assistance	a) Subjects																			
	b) Regional focus																			
6) Territorial Presence	a) Projects/ regional office	█																		█
	b) UN - West																			█
	c) UN - East																			█
7) Logistics	a) Office/inter-agency group for Operations	█																		█
8) Public Information	a) Office/inter-agency Group for Communications & Information	█																		█

Source: Compiled from United Nation sources

Table 10.11 Inter-agency Coordination Groups of the United Nations System

Year of establishment	Subject Area of Group	Character of Group
1994	Education	Enlarged group, including other donors such as USAID and GTZ
1996	Gender Issues & the Advancement of Women	Inter-agency Group
1996	Communications & Information	Inter-agency
1996	HIV Program by the UN	Enlarged group, including civil society, the Government & donors
1997	Indigenous & Multicultural Topics	Inter-agency
1997	Justice, public security & election related issues	Coordination of the international community in support of the justice sector
1997	Inter-agency group for operations	Inter-agency
1998	Health	Inter-agency
1998	Rural development & food security	Inter-agency
1998 (Reconstituted)	Disaster Management Team	Inter-agency, including the International Red Cross
1999	Human Rights	Inter-agency
1999 (Reconstituted)	Security Management Team	Inter-Agency

Source: Compiled from United Nation sources

10.3. Modernization of the Public Sector and Public Finances

Modernization of the public sector, increased budget revenues, and rationalization and optimalization of public sector expenditures and/or investments have been identified before as important pillars of realizing timely Peace Agreements objectives and targets. They are also essential prerequisites for successful tourism sub-sector development, since:

- The public sector will have to finance through public sector investments the infrastructure development that will be needed to support tourism development at national and priority target tourism development zones. If so, public investments for infrastructure needed for supporting tourism development will be competing with public investments needed to achieve Peace Agreements and other targets, and
- A modernized, efficient and lean public sector in combination with an appropriate overall “enabling environment” will foster private sector investment into the tourism and other sub-sectors of the economy. It should be noted in this context that the tourism strategy and development to be proposed by this Study rests on the assumption that private sector interests and investment will be forthcoming along the lines proposed in the tourism development plan.

It is not necessary to discuss here in each detail all aspects of public sector modernization and public finances, since this has been done already at different places³³. It is, however, necessary for the reasons established above to understand the fundamental relationship

³³ For a comprehensive review, please consult with World Bank; Guatemala – Expenditure Reform in a Post-Conflict Country; Report No. 19617-GU; February 4, 2000.

between tourism development and public sector performance. The following issues are important in this context:

- Can high real GDP growth rates be achieved, since they constitute an important indicator for private capital asset holders to invest into an economy (apart from strictly project related merits such as a project's financial internal rate of return [FIRR]),
- Will budget revenues and other potential resources be sufficient to meet Peace Agreements targets, and will enough resources remain available to finance infrastructure development needed to support tourism sub-sector development, and
- Does the existing public investment allocation mechanism support the early implementation of the needed public sector investments into tourism development supporting infrastructure.

Peace Agreements required that the GOG implements measures to achieve a minimum real GDP growth rate of 6 percent in 1999 and subsequent years. This target has not been achieved and it has already been demonstrated that there is likely to be a significant imbalance between actual investment and investment requirements to support real GDP growth at or above the 6 percent target.

It is also clear from the performance record of the public sector that some Peace Agreements target, such as achieving a tax burden ratio of 12 percent of GDP, education spending, achievement of a 70 percent literacy rate, a 100 percent primary education coverage rate, a decrease of the infant mortality rate to 20 percent, a decrease of the maternal mortality rate, and an increase in the vaccination coverage rate against measles to 95 percent remain unachieved as of the year 2000.

It is not clear from the available data how much budget resources will be needed in the future to achieve these targets. What is clear, however, is that the GOG will have no choice, but to increase the tax burden to a minimum of 12 percent of GDP and that scrutiny of public sector investments in accordance with strict cost-benefit criteria will have to be applied over the short- to medium term. Such strict cost-benefit criteria are likely to be applied also to infrastructure projects needed for tourism development.

10.4. Business Climate, Private Sector and Tourism Sector Promotion

GOG is committed to the privatization of former state-owned assets and the promotion of the private sector including the development of the tourism sub-sector.

In fact Guatemala's privatization program comprises the power, telecommunications, railroad, mail, airport, port, agricultural, road and natural gas sectors. Privatization has been completed in the power, telecommunications, railroads, mail, airport and agricultural sectors.

The tourism sub-sector is important in two aspects, namely its impact on the public sector, and its impact on the macro-economic side. The most important aspects are:

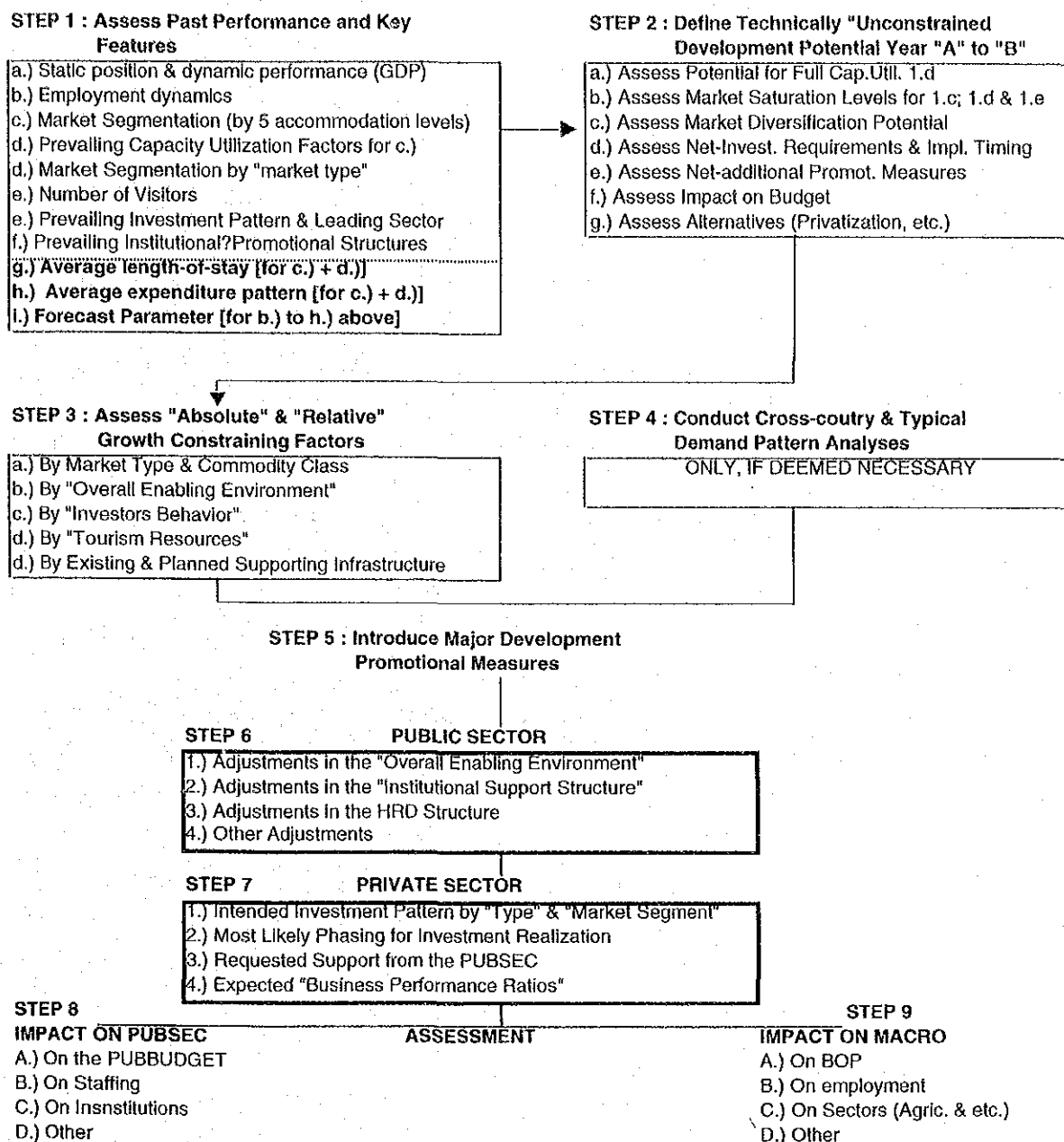
- Its impact on the public sector in term of public sector investment requirements (as already discussed above)
- Its impact on the institutional infrastructure needed to promote the country and the tourism sector
- Its impact on the current account of the balance of payments
- Its impact on employment creation, and
- Its backward and forward linkages to other sub-sector of the economy, such as agriculture, manufacturing, transport and other related services.

The impact on the public sector is addressed in other parts of this report. As regard to the impact on the macro-economic side, the following issues are apparent:

- Guatemala's trade balance over the period 1994 to 1998 has been negative at around US dollar 1 billion over the period 1994 to 1996, with the trade deficit widening to around US dollar 1.2 billion and US dollar 1.8 billion in 1997 and 1998, respectively,
- The net-value of tourism receipts (tourism credits minus tourism debits) has been recorded at the following values: 1994 about US dollar 54 million, 1995 about US dollar 71 million, 1996 about US dollar 82 million, 1997 about US dollar 147 million, and 1998 around US dollar 157 million. Hence the tourism sector net-value receipts off-balance roughly ten percent of the trade deficit,
- Tourism receipts in absolute gross-term have increased from US dollar 205 million in 1994 to around US dollar 314 million in 1998, equivalent to a compound growth rate of about 11.25 percent over the period, and
- Empirical data on employment (permanent and temporary) have not yet been made available. Likewise, quantitative and value-wise backward and forward linkage data are not available.

A typical economic promotion plan is attached in Figure 10.3.

Figure 10.3 Typical Economic Promotion Plan



Source: JICA Study Team

10.5. Economic Impact of Tourism

The generally held view is that tourism related economic activities produce a positive impact on a country's economy, or in more economy-specific terms general visitors and tourists generate additional demand for goods and services, thereby generating employment, and they also inject additional foreign exchange into the economic system, thereby producing a positive impact on the balance of payments. However, it is important for tourism related policy makers and planners to go beyond this general wisdom and to quantify to the extent possible such economic impact of tourism, in order to gain a deeper understanding of the value-flows generated by tourism activities. A reliable empirical numerical framework is a prerequisite for translating strategic tourism development objectives into proper operational plans and targets with their underlying cost and benefit relationships. This section is a first and rudimentary attempt to establish such a numerical framework for Guatemala's existing and established tourism sub-sector.

Two major economic impact areas with both having direct and indirect effects may be differentiated. The impact areas are:

The macro-economic side:

The foreign exchange cash brought into the country by visitors is accounted for in the balance of payments. However, the overall net-benefit for Guatemala is measured as the net revenues from tourism, i.e. credits from in-coming tourists minus debits from out-going Guatemalan visitors and tourist. It should be noted in this context that it is in theory and practice possible that a country has on overall negative net-benefit from tourism in the balance of payments. In such a case, debits from out-going Guatemalans would exceed the credits received from in-coming visitors. Also, the import content generated by incoming visitors is an economic cost related to tourism activities. On the positive side in terms of direct positive impact is the employment generated and the additional demand generated for local products and services, such as agricultural products, transport and other related services. Positive indirect impacts are the direct and indirect taxes received by the government from tourism related economic activities

The micro-economic side:

This refers to the level of all enterprises that provide directly or indirectly goods and services to the tourism sub-sector and its related activities. Typical examples would be hotels, restaurants, travel agents, transport enterprises, food and beverage manufacturers, and so on. At the micro level, profitability is obviously the mayor measure, since cost cannot exceed revenues over the long-term. It is also clear that in a market-driven economy, the laws of price-product-performance determine the fundamental well-being of individual enterprises and economic sub-sectors. For example, in Guatemala some 20 percent of hotel prices reflect just taxes (not yet counting any other direct and indirect tax included in tourism related goods and services). Given existing gross-margins in the hotel and other tourism related sub-sectors, it is easy to imagine that it may not be easy for hotel enterprises to respond to decreasing demand by decreasing room rates – though that

appears to be happening over the last two years in the large-scale international level hotels in Guatemala City.

It is necessary in a first step, in order to arrive at value-flows that reflect the tourism sub-sector in general and also particular market segments of the tourism sub-sector, to begin with a proper market segmentation. It is assumed here that the visitor sample surveys implemented under the present study are statistically representative and that the survey results, therefore, reflect the statistical characteristics of all visitors to Guatemala. Table 10.12 identifies the visiting purpose and age distribution profiles according to the results of the visitor surveys.

Table 10.12 Purpose of visit and age distribution profiles

Visiting purpose	Number	Percent	Regroup	Purpose	Percent
Holiday	1,356	44.52	"A"	Holiday	44.52
VF&R	562	18.45	"B"	VF&R	18.45
Learn Spanish	130	4.27	"C"	Learn Spa.	4.27
Travel/Conf.	137	4.5	"D"	Travel/Conf.	21.83
Business	528	17.33		Business	
Employment	232	7.62			
Volunteer	35	1.15	"E"	Empl/Vol.	8.77
Others	64	2.10	"F"	Other	2.10
Total	3,044	99.93			99.93

	Less 19	20-29	30-39	40-49	50-59	Over 60	Total
Number	100	885	945	662	324	130	3,046
Percent	3.3	29.1	31.0	21.7	10.6	4.3	100.00
Probability		32.3	60.1	52.8	32.4	14.9	

Source: JICA Study Team

The statistical market segmentation characteristics of visitors to Guatemala are summarized as:

- Six major market segments by purpose of visit are identified. Around 44.5 percent of all visitors are tourists in the narrow sense of the word, i.e. they come to Guatemala for holiday purposes (market segment "A"). Translated into absolute numbers, it would imply that 367,677 out of the total of 826,240 visitors in the year 2000 were actual tourists,
- The second most important market segment in terms of number of people is a group that arrived in Guatemala either for business purposes, a conference and/or sports or arts related activities. This group comprises around 21.8 percent of all visitors, equivalent to 180,120 persons out of the total number of visitors in the year 2000 (market segment "D"),
- The third most important market segment in terms of number of people is a group that arrived in Guatemala either for visiting friends and relatives. This group comprises

around 18.5 percent of all visitors, equivalent to 152,854 persons out of the total number of visitors in the year 2000 (market segment "B"),

- The highest probability according to the survey results is that a visitor is between 30 to 39 years of age, and

The above market segmentation is in a second step cross-referenced vertically and horizontally with the "country-of-origin" of visitors to Guatemala. Table 10.13 identifies the distribution of country-of-origin over visiting purpose for the above identified market segments "A" to "F."

Table 10.13 Distribution of country of origin by visiting purpose by market segment

Country of origin		Holiday "A"	VFR "B"	Spanish "C"	TCBSA "D"	E&V "E"	Others "F"	Total
Whole sample		44.5	18.5	4.3	21.8	8.8	2.1	99.9
Canada	No.	26	6	9	5	1	n.a.	47
	%	55.32	12.77	19.15	10.64	2.13	n.a.	100.00
USA	No.	255	140	87	123	96	37	738
	%	34.55	18.97	11.79	16.67	13.01	5.01	100.00
Mexico	No.	75	40	n.s.	61	13	2	191
	%	39.27	20.94	n.s.	31.94	6.81	1.05	100.00
El Salvador	No.	528	228	2	205	70	2	1,035
	%	50.97	22.01	0.19	19.79	6.76	0.19	100.00
Honduras	No.	41	35	n.s.	62	20	2	160
	%	25.63	21.88	n.s.	38.75	12.5	1.25	100.00
Central América	No.	61	32	n.s.	80	14	12	199
	%	30.65	16.08	n.s.	40.20	7.04	6.03	100.00
Other S.A.	No.	65	21	2	44	8	2	142
	%	45.45	14.69	1.40	30.77	5.59	1.40	100.00
Europe	No.	244	41	25	52	35	5	402
	%	60.70	10.20	6.22	12.94	8.71	1.24	100.00

Note: n.a. = Not separately available

Source: JICA Study Team based on the visitor survey

The market segmentation is in a third step correlated with expenditure patterns and average length of stay as summarized in Table 10.14, in order to identify:

- The market value of individual market segments, and
- The most likely cash-flow related to the tourism sub-sector.

Table 10.14 Average expenditure and length of stay by country of origin and visiting purpose

Country-of-origin		Holiday "A"	VF&R "B"	Spanish "C"	TCBSA "D"	E&V "E"	Other "F"
Canada	Average expenditure (US\$)	473	444	2,192	2,980	300	n.a.
	Average length of stay (night)	18.4	9.5	44.2	17.4	3.0	n.a.
USA	Average expenditure	630	657	1,232	672	510	857
	Average length-of-stay	14.7	15.0	34.6	7.9	30.3	27.1
Mexico	Average expenditure	473	380	n.a.	538	332	170
	Average length-of-stay	5.3	4.5	n.a.	4.5	3.8	2.0
El Salvador	Average expenditure	189	132	100	284	149	105
	Average length-of-stay	7.3	6.0	44.5	5.1	9.8	5.0
Honduras	Average expenditure	225	242	n.a.	1,687	410	175
	Average length-of-stay	6.5	8.8	n.a.	4.0	21.0	1.0
Cent. Ame.	Average expenditure	709	755	n.a.	635	797	483
	Average length-of-stay	6.7	13.8	n.a.	5.2	12.2	7.6
Other SA	Average expenditure	1,129	1,076	1,300	857	1,440	350
	Average length-of-stay	12.5	16.4	37.0	8.8	27.0	23.5
Europe	Average expenditure	898	958	1,024	1,034	2,644	1,167
	Average length-of-stay	19.0	35.4	40.6	13.0	83.3	11.8
TOTAL	Average expenditure	512	424	1,220	729	672	687
	Average length-of-stay	11.3	11.6	36.3	7.3	30.1	19.6

Source: JICA Study Team

It is possible with the above stated correlation factors to estimate the total market value of the market segments identified above using country-of-origin and purpose of visit in combination with either average expenditure and/or average length-of-stay. For practical reasons, the averaged out values by market segment will be used – though additional correlations are possible and actually recommended to be computed. The results of computing the market value, i.e. the turnover achieved in one of the identified market segments, are presented in Table 10.15.

Table 10.15 Estimated market value in 2000 by visiting purpose

Unit: million US\$

	Market value	Holiday "A"	VFR "B"	Spanish "C"	TCBSA "D"	E&V "E"	Other "F"	Total
2000	Person	367,677	152,854	35,528	180,120	72,709	17,351	826,240
	Ave. Expend. (US\$)	512	424	1,220	729	672	687	
	Value (million US\$)	188.3	64.8	43.3	131.3	48.9	11.9	488.5
	(%)	38.5%	13.3%	8.9%	26.9%	10.0%	2.4%	100.0%
2010	Person	534,000	222,000	51,600	261,600	105,600	25,200	1,200,000
	Ave. Expend. (US\$)	512	424	1,220	729	672	687	
	Value (million US\$)	273.4	94.1	63.0	190.7	71.0	17.3	709.5
2020	Person	801,000	333,000	77,400	392,400	158,400	37,800	1,800,000
	Ave. Expend. (US\$)	512	424	1,220	729	672	687	
	Value (million US\$)	410.1	141.2	94.4	286.1	106.4	26.0	1,064.2

Source: JICA Study Team

It should be noted, however, that these values are representative for the existing and established market structure measured in terms of visitors and tourism related product range. Also, values are computed based on the statistical probabilities identified in the tables shown above. In that sense, the values represent statistical probabilities only, and they do not necessarily represent an empirical and comprehensive picture of the realities in the tourism sub-sector.

The above picture would suggest the following general conclusions for the already established tourism market:

- The total direct gross volume of Guatemala's tourism sub-sector in the year 2000 was likely in the order of 489 million US dollars, 710 million US dollars in the year 2010, and 1,064 million US dollars in the year 2020,
- The most important market segments in that order of priority were: "holiday" purpose about 39 percent of total turnover; business related visitors about 27 percent of total turnover; visiting friends & relatives about 13 percent; seeking employment and volunteer services about 10 percent; wanting to learn Spanish around 9 percent, and other purposes around 2.4 percent of total estimated turnover in the tourism sub-sector, and
- That means that in terms of importance of total business volume generated the relationship among the various visiting purpose categories is roughly in the order indicated above.