

Chapter 2

Profile of the Study Area

2 Profile of the Study Area

2.1 Natural Condition

2.1.1 Location

The Republic of El Salvador is located at the Central American Isthmus in the American continent; in the Western Hemisphere and at northern latitude. Its geographical coordinates are the following: 13° 09' and 14° 27' northern latitude and 87° 41' and 90° 07' western longitude. The topography of the country is with ravines, predominance of mountain ranges and volcanoes. It has a surface of around 21,000 km². It is bounded in the north by Honduras, in the west by Guatemala, in the east by Nicaragua through Gulf of Fences, and in the south by the Pacific Ocean. Due to its geographical location, within the Circum-Pacific belt, earthquakes and volcanic outbursts constantly threaten it. About 50 destruction events have taken place since 1520, according to historical records, most of which can be regarded as tectonic occurrences.

The Study Area, San Salvador Metropolitan Area, is located in the central part of the El Salvador, between Ilopango Lake in the east and San Salvador Volcano in the west. The coordinates of the Study Area are as follows:

- Longitude: 89°01' and 89°23' West
- Latitude: 13°32' and 13°55' North

2.1.2 Topography

The Study Area is located in the central plateau, between the coastal mountains and northern frontier mountains. Altitudes of the Study Area varies from 434m of Apopa to 950 m Nueva San Salvador. The Study Area slopes towards to the northeast.

Table 2-1: Area and Average Elevation of Municipalities

| Municipalities | Area (km) ² | Elevation (meters above sea level) |
|--------------------|------------------------|---------------------------------------|
| San Salvador | 72.2 | 665 |
| Mejicanos | 20.2 | 640 |
| Ciudad Delgado | 34.3 | 620 |
| Cuscatancingo | 5.6 | 640 |
| Ayutuxtepeque | 7.6 | 700 |
| San Marcos | 17.1 | 755 |
| Nueva San Salvador | 115.5 | 950 |
| Antiguo Cuscatlán | 19.5 | 850 |
| Soyapango | 28.3 | 625 |
| Ilopango | 23.9 | 625 |
| San Martín | 44.1 | 700 |
| Apopa | 53.7 | 434 |
| Nejapa | 81.3 | 450 |
| Tonacatepeque | 68.2 | 625 |
| Total | 591.5 | 663 |

Source: Oficina de Planificación del Área Metropolitana de San Salvador (OPAMSS)

2.1.3 Climate

There exist two seasons and two transition periods in a year in El Salvador. According to records in San Salvador¹ from 1918 to 1967, the following average dates for the beginning and end of seasons were calculated, which are shown in Table 2-2.

Table 2-2: Season of Year

| Seasons of Year | Beginning | End | Days | Weeks |
|-------------------------------------|---------------------------|---------------------------|------|-------|
| Dry season | November 14 th | April 19 th | 157 | 22.5 |
| Transition from dry to rainy season | April 20 th | May 20 th | 31 | 4.5 |
| Rainy season | May 21 st | October 16 th | 149 | 21 |
| Transition from rainy to dry season | October 17 th | November 13 th | 28 | 4 |

Source: Dirección General de Recursos Naturales Renovables División de Meteorología e Hidrología, Almanaque Salvadoreño, Ministerio de Agricultura y Ganadería.

Table 2-3 shows representative climate data in the Study Area, which is recorded at Ilopango Meteorological Station located at 89°07'W, 13°42'N and 610m above the sea level.

Table 2-3: Climate Parameters registered in Ilopango Meteorological Station

| Item/Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total (Mean) |
|------------------------------------|------|------|------|------|-------|-------|-------|-------|-------|-------|------|------|-----------------|
| Mean monthly precipitation (mm) | 5.9 | 4.0 | 9.7 | 39.8 | 153.1 | 285.7 | 321.4 | 316.8 | 346.8 | 229.0 | 38.0 | 11.0 | 1761.2 (146.77) |
| Mean monthly temperature (°C) | 22.3 | 22.9 | 23.9 | 24.6 | 24.3 | 23.5 | 23.5 | 23.3 | 22.9 | 22.9 | 22.5 | 22.2 | 23.23 |
| Predominant wind direction | N | N | N | N | N | N | N | N | N | N | N | N | N |
| Mean wind velocity (km/Hr) | 10.2 | 12.6 | 11.9 | 11.1 | 9.7 | 8.3 | 9.3 | 8.6 | 7.9 | 10.1 | 12.2 | 14.0 | 10.5 |
| Mean monthly relative humidity (%) | 66 | 66 | 67 | 70 | 77 | 84 | 82 | 82 | 86 | 82 | 77 | 68 | 76 |

Source: Dirección General de Recursos Naturales Renovables División de Meteorología e Hidrología, Almanaque Salvadoreño, Ministerio de Agricultura y Ganadería

2.1.4 Geological Condition

In the country, basically 6 geological formations are found. They are in chronological order: Metapan, Morazán, Chalatenango, Bálsamo, Cuscatlán and San Salvador.

There exist two fault systems in AMSS; one system has a direction of NNW-SSE and the other is ENE-WSW, which are the most recent faults. They are vertical or almost vertical faults.

The area has undergone around 50 destructive earthquakes since year 1500, and the valley is known as the "hammock valley" (*Valle de las Hamacas*). The last earthquake registered was on October 10th, 1986 with a magnitude of 7.5 degrees in Richter scale. The exposure to earthquakes is the result of local faults in the Study

¹ Almanaque Salvadoreño, Ministerio de Agricultura y Ganadería, Servicio de Meteorología e Hidrología.1999.

Area and the parallel fault to the Pacific coast, which is known as the insertion of the Cocos plate under the Caribbean plate, at a distance of 200 km from San Salvador.

2.2 Socioeconomic Conditions

2.2.1 Macro Economy of the Country

2.2.1.1 Gross Domestic Product

The national economy represented by gross domestic product (GDP) between 1965 and 1980 showed about 4.4% annual growth on average in El Salvador. However, in 1980s its annual growth dropped to about 0.9% due to the civil war and the monetary crisis.²

Since the peace pact between the then government and FMLN was concluded in 1992, a constant economical growth has been recorded so that the annual GDP growth between 1992 and 1995 ranged around 6.5% on average. The growth rate recorded the largest among the Central American countries during this time.

However, its annual growth dropped to 3.2% in 1998 due to damages caused by the Hurricane Mitch, and in 1999 a cloud seems to be still hanging over the national economy even more dropping to 2.1%. However, it is expected that it will go up to 3 to 4% in the year 2000.

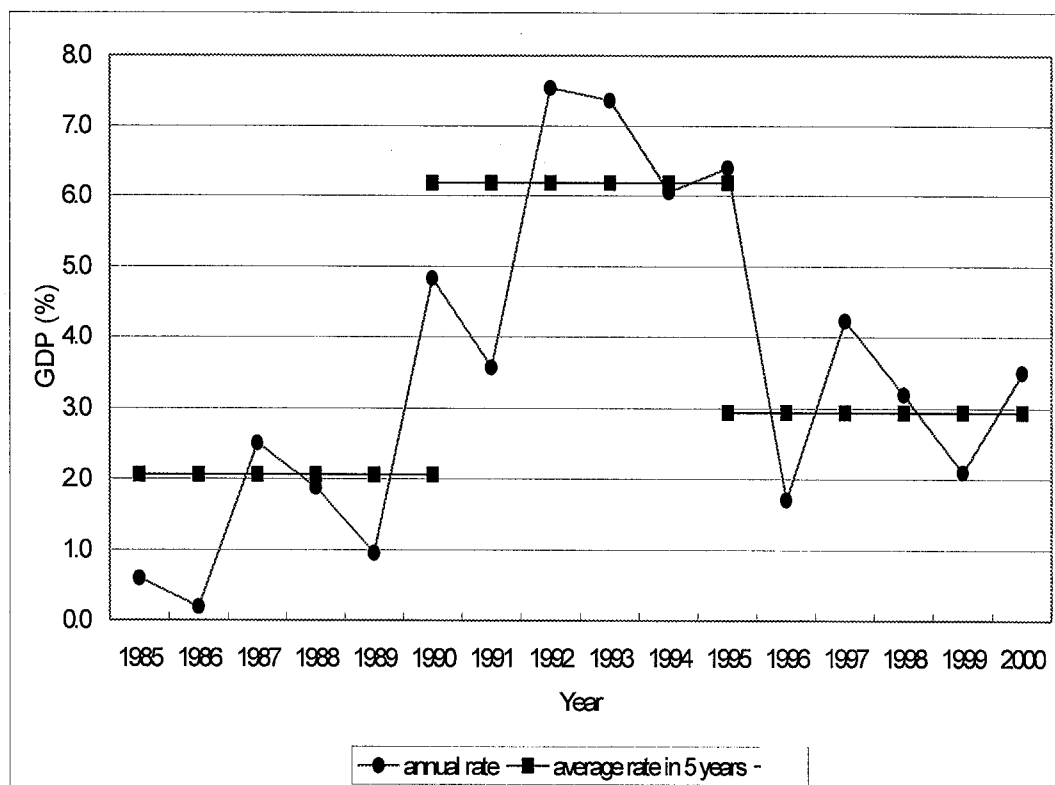


Figure 2-1: Economic Growth Rate (GDP)

² FUSADES, Crecimiento con participación: una estrategia de desarrollo para el siglo XXI, 1999.

Table 2-4 shows the national industrial structure in terms of sectors' GDP in 1994 and 1998. It illustrates that agricultural and house renting sectors made little growth and sectors such as 'financing & insurance' and 'electricity, gas, and water supply' made considerable growth during this time.

Manufacturing industries made constant development with about 6.1% annual growth in GDP. The growth in domestic demands as well as the production increase by exporting industries in free zones supports industrial development of the country.

Table 2-4: Trend of Industrial Structure

| Sector | year | 1994 | | 1998 | | 1998/1994 growth rate |
|--|------|---------------------------------|--------------|---------------------------------|--------------|--------------------------|
| | | Amount* (million colones) | Ratio (%) | Amount* (million colones) | Ratio (%) | |
| Agriculture | | 6,394 | 14.7 | 6,669 | 13.2 | 1.043 |
| Mining | | 195 | 0.5 | 236 | 0.5 | 1.211 |
| Manufacturing | | 9,749 | 22.5 | 12,359 | 24.4 | 1.268 |
| Electricity, Gas, Water supply | | 253 | 0.6 | 343 | 0.7 | 1.355 |
| Construction | | 1,719 | 4.0 | 2,055 | 4.1 | 1.196 |
| Commerce, Restaurant & Hotel | | 9,129 | 21.1 | 10,385 | 20.5 | 1.138 |
| Transport, Warehousing, Communication | | 3,467 | 8.0 | 4,290 | 8.5 | 1.237 |
| Financing & Insurance | | 1,240 | 2.9 | 1,777 | 3.5 | 1.433 |
| Real Estate & Business service | | 1,532 | 3.5 | 1,785 | 3.5 | 1.165 |
| House renting | | 4,369 | 10.1 | 4,696 | 9.3 | 1.075 |
| Community & Personal service | | 2,562 | 5.9 | 2,918 | 5.8 | 1.139 |
| Government service | | 2,693 | 6.2 | 3,034 | 6.0 | 1.127 |
| Total | | 43,302 | 100.0 | 50,547 | 100.0 | 1.167 |

Note: * 1990 constant price

2.2.1.2 Inflation Rate

Since commodity prices between 1994 and 1998 were comparatively stable, the domestic demands increased constantly during this time. Although the inflation rate in 1998 was 4.2%, that in 1999 is estimated to be about minus 1.0%. Meanwhile, it is forecast to be 2 to 4% in the year 2000.

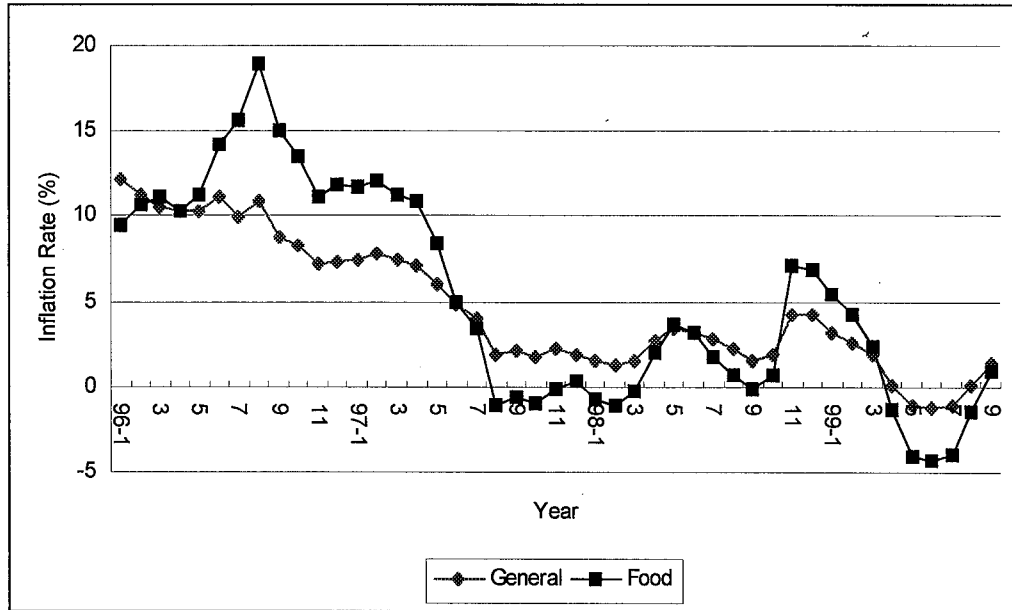


Figure 2-2: Annual Inflation Rate

2.2.1.3 Balance of International Payments

In recent years, export shows smaller growth rate. Export amount in 1999 amounting to US\$ 2,470 million resulted in only 0.7% increase from 1998. That in 1998 also resulted in only 1.5% increase from 1997 (US\$ 2,416 million). Although the balance of international payments remains in red since 1992, it improved up to about US\$ 1,320 million as of October 1999.

The external debt accounted for 6.8% increase in 1999. It is reported that this is mainly because the central government raised investments in public health and education sectors in that year.³

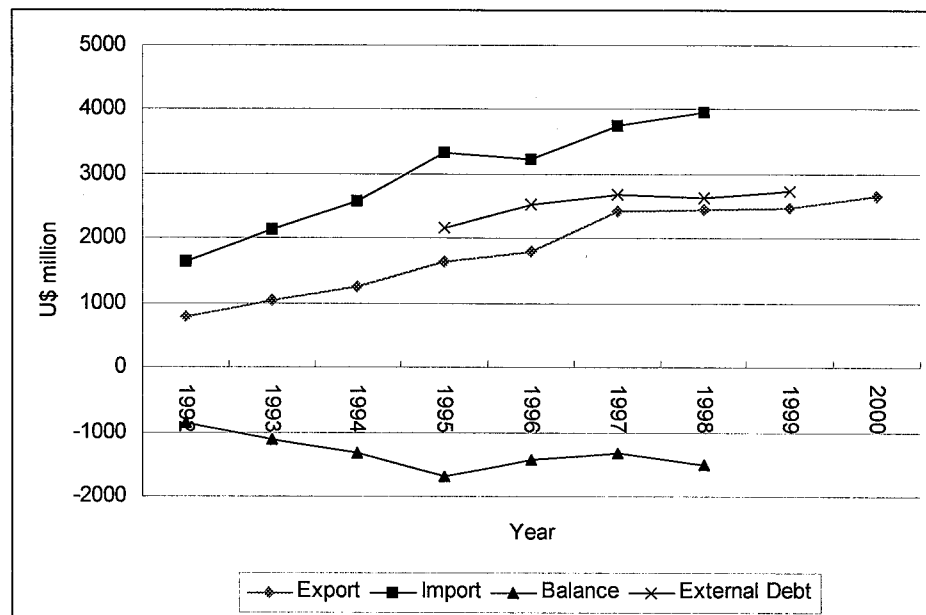


Figure 2-3: External Sector

³ El Diario de Hoy, 18.Feb.2000.

2.2.1.4 Unemployment Rate

The unemployment rate in El Salvador is decreasing since 1993 dropping to 6.6% in 1999. On the contrary, the potential unemployment rate is rising since 1997 and it is estimated to reach 31.9% in 1999.

Table 2-5: Trend of Unemployment Rate

| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999* |
|-----------------------------|------|------|------|------|------|------|------|------|-------|
| Unemployment rate | 8.7 | 9.3 | 9.9 | 7.7 | 7.7 | 7.7 | 8.0 | 7.3 | 6.6 |
| Potential unemployment rate | 34.0 | 37.3 | 33.9 | 33.2 | 32.0 | 30.9 | 30.0 | 31.5 | 31.9 |

Source: DIGESTYC (El Diario de Hoy, 16, Feb., 2000)

Note: * preliminary

2.2.1.5 Major Economic Indicators

Major economic indicators in El Salvador are summarized in the table below.

Table 2-6: Major Economic Indicators of El Salvador

| Item | Year | 1995 | 1996 | 1997 | 1998 | 1999 | 2000* |
|---|----------------|--------|--------|--------|---------|---------|---------|
| Nominal GDP | million Colons | 83,130 | 90,261 | 98,093 | 103,181 | 106,506 | 114,170 |
| Real GDP growth rate | % | 6.4 | 1.7 | 4.2 | 3.2 | 2.1 | 3.5 |
| Per capita GDP | US\$ | 1,675 | 1,781 | 1,896 | 1,955 | 1,978 | 2,079 |
| Central Government Deficit (pct. GDP)** | % | -0.6 | -0.2 | -1.1 | -2.0 | -2.2 | -2.2 |
| Inflation rate | % of increase | 11.4 | 7.4 | 1.9 | 4.2 | -1.0 | 2.0-4.0 |
| Unemployment rate | % | 7.7 | 7.7 | 8.0 | 7.3*** | 6.6*** | |
| External Debt | million US\$ | 2,168 | 2,517 | 2,689 | 2,632 | 2,737 | |
| Average exchange rate for US\$ 1.00 | Colon | 8.75 | 8.75 | 8.75 | 8.75 | 8.75 | |
| Population | 1,000 | 5,669 | 5,787 | 5,909 | 6,031 | 6,154 | 6,276 |

Source: BCR

Note: * projection, ** Adjusted with the return of income tax and VAT.

*** DIGESTYC (El Diario de Hoy, 16 de Febrero de 2000).

2.2.2 Regional Economy

2.2.2.1 Statistical Data

The population census and the economic census carried out in 1992 are the recent statistical data on regional economy in the country. Surveys on household income carried out annually give supplementary data for these 1992 statistical data.

The 1992 economic census gives indicators on regional economy per department only. It shows that the San Salvador Department (el Departamento de San Salvador) contributes the most to the national economy especially in commercial and industrial sectors.

Table 2-7: Economic Potential of San Salvador and La Libertad Departments

| Sector | Department | Nos. of Establishment | No. of Personal | Production(Add Value)/ Sales & Income (1000 colones) |
|------------|------------------|-----------------------|-----------------|--|
| Industry | Total in country | 1,568 | 77,893 | 19,255 |
| | San Salvador | 958 (61%) | 57,469 (74%) | 13,510 (70%) |
| | La Libertad | 182 (12%) | 12,583 (16%) | 2,695 (14%) |
| Commercial | Total in country | 2,233 | 36,086 | 14,335 |
| | San Salvador | 1,442 (65%) | 26,691 (74%) | 9,230 (64%) |
| | La Libertad | 173 (8%) | 4,290 (12%) | 3,565 (25%) |

Source: Economic Census (1992)

According to population census, the great majority of the population engaged in economic activities are concentrated in the AMSS except for the sectors of agriculture and fishery. This is especially obvious in the finance sector.

Table 2-8: Population Engaged in Respective Economic Activities (older than 10 years)

| Economic Activity | El Salvador (A) | 14 Municipalities in San Salvador Metropolitan Area (B) | Share (%) (B/Ax100) |
|------------------------------------|-----------------|---|---------------------|
| Agriculture | 588,501 | 26,828 | 4.6 |
| Fishery | 10,237 | 315 | 3.1 |
| Mining | 967 | 423 | 43.7 |
| Manufacturing | 245,800 | 132,273 | 53.8 |
| Electricity, Gas and Water supply | 9,984 | 6,027 | 60.4 |
| Construction | 82,664 | 40,243 | 48.7 |
| Commercial | 248,975 | 125,994 | 50.6 |
| Hotel & Restaurant | 26,543 | 17,257 | 65.0 |
| Transport, storage & Communication | 62,209 | 32,599 | 52.4 |
| Financing | 18,359 | 13,677 | 74.5 |
| Real estate | 33,185 | 21,491 | 64.8 |
| Public administration & Defense | 100,800 | 51,798 | 51.4 |
| Education | 44,702 | 21,369 | 47.8 |
| Social Service | 28,165 | 16,598 | 58.9 |
| Community activities | 36,184 | 17,727 | 49.0 |
| House-keeping | 86,360 | 43,985 | 50.9 |
| Other Organization | 1,436 | 1,178 | 82.0 |
| non-specific | 33,607 | 14,956 | 44.5 |
| Total | 1,658,678 | 584,738 | 35.3 |

Source: Population Census (1992).

However, the survey on household income in 1998 (as shown in the table below) indicates that the population concentration in AMSS is slightly decreased in that year compared with the population census in 1992.

Table 2-9: Population Engaged in Respective Economic Activities

| Economic Activity | El Salvador (A) | Metropolitan Area (13 Municipalities) (B) | Share (%) (B/Ax100) | Reference* Economic Activity of GDP |
|------------------------------------|-----------------|---|---------------------|---|
| Agriculture | 539,332 | 21,971 | 4.1 | Agriculture |
| Fishing | 18,700 | 369 | 2.0 | ditto |
| Mining | 1,914 | 113 | 5.9 | Mining |
| Manufacturing | 415,631 | 190,408 | 45.8 | Manufacturing |
| Electricity, Gas and Water supply | 8,651 | 3,762 | 43.5 | Electricity, Gas, Water supply |
| Construction | 121,185 | 40,774 | 33.6 | Construction |
| Commercial, Hotel and Restaurant | 555,857 | 238,631 | 50.6 | Commerce, Restaurant & Hotel |
| Transport, storage & Communication | 89,975 | 40,194 | 42.9 | Transport, Warehousing, Communication |
| Financing | 82,625 | 57,011 | 69.0 | Financing & Insurance, Real Estate & Business service |
| Public administration & Defense | 104,746 | 49,488 | 47.2 | Government service |
| Education | 65,959 | 25,765 | 39.1 | ditto |
| Community Service | 124,153 | 63,218 | 50.9 | Community & Personal service |
| House-keeping etc. | 96,109 | 31,546 | 32.8 | House renting |
| Other | 2,634 | 1,691 | 64.2 | ditto |
| Total | 2,227,471 | 764,941 | 34.3 | |

Source: Encuesta de Hogares de Propósitos Múltiples (1998)

2.2.2.2 Gross Regional Domestic Product (GRDP)

Referring to the work forces structure in 1998, the gross regional domestic product (GRDP) is estimated by using the formula below.

$$GRDP = \sum GDP_s \times \frac{ME_s}{AE_s}$$

where

- GRDP* : Gross regional domestic product
- GDP_s* : Gross domestic product by sector
- ME_s* : Work forces in the metropolitan area by sector
- AE_s* : Work forces in the country by sector

Consequently, the GRDP of AMSS in 1998 is estimated as shown in Table 2-10, which counts for about 40% of the GDP.

Table 2-10: GRDP of San Salvador Metropolitan Area in 1998

| | GDP (million colones) | GRDP (million colones) | Share of San Salvador Metropolitan Area (%) |
|--|--------------------------|---------------------------|--|
| Agriculture | 6,669 | 272 | 4.1 |
| Mining | 236 | 14 | 5.9 |
| Manufacturing | 12,359 | 5,662 | 45.8 |
| Electricity, Gas, Water supply | 343 | 149 | 43.4 |
| Construction | 2,055 | 691 | 33.6 |
| Commerce, Restaurant & Hotel | 10,385 | 4,458 | 42.9 |
| Transport, Warehousing, Communication | 4,290 | 1,916 | 44.7 |
| Financing & Insurance | 1,777 | 1,226 | 69.0 |
| Real Estate & Business service | 1,785 | 1,232 | 69.0 |
| House renting | 4,696 | 1,434 | 30.5 |
| Community & Personal service | 2,918 | 1,486 | 50.9 |
| Government service | 3,034 | 1,541 | 50.8 |
| Total | 50,547 | 20,081 | 39.7 |

Note: 1990 constant price.

2.2.3 Administration

El Salvador is a sovereign nation with a republican, democratic and representative government. The state commands the country through the Executive, Legislative and Judicial branches.

The legislative function is exercised by the Legislative Assembly, which is constituted by 84 members through elections every three years and can be reelected. The main function of this Assembly is to create, reform, interpret and derogate laws.

The executive function is exercised by the President of the Republic, who is also voted by the population every five years and assisted by the Vice-President, Ministers, State Vice-ministers and related officials. The executive body exercises the administrative activities aimed at satisfying the needs of the population. The government model for El Salvador is presidential-oriented; i.e., the activities of the executive body are under the command of the President. The Ministry of Health and Social Assistance and the Ministry of Environment and Natural Resources are the closest bodies related to the management of urban solid wastes.

The territory of El Salvador is formed by 14 departments with 262 municipalities, 2074 cantons and *caseríos* (group of houses). There exist some initiatives to reduce the number of municipalities. The Constitution of the Republic in Article 203 states that the municipalities are economically, technically and administratively autonomous and follow the Municipal Code.

The Municipal Code that was issued by means of legislative decree No. 274 in February 1986, in Title III, "Municipal Jurisdiction", states the following: "municipalities will be in charge of rendering the cleansing service, street sweeping, collection and final disposal of garbage". Said functions are regulated through municipal ordinances created by the corresponding municipality, as stated in Title II of the same Code.

Mayors' governing term is three years. There are some initiatives as well that propose the governing term to be of four or five years. The terms of current Mayors end on April 30th, 2000.

The Study Area covers "San Salvador Metropolitan Area" (AMSS), which is formed by the following 14 municipalities: San Salvador, Mejicanos, Ciudad Delgado, Cuscatancingo, Ayutuxtepeque, San Marcos, Nueva San Salvador, Antiguo Cuscatlán, Soyapango, Ilopango, San Martín, Apopa, Nejapa and Tonacatepeque. They are found within the Department of San Salvador, except for Antiguo Cuscatlán and Nueva San Salvador, which belong to the Department of La Libertad.

On July 14th 1987, Official Gazette No. 129 issued the resolution for the creation of a decentralized and autonomous body called "Mayors Council for San Salvador Metropolitan Area (COAMSS)", whose functions are the following, among others:

- Planning and control of AMSS in order to utilize resources efficiently.
- Coordination of public investments and services rendered in AMSS.
- Coordination of activities among municipal governments that belong to such entity in order to achieve a harmonic and sustainable development of their municipalities.
- Facilitate the reconstruction of AMSS, which suffered damages by the earthquake on October 10th, 1986.

Legislative decree No. 732, issued in December 1993 sets forth the development and territorial arrangement of AMSS, whose institutional framework is as follows:

- COAMSS: Administrative body that executes urban-planning functions,
- OPAMSS: Planning Office for AMSS, a technical entity which acts as COAMSS' Executive Secretary,
- CODEMET: Metropolitan Development Council, a body with evident political purposes, and
- COPLAMSS: Planning Committee for AMSS, a technical-advising body for CODEMET.

CODEMET and COPLAMSS have not operated since they were created.

2.2.4 Population

a. Population in the Country

Censuses were carried out five times in the country, i.e., in 1930, 1950, 1961, 1971 and 1992. Table 2-11 shows the population trend between 1971 and 1992. It should be noted that there was the civil war in the period, and the peace agreement was signed in 1992.

Table 2-11: Population in the Country

| Total population (persons) | | Increased population (persons) | Average growth rate per year (%) |
|----------------------------|-----------|--------------------------------|----------------------------------|
| 1971 | 1992 | | |
| 3,554,648 | 5,118,599 | 1,563,951 | 1.73 |

Source: Dirección General de Estadística y Censos, Ministro de Economía, 1995, Censos Nacionales V de Poblacion y IV de Vivienda 1992, El Salvador

The last census was carried out in 1992, the number of population was forecast until 2025. According to the forecast, the population in 1999 is regarded as **6,154.3 thousand** at growth rate of 2.0%. In the Study, this number of population is taken as the present population number.

Table 2-12: Estimated Population from 1950 to 1999

| Year | Population (thou.) | Average growth rate for five years |
|------|--------------------|------------------------------------|
| 1950 | 1,950.6 | 2.66 |
| 1955 | 2,224.1 | 3.00 |
| 1960 | 2,578.4 | 3.16 |
| 1965 | 3,012.2 | 3.62 |
| 1970 | 3,598.2 | 2.74 |
| 1975 | 4,119.5 | 2.17 |
| 1980 | 4,585.9 | 0.79 |
| 1985 | 4,769.1 | 1.39 |
| 1990 | 5,110.2 | 2.10 |
| 1995 | 5,668.6 | 2.10 |
| 1999 | 6,154.3 | 2.00 |

Source: Dirección General de Estadística y Censos, Ministro de Economía, 1995, Proyección de la Población de El Salvador, El Salvador.

b. Population in the Study Area

The number of population in the Study Area that was obtained in the censuses, i.e., from 1st to 5th census, is shown in Table 2-13. The population in the Study Area occupies 20.0% of that in the country in 1971 and 29.7% in 1991. Also as the table shows, the population growth rate in the Study Area is considerably higher than that of the whole country, i.e., between 1971 and 1992 the annual average growth rate of the country population was 1.73, meanwhile that of the Study Area was 3.69%. So, it is clear that population concentration into the Study Area is remarkable due to urbanization.

Table 2-13: Population in the Study Area in the Past

| No. | Municipality | 1930 | 1950 | 1961 | 1971 | 1992 |
|----------------------------|--------------------|--------|---------|---------|---------|-----------|
| 1 | San Salvador | 96,212 | 171,270 | 255,744 | 338,154 | 415,364 |
| 2 | Mejicanos | 12,866 | 14,406 | 28,491 | 69,359 | 144,855 |
| 3 | Ciudad Delgado | - | 19,333 | 32,631 | 64,048 | 109,863 |
| 4 | Cuscatancingo | 2,834 | 4,160 | 11,234 | 21,674 | 57,485 |
| 5 | Ayutuxtepeque | 1,612 | 2,230 | 2,736 | 8,379 | 23,810 |
| 6 | San Marcos | 2,404 | 4,362 | 12,014 | 28,451 | 59,913 |
| 7 | Nueva San Salvador | 29,074 | 91,239 | 40,817 | 53,067 | 113,698 |
| 8 | Antiguo Cuscatlán | 3,437 | 6,310 | 5,213 | 8,957 | 28,187 |
| 9 | Soyapango | 5,536 | 9,530 | 20,440 | 43,158 | 261,122 |
| 10 | Ilopango | 2,213 | 3,316 | 5,113 | 23,757 | 90,634 |
| 11 | San Martín | 6,137 | 7,196 | 9,375 | 4,220 | 56,530 |
| 12 | Apopa | 6,478 | 8,199 | 12,370 | 18,980 | 109,179 |
| 13 | Nejapa | 6,382 | 8,930 | 11,894 | 15,368 | 23,891 |
| 14 | Tonacatepeque | 6,806 | 7,695 | 9,896 | 12,857 | 27,342 |
| Total population | | - | 358,176 | 457,968 | 710,429 | 1,521,873 |
| Annual average growth rate | | | 2.3% | 4.5% | 3.7% | |

Source: Dirección General de Estadística y Censos, Ministro de Economía, "Censos Nacionales V de Poblacion y IV de Vivienda 1992."

2.2.5 Industrial Structure

In the same manner applied for the GRDP calculation, GRDP per sector in 1994 was calculated and GRDP growth rates per sector from 1994 to 1998 are estimated. Assuming that the respective sectors achieve same growth rates till year 2010, the industrial structure in AMSS in 2010 is forecast as shown in Table 2-14.

Table 2-14: Industrial Structure in the Metropolitan Area

Unit: million Colons at 1990 constant price

| sector | year | 1994 | 1998 | 2010 | |
|---------------------------------------|------|-------|-------|-------|------|
| | | | | GRDP | % |
| Agriculture | | 283 | 272 | 241 | 1.0 |
| Mining | | 64 | 14 | 0 | 0.0 |
| Manufacturing | | 5,023 | 5,662 | 8,107 | 32.7 |
| Electricity, Gas, Water supply | | 141 | 149 | 178 | 0.7 |
| Construction | | 763 | 691 | 515 | 2.1 |
| Commerce, Restaurant & Hotel | | 4,419 | 4,458 | 4,576 | 18.4 |
| Transport, Warehousing, Communication | | 1,740 | 1,916 | 2,559 | 10.3 |
| Financing & Insurance | | 904 | 1,226 | 3,054 | 12.3 |
| Real Estate & Business service | | 1,117 | 1,232 | 1,651 | 6.6 |
| Government service | | 1,352 | 1,434 | 1,709 | 6.9 |
| Community & Personal service | | 1,451 | 1,486 | 1,595 | 6.4 |
| Housekeeping etc. | | 1,999 | 1,541 | 706 | 2.8 |

2.2.6 Education

According to the National Census of 1992 of Statistic and Censuses Office, 72.3% (3.2 million people) is literate among 4.5 millions of the population in the country (more than five years old), and illiteracy rate is 27.7%.

The biggest concentration of literate population is found in urban areas. 60% of the population is concentrated in urban areas and the 40% in rural areas.

For each 100 persons of more than 5 year-old, only 26.5 people receive formal education. This situation can be due to diverse factors such as high unemployment rate which forces the children to work on the streets to help their parents, and the limited family income for education which makes difficult for the children to attend schools.

a. Formal Education

After Environmental Education Unit was set up within the Ministry of Education in 1994, importance has started to be given to the environmental education within the curriculum of formal education. Waste issues are taken up in the textbook called "Science-Health and Environment (Ciencia-Salud y Medio Ambiente)" for science class.

With joint cooperation between Ministry of Environment and Natural Resources (MARN) and Ministry of Education (MINED), a pilot project for "separation and recycling of solid waste" has been carried out from February through October, 2000. 143 model schools (10 schools per Department) were selected in the entire country and a series of educational programs are provided to them in order to raise awareness of the students on waste issues and to promote separation and recycling of waste starting at schools.

b. Non-Formal Education

The non-formal environmental education has been developed partially by different Non Governmental Organizations (NGOs) in different areas of the country. However, their efforts have been limited to deliver pamphlets to encourage an appropriate waste management and the coverage level is still low.

- At a municipal level, the Municipality of San Salvador, in cooperation with UNDP and UNESCO, has prepared a pamphlet called "Waste is not waste".
- The media makes references on experiences related with solid waste management. These actions have been impelled by NGOs.

2.2.7 Community Structure

a. Urban Structure System

San Salvador Metropolitan Area (AMSS) covers 14 municipalities under the jurisdiction of COAMSS. The urban area of AMSS consists of a system, sub-system, components and sub-components.

Some of the communities have organizational structures. These organizations have the juridical representation of the communities before the authorities, with the purpose of requesting the execution of some works or services.

According to OPAMSS, the definition of the urban structure has four basic categories, which are:

| Category | Concept | Urban Space |
|----------|----------------|-------------------------|
| 1 | System | AMSS |
| 2 | Sub-system | Group of Municipalities |
| 3 | Components | Municipalities |
| 4 | Sub-components | Districts |

b. Urban Centers

The urban centers, according to the area of influence and level of services, they have been defined as follows (according to the report of PLAMADUR-AMSS):

- **Centers of Neighborhood:** These centers consist of a "basic urban unit", with a population up to 5,000 inhabitants which can be one or more land subdivisions, with a minimum facilities such as a children's park, kindergarten, community center, etc.
- **"Barrios":** The "barrios" consists of an "elementary urban unit", with a population of 10,000/20,000 inhabitants which belongs to the traditional "barrios" or the actual "colonia". Urban basic activities are developed in these barrios, such as health services, schools and administration offices, generally located around a civic park.
- **Urban Centers:** These centers consist of several "elementary urban units", of one or more urban municipalities. Approximately 200,000 inhabitants are living in the influential area.

2.2.8 Marginal Settlements

These communities which are inserted in the urban environment and surroundings, are in the development phase. Some of the communities lack such basic infrastructure as access roads, water supply, sewerage system, waste collection service, and some community facilities, namely, schools, community centers, sport grounds and health centers.

According to information provided by OPAMSS (October 1999), 366 communities and illegal colonies exist in the AMSS. 79 communities (21.6% of the total) among them are in legalization process.

2.2.9 Public Health

a. Healthcare System

The provision of healthcare in El Salvador can be divided into three main blocks: public services, social welfare, and private services. In the public sector, the Ministry of Public Health and Social Welfare (MSPAS) provides services, covering 80% of the population.

Social insurance is provided to employees of private companies, and industries, and state employees, covering 17% of the population.

Located mainly in the metropolitan regions of San Salvador, the private sector operates clinics and hospitals that provide secondary care and tertiary care. At an institutional level, almost all the resources are concentrated in AMSS.

b. Public Health

Diarrheal diseases are one of the most significant health problems in El Salvador, and, in general, in all developing countries. Improvements made in the water supply and sanitation services, including solid waste management, have reduced considerably the mortality caused by diarrhea of children and infants.

The SWM should consider the public health aspect to reduce risks of the population living close to the disposal site: legal and illegal open dumping, streams, rivers, and others.

Also, occupational risks should be reduced to avoid negative effects on people's health (scavengers, municipal collectors and private collectors) as a result of an inappropriate SWM.

c. Infant Mortality

The infant mortality rate decreased from 137 per thousand live births in 1960 to 41 per thousand live births in 1993. The estimated rate for 1998 was 32 per thousand live births.

In 1994, the main causes of infant death between the age of one and four, was the contagious diseases with 47%, of which 28.4% was related to intestinal infections.

d. Morbidity

The top ten causes of death registered in the external consultation of the MSPAS in 1997 were: 1) respiratory infections; 2) intestinal parasitism; 3) gastrointestinal disease; 4) pneumonia; 5) high blood pressure; 6) rabies from animal bites; 7) occupational accidents; 8) chicken pox; 9) gonorrhea; and 10) Hepatitis A.

Infections and parasitic diseases prevail and most of them are caused by the lack of basic sanitary measures. According to statistics provided by the MSPAS and the Salvadoran Institute of the Social Insurance (ISSS), all age groups suffer from the infectious diseases such as diarrhea and parasitic diseases.

2.3 Urban Structure

2.3.1 Origin and Evolution of the Study Area

In 1954, Spanish architect Gabriel Riesco Fernández designed the "First Planning of San Salvador" by request from the Department of Urbanism and Architecture of the Ministry of Public Works. His target year was 1994.

This plan concentrated on infrastructure to outline the road and street system, controlling of urban development to preserve the right of way. Under such plan, the Law on Regulated Planning (1955), the Metropolitan Road Planning (1956) and the Urbanism and Construction Law (1956) were created.

In 1968 and 1969, the Urban Development Plan (METROPLAN 80) was elaborated by Adley Associates Inc. with a target in 20 years, which defined the metropolitan area with 10 municipalities that are shown in Table 2-15.

By the end of the 70's, political conflicts increased, this is the reason why urban development was uncontrolled.

The 80's were featured by the stagnation of all activities related to national development. The country was affected by a civil war that began by the end of the 70's and lasted during the 80's, and Metroplan 80 was almost left aside national interests.

On October 10 1986, a strong earthquake shook San Salvador; as a consequence, the Council of Mayors for San Salvador metropolitan area (COAMSS) and the Planning Office for San Salvador metropolitan area (OPAMSS) were established. Their purpose is to plan the development of the metropolitan area.

Table 2-15: Municipalities forming San Salvador Metropolitan Area

| No | Municipality | 1968 ⁴ | 1987 ⁵ | 1988 ⁶ | 1994 ⁷ | 1996 | 1999 |
|-------|--------------------|-------------------|-------------------|-------------------|-------------------|------|------|
| 1 | San Salvador | X | X | X | X | X | X |
| 2 | Mejicanos | X | X | X | X | X | X |
| 3 | Ciudad Delgado | X | X | X | X | X | X |
| 4 | Cuscatancingo | X | X | X | X | X | X |
| 5 | Ayutuxtepeque | X | X | X | X | X | X |
| 6 | San Marcos | X | X | X | X | X | X |
| 7 | Nueva San Salvador | X | | X | X | X | X |
| 8 | Antiguo Cuscatlán | X | X | X | X | X | X |
| 9 | Soyapango | X | X | X | X | X | X |
| 10 | Ilopango | X | X | X | X | X | X |
| 11 | San Martín | | | X | X | X | X |
| 12 | Apopa | | X | X | X | X | X |
| 13 | Nejapa | | X | X | X | X | X |
| 14 | Tonacatepeque | | | | | X | X |
| Total | | 10 | 11 | 13 | 13 | 14 | 14 |

Neighboring municipalities to San Salvador had the advantage of coping together with their institutional and urban problems through COAMSS and OPAMSS. Table 2-15 shows those municipalities that have been integrated to the metropolitan area, and the last column shows the current municipalities belonging to COAMSS in 1999.

In 1996, in accordance with the Act on June 6th, 1996, folio 71, COAMSS accepts Tonacatepeque as a new member, but the request by Tonacatepeque to the Legislative Assembly is still pending, therefore, only 13 municipalities are recognized so far by the Law in 1993.

⁴ METROPLAN 80 MOP-DUA-Adley Associates Inc. 1968.

⁵ MAYOR COUNCIL FOR SAN SALVADOR METROPOLITAN AREA, COAMSS, Constitutive Chart on July 3rd, 1987, and issued by the Official Gazette on July 14th, 1987.

⁶ COAMSS agreement on October 29th, 1988, folio 3.

⁷ Legislative Decree No. 732 on December 20th, 1993, Law on Territory Development and Arrangement of San Salvador Metropolitan Area and Surrounding Municipalities.

2.3.2 Land Use Conditions

An ordinance, "Diario Oficial Tomo No. 340, 1998," defines land use conditions which establish natural resource protection and preservation zones for sound development of AMSS. OPAMSS controls land use according to the conditions prescribed in the ordinance that defines the zones as follows:

- MP: Maximum protection zones
- DR: Restricted development zones
- DA: Agriculture development zones
- DTE: Ecologically-sustainable tourism development zones

In MP and DR urbanization, e.g., residential land development, industrial and commercial area development, is prohibited. In MP construction of dwelling houses is forbid, but in DR it is allowed with stringent conditions. There exist two restriction levels, DR1 and DR2, in accordance with environmental features and resources to be protected. DA is recognized as zones suitable for proper agricultural development, and the urbanization is prohibited. DTE means a zone for ecologically sustainable tourism development, which is the area along the Lake Ilopango.

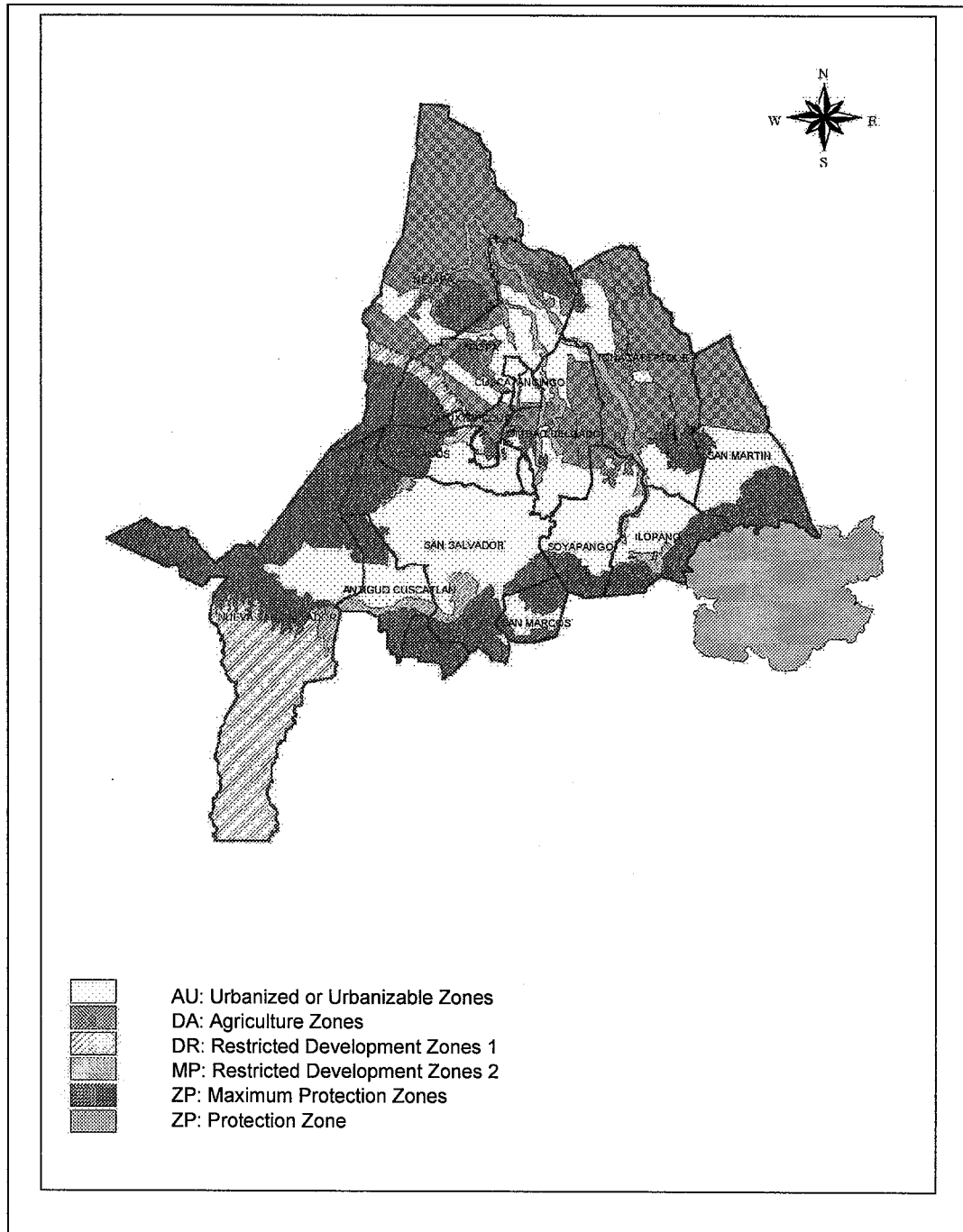
Furthermore, to control construction of buildings OPAMSS sets Protection zone (ZP) that is zones along rivers where erosion is expected. The rest of the area in AMSS is called AU that is urbanized and/or urbanizable area where residential land development and other development are possible with approval by OPAMSS.

Table 2-16 shows areas in each zone category.

Table 2-16: Land Use Conditions in AMSS

| Municipality | AU | DA | DR | MP | ZP | Total |
|--------------------|-------|-------|------|-------|------|-------|
| San Salvador | 46.3 | 0.0 | 4.3 | 21.6 | 0.0 | 72.2 |
| Mejicanos | 10.5 | 0.1 | 1.3 | 8.3 | 0.0 | 20.2 |
| Ciudad Delgado | 14.1 | 14.2 | 0.0 | 1.6 | 4.3 | 34.2 |
| Cuscatancingo | 4.7 | 0.4 | 0.0 | 0.1 | 0.4 | 5.6 |
| Ayutuxtepeque | 1.7 | 2.8 | 0.9 | 2.1 | 0.0 | 7.5 |
| San Marcos | 4.4 | 0.0 | 0.0 | 12.6 | 0.0 | 17.0 |
| Nueva San Salvador | 12.8 | 0.0 | 57.1 | 45.6 | 0.0 | 115.5 |
| Antiguo Cuscatlán | 8.9 | 0.0 | 3.1 | 7.5 | 0.0 | 19.5 |
| Soyapango | 19.2 | 2.7 | 0.1 | 5.2 | 1.2 | 28.4 |
| Ilopango | 11.0 | 0.0 | 1.7 | 10.5 | 0.8 | 24.0 |
| San Martín | 15.2 | 15.1 | 0.0 | 13.9 | 0.0 | 44.2 |
| Apopa | 16.1 | 16.0 | 3.8 | 12.6 | 5.2 | 53.7 |
| Nejapa | 6.3 | 54.6 | 2.1 | 14.4 | 3.9 | 81.3 |
| Tonacatepeque | 14.5 | 42.5 | 0.0 | 5.4 | 5.8 | 68.2 |
| Total | 185.7 | 148.4 | 74.4 | 161.4 | 21.6 | 591.5 |

Note: DTE is included in MP



Source: OPAMSS

Figure 2-4: Zoning Map in AMSS

2.3.3 Population Density

Population density in 1999 in AMSS is 105 persons/ha as shown in Table 2-17, which is obtained by dividing the population in 1999 by the urbanized/urbanizable areas shown in Table 2-16. It should be noted that the obtained population density is not only in the urbanized areas, but also in areas to be urbanized in the future. PLAMADUR (1995) says that population density in urbanized areas in AMSS and other three cities is 130 pers./ha.

Table 2-17: Population Density in AMSS in 1999

| Municipality | Population | AU | Density |
|--------------------|------------|--------|----------|
| | person | ha | pers./ha |
| San Salvador | 473,374 | 4,630 | 102 |
| Mejicanos | 185,204 | 1,050 | 176 |
| Ciudad Delgado | 149,394 | 1,410 | 106 |
| Cuscatancingo | 90,079 | 470 | 192 |
| Ayutuxtepeque | 38,158 | 170 | 224 |
| San Marcos | 69,660 | 440 | 158 |
| Nueva San Salvador | 152,723 | 1,280 | 119 |
| Antiguo Cuscatlán | 42,773 | 890 | 48 |
| Soyapango | 283,598 | 1,920 | 148 |
| Ilopango | 127,434 | 1,100 | 116 |
| San Martín | 101,086 | 1,520 | 67 |
| Apopa | 163,974 | 1,610 | 102 |
| Nejapa | 31,466 | 630 | 50 |
| Tonacatepeque | 39,871 | 1,450 | 27 |
| Total | 1,948,794 | 18,570 | 105 |

2.3.4 Transportation

Major means of transportation in AMSS are buses, trucks and cars. Although railroad lines cross through AMSS, those do not currently provide service for passengers for internal trip within AMSS.

a. Roadways

To other regions, there are four main roads:

- Pan-American Highway, that goes West and passes through Nueva San Salvador and heading towards Santa Ana, Sonsonate and the Guatemalan border,
- Pan-American Highway, that goes East passing through Soyapango, Ilopango and San Martín, heading towards San Miguel and the Honduran border,
- The northern trunk road, that passes through Apopa and heads towards the Honduran border, and
- The southern highway to Comalapa, that heads towards the airport and to Costa del Sol.

In AMSS, an inter-urban radial road system is established. The road system is connected to the outside of AMSS with the roads mentioned above.

Ministry of Public Works are in charge of planing, construction and maintenance of the major roads to other regions. Those of the inter-urban radial road system are under control of Transport Department in the Ministry.

Buses are operated by private companies under the control of the Transport Department. Currently, 85 routes are provided in AMSS.

b. Railroads

Three railroad lines cross through AMSS:

- San Salvador – Zacatecoluca – San Miguel – La Unión line, which passes through Soyapango, Ilopango and San Martín,
- San Salvador-Santa Ana- Acajutla line that crosses through Apopa and Nejapa, and
- San Salvador- Lago de Guija- Guatemalan border.

Transportation of passengers is nearly non-existent, and trains are utilized almost exclusively for haulage of goods and materials that comes from Acajutla port.

2.4 Financial Condition

2.4.1 Public Finance

2.4.1.1 Central Government

The current expenditure (real) in 1999 turned out to be 13,031 million colones which is 2.7% more than the figure (12,678 million colones) projected at the beginning of the year. On the other hand, the current revenue (real) of 13,417 million colones in the same year turned out to be 4.5% more than the projected figure (12,834 million colones). Consequently, the real current balance in 1999 was 386 million colones in black.

However, since the real capital expenditure was 2,558 million colones and the real capital revenue was 191 million colones, the real balance was 1,981 million colones in red in that year.

Table 2-18: Annual Budget of Central Government

| | | 1999 Real (million colones) | 2000 Budget (million colones) |
|-------------|-----------------------|--------------------------------|----------------------------------|
| Revenue | Current Revenue | 13,417 | 14,858 |
| | Capital Revenue | 191 | 90 |
| | Financing | 3,471 | 3,276 |
| Expenditure | Current Expenditure | 13,031 | 14,050 |
| | Capital Expenditure | 2,558 | 2,711 |
| | Financial Application | 1,490 | 1,463 |
| Total | | 17,079 | 18,224 |

Source: Ministry of Finance (MOH)

Table 2-19: Ordinary Revenue in 1999

| | Projection (A) (million colones) | Real (B) (million colones) | (B/A) |
|------------------------------|-------------------------------------|-------------------------------|-------|
| Tax Revenue | 11,874 | 12,648 | 1.065 |
| - Income tax | 3,548 | 3,838 | 1.082 |
| - Import tax | 1,286 | 1,107 | 0.86 |
| - VAT | 6,326 | 7,004 | 1.107 |
| - Other tax | 714 | 699 | 0.979 |
| Non-tax and other Revenue | 960 | 769 | 0.801 |
| Total | 12,834 | 13,417 | 1.045 |

Source: MOH

2.4.1.2 Annual Budget of Related Ministries and Institution

Trends in annual budget for MSPAS, MARN and ISDEM from 1995 to 1999 are summarized in the table below.

Table 2-20: Annual Budget of Related Ministries

| | | Unit: million colones | | | | |
|-------|-----------|-----------------------|-------|-------|-------|-------|
| | | 1995 | 1996 | 1997 | 1998 | 1999 |
| MSPAS | Budget | 1,205 | 1,318 | 1,318 | 1,326 | 1,589 |
| | Execution | 1,117 | 1,272 | 1,263 | 1,506 | 1,629 |
| MARN | Budget | 0 | 0 | 0 | 25 | 24 |
| | Execution | 0 | 0 | 1 | 18 | 24 |
| ISDEM | Budget | 25 | 125 | 125 | ? | ? |
| | Execution | 92 | 143 | 125 | ? | ? |

Source: MOH

2.4.2 Taxation System and Public Utilities Charge Collection System

2.4.2.1 Taxation System in El Salvador

a. National Tax

As the revenues of the central government shows, the national tax mainly comprises of income tax, import tax, and value added tax (VAT). Income tax consists of tax imposed on personal income and corporate bodies' income.

a.1 Personal Income Tax Rates

Personal income tax rates are shown in the table below.

Table 2-21: Personal Income Tax Rates

| Annual income (colones) | Tax rates |
|-------------------------|---|
| 0-22,000 | tax exempt |
| 22,001-80,000 | colones are taxed at 10% + 500 colones |
| 80,001-200,000 | colones are taxed at 20% + 6,300 colones |
| 200,000< | colones are taxed at 30% + 30,000 colones |

a.2 Corporate Tax

The corporate tax is 25% of the annual corporate income if it exceeds 75,000 colones.

a.3 Value Added Tax (VAT)

The VAT is 13% on the sale value.

a.4 Import Tax

In compliance with the Central American agreement, the following rates are applied.

| | | |
|---------------------------------|---|-----------|
| raw materials and capital goods | : | 0% |
| intermediate goods | : | 5% or 10% |
| finished goods | : | 15% |

a.5 Local Tax

Local taxes are mainly categorized into “tax (impuesto)” and “fee (tasa)”. Both could be set up and/or reformed under the municipal competency. The municipal “tax (impuesto)” is basically imposed for business entity. Municipal “fees (tasas)” such as streetlight fee (tasa de alumbrado), cleansing fee (tasa de aseo), and public services fee (tasa de servicios públicos) are the fees that citizens pay for the municipality in receiving such public services.

2.4.2.2 Utilities Charge Collection System

A major utility charge for citizens is the electricity charge. Two (2) electric companies, namely CAESS and DELSUR, provide such services and set up respective charges to be collected from the users in AMSS. CAESS sets up different charge rates for small-, medium- and large- users respectively. The table below shows the CAESS’s electricity charge for popular citizen users.

Table 2-22: Electricity Bill of “CAESS”

| Charge | | Residence | | General | Public lighting |
|----------|--------|-----------|----------|---------|-----------------|
| | | <200 kWh | >200 kWh | | |
| Fixed | C/user | 13.82 | 13.82 | 13.82 | 13.82 |
| Variable | C/kWh | 0.6310 | 0.6284 | 0.6235 | 0.5938 |
| Network | C/user | 5.94 | 8.36 | 13.66 | - |
| | C/kWh | 0.2154 | 0.2126 | 0.2026 | 0.2709 |

Electricity charges are billed every month based on the meter measurement. Users generally make the bill payment at a bank counter. In case when the bill payment is not made within 60 days, the company suspends the electricity supply.

2.5 Environmental Policy

2.5.1 General Review

The basic environmental policy expressed in the “1994-1999 Government Plan for the Republic of El Salvador” outlines its objectives such as natural resource

protection, search of population and territorial equilibrium. The "National Environmental Strategy (Estrategia Nacional de Medio Ambiente)" issued in 1994 also proposes solutions for the major environmental problems caused by development. However, efforts for practical execution of environmental policies have just recently started in El Salvador.

2.5.2 Organizations Concerned

a. MARN

MARN was created on May 16th, 1997 (Executive Decree No. 27), in place of the former governing institution: the Executive Secretariat for the Environment (Secretaría Ejecutiva del Medio Ambiente: SEMA), in order to expand environmental management at national governmental level.

On the other hand, the Environmental Law approved by Decree No. 233 on March 2nd, 1998 is still in its initial stage for enforcement, as its regulations have to be approved.

b. MSPAS

MSPAS reserves competency regarding public health issues of national policy. It entails coordination with the other ministries, municipalities, public/private institutions that conduct health related activities. MSPAS establishes the Health Code (Código de Salud) in order to enhance the health improvement of the citizens.

c. Municipalities

Municipalities are supposed to be also eligible to set their own environmental legislation (e.g., municipal ordinances) within their jurisdiction. Meanwhile they are responsible for providing solid waste collection services for the citizen and also for supervising the SWM by the municipality itself or by other sectors. The shortage of human, financial and managerial resources in most municipalities, however, makes it difficult to play a sufficient role in environmental management. A possible discontinuity of municipal environmental policy due to re-elected administrators every three years could be another impediment to execute efficient environmental management by municipalities.

d. OPAMSS/COAMSS

The Law for Development and Territorial Regulation of AMSS (Ley de Desarrollo y Ordenamiento Territorial del AMSS) came into force in December 1993. The COAMSS was created on July 14th, 1987 prior to the enforcement of the law. OPAMSS was created on February 3rd, 1990 as the technical organ to exercise functions relating to the Executive Secretariat of Mayors' Council.

OPAMSS has the competency to issue "construction permission (permiso de construcción)" in view of its role on urban planning.

In the occasion that the MIDES project was planned and presented by the proponent CINTEC to the OPAMSS, the OPAMSS requested MARN, MSPAS, UNES, CEPRHI to make observation for the environmental consideration on the project before giving the construction permission.

Before the EIA system is practically enforced by the MARN and/or others, environmental examination in relation to the project construction permission by OPAMSS with such institutions has played and is playing an important role.

2.5.3 Environmental Policy on SWM

With regard to an environmental policy on SWM, MARN issued the "Transitory Decree of Solid Waste" on October 6th, 1999, which could be highly appreciated since it views both environmental conservation and sustainability of especially medium and small municipalities.

2.6 Other Infrastructure

2.6.1 Water Supply

The body in charge of supplying drinkable water is the *Administración Nacional de Acueductos y Alcantarillados* (National Aqueduct and Sewerage Administration "ANDA"). It was created by decree N° 341 from the Civil and Military Directory on October 17th, 1961, and is defined as an autonomous public service institution whose objective is providing and helping the inhabitants of the Republic with aqueducts and sewerage systems.

Table 2-23 shows the type of water supplying in AMSS municipalities according to the 1992 Housing Census conducted by DIGESTYC. The table shows that 79.7 % of the houses in AMSS were supplied with water mains, whereas 11.8% by wells and 8.4% by rivers, water springs and others in 1992.

Table 2-23: Water Supply per Municipalities and Houses

| Municipality | Water supply | | | | | | | | | | |
|--------------------|--------------|------|--------|------|--------|------|---------------|------|--------|------|---------------|
| | Water mains | | Wells | | Rivers | | Water springs | | Others | | Total nos. |
| | Nos. | % | nos. | % | nos. | % | nos. | % | nos. | % | |
| San Salvador | 90,121 | 87.7 | 8,185 | 8.0 | 510 | 0.5 | 482 | 0.5 | 3,425 | 3.3 | 102,723 |
| Mejicanos | 32,510 | 87.7 | 1,983 | 5.3 | 140 | 0.4 | 293 | 0.8 | 2,156 | 5.8 | 37,082 |
| Delgado | 17,107 | 66.3 | 6,270 | 24.3 | 511 | 2.0 | 388 | 1.5 | 1,508 | 5.8 | 25,784 |
| Cuscatancingo | 8,952 | 66.6 | 3,368 | 25.1 | 74 | 0.6 | 131 | 1.0 | 910 | 6.8 | 13,435 |
| Ayutuxtepeque | 4,147 | 79.5 | 526 | 10.1 | 58 | 1.1 | 135 | 2.6 | 352 | 6.7 | 5,218 |
| San Marcos | 8,805 | 67.2 | 1,876 | 14.3 | 156 | 1.2 | 459 | 3.5 | 1,812 | 13.8 | 13,108 |
| Nueva San Salvador | 22,763 | 84.4 | 1,764 | 6.5 | 221 | 0.8 | 1,662 | 6.2 | 550 | 2.0 | 26,960 |
| Antiguo Cuscatlán | 6,521 | 92.8 | 344 | 4.9 | 39 | 0.6 | 43 | 0.6 | 80 | 1.1 | 7,027 |
| Soyapango | 52,668 | 85.9 | 6,541 | 10.7 | 387 | 0.6 | 358 | 0.6 | 1,372 | 2.2 | 61,326 |
| Ilopango | 17,214 | 80.2 | 2,467 | 11.5 | 120 | 0.6 | 241 | 1.1 | 1,413 | 6.6 | 21,455 |
| San Martín | 5,632 | 46.1 | 2,278 | 18.6 | 589 | 4.8 | 412 | 3.4 | 3,313 | 27.1 | 12,224 |
| Apopa | 18,323 | 74.1 | 4,608 | 18.6 | 171 | 0.7 | 692 | 2.8 | 931 | 3.8 | 24,725 |
| Nejapa | 806 | 16.1 | 1,617 | 32.3 | 484 | 9.7 | 1,496 | 29.9 | 604 | 12.1 | 5,007 |
| Tonacatepeque | 2,606 | 46.0 | 961 | 17.0 | 964 | 17.0 | 973 | 17.2 | 157 | 2.8 | 5,661 |
| Total | 288,175 | 79.7 | 42,788 | 11.8 | 4,424 | 1.2 | 7,765 | 2.1 | 18,583 | 5.1 | 361,735 |

Source: Information from the 4th Housing Census, DIGESTYC 1992.

2.6.2 Sewage and Drainage

Sewage system and drainage system are basically separated, however some parts are linked.

In general terms, AMSS' drainage system has six main sewage channels oriented from west to east, and discharges waters to Las Cañas and Acelhuate rivers with no previous treatment, which in turn has caused the absolute degradation of such rivers. Table 2-24 from the 1992 Housing census shows that 72.8% of houses discharge in the sewerage system, 3.2% use septic tanks and the remaining percentage discharges in the ground, in ravines, and any places.

Table 2-24: Wastewater Discharge Type per House

| Municipality | Wastewater discharge | | | | | | | | | | |
|--------------------|----------------------|------|-------------|-----|---------------|------|---------------|-----|--------------------|------|---------------|
| | Sewerage | | Septic tank | | To the ground | | Ravine/ river | | Does not discharge | | Total nos. |
| | nos. | % | nos. | % | nos. | % | nos. | % | nos. | % | |
| San Salvador | 83,910 | 81.7 | 2,381 | 2.3 | 2,972 | 2.9 | 1,888 | 1.8 | 11,572 | 11.3 | 102,723 |
| Mejicanos | 28,389 | 76.6 | 1,164 | 3.1 | 1,511 | 4.1 | 484 | 1.3 | 5,534 | 14.9 | 37,082 |
| Delgado | 13,575 | 52.6 | 1,839 | 7.1 | 2,019 | 7.8 | 660 | 2.6 | 7,691 | 29.8 | 25,784 |
| Cuscatancingo | 7,500 | 55.8 | 1,322 | 9.8 | 1,324 | 9.9 | 271 | 2.0 | 3,018 | 22.5 | 13,435 |
| Ayutuxtepeque | 2,744 | 52.6 | 329 | 6.3 | 328 | 6.3 | 131 | 2.5 | 1,686 | 32.3 | 5,218 |
| San Marcos | 6,580 | 50.2 | 595 | 4.5 | 1,198 | 9.1 | 276 | 2.1 | 4,459 | 34.0 | 13,108 |
| Nueva San Salvador | 22,178 | 82.3 | 428 | 1.6 | 304 | 1.1 | 347 | 1.3 | 3,703 | 13.7 | 26,960 |
| Antiguo Cuscatlán | 6,404 | 91.1 | 92 | 1.3 | 28 | 0.4 | 23 | 0.3 | 480 | 6.8 | 7,027 |
| Soyapango | 52,397 | 85.4 | 855 | 1.4 | 1,901 | 3.1 | 409 | 0.7 | 5,764 | 9.4 | 61,326 |
| Ilopango | 15,288 | 71.3 | 784 | 3.7 | 1,132 | 5.3 | 195 | 0.9 | 4,056 | 18.9 | 21,455 |
| San Martín | 4,051 | 33.1 | 592 | 4.8 | 1,634 | 13.4 | 149 | 1.2 | 5,798 | 47.4 | 12,224 |
| Apopa | 17,535 | 70.9 | 864 | 3.5 | 914 | 3.7 | 143 | 0.6 | 5,269 | 21.3 | 24,725 |
| Nejapa | 338 | 6.8 | 167 | 3.3 | 907 | 18.1 | 172 | 3.4 | 3,423 | 68.4 | 5,007 |
| Tonacatepeque | 2,303 | 40.7 | 120 | 2.1 | 271 | 4.8 | 180 | 3.2 | 2,787 | 49.2 | 5,661 |
| Total | 263,192 | 72.8 | 11,532 | 3.2 | 16,443 | 4.5 | 5,328 | 1.5 | 65,240 | 18.0 | 361,735 |

Source: Information from the 4th Housing Census, DIGESTYC 1992.

2.6.3 Roads

According to the Law on Territory Arrangement of AMSS, chapter III article 36 defines the hierarchy and functioning of the road system, which is divided into two main groups; major traffic and minor traffic roads.

Major traffic roads: Freeways, primary trunk and secondary trunk roads. These roads should be planned and coordinated by the Transport Department of Ministry of Public Works and construction works are carried out by the Central Government.

Minor traffic roads: These roads are defined and controlled by the regulation in the Law on Territory Arrangement and they are divided into distribution roads, repartition roads and driveways.

2.6.4 Priority Ranking of Infrastructure Investment

PLAMADUR's (Master Plan for Urban Development in AMSS) Diagnosis and Proposal document shows eight strategic investment areas and their respective projects that should go along with the Integral Development Plan of AMSS (Table 2-25):

Table 2-25: Programs Developed by PLAMADUR

| Investment Program | Projects | Abbreviation | US\$ |
|--|----------|--------------|---------------|
| 1 Environmental investment program | 20 | POA | 35,422,000 |
| 2 Territory arrangement investment program | 47 | POT | 1,040,688,500 |
| 3 Downtown rescue investment program | 9 | PRCC | 63,698,200 |
| 4 Neighborhood improvement investment program | 4 | PMB | 13,544,000 |
| 5 Open spaces investment program | 13 | PIAA | 7,916,000 |
| 6. Solid waste management investment program | 15 | PMDS | 34,610,500 |
| 7 Water safeguard investment program | 6 | PSA | 49,640,000 |
| 8 Institutional strengthening investment program | 6 | PFI | 2,344,500 |
| Total | 120 | | 1,247,863,700 |

Source: PLAMADUR-AMSSA

Public institutions involved ranked the best projects in a scale of 1 to 5. The best-qualified projects are shown in Table 2-26. 12 out of these 20 projects belong to PMDS (Solid Waste Management Program).

Table 2-26: Best-Ranked Projects by the Entities that Participated in PLAMADUR

| No. | Grade | Name of the project | Plan |
|-----|-------|--|-------------|
| 1 | 5.00 | Creation of 6 service districts | PMDS |
| 2 | 5.00 | Differentiated haulage and collection system | PMDS |
| 3 | 5.00 | Material selection and recycling plant | PMDS |
| 4 | 5.00 | Intervention of rivers sanitation | PMDS |
| 5 | 4.75 | Environmental sanitation education | PMDS |
| 6 | 4.75 | Creation of a solid waste metropolitan enterprise | PMDS |
| 7 | 4.75 | Installation of 20 service base units | PMDS |
| 8 | 4.75 | Gathering and storage center systems | PMDS |
| 9 | 4.75 | Three transfer stations | PMDS |
| 10 | 4.60 | Territorial park of San Salvador volcano – San Andrés | POA |
| 11 | 4.60 | Boquerón – Picacho metropolitan park | POA |
| 12 | 4.60 | Study to create incentives for building apartment | POT |
| 13 | 4.50 | Minimum treatment of pluvial waters and aquifer recharge | PSA |
| 14 | 4.50 | Bio-mechanical treatment plant of solid wastes | PMDS |
| 15 | 4.50 | High-grade compost production plant | PMDS |
| 16 | 4.50 | Systematic monitoring of the generation of wastes | PMDS |
| 17 | 4.40 | Construction of by-pass for Troncal del Norte | POT |
| 18 | 4.40 | New technological networks at Metro-Norte zone | POT |
| 19 | 4.40 | Partial pilot plan at El Angel-Apopa | POT |
| 20 | 4.40 | Major road integration at Metro-Norte zone | POT |

Source: Plan de Inversiones Estratégicas PIE, Diagnostico y propuesta, PLAMADUR1997.