A.2 Socioeconomic Conditions

A.2.1 Macro Economy of the Country

A.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.

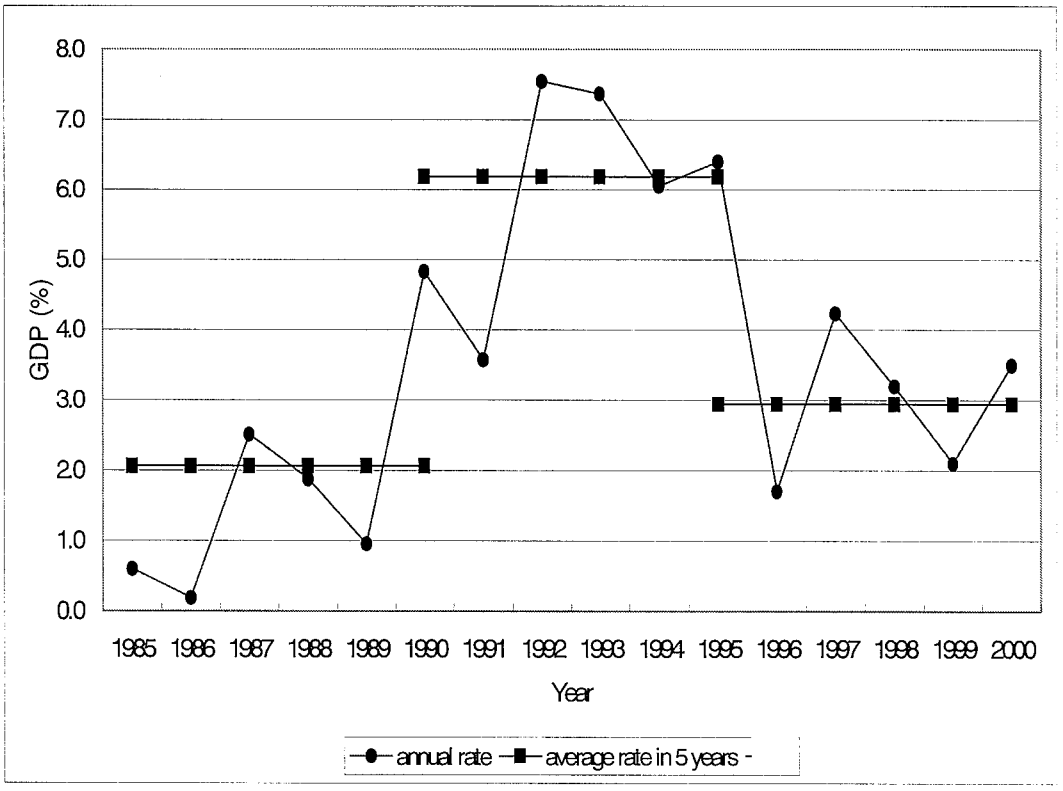


Figure A-2: Economic Growth Rate (GDP)

Table A-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.

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

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 A-4: Trend of Industrial Structure

Sector \ year	1994		1998		1998/1994 growth rate
	Amount* (million colons)	Ratio (%)	Amount* (million colons)	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

A.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.

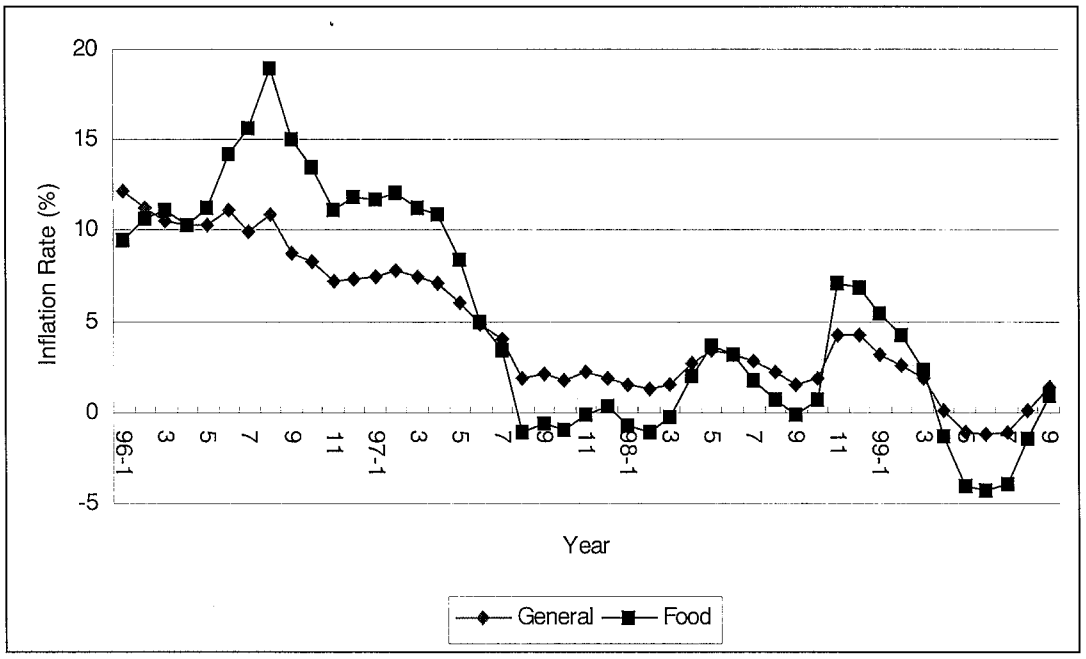


Figure A-3: Annual Inflation Rate

A.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]

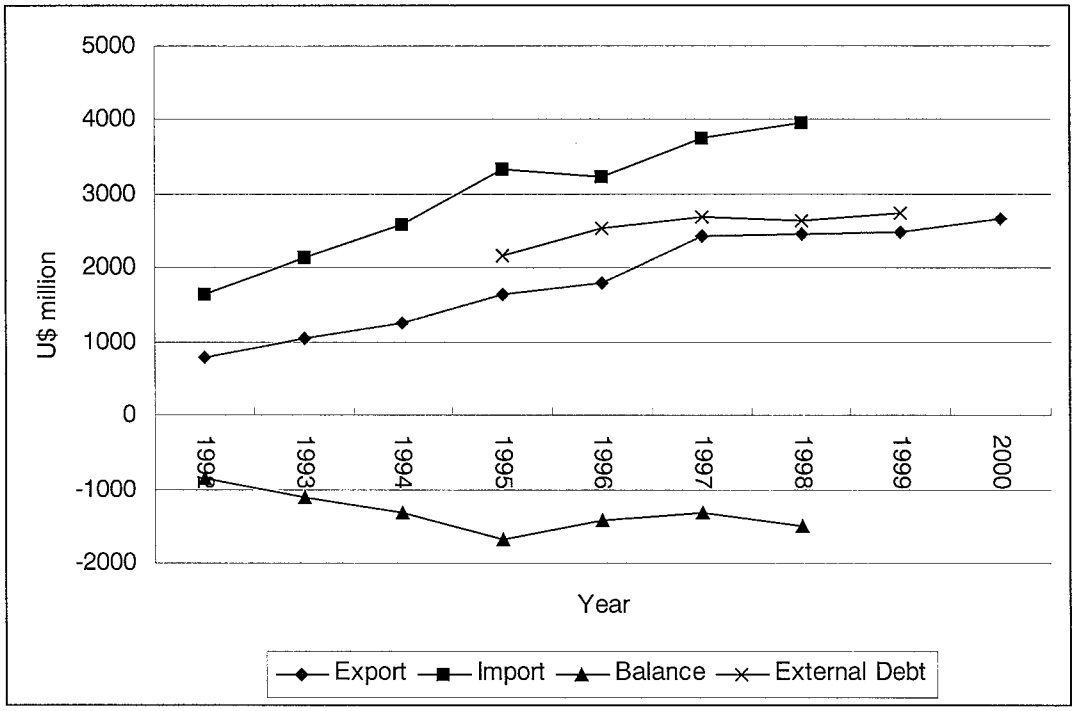


Figure A-4: External Sector

A.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 A-5: Trend of Unemployment Rate

unit : %

	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

[3] El Diario de Hoy, 18.Feb.2000.

A.2.1.5 Major Economic Indicators

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

Table A-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	USD	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 USD	2,168	2,517	2,689	2,632	2,737	
Average exchange rate for USD 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).

A.2.2 Regional Economy

A.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 A-7: Economic Potential of San Salvador and La Libertad Departments

Sector	Department	Nos. of Establishment	No. of Personal	Production(Add Value)/ Sales & Income (1000 colons)
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 A-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 A-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 Propositos Multiples (1998)

A.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.

$$GRDP = \sum GDPs \times \frac{MEs}{AEs}$$

where

$GRDP$	:	Gross regional domestic product
$GDPs$	:	Gross domestic product by sector
MEs	:	Work forces in the metropolitan area by sector
AEs	:	Work forces in the country by sector

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

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

	GDP (million colons)	GRDP (million colons)	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.

A.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 Supreme Court, Second Instance Courts (*Cámaras de Segunda Instancia*) and the corresponding jurisdictional courts exercise the judicial function. This body is in charge of providing justice in constitutional, civil, penal, mercantile and labor matters, as well as others determined by law.

Besides, the *Ministerio Publico* and the General Accounting Office of the Republic oversee that laws are correctly enforced.

The juridical ordinance is based mainly on the Constitution of the Republic, which was promulgated and rules since December 1983, with further reforms passed in 1991 and 1994.

For political administrative purposes, the territory is divided into departments whose boundaries and number are set by law. Each department is commanded by a governor that is appointed by the Executive body.

For the local government, departments are divided into municipalities, which in turn are controlled by municipal councils formed by the Mayor, a representative and two or more councilors, selected in proportion to the population.

The territory of El Salvador is formed by 14 departments with 262 municipalities, 2074 cantons and *caseríos* (group of houses)(Table A-11). 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.

Table A-11: Political and Administrative Distribution of El Salvador

Department	No. of Municipalities
Ahuachapán	12
Cabañas	9
Chalatenango	33
Cuscatlán	16
La Libertad	22
La Paz	22
La Unión	18
Morazán	26
San Miguel	20
San Salvador	19
San Vicente	13
Santa Ana	13
Sonsonate	16
Usulután	23
TOTAL	262

Source: Evaluación del Sector Agua Potable y Saneamiento en El Salvador, PAHO/WHO, 1993.

As a consequence, each municipality in AMSS constitutes the primary political and administrative unit within the State's organization in its corresponding jurisdictional territory.

Each department in the country has its own Department Council of Mayors –*CDA*-, which groups the Mayors of each municipality of the corresponding department in order to coordinate actions and to unite efforts among the municipalities that allow to seek their development.

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.

A.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 A-12 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 singed in 1992.

Table A-12: 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 Economiá, 1995, Censos Nacionales V de Poblacion y IV de Vivienda 1992, El Salvador

According to the Statistic and Census Department, Ministry of Economy[4], population trend in the country for the last 50 years are as follows:

- Between 1950 and 1970, a number of population had been increasing at a rate of about 3% for each five years. This reflects a normal development of the country.
- Between 1970 and 1990, population growth rate had been declined remarkably due to the civil war. 813,000 of people emigrated out of the country in the period.
- Although 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 A-13: 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 Economiá, 1995, Projección 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 A-14. 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.

[4] Dirección General de Estadística y Censos, Ministro de Economía, 1995, Projección de la Población de El Salvador, El Salvador.

Table A-14: 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	6478	8199	12370	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 Estadistica y Censos, Ministro de Economia, "Censos Nacionales V de Poblacion y IV de Vivienda 1992."

A.2.5 Industrial Structure

In the same manner applied for the GRDP calculation (as shown in the Section A.2.2.2), 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 A-15.

Table A-15: 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

A.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.

Consequently, the above-mentioned situation restricts the population's participation in the labor market, the productivity and the possibilities of carrying out self-employed productive activities and being limited to carry out marginal activities with low revenues and without security.

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.

There is no university offering masters degree specializing solid waste management. Issues related to SWM are taken up in master's degree courses as a subject: the University of El Salvador (Master on Environment and Natural Resources), the Central American University José Simeon Cañas (Environmental Management) and University Don Bosco. These universities have also classes in Environmental Engineering.

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.

A.2.7 Community Structure

a. Urban Structure System

According to "1998 Housing Survey for Multiple Purposes" conducted by the Statistic and Censuses Office (DIGESTYC), the Metropolitan Area of San Salvador (AMSS) is composed of 18.6% with high income population, 63.3% with middle income and 18.1% with low income.

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

Each one of the mentioned concepts covers the concepts of minor category forming an integral urban unit:

- **System:** is formed by all the urban lands, urbanizable rural areas and non-urbanizable rural areas of AMSS and is divided in sub-systems, or group of municipalities, municipalities and districts.
- **Sub-systems:** are formed by the urban lands and urbanizable lands of the municipalities in the urban sub-systems.
- **Components:** are the most important geographical units of the system and are formed by the urban lands and urbanizable lands of each one of the municipalities, which forms the AMSS.
- **Sub-components:** are geographical units with a specific function within the urban system, which are called districts. Each municipality comprises of a certain number of districts.

a. 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.

A.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.

The marginal settlements have been increasing from the decade of 1980. At present, the squatters continues to grow due to the following reasons.

- The war
- The precarious economical situation
- Migration from the rural to urban areas
- High unemployment rate
- High cost of houses

The squatters are usually settled in lands where the residents have no property titles. The people make their own organizations in order to look for help from municipal governments and get the legal titles of such lands. Later on, they obtain basic services as electricity, water supply, execution of precarious drainage of wastewater, etc. and finally their areas get to be recognized as legal urbanizations.

A.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

One of the life quality indicators of the people is the condition of the health service and actions to prevent and control the environmental risk factors, since they are

related with the degree and frequency of the exposure to pathogenic agents. Consequently, they are associated with other health-related indicators such as life expectancy, general mortality, and infant mortality, which are affected by a high incidence of infectious and parasitic diseases. The main clinical manifestation of bacterial, viral, and protozoan infections is diarrhea.

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

Infant mortality rates vary between 32 and 55 per thousand live births. An MSPAS study on infant mortality in hospitals concluded that the figure was 22.8 per thousand live births in 1994. The commonly accepted values of El Salvador's infant mortality rates are those released by the National Survey of Family Health (FESAL-93), which is 41 per thousand live births. Boys have a higher mortality rate than girls. In 1996 the male infant mortality rate was 38 per thousand live births, whereas that for girls was 31 per thousand live births. 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.

e. Effects in Human Health due to MSW

The components of the MSW can vary according to the people lifestyle of each community. Therefore, the interference on human health due to physical, chemical and biological agents contained in waste is the main effect of a inefficient SWM.

The typical agents related to the MSW, which affects the health of the workers, and peoples are:

- Odor: it can cause uneasiness, migraines and nausea.

- Noise: it can cause the partial or permanent loss of listening, migraine, nervous tension, stress and arterial hypertension
- Dust: responsible for nuisances and momentary loss of sight, breathing and lung problems.
- Aesthetics: the unpleasant view of waste makes the urban landscape ugly.
- Vibration: it can cause lumbago, body pains and stress.
- Sharp and piercing objects: they can cause wounds and cuts.

In the MSW there is a great variety of chemical waste, especially batteries; oil and grease; pesticides and herbicides; solvent, paints and tints; cleansing products, cosmetics, medicines and aerosols which are highly dangerous to the human health.

Table A-16: Diseases related with MSW transmitted by Vectors

Vectors	Form of Transmission	Main Diseases
Rats	Through bite, urine and grounds Through fleas which lives in the body of the rats	Bubonic pest, Typhus murino, Leptospirosis
Flies	Through wings, paws and body Through grounds and saliva	Typhoid fever, Salmonelosis, Cholera, Ameabiasis, Dysentery, Giardiasis
Mosquitoes	Through itch of the female mosquito	Malaria, Leishmaniasis, Yellow fever, Dengue fever, Filariasis
Cockroaches	Through wings, paws and body and by grounds	Typhoid fever, Cholera, Giardiasis
Pigs	By ingestion of polluted meat	Cisticercosis, Toxoplasmosis, Trichinosis, Taeniasis
Birds	Through the grounds	Toxoplasmosis

Source: State Foundation of Environment, FEMA/MG, 1995, Brazil.

The presence of biological agents in MSW can be important in the direct and indirect transmission of diseases. The Table above shows the vectors and the diseases related with them.

Other main problem in SWM is water pollution of the aquifer used as portable water by infiltration of leachate. Surface waters are also contaminated, because many community residents of AMSS use riverbanks as disposal sites. Another risk factor is soil degradation. Floods increase the contamination by waste and degrade the quality of water.

The municipality of Mejicanos conducted a study on the awareness level of the population and municipal workers. The survey revealed the following problems.

1) Inadequate management of solid wastes,
2) Insufficient public education on the appropriate treatment of wastes,
3) High incidence of parasitic, gastrointestinal and skin diseases,
4) Lack of human, equipment and finance resources
5) Environmental pollution,

6) Waste piles in the streets and public areas, and

7) Proliferation of transmission vectors of diseases.

Population groups residing near the riverbanks show a high incidence of diseases associated with improper solid waste disposal. According to a survey, the following main diseases are common:

1) Gastrointestinal diseases: gastrointestinal infections, diarrhea, and parasites affect both children and adults.

2) Respiratory diseases: chronic bronchitis and asthma aggravated during the dry season when the bad odor of the river is stronger.

3) Dermatological diseases: prorates (itching) and piodermitis (eruptions and ulcers) aggravated during the dry season when contamination rises.

A.3 Urban Structure

A.3.1 Origin and Evolution of the Study Area

a. Pre-Columbian Age

Archaeological evidence shows that diverse cultures coming from Mexico have settled down in El Salvador. Mayan people, known as *Pipiles,* were the El Salvador's largest ethnic group with a greater social development than other tribes when Spanish conquerors arrived.

Cuscatlán, called "*Señorío de Cuscatlán* (Seigniory of Cuscatlan)" was the most important political entity that conquerors found in these lands, and it is also one of the largest ones within the current San Salvador Metropolitan Area, in the Antiguo Cuscatlán municipality. It is estimated that *Pipiles* founded Cuscatlán in year 1054.

b. Colonial Age (1524-1810)

From 16th to 19th century El Salvador belonged to the Spanish Crown, which extremely influenced on the country's structure. Churches, plazas and town halls were basic elements of cities.

Gonzalo de Alvarado is assumed to have founded the city of San Salvador in 1525. However, it was attacked and destroyed the following year by Pipiles, and rebuilt again by Diego de Alvarado in 1528 in the valley of La Bermuda where is Suchitoto Municipality. The city moved to another place in 1530 and came back to the Bermuda valley in 1538. Finally, San Salvador settled in 1545 at the confluence of Acelhuate and El Garrobo rivers. On September 27, 1546, the town was granted the title of City by royal decree of Charles V.

The city was destroyed three times during the 15th century by earthquakes and at least two times per century during the following ones by the same disasters.

c. Republican Age (1811-1935)

In the late 19th century, coffee exporting demand expanded which in turn allowed the construction of highways, railroads and harbors, and at the same time the main cities such as Santa Ana and La Livertad developed.

It is said that in 1905 San Salvador had 50,305 inhabitants. In that year, a trolley car to allow mobilization of people and public lighting was installed. In 1914, maps of the city identify connecting roads to Santo Tomas, Panchimalco, Ilopango, Cuscatlán, Huizucar, El Volcán, Tonacatepeque and towards diverse parts of the country.

The damages caused by the 1917 earthquake forced a charge in the construction processes and materials, and plaited cane and mud walls were replaced by a lighter wood and thin plates.

In 1925 the paving of streets in San Salvador's downtown begins, and rain water collection and water supply networks were built simultaneously.

The current street and avenue naming system dates from 1926, which creates two central street axis. The first one goes from east to west and is formed by Calle Arce and Calle Delgado from which even numbered streets begin in a southern direction and odd numbered streets begin in a northern direction. The second axis goes from north to south and is formed by Avenida Cuscatlán and Avenida España from which even numbered streets begin in a eastern direction and odd numbered streets begin in a western direction.

In 1930 a census was carried out and placed San Salvador as the largest population center in the country with 96,212 persons. San Salvador three-folded its population during a period of 40 years (1890-1930).

d. Contemporary Age (1935-1999)

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 Asociates Inc. with a target in 20 years, which defined the metropolitan area with 10 municipalities that are shown in Table A-17.

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 A-17: Municipalities forming San Salvador Metropolitan Area

No	Municipality	1968[5]	1987[6]	1988[7]	1994[8]	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 A-17 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.

A.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

[5] METROPLAN 80 MOP-DUA-Adley Asociates Inc. 1968.
[6] MAYOR COUNCIL FOR SAN SALVADOR METROPOLITAN AREA, COAMSS, Constitutive Chart on July 3rd, 1987, and issued by the Official Gazette on July 14th, 1987.
[7] COAMSS agreement on October 29th, 1988, folio 3.
[8] Legislative Decree No. 732 on December 20th, 1993, Law on Territory Development and Arrangement of San Salvador Metropolitan Area and Surrounding Municipalities.

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.

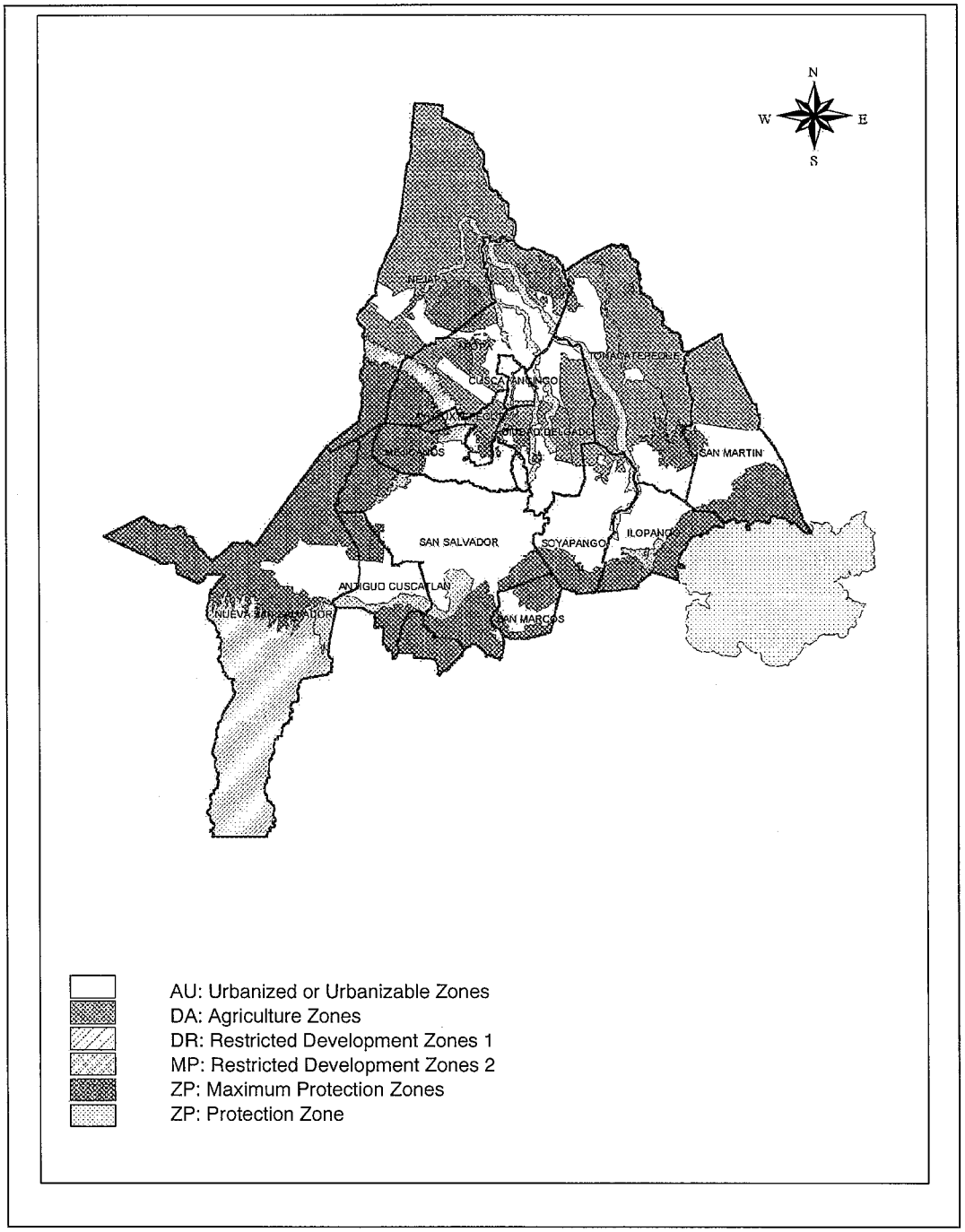
Table A-18 shows areas in each zone category.

Table A-18: Land Use Conditions in AMSS

Unit: km^2

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 A-5: Zoning Map in AMSS

A.3.3 Population Density

Population density in 1999 in AMSS is 105 persons/ha as shown in Table A-19, which is obtained by dividing the population in 1999 by the urbanized/urbanizable areas shown in Table A-18. 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 A-19: 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

A.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.

A.4 Financial Condition

A.4.1 Public Finance

A.4.1.1 Central Government

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

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

Table A-20: Annual Budget of Central Government

		1999 Real (million colons)	2000 Budget (million colons)
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 A-21: Ordinary Revenue in 1999

	Projection (A) (million colons)	Real (B) (million colons)	(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

A.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 A-22: Annual Budget of Related Ministries

Unit: million colons

		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

A.4.2 Taxation System and Public Utilities Charge Collection System

A.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 A-23: Personal Income Tax Rates

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

a.2 Corporate Tax

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

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.

A.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 A-24: 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.

A.5 Environmental Policy

A.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.

A.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.

Its competency expressed in Article 45 of Decree No. 30 issued on the same day are as follows.

- To formulate, plan and execute the environmental and natural resources policies;
- To exercise the direction, control, auditing, promotion and development of environmental and natural resources matters;
- To propose a legislation on conservation and rational use of the natural resources, in order to achieve their sustainable development and oversee its compliance;
- To promote the active participation of all the sectors of the nation in the sustainable use of natural resources and the environment;
- To coordinate national commissions in favor of the environment and sustainable use of natural resources, both within the government as well as within sectors of the civil society;
- To represent the country before national, regional and international bodies related to environmental and natural resources issues;
- To promote the compliance of laws of the country and international treaties related to environmental and natural resources issues;
- To update and impulse the national environmental strategy and its corresponding action plan as well as the sector strategies related to environmental and natural resources issues;
- To negotiate, in cooperation with the Ministry of Foreign Affairs, international cooperation related to environmental and natural resources;
- The additional functions and powers appointed by other laws and regulations.

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 enforce 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.

A.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.

A.5.3.1 Transitory Decree of Solid Waste (Decreto Transitorio de Desechos Sólidos)

The decree is quoted as follows.

Transitory Decree of Solid Waste

Agreement N ° 22

San Salvador, October 6th, 1999. - THE EXECUTIVE BODY in the Field of Environment and Natural Resources, CONSIDERS:

I.- That the problem of the solid waste is an inherent phenomenon to the different activities of human being;

II.- That the problem of solid waste is health, environmental, social and cultural problem; as a consequence it is not the exclusive responsibility of Municipal Governments, yet they face the problem directly;

III.- That due to the degree of environmental deterioration caused by solid waste in the national environment, it becomes necessary to issue transitory technical guidelines for the final disposal of municipal waste;

IV.- That promoting the integral management of solid waste is an obligation of this Ministry;

THEREFORE: this Ministry, AGREES: to issue the transitory technical guidelines for the final disposal of municipal solid waste;

1.- That, according to what is set forth in Articles 107 and 108 from the Law of Environment, all final disposal sites must conduct the Environmental Assessment and the Environmental Adaptation Program with the following purposes:

a) To identify and quantify the environmental damages that the operation of such disposal sites is causing to the environment and to population;

b) To define and establish the necessary measures to correct and control noxious or hazardous effects on the quality of life of the population and the environment's;

2.- That current final disposal sites should, within a term of two(2) years as from the approval of the referred Law, present their Environmental Assessment, and three years more to execute their Environmental Adaptation Program;

3.- That the contents of the Environmental Assessment should at least include the following: Executive summary, a description of the activity subject to the assessment, description of physical, biological and socioeconomic aspects of the activity's area of influence, taking into consideration the technical criteria for the selection of the site; Identification, prioritization and quantification of the environmental damages caused by the activity; to determine, prioritize and evaluate the environmental measures and investments to prevent, correct and control; Environmental Adaptation Program, References, Appendixes;

4.- That the Environmental Adaptation Program includes, without being limited to, the following: Technical specifications of the measures and environmental investments to be executed; timetable to implement such measures and investments; Control and follow-up to verify the implementation and the effectiveness of the measures and investments.

5.- That given the degree of environmental degradation of the national environment caused by an inadequate solid waste management and the high degree of soil, water and air resources due to inappropriate disposal, as well as hazard for human health due to exposure to this type of pollution, the Ministry of Environment and Natural Resources informs the municipalities on the following transitory technical guidelines for site selection and operation of a sanitary landfill and minimum information for the final disposition of municipal solid wastes:

1. Site Selection Technical Criteria

Hydrology:

- Groundwater level greater than 10m deep.
- The site should be at a distance of more than 500 m from flooding areas, water bodies and areas where natural drainage are located.
- It should be located at a distance greater than one (1) kilometer away and downstream from aquifer recharging areas or drinkable water supply sources.

Characteristic of the ground:

- Clayey/silty-clay soil, permeability index 10-5, 10-7 cm/sec. (percolation rate),
- Land use category (not agricultural), Topographic slope not greater than 30%.
- Covering material: it should have enough material (soil) for the daily covering of wastes during the useful life of the landfill, with a thickness of 30cm compacted (soil) at the end of the day.
- If covering material (soil) is not available within the site, other places should be looked for that can provide covering material in the surrounding zones and the location maps must be shown.

Location with respect to population centers and access roads:

- It should be located at distance greater than 1km from urban area.
- It should be an easy and quick access area that can be accessed to during the entire year.
- It should be outside the following: natural protected areas; airports' influence area; right-of-way of gas and oil pipelines, aqueducts and hydrocarbon storage areas.
- Winds in the area.

Social acceptance of the project:

- The community of the influence area will be consulted about the project, in order to avoid social problems in the course of the project.

2. Criteria for Sanitary Landfill Operation:

- A manual sanitary landfill can be operated in those municipalities where the daily disposed waste amount is smaller than 20 tons.
- A mechanized sanitary landfill can be operated in those municipalities where the daily disposed waste amount is greater than 40 tons.
- A combination of the above two sanitary landfills can operate in those municipalities where the daily disposed waste amount ranges between 20 and 40 tons.

3. Minimum information for the Final Disposal of Municipal Solid Waste:

a) From 0.1 to 5.0 ton/day, requirements are as follows: Environmental Form (*formulario ambiental*) for municipal waste; hydrological and geological survey.

b) From 5.0 to 15.0 ton/day, requirements are: Environmental Form; to present the material (covering soil) source in the zone; hydrological and geological survey.

c) From 15.0 to 20.0 ton/day, the following should be submitted: Environmental Form; Study for Site Selection, including hydrological and geological study; Environmental Management Programs; Assessment of endangered species and habitats in the zone.

d) From 20.0 ton/day and up, the following is required: Environmental Form, Study for Site Selection; Environmental Impact Assessment elaborated in accordance with the terms of reference provided by MARN

These transitory technical guidelines are exclusively for the final disposal of municipal wastes and will be substituted when the Regulation is enforced. The definitions of manual

sanitary landfill, mechanized sanitary landfill and combined sanitary landfill form part of this Agreement.

Please communicate with. - (Signed by the Mr. President of the Republic) the Minister of Environment and Natural Resources Ministry. (f) ANA MARIA MAJANO GUERRERO.

A.6 Other Infrastructure

A.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 A-25 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 in1992.

Table A-25: 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.

A.6.2 Sewage and Drainage

Sewage system and drainage system are basically separated, however some parts are linked. In 1996, the Central Government requested a company "TAHAL Consulting" to conduct a study to identify and diagnose both systems.

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 A-26 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 A-26: 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.

A.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. Their features area as follows:

Table A-27: Specifications of Roads

Road type	Subtype	Minimum crossing length (m)	Design speed (km/h)	Maximum slope %	Right of Way[6] (m)	Border (m)	Sidewalk (m)	Sum of parking and traffic lanes (m)	Minimum height for point of sight (m)
Distribution road	Collecting	150	50	8-18	26.50	5.25	1.5	13	10
	Local [1]	100	50	8-18	17	1.5	1.5	11	10
Repartition road	Neighborhood[1]	80	40	8-18	15	1.5	1.5	9	7.5
	Residential [1]	60	40	8-18	13.50	1.5 one border[3]	1.5 and 2.0	8.50	7.50
Driveway	Vehicle passage[2]	-	30	8-18	12.5	1.0 one border[3]	1.5	8.5	7.5
	Vehicle runway	-	15	8-18	9.50	0.5 to 1.5	1.00	6.5 5.5 and 6.00	4.00
	Footway	-	-	8-18	3.0,4.0, 5.0[5]	1.0 to 3.00	1.0	-	3.5
	Passage lane[7]	-	-	-	2.5	[4]	1.20	-	3.5

Notes:

1 These roads can join, with their maximum length, two roads of a greater hierarchy or one of the same rank with another of a greater hierarchy.

2 Vehicle passages with a maximum length will interconnect two roads of a greater hierarchy. Those vehicle passages ending up in U-turns will not have a length greater than the half of their maximum length allowed when such roads begin as repartition or local distribution roads, and a length greater than the quarter of their maximum length allowed when they begin from another vehicle passage.

3 When a single border is indicated, this should be adjacent to the smallest sidewalk, and the biggest sidewalk should be adjacent to the parking lane and furnished with islands for plating trees every 10 meters.

4 Borders are not indicated according to the designer's criterion, however, the measures indicated for the other components will be complied with.

5 According to length: up to 50 m = 3.00, 50 m to 100 m = 4.00, 100 m to 150 m = 5:00

6 Urbanizations with more than 1000 housing units will have at least 4 bus stops, which will be strategically located within a range of 250 m each, in order to insure an effective communication among the different zones of the project and the surroundings.

7 When footways reach their maximum length between two vehicle roads, a passage lane will be provided at the middle part of their length.

A.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 A-28):

Table A-28: 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 A-29. 12 out of these 20 projects belong to PMDS (Solid Waste Management Program).

Table A-29: 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.