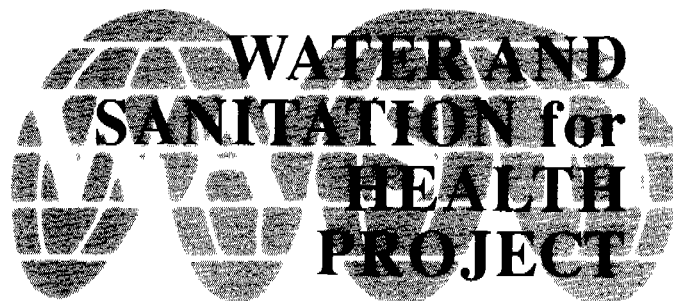


PLANNING FOR CENTRAL AMERICA WATER AND SANITATION PROGRAMS

Field Report No. 301
June 1990

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WASH Field Report No. 301

PLANNING FOR CENTRAL AMERICA WATER AND SANITATION PROGRAMS

Prepared for the Bureau for Latin America and the Caribbean,
U.S. Agency for International Development
under WASH Task No. 073

by

David Ey

June 1990

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RELATED WASH REPORTS

Water Supply and Sanitation in the Health Sector of the Asia Region: Information Needs and Program Priorities. Technical Report No. 36, February 1986.

LAC Bureau: Planning for Central America Water Supply and Sanitation Programs. Field Report No. 209, May 1987.

Planning for Central America Water Supply and Sanitation Programs: Update. Field Report No. 253, May 1989.

Water and Sanitation Sector Profiles of Twenty African Countries. Field Report No. 291, June 1989.

Planning for Water and Sanitation Programs in Bolivia, Ecuador, and Peru. Field Report No. 302, June 1990.

Planning for Water and Sanitation Programs in the Caribbean. Field Report No. 303, June 1990.

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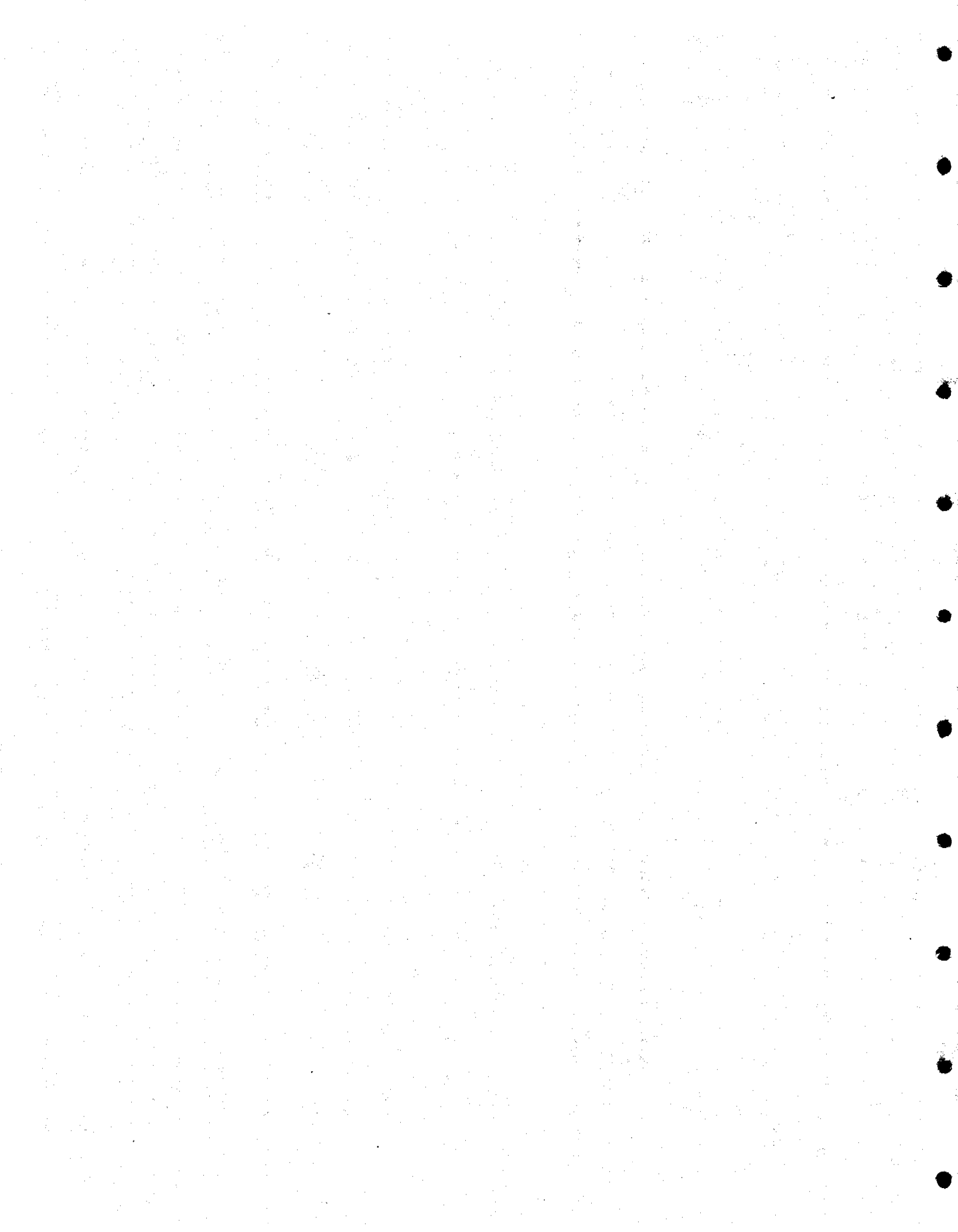
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ACRONYMS

A.I.D.	U.S. Agency for International Development/Washington
ANDA	<i>Administración Nacional de Acueductos y Alcantarillados</i> (Salvadoran national water and sewerage agency)
AyA	<i>Instituto Costarricense de Acueductos y Alcantarillados</i> (Costa Rican national water and sewerage agency)
CABEI	Central American Bank for Economic Integration
CAI	Central American Initiative
CARE	An international private voluntary organization
CBHNP	Community Based Integrated Health and Nutrition Project (Guatemala)
CDC	Commonwealth Development Corporation (United Kingdom)
CEPRHI	<i>Comité Ejecutivo Protector de los Recursos Hídricos</i> (Salvadoran coordinating committee)
CIDA	Canadian International Development Agency
CONAGUA	<i>Comité Nacional de Agua</i> (Guatemala)
CONIAPOS	<i>Comité Nacional de Instituciones de Agua Potable y Saneamiento</i> (Salvadoran water and sanitation policy-determining committee)
COPECAS	<i>Comité Permanente de Coordinación de Agua Potable y Saneamiento</i> (Guatemala)
DA	Development Assistance
EEC	European Economic Community
EMPAGUA	<i>Empresa Municipal de Agua de la Ciudad de Guatemala</i> (Guatemala City Municipal Water Authority)
ESF	Economic Support Funds
GDP	Gross Domestic Product

GNP	Gross National Product
GOB	Government of Belize
GOCR	Government of Costa Rica
GOES	Government of El Salvador
GOG	Government of Guatemala
GOH	Government of Honduras
GTZ	German Agency for Technical Cooperation
IBRD	International Bank for Reconstruction and Development (World Bank)
IDAAN	<i>Instituto de Acueductos y Alcantarillados Nacionales</i> (Panamanian national water and sewerage agency)
IDB	Inter-American Development Bank
IFAM	<i>Instituto de Fomento y Asesoría Municipal</i> (Costa Rica)
INFOM	<i>Instituto de Fomento de Obras Municipales</i> (Guatemala—national agency for the development of municipal works)
IPTBH	Improved Productivity Through Better Health Project (Belize)
JICA	Japanese International Cooperation Agency
KfW	Reconstruction Loan Corporation (Federal Republic of Germany)
LAC	Bureau for Latin America and the Caribbean (A.I.D.)
MOH	Ministry of Health
PAHO	Pan American Health Organization (unit of World Health Organization)
PLANSABAR	<i>Plan Nacional de Saneamiento Básico Rural</i> (El Salvador—entity of the Ministry of Public Health)
PVO	Private voluntary organization
RHUDO	Regional Housing and Urban Development Office
ROCAP	Regional Office for Central America and Panama

SANAA	<i>Servicio Autónomo Nacional de Acueductos y Alcantarillados</i> (Honduran National Autonomous Agency for Water and Sewerage)
UNDP	United Nations Development Programme
UNEPAR	<i>Unidad Ejecutora del Programa de Acueductos Rurales</i> (Guatemala—entity of the Ministry of Public Health)
UNICEF	United Nations Children's Fund
USAID	U.S. Agency for International Development/overseas missions
VLWS	Village Level Water and Sanitation Project (Belize)
WASA	Water and Sanitation Authority (Belize—entity of the Ministry of Energy and Communications)
WASH	Water and Sanitation for Health Project

AUTHOR'S NOTE

This report provides an analysis of the water and sanitation sectors in each of the Central American countries under study up to the end of 1989. During the process of finalizing this report in early 1990, however, the status of some projects has changed. For example, the water and sanitation component of USAID/Honduras's Employment Generation Project in Honduras has been cancelled, with the new Honduran Government providing funding for water and sanitation development through its Social Investment Fund. In addition, USAID/Guatemala will be adding \$10 million to its rural water supply and sanitation project.

These changes, along with others which have taken place in 1990, have not been included in the following report; rather, they will be recorded in the WASH Project's 1990 report.

EXECUTIVE SUMMARY

Background

In 1987, the Latin America and Caribbean (LAC) Bureau of the U.S. Agency for International Development (A.I.D.) requested that the Water and Sanitation for Health (WASH) Project conduct an analysis of funding needs for water supply and sanitation in Central America. This report is the third in a series of such analyses, which the LAC Bureau intends to update annually through 1994.¹ The report makes current, through the end of 1989, WASH's analysis of the water and sanitation sectors of Belize, Guatemala, Honduras, El Salvador, and Costa Rica.

Because A.I.D. has not been active in Panama and Nicaragua in recent years, these countries were not originally included in the scope of this study. In the case of Panama, however, coverage information from 1988 has been included in an appendix to this report due to the recent change in Panama's government and a renewed commitment by the United States to assist in the development of that country. Nicaragua has not been included.

The objectives of this study are similar to those of each of the earlier reports: (1) to determine existing levels of coverage (the number of persons and the percentage of the population with access to basic water and sanitation services); (2) to assess levels of investment currently committed by external support agencies and local governments to increase the availability of water and sanitation services; and (3) to track the progress made in each country toward meeting the 1989 goals of the LAC Bureau's Central America Initiative (CAI). For this report, WASH has also developed target goals for 1995 as a means of focusing attention on the additional gains in water and sanitation coverage needed in the region and the funding that will be required to achieve them.

The 1989 CAI Objectives

The CAI objectives, formulated by the LAC Bureau on the recommendation of the Bipartisan Commission on Central America², proposed to increase the number of people in Central America served by adequate facilities in four subsectors: urban water supply, urban sanitation, rural water supply, and rural sanitation. The objectives sought to increase the number of

¹ The initial WASH report was *Planning for Central America Water Supply and Sanitation Programs*, WASH Field Report No. 209, November 1987; the first update, WASH Field Report No. 253, was published in May 1989.

² *Report of the National Bipartisan Commission on Central America*. January 1984.

people with coverage in each of the subsectors by 25 percent during the period 1984 to 1989.

By the time of the 1988 WASH Update report, 8 of the CAI objectives had been met (out of a possible 20, 4 for each of the 5 countries). In the past year, three more have been achieved: the rural water and rural sanitation goals in Guatemala and the rural water target for Costa Rica. Thus, within the time frame of the CAI objectives, just over half (11) of the goals set in 1984 have actually been met (see Table 1).

Table 1

PROGRESS TOWARD MEETING THE CAI OBJECTIVES

	URBAN		RURAL	
	Water	Sanitation	Water	Sanitation
Belize	80%	MET	MET	MET
Guatemala	48%	95%	MET	MET
Honduras	56%	55%	74%	MET
El Salvador	MET	MET	0% *	54%
Costa Rica	MET	MET	MET	63%

* The number of people with coverage in 1989 is below that reported in 1984.

Since 1984, notable gains in the number of people with access to water and sanitation facilities have been recorded. In the water sector, an estimated 1.8 million people gained access to potable water, an increase of 20 percent in urban areas and 11 percent in rural ones. As seen in Table 2, these gains, when calculated as a percentage of the population with service, translate into minimal increases in access to a water system—one percentage point over the reported 1984 urban and rural levels. The growth rate of the sanitation sector, however, has been higher than that of the water sector. At the end of this six-year time period (1984-1989), 30 percent more residents of urban and rural areas had the service of a sanitation facility, an increase of nearly 3 million people. Overall, sanitation coverage levels jumped 7 percentage points in the urban areas and 8 points in the rural areas. While it is not entirely clear why the expansion of sanitation systems is outstripping the development of water systems, it is indeed a positive sign that such growth is occurring, and, with the increased use of these facilities, health benefits should accrue.

Table 2

CENTRAL AMERICA—REGIONAL COVERAGE LEVELS 1984 - 1989 *
(THOUSANDS OF PERSONS SERVED - PERCENTAGE OF POP. SERVED)

	URBAN		RURAL	
	Water	Sanitation	Water	Sanitation
1984	6,280 - 79%	5,241 - 66%	4,459 - 39%	4,690 - 41%
1986	6,645 - 79%	5,841 - 69%	4,512 - 38%	5,158 - 44%
1988	7,503 - 85%	6,484 - 73%	4,364 - 36%	5,318 - 44%
1989	7,522 - 80%	6,812 - 73%	4,960 - 40%	6,054 - 49%

* Does not include Panama or Nicaragua.

Since the 1988 study, the number of persons in the region served by adequate water supplies increased by 615,000 and the number of persons served by sanitation facilities increased by 1,064,000. While notable, these gains in the numbers of persons with access to basic services must be seen in the light of the rapid population growth in the region. During the same one-year period, the total population in the region increased by 615,000 people, an increase equal to the number who gained access to a water system in 1989.

The 1995 Targets

With the expiration of the time period for the CAI goals at the end of 1989, new targets have been developed by the WASH Project to track water and sanitation coverage levels in each of the five countries under study. These new targets differ from the CAI goals, which represented a **fixed increase in the number of persons with coverage** regardless of the population growth experienced in a country. Set as percentage goals, the 1995 targets have been structured to **track gains in the percentage** of a country's population with access to water and sanitation facilities. As shown in Chapter 2, these targets are based on a model which projects water and sanitation coverage for all Central Americans in 30 years, by 2020. The 1995 targets constitute the first stage in moving toward full coverage, and they set the rate of expansion needed to attain this goal. In addition, the targets will help donors determine where the largest amounts of investment are needed. It should be noted, however, that these targets have not been developed with country participation and are not, therefore, reflective of specific country goals.

The 1995 target levels, shown with current coverage rates in Table 3, have been developed for each of the four subsectors within each country, and progress toward achieving these targets will be monitored in future reports. For the region as a whole, the 1995 targets are set to increase urban water coverage by 5 percentage points to 85 percent, rural water coverage by 13 percentage points to 53 percent, urban sanitation by 6 points to 79 percent and rural sanitation by 11 points to 60 percent.

Table 3**1989 COVERAGE LEVELS/1995 TARGET LEVELS
(PERCENTAGE OF THE POPULATION WITH COVERAGE)**

	URBAN		RURAL	
	Water	Sanitation	Water	Sanitation
Belize	91/93	91/93	75/81	80/84
Guatemala	70/76	44/56	30/44	32/46
Honduras	92/94	88/92	56/66	66/74
El Salvador	76/82	88/92	17/35	38/52
Costa Rica	100/100	100/100	84/88	93/95

To achieve the 1995 goals, significant levels of funding will be required. This report estimates the total investment levels needed in each country to meet the 1995 targets, the level of funding currently committed to the effort to increase coverage, and existing shortfalls in funding. The concept of funds committed to increasing coverage used for this and past WASH reports includes only those monies that have been firmly committed and that will be used specifically to extend coverage to populations currently unserved by water and sanitation facilities. Investments that will be used to rehabilitate existing water or sewerage systems or to provide other needed improvements that do not affect coverage are not included in the analysis.

Currently, international donors and local governments have committed nearly \$248 million to coverage-expanding projects that are either ongoing or have been approved for initiation in the next few years. In the case of ongoing projects, only those monies for 1990 and beyond have been considered. In addition, only those funds committed by local governments in conjunction with externally funded projects are included in the analysis. Given that approximately \$842 million will have to be spent over the next six years to achieve the 1995 WASH targets, substantial shortfalls in funding exist. Table 4 shows by country and by subsector the levels of additional funding needed to achieve the 1995 targets.

Table 4

**SHORTFALLS IN FUNDING NEEDED TO MEET THE 1995 TARGETS
(COSTS IN 1989 US\$, 000S)**

	URBAN		RURAL		TOTAL
	Water	Sanitation	Water	Sanitation	
Belize	\$ 2,913	\$ 1,915	\$ 990	\$ 535	\$ 6,353
Guatemala	62,257	78,267	95,736	11,294	247,554
Honduras	42,137	57,547	47,801	8,589	156,074
El Salvador	63,182	27,316	3,798	0	94,296
Costa Rica	38,378	36,328	10,544	4,618	89,868
TOTAL	\$208,867	\$201,373	\$158,869	\$25,036	\$594,179

While the funding shortfalls for the urban sector are notably larger than those in the rural sector, coverage levels in the rural sector are far below urban rates, and, therefore, the funding and implementation of projects to extend coverage in the rural areas remain a priority. The WASH studies have further shown that A.I.D. has played a leading role in the construction of water and sanitation facilities in rural areas. Clearly, this involvement should be sustained or expanded, if possible.

In the urban sector, the bulk of the financing to support municipal water and sanitation construction projects comprises loans from the Inter-American Development Bank (IDB) and the World Bank. Within the urban sector, A.I.D. has and should continue to focus on providing water and sanitation services to marginal, low-income communities where coverage rates (like those in the rural areas) are substantially lower than the urban average.

Based upon the funding analysis shown in Table 4, the priority countries for expanded water and sanitation programs are Guatemala and Honduras, which currently have funding shortfalls of \$248 million and \$156 million. In particular, Guatemala is in critical need of additional investments—it has the lowest coverage rates in three of the four subsectors and has the second lowest rate in the fourth, rural water coverage. It should be noted, however, that based upon 1989 coverage levels, the water and sanitation needs of El Salvador should also be considered a priority for A.I.D. In the rural water and sanitation subsectors especially, El Salvador has some of the lowest coverage rates in the region. The funding needs to increase rural coverage in El Salvador to the 1995 target levels, however, have largely been met through A.I.D.'s \$40 million rural water and sanitation project which began in 1989. Countries with high coverage rates, namely Costa Rica and Belize, do not have the same need for A.I.D.-funded water and sanitation projects, though these countries are better equipped to efficiently absorb the funds necessary to meet the 1995 targets.

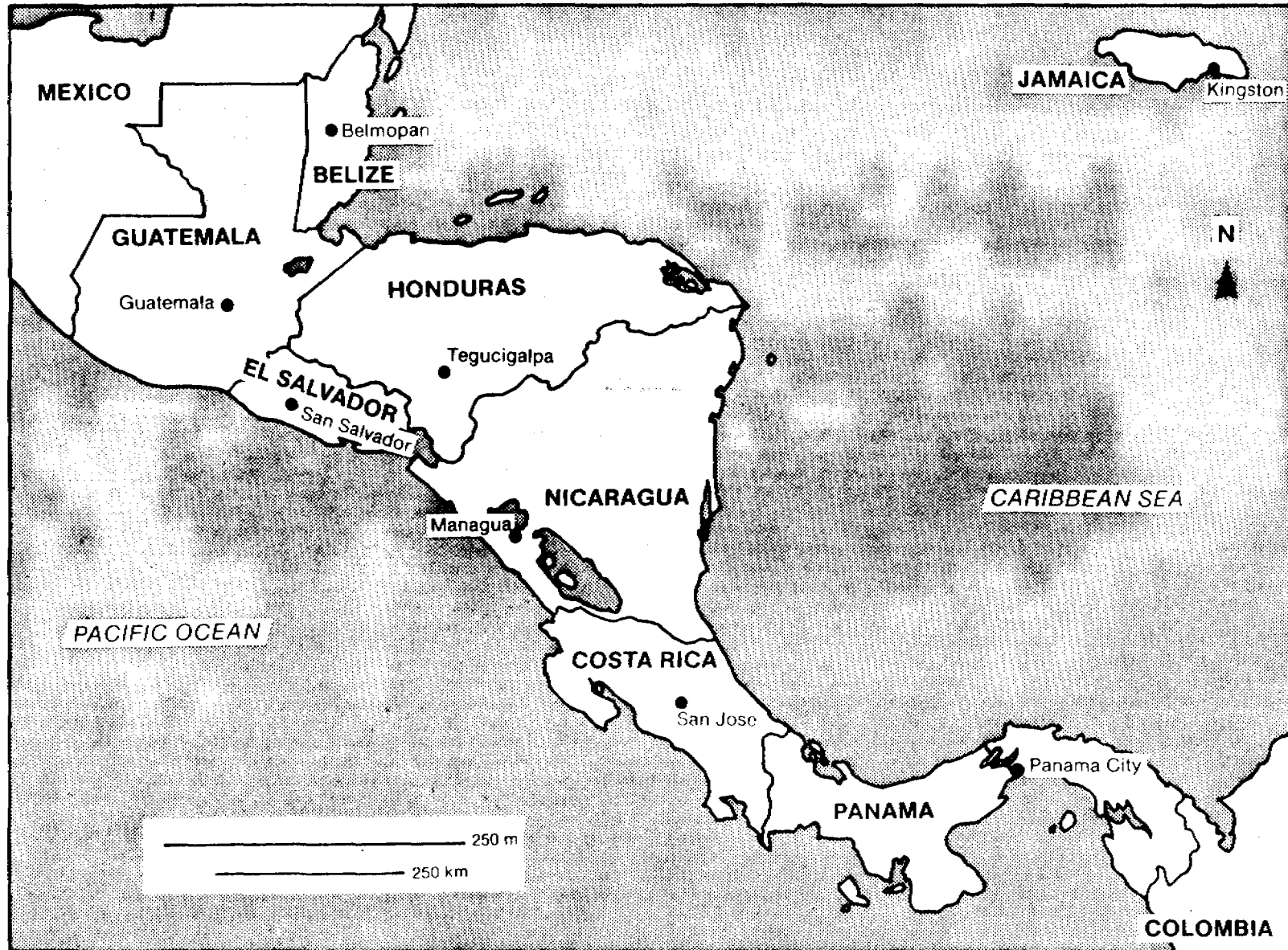
The expansion of water and sanitation services to the extent called for by the CAI objectives and the 1995 targets can only occur as a result of a long-term approach to the development of the water and sanitation sector. The provision of these services to a larger portion of the Central American population requires not only large amounts of additional funding, but the improvement of institutional capabilities within each country so that the construction initiated under these projects can be sustained and further expanded.

WASH's Lessons Learned

The WASH Project has learned over the past 10 years that the construction of water and sanitation systems alone is not enough to ensure the desired results of safe, accessible water and hygienic excreta disposal. Efforts to provide potable water and sanitary waste disposal must be integrated with other development activities; to succeed, they must provide hygiene education to communities served, train personnel in the operation and maintenance of the facilities, strengthen the local agencies and institutions which work in the water and sanitation sector, and involve the community to be served in the planning and execution of the project.

It is important to note that, in WASH's experience, the realization of the goal of increased access to water and sanitation facilities requires substantial coordination among all of the various agencies and institutions involved in the sector as well as a long-term commitment to build not only the systems themselves but the local institutional capacity to maintain them.

CENTRAL AMERICA



1

INTRODUCTION

1.1 Purpose and Scope

In 1987, the Water and Sanitation for Health (WASH) Project prepared a study of the water supply and sanitation sector in Central America for the Latin America and Caribbean (LAC) Bureau of the U.S. Agency for International Development (A.I.D.). The report examined existing levels of water and sanitation coverage in Central America, assessed past and proposed investments in the sector, and determined what additional funding would be required to meet the 1989 objectives of the Central American Initiative (CAI). These targets were formulated by the LAC Bureau from recommendations made in 1984 by the Bipartisan Commission on Central America, chaired by Henry Kissinger.¹ Following its initial report, WASH prepared an update in 1988 that tracked the progress made in Central American countries toward meeting the CAI objectives.

This document, the 1989 update, reports on the current status of the water supply and sanitation sector in five Central American countries: Belize, Guatemala, Honduras, El Salvador, and Costa Rica. Because A.I.D. has not been active in Panama and Nicaragua in recent years, these countries were not originally included in the scope of this study. In the case of Panama, however, coverage information from 1988 has been included in an appendix to this report due to the recent change in Panama's government and a renewed commitment by the United States to assist in the development of that country. Nicaragua has not been included.

This report was prepared in Washington, D.C., using readily available information from USAID missions and international donors working in Central America. Each of the country missions, the USAID Regional Housing and Urban Development Office (RHUDO)/Tegucigalpa, and the Regional Office for Central America and Panama (ROCAP) all provided the most current data on water and sanitation coverage and programs in the five countries. Other institutions contacted for information include the United Nations Children's Fund (UNICEF), CARE, the World Bank, the Inter-American Development Bank (IDB), the Pan American Health Organization (PAHO), the Canadian International Development Agency (CIDA), the German Agency for Technical Cooperation (GTZ), and the German Reconstruction Loan Corporation (KfW).

¹ Report of the National Bipartisan Commission on Central America. January 1984. The initial WASH report was *Planning for Central America Water Supply and Sanitation Programs*, WASH Field Report No. 209, November 1987; the first update, WASH Field Report No. 253, was published in May 1989.

1.2 Definitions and Structure

The 1989 Update seeks to make current, through the end of 1989, the LAC Bureau's ongoing study of water and sanitation programs in Central America. The organizational and definitional frameworks used are the same as those used for both earlier reports. Population centers of 2,000 or more people are defined as being urban, and all other areas are considered rural. Urban and rural water coverage data include persons with access, at a minimum, to a standpipe within 200 meters of the home. Urban and rural sanitation coverage includes persons with access, at least, to a latrine.

The 1989 Update, however, differs slightly from its predecessors in its structure and analysis. Health and economic indicators have been added to the country profile appendixes to provide additional reference information relevant to the study of the water and sanitation sector. In addition, the format has been changed slightly, and a number of graphs have been added.

Chapter 2 discusses the progress made in each country toward achieving the 1989 CAI goals. Since the time frame for the CAI objectives has passed, new targets for 1995 have been set. These new targets, presented in Chapter 2, are based on a model projecting full water and sanitation coverage in the region within 30 years, by 2020. It should be noted, however, that these targets have not been developed with country participation and therefore, they are not reflective of specific country goals. Rather, they are intended to serve as planning tools with which A.I.D. can gauge the investment needed to achieve full water and sanitation coverage throughout Central America by 2020.

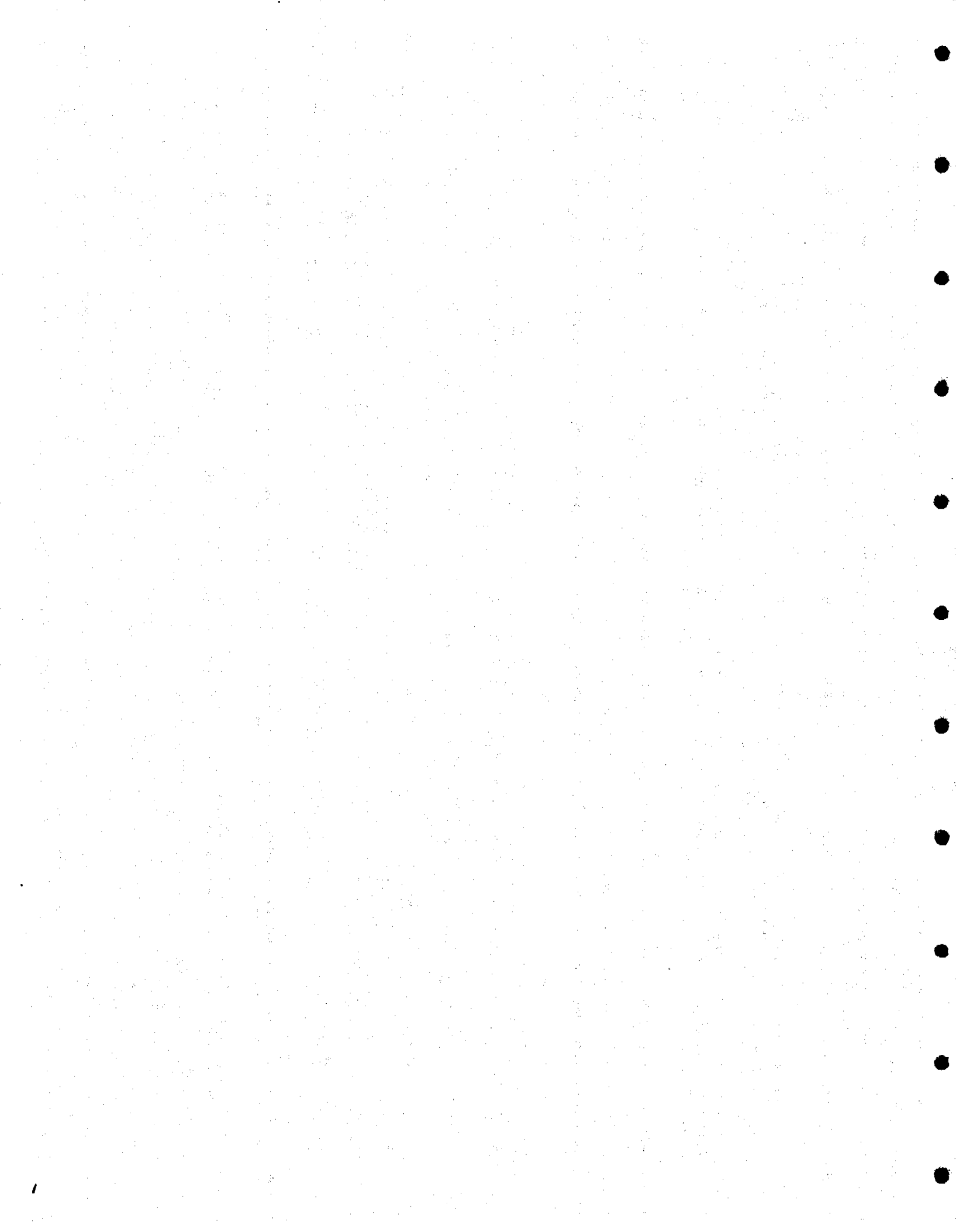
The report's conclusions are presented in Chapter 3. Following that are a series of appendixes that contain, for each of the five countries in turn, a country introduction and then a detailed analysis of the water and sanitation sector. Graphs and tables detailing coverage and investment levels are located at the end of each appendix. As noted earlier, an appendix containing information on Panama, taken from the 1988 WASH report, is included at the end of this report.

1.3 Additional Planning Reports

The LAC Bureau plans to continue these annual Central American updates through 1994. In addition, the scope of the study has been expanded to cover, for the first time, the Andean countries of Bolivia, Ecuador, and Peru and the Caribbean countries of Barbados, the Dominican Republic, Grenada, Haiti, and Jamaica. Reports on the Andean and

Caribbean countries will follow the same format as this document. These studies, which will also be updated annually through 1994, will be available as separate reports.²

² *Planning for Andean Water and Sanitation Programs.* WASH Field Report No. 302.
Planning for Caribbean Water and Sanitation Programs. WASH Field Report No. 303.



2

WATER SUPPLY AND SANITATION UPDATE IN CENTRAL AMERICA

Data on water and sanitation coverage levels (the number of persons with access to basic water and sanitation services) and population projections through the end of 1989 were obtained from the Central American USAID missions, RHUDO/Tegucigalpa, and ROCAP. Much of the information provided by the missions was obtained directly from national sources—water and sewerage agencies, coordinating committees, and census bureaus. In instances in which the reported coverage or population figures did not conform with the definitional framework of this series of reports, they were adjusted as much as possible to meet the definitions. The necessary adjustments are discussed in the country profile appendixes.

Overall, the coverage figures developed for the purpose of this 1989 update, although approximate in nature, provide a reasonably accurate picture of the water and sanitation sector in Central America through the end of 1989. However, because this report does not include coverage information on Panama in its regional analysis, data on total Central American coverage are not comparable with the earlier reports in this series. In addition, it should be noted that changes in the water and sanitation coverage data can occur in large increments; that is, the reported coverage level may rise quickly when a major system is completed. This may not, however, indicate that a country can sustain this rate of growth. Rather, the expansion of water and sanitation facilities to a significantly greater percentage of a country's population occurs over an extended period of time.

2.1 Population and Coverage Trends, 1984-1989

In 1984, nearly four out of five urban residents in the region (excluding Panama and Nicaragua) had access to water, while two out of three residents had access to a sanitation facility. Coverage levels in the rural sector were much lower; 39 percent had access to potable water, and 41 percent had access, at a minimum, to a latrine.

Since 1984, notable gains in the numbers of persons with access to water and sanitation facilities have been recorded, though the disparity between urban and rural coverage rates persists. In the water sector, an estimated 1.8 million persons gained access to potable water, an increase of 20 percent in urban areas and 11 percent in rural ones. As seen in Table 1, these gains, when calculated as a percentage of the population with service, translate into minimal increases in access to water—one percentage point over the reported 1984 urban and rural levels. At the end of this six-year time period (1984-1989), nearly 3 million more

residents of urban and rural areas had access to a sanitation facility. Overall, sanitation coverage levels jumped 7 percentage points in the urban areas and 8 points in the rural areas. While it is not entirely clear why the expansion of sanitation systems is outstripping the development of water systems, it is indeed a positive sign that such growth is occurring, and, with the increased use of these facilities, health benefits should accrue.

Table 1

CENTRAL AMERICA—REGIONAL COVERAGE LEVELS, 1984-1989*
(THOUSANDS OF PERSONS SERVED—
PERCENTAGE OF POPULATION SERVED)

	URBAN		RURAL	
	Water	Sanitation	Water	Sanitation
1984	6,280 - 79%	5,241 - 66%	4,459 - 39%	4,690 - 41%
1986	6,645 - 79%	5,841 - 69%	4,512 - 38%	5,158 - 44%
1988	7,503 - 85%	6,484 - 73%	4,364 - 36%	5,318 - 44%
1989	7,522 - 80%	6,812 - 73%	4,960 - 40%	6,054 - 49%

* Does not include Panama or Nicaragua.

Since the last WASH update in 1988, the total population of the Central American countries increased by nearly 615,000 persons. During this same period, the number of people served by adequate water facilities also increased by 615,000; an additional 1,064,000 people were served by sanitation facilities. As in the overall period, the expansion of sanitation facilities to unserved populations increased at a more rapid rate than did water system construction.

In the urban areas of Central America, residents continue to benefit from significantly higher levels of coverage than do the region's rural inhabitants. In the past year, however, urban water coverage levels fell from 85 percent in 1988 to 80 percent in 1989, while urban sanitation levels remained at 73 percent. In the rural sector, regional increases were reported in water coverage, which rose from 36 percent in 1988 to 40 percent in 1989, and in sanitation coverage, which increased from 44 percent to 49 percent in 1989.

Figure 1 and Table 2 show 1989 water supply coverage levels for the urban and rural populations of each of the five countries. Coverage rates vary greatly by country. Costa Rica maintains the highest coverage rates in both urban and rural water supply—100 percent and 84 percent, respectively. Guatemala has the lowest urban water coverage rate, at 70 percent. In the rural sector, the range of coverage levels among the countries is much wider, from 84 percent (Costa Rica) to 17 percent (El Salvador).

In each of the five countries, the rural sanitation coverage level is higher than that for rural water supply. For both rural and urban sanitation, there is a large variation among the countries in the percentages of the population with access (Figure 2 and Table 3). Costa Rica has the highest levels of coverage, 100 percent in urban and 93 percent in rural areas. Guatemala, on the other hand, has the lowest coverage rates in the region—44 percent for urban sanitation and 32 percent for rural sanitation.

TABLE - 2

EXISTING WATER SUPPLY
COVERAGE IN CENTRAL AMERICA
1989

	WATER SUPPLY								
	TOTAL POP- ULATION	ALL AREAS		URBAN AREAS			RURAL AREAS		
		POP. SERVED	% SERVED	URBAN POP.	TOTAL SERVED	% SERVED	RURAL POP.	TOTAL SERVED	% SERVED
BELIZE	180	150	83 %	95	86	91 %	85	64	75 %
GUATEMALA	8,935	4,152	46 %	3,663	2,577	70 %	5,272	1,575	30 %
HONDURAS	4,534	3,159	70 %	1,740	1,594	92 %	2,794	1,565	56 %
EL SALVADOR	5,100	2,331	46 %	2,500	1,894	76 %	2,600	437	17 %
COSTA RICA	2,941	2,690	91 %	1,371	1,371	100 %	1,570	1,319	84 %
TOTAL:	21,690	12,482	58 %	9,369	7,522	80 %	12,321	4,960	40 %

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

Figure 1
CENTRAL AMERICA
1989 WATER COVERAGE LEVELS

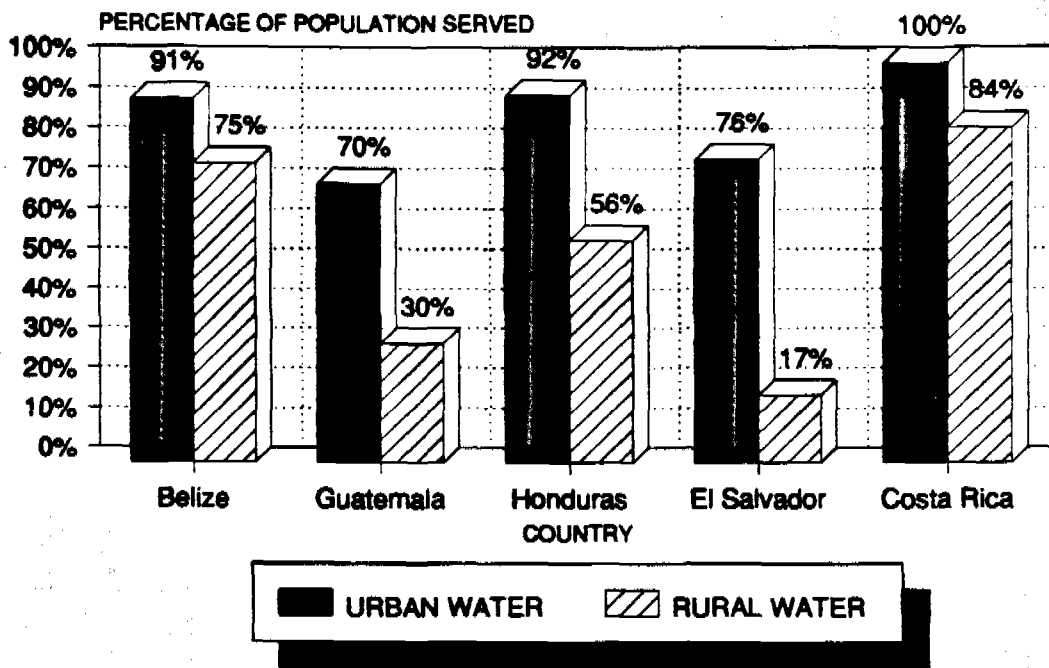
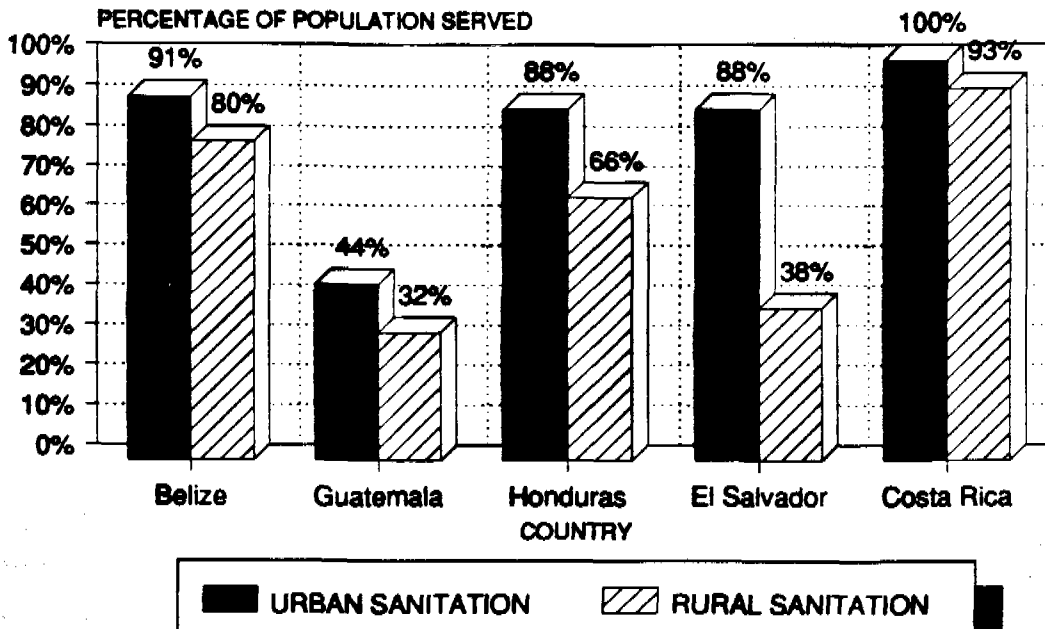


TABLE - 3
 EXISTING SANITATION
 COVERAGE IN CENTRAL AMERICA
 1989

	SANITATION								
	TOTAL POPULATION	ALL AREAS		URBAN AREAS			RURAL AREAS		
		POP. SERVED	% SERVED	URBAN POP.	TOTAL SERVED	% SERVED	RURAL POP.	TOTAL SERVED	% SERVED
BELIZE	180	154	86 %	95	86	91 %	85	68	80 %
GUATEMALA	8,935	3,305	37 %	3,663	1,610	44 %	5,272	1,695	32 %
HONDURAS	4,534	3,379	75 %	1,740	1,535	88 %	2,794	1,844	66 %
EL SALVADOR	5,100	3,197	63 %	2,500	2,210	88 %	2,600	987	38 %
COSTA RICA	2,941	2,831	96 %	1,371	1,371	100 %	1,570	1,460	93 %
TOTAL:	21,690	12,866	59 %	9,369	6,812	73 %	12,321	6,054	49 %

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

Figure 2
 CENTRAL AMERICA
 1989 SANITATION COVERAGE LEVELS



Significant changes were reported in El Salvador, where a steady decline in rural water coverage from 1980 to 1988, due in part to the ongoing civil strife, was turned around with an increase in coverage from 1988 to 1989. Still, less than 20 percent of the rural population has access to adequate water supplies. At the same time, Honduras recorded a substantial increase of 10 percentage points in rural sanitation coverage, with an additional 328,000 persons served in 1989, but it experienced declines in both urban water and sanitation coverage. Most of the reported coverage levels in the region for 1989, however, remained the same or increased slightly over those in 1988. It is important to remember that substantial increases in the percentage of people with access to basic water and sanitation services can only occur over a number of years, even with active expansion programs.

2.2 The 1989 CAI Objectives

In 1984, as noted earlier, the Bipartisan Commission on Central America recommended that the United States support the expansion of access to safe water supplies and sanitation facilities in Central America. The LAC Bureau, acting on those recommendations, set an objective in its program of increasing by 25 percent the number of people with access in 1989. The expansion of these services and their contribution to improved health in the region are consistent with A.I.D.'s efforts to promote development in Central America and to support efforts that distribute the benefits of growth more evenly among the residents of the countries.

The 1986 and 1988 WASH reports on Central America have tracked the progress made toward meeting the CAI objectives in the four subsectors of urban water, urban sanitation, rural water, and rural sanitation. This 1989 update reports on the final status of progress in the region and in each country in meeting the CAI objectives.

As shown in Table 4, the five Central American countries, as a whole, have surpassed the CAI objectives in both urban and rural sanitation, though deficits remain in urban and rural water coverage. Tables 5 and 6 also show water and sanitation coverage levels for each country at the start of the CAI time period (1984), the coverage levels at the end of this period (1989), and the CAI objectives themselves.

Table 4

REGIONAL PROGRESS TOWARD CAI OBJECTIVES (NUMBER OF PERSONS WITH COVERAGE)

Subsector	Actual Gain 1984-1989	Increase Needed to Meet CAI Objectives	Difference
Urban water	1,242,000	1,554,000	-312,000
Rural water	501,000	1,062,000	-561,000
Urban sanitation	1,571,000	1,310,000	+261,000
Rural sanitation	1,364,000	1,169,000	+195,000

TABLE - 5

WATER SUPPLY COVERAGE:
1984 BASELINE AND 1989 COVERAGE VS. CAI OBJECTIVES FOR 1989

		WATER SUPPLY								
YEAR	TOTAL POPULATION	ALL AREAS			URBAN AREAS			RURAL AREAS		
		POP. SERVED	% DENIED	%	URBAN POP.	TOTAL SERVED	% SERVED	RURAL POP.	TOTAL SERVED	% SERVED
BELIZE	1984:	156	98	63 %	78	71	91 %	78	27	35 %
	1989:	180	150	83 %	95	86	91 %	85	64	75 %
	CAI:	180	123	68 %	95	89	93 %	85	34	40 %
GUATEMALA	1984:	7,800	3,500	45 %	3,100	2,300	74 %	4,700	1,200	26 %
	1989:	8,935	4,152	46 %	3,663	2,577	70 %	5,272	1,575	30 %
	CAI:	8,935	4,375	49 %	3,663	2,875	78 %	5,272	1,500	28 %
HONDURAS	1984:	4,299	2,726	63 %	1,700	1,405	83 %	2,599	1,321	51 %
	1989:	4,534	3,159	70 %	1,740	1,594	92 %	2,794	1,565	56 %
	CAI:	4,534	3,391	75 %	1,740	1,740	100 %	2,794	1,651	59 %
EL SALVADOR	1984:	4,700	2,261	48 %	1,980	1,445	73 %	2,720	816	30 %
	1989:	5,100	2,331	46 %	2,500	1,894	76 %	2,600	437	17 %
	CAI:	5,100	2,826	55 %	2,500	1,806	72 %	2,600	1,020	39 %
COSTA RICA	1984:	2,405	2,154	90 %	1,070	1,059	99 %	1,335	1,095	82 %
	1989:	2,941	2,690	91 %	1,371	1,371	100 %	1,570	1,319	84 %
	CAI:	2,941	2,640	90 %	1,371	1,324	97 %	1,570	1,316	84 %
TOTAL:	1984:	19,360	10,739	55 %	7,928	6,280	79 %	11,432	4,459	39 %
	1989:	21,690	12,482	58 %	9,369	7,522	80 %	12,321	4,960	40 %
	CAI:	21,690	13,355	62 %	9,369	7,834	84 %	12,321	5,521	45 %

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

TABLE - 6

SANITATION COVERAGE:
1984 BASELINE AND 1989 COVERAGE VS. CAI OBJECTIVES FOR 1989

		SANITATION								
YEAR	TOTAL POPULATION	ALL AREAS		URBAN AREAS			RURAL AREAS			
		POP. SERVED	% SERVED	URBAN POP.	TOTAL SERVED	% SERVED	RURAL POP.	TOTAL SERVED	% SERVED	
BELIZE	1984:	156	97	62 %	78	48	62 %	78	49	63 %
	1989:	180	154	86 %	95	86	91 %	85	68	80 %
	CAI:	180	121	67 %	95	60	63 %	85	61	72 %
GUATEMALA	1984:	7,800	2,600	33 %	3,100	1,300	42 %	4,700	1,300	28 %
	1989:	8,935	3,305	37 %	3,663	1,610	44 %	5,272	1,695	32 %
	CAI:	8,935	3,250	36 %	3,663	1,625	44 %	5,272	1,625	31 %
HONDURAS	1984:	4,299	2,560	60 %	1,700	1,349	79 %	2,599	1,211	47 %
	1989:	4,534	3,379	75 %	1,740	1,535	88 %	2,794	1,844	66 %
	CAI:	4,534	3,200	71 %	1,740	1,686	97 %	2,794	1,514	54 %
EL SALVADOR	1984:	4,700	2,355	50 %	1,980	1,485	75 %	2,720	870	32 %
	1989:	5,100	3,197	63 %	2,500	2,210	88 %	2,600	987	38 %
	CAI:	5,100	2,944	58 %	2,500	1,856	74 %	2,600	1,088	42 %
COSTA RICA	1984:	2,405	2,319	96 %	1,070	1,059	99 %	1,335	1,260	94 %
	1989:	2,941	2,831	96 %	1,371	1,371	100 %	1,570	1,460	93 %
	CAI:	2,941	2,894	98 %	1,371	1,324	97 %	1,570	1,570	100 %
TOTAL:	1984:	19,360	9,931	51 %	7,928	5,241	66 %	11,432	4,690	41 %
	1989:	21,690	12,866	59 %	9,369	6,812	73 %	12,321	6,054	49 %
	CAI:	21,690	12,409	57 %	9,369	6,551	70 %	12,321	5,858	48 %

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

On the whole, the countries in this study were successful in meeting over half of the CAI objectives by 1989 (11 out of 20), though none of the countries met each of the four goals. As seen in Table 7, two more countries succeeded in meeting the rural water objectives since the 1988 report (Guatemala and Costa Rica) and one more met the rural sanitation target (Guatemala). No additional urban goals were met in 1989.

Table 7

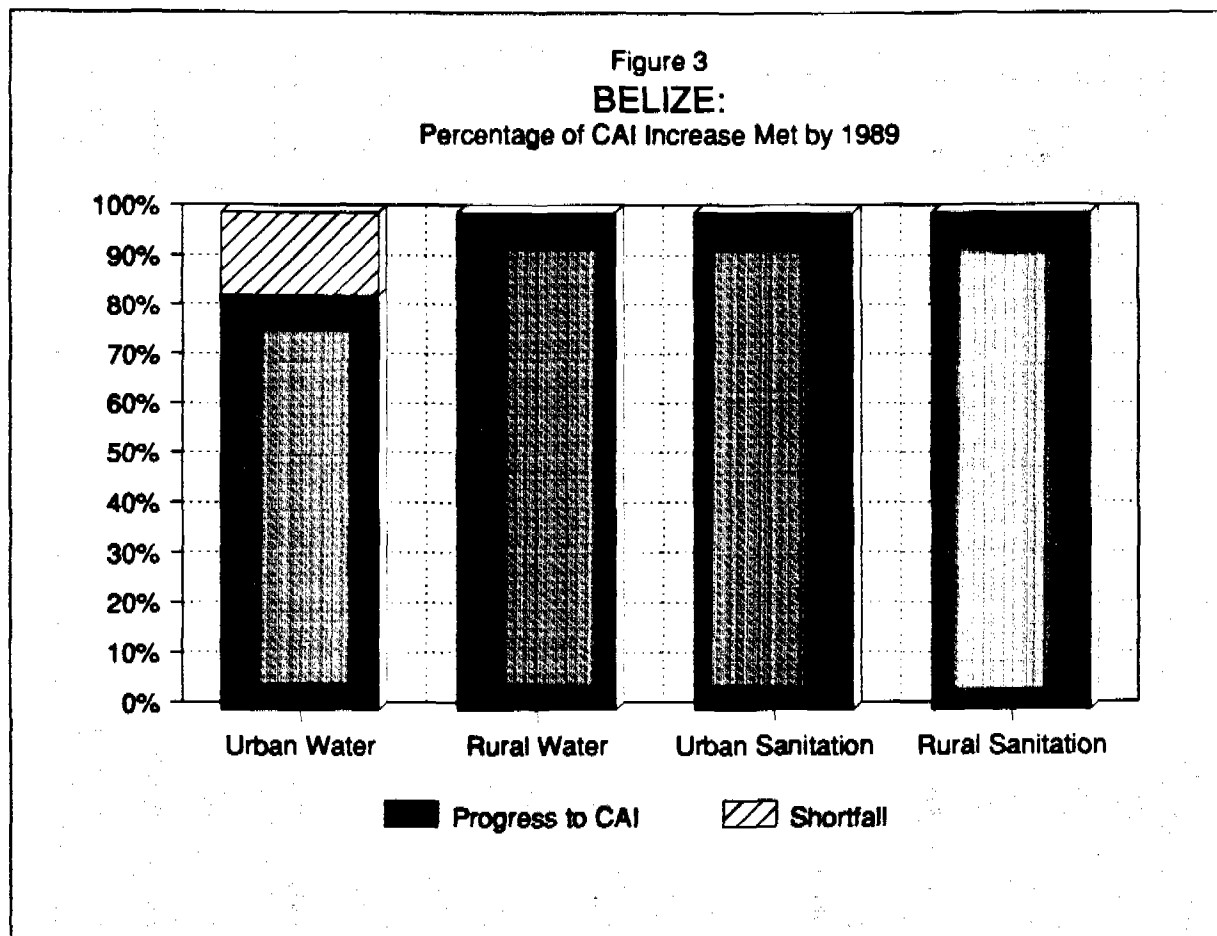
CAI OBJECTIVES MET, BY SUBSECTOR

Subsector	1988	1988-1989	CAI Objective
Urban water	2 *	2	5
Rural water	1	3	5
Urban sanitation	3	3	5
Rural sanitation	2	3	5
Total	8	11	20

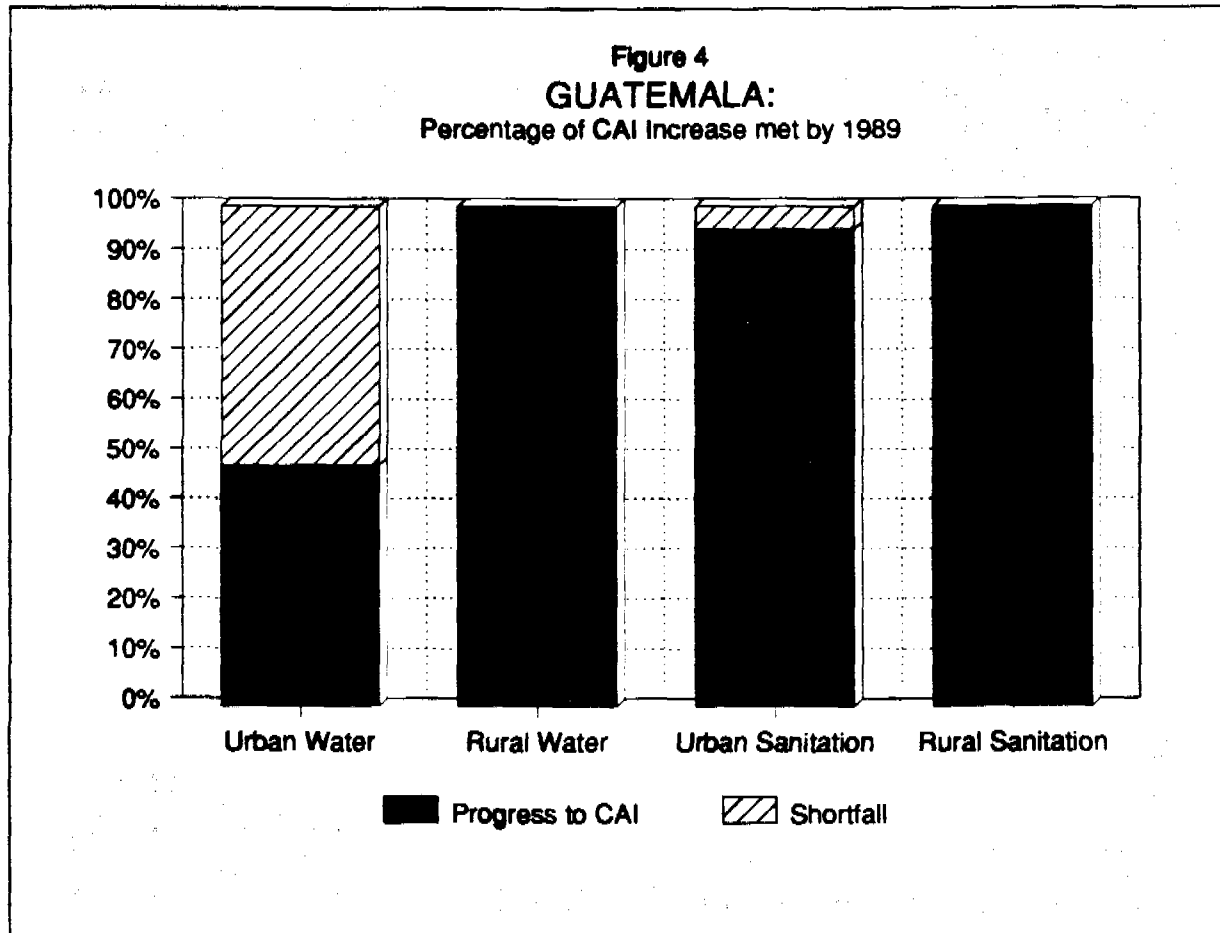
* Number of countries that met the CAI goal.

The series of graphs that follows shows the extent to which each of the CAI goals was met in each country. The darkly shaded portion of the columns in the graphs represents the percentage gain made toward the target. Fully shaded columns indicate that the goal has been met or surpassed, not that 100 percent coverage was achieved.

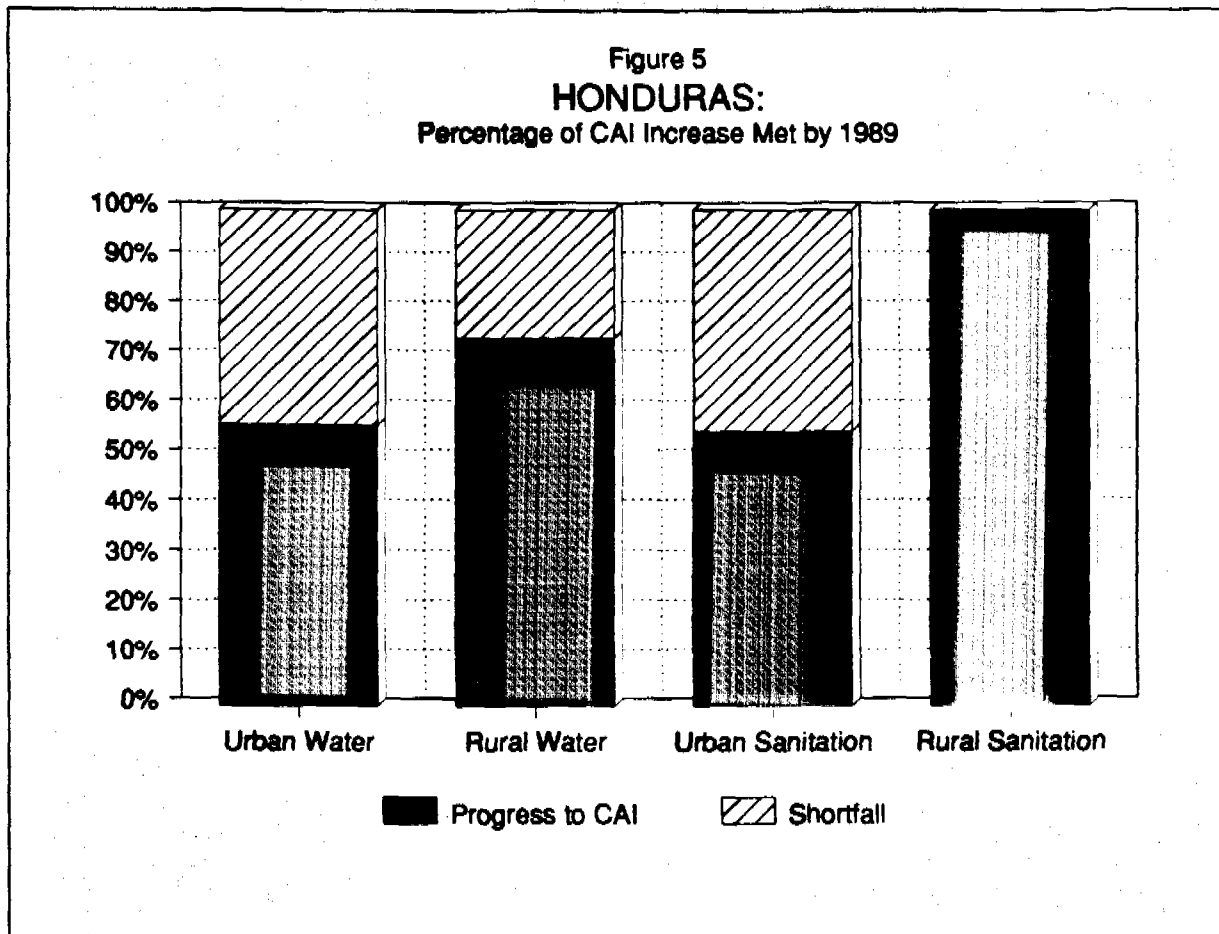
Belize. In Belize, each of the 1989 CAI objectives has been met except for urban water, which requires coverage for an additional 3,000 persons to attain the target level of 93 percent coverage. Figure 3 shows that, as of 1989, coverage in the urban water sector reached nearly 80 percent of the total increase required to meet the CAI goal.



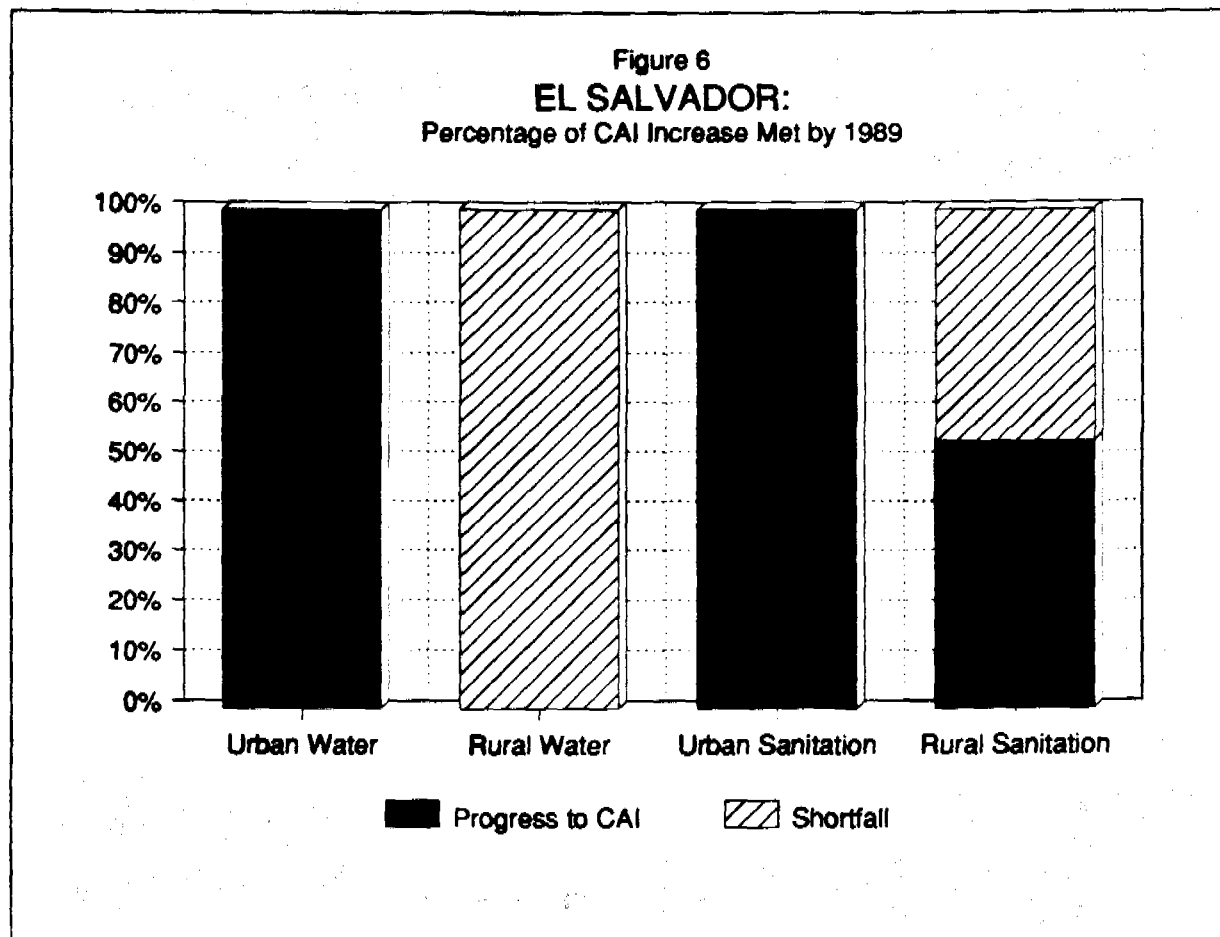
Guatemala. Since 1988, when Guatemala had not met any of the CAI objectives, increases in rural water and sanitation have enabled it to meet both of the rural goals (Figure 4). In the urban sector, however, neither goal was met, though an increase in 1989 in urban sanitation coverage brought Guatemala close to fulfilling the objective. Urban water coverage is still less than 50 percent of the CAI objective.



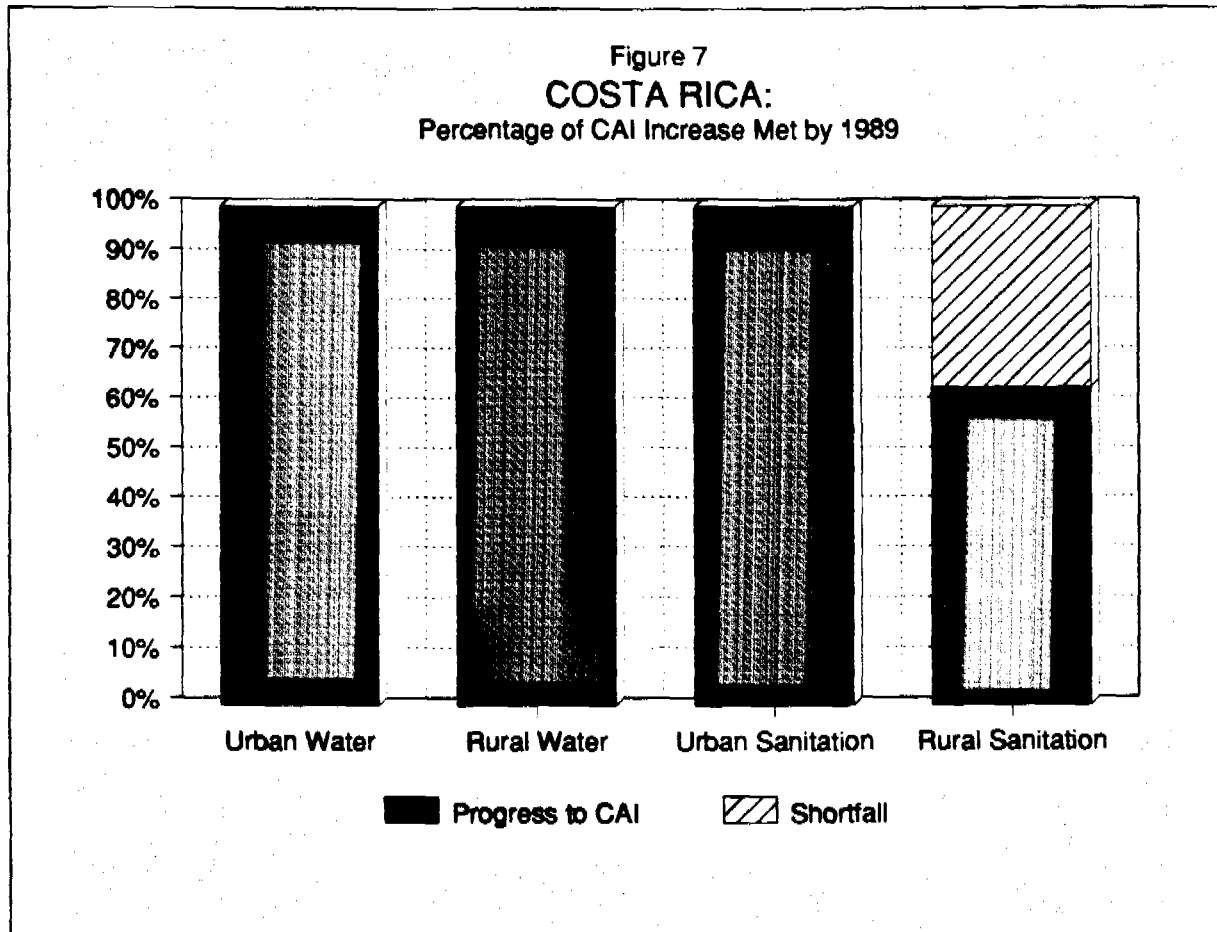
Honduras. Honduras has met the CAI objectives in only one subsector, rural sanitation (Figure 5). Declines in urban water and sanitation in 1989, after substantial gains between 1984 and 1988, have left Honduras well below the levels needed to meet the CAI targets for these sectors. The decline in urban coverage levels in 1989 appears to be a correction of overly high gains reported in 1988. Although Honduras's rural water coverage rose slightly in 1989, approximately 25 percent of the total increase needed to meet the CAI objective remains unfulfilled.



El Salvador. El Salvador was successful in meeting both of the urban targets in 1988. Despite a slight gain in rural water coverage in 1989, a long decline in coverage from 1980 to 1988 left that sector with 379,000 fewer people covered in 1989 than in 1984. Rural sanitation levels, however, showed slight gains from 1984 to 1989 and the CAI objective was approximately half met (Figure 6).



Costa Rica. Together with Belize, Costa Rica was successful in meeting three of the CAI goals, most recently the rural water objective in 1989. In the rural sanitation sector, Costa Rica was short by approximately one-third of the increase needed to meet the CAI objective (Figure 7).



2.3 The 1995 WASH Targets

In order to track progress in expanding water and sanitation facilities and project the funding needs for each country, the WASH Project has constructed a model of overall coverage expansion which establishes as a goal full water and sanitation coverage in Central America within 30 years, by 2020. The 1995 targets developed and discussed in this report represent the first stage in moving toward full coverage in each of the subsectors of this study by 2020: urban water, urban sanitation, rural water, and rural sanitation. As noted earlier, the 1995 targets were not developed with country participation and are not, therefore, reflective of specific country goals. Rather, they are intended as a means of focusing attention on the level of effort and funding needed if the countries involved are to provide increasing levels of water and sanitation coverage to both their urban and rural populations.

These new 1995 targets differ from the 1989 CAI goals, which represented a fixed increase (25 percent) in the number of persons with coverage regardless of the population growth experienced in a country. Because the 1989 CAI goals did not account for population growth, a given country could meet the CAI target of increasing the number of persons with coverage by 25 percent and yet be providing services to a smaller percentage of the population in 1989 than in 1984.

To set the 1995 targets, the 1989 coverage levels for each subsector were grouped into percentile ranges: 90-99 percent coverage, 80-89 percent coverage, etc. Percentage point increases were then calculated to establish the rate of coverage expansion necessary for the region to attain full coverage by 2020. Because coverage levels in each country vary widely, the rate of expansion needed to attain full coverage varies accordingly; subsectors with low coverage rates in 1989 (i.e., rural water and sanitation), require larger percentage point increases than those subsectors with higher coverage rates (i.e., urban water and sanitation). As seen in Table 8, this rate of expansion is incrementally greater by 2 percentage points for each 10 point drop in current coverage rates. To calculate the 1995 targets, actual coverage rates for each of the four subsectors in each country were inflated by the corresponding percentage increase shown in Table 8. For example, Honduras currently has a rural sanitation coverage rate of 66 percent. Since the 60-69 percentile range calls for an increase of 8 percentage points in six years, the 1995 target for Honduras's rural sanitation subsector is 74 percent (66+8).

It should be noted, however, that since urban areas are facing more rapid population growth than rural areas, the attainment of a given percentage point gain in the urban sectors requires the addition of more new connections than in the rural sector.

Table 8

1995 TARGET CALCULATION

<u>Current Coverage*</u>	<u>Six-Year Increase**</u>	<u>1995 Target***</u>	<u>2020 Target</u>
100%	---	100%	100%
90-99	+ 2 pts.	92	100
80-89	+ 4 pts.	84	100
70-79	+ 6 pts.	76	100
60-69	+ 8 pts.	68	100
50-59	+ 10 pts.	60	100
40-49	+ 12 pts.	52	100
30-39	+ 14 pts.	44	100
20-29	+ 16 pts.	36	100
10-19	+ 18 pts.	28	100
0-10	+ 20 pts.	20	100

*Ten-point percentile range.

**Increase in percentage points (i.e., 80 percent to 84 percent coverage is a 4-point gain).

***Target percentages shown represent the increase of the base percentage shown in the first column.

The actual 1995 targets for each of the countries are shown in Tables 9 and 10 and corresponding Figures 8 and 9. Population estimates for 1995 shown in these tables were extrapolated from the 1989 population figures and annual growth rates provided by USAID missions and reported in the country profile appendixes. For the region as a whole, the targets are set to increase access to water for the combined urban and rural populations from 58 percent in 1989 to 67 percent in 1995. The combined regional sanitation target increase is also 9 percentage points, from 59 percent to 68 percent. In terms of the number of additional persons with service, approximately 4.85 million more people with potable water and 4.86 million with sanitation are needed to meet the 1995 targets (Table 11).

TABLE - 9

WATER SUPPLY COVERAGE:
1989 COVERAGE VS. 1995 TARGETS

		WATER SUPPLY								
YEAR	TOTAL POPULATION	ALL AREAS		URBAN AREAS			RURAL AREAS			
		POP SERVED	% SERVED	URBAN POP.	TOTAL SERVED	% SERVED	RURAL POP.	TOTAL SERVED	% SERVED	
BELIZE	1989:	180	150	83 %	95	86	91 %	85	64	75 %
	1995:	211	184	87 %	113	105	93 %	98	79	81 %
GUATEMALA	1989:	8,935	4,152	46 %	3,663	2,577	70 %	5,272	1,575	30 %
	1995:	10,647	6,101	57 %	4,425	3,363	76 %	6,222	2,738	44 %
HONDURAS	1989:	4,534	3,159	70 %	1,740	1,594	92 %	2,794	1,565	56 %
	1995:	5,688	4,380	77 %	2,234	2,100	94 %	3,454	2,280	66 %
EL SALVADOR	1989:	5,100	2,331	46 %	2,500	1,894	76 %	2,600	437	17 %
	1995:	5,914	3,433	58 %	2,899	2,377	82 %	3,015	1,055	35 %
COSTA RICA	1989:	2,941	2,690	91 %	1,371	1,371	100 %	1,570	1,319	84 %
	1995:	3,444	3,232	94 %	1,676	1,676	100 %	1,768	1,556	88 %
TOTAL:	1989:	21,690	12,482	58 %	9,369	7,522	80 %	12,321	4,960	40 %
	1995:	25,904	17,329	67 %	11,347	9,621	85 %	14,557	7,708	53 %

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

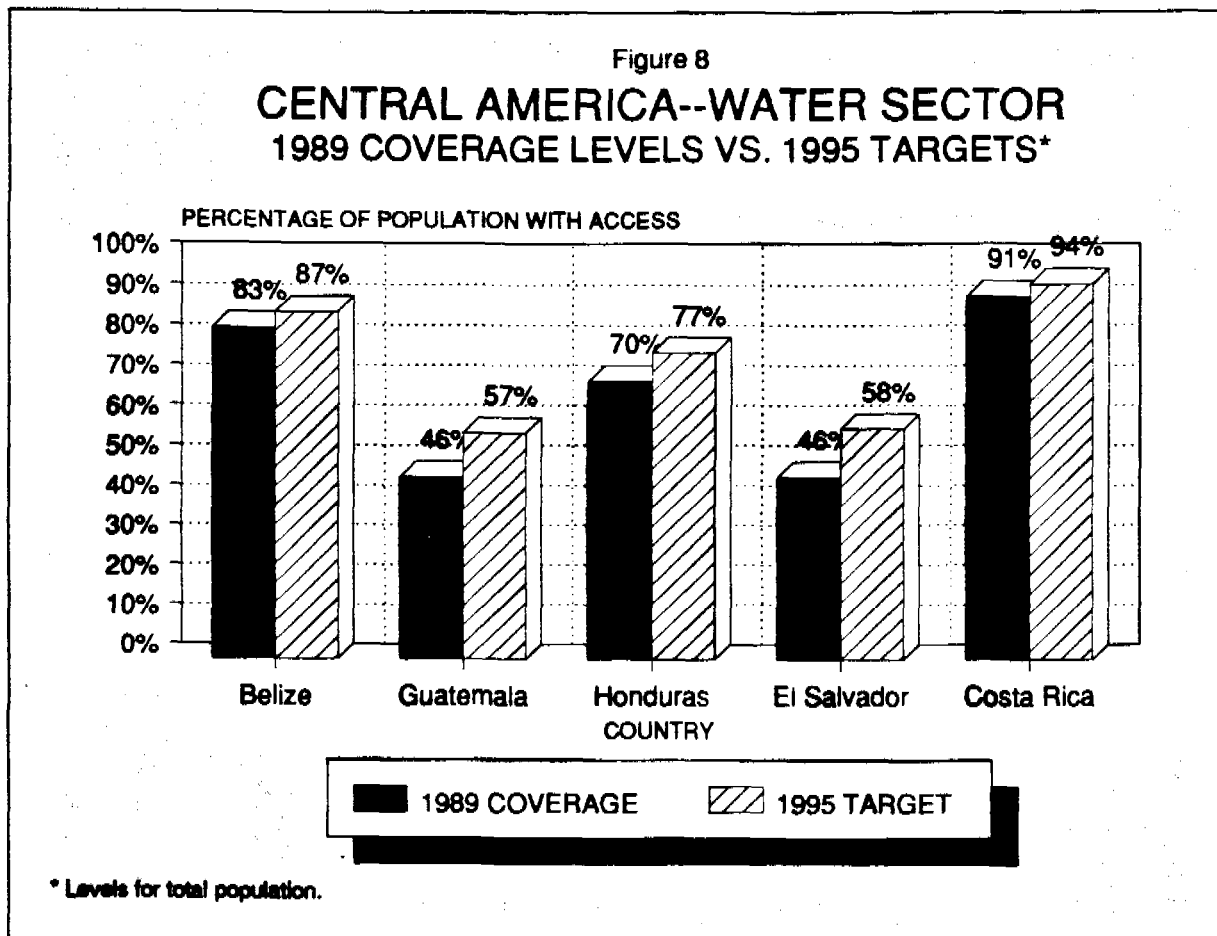


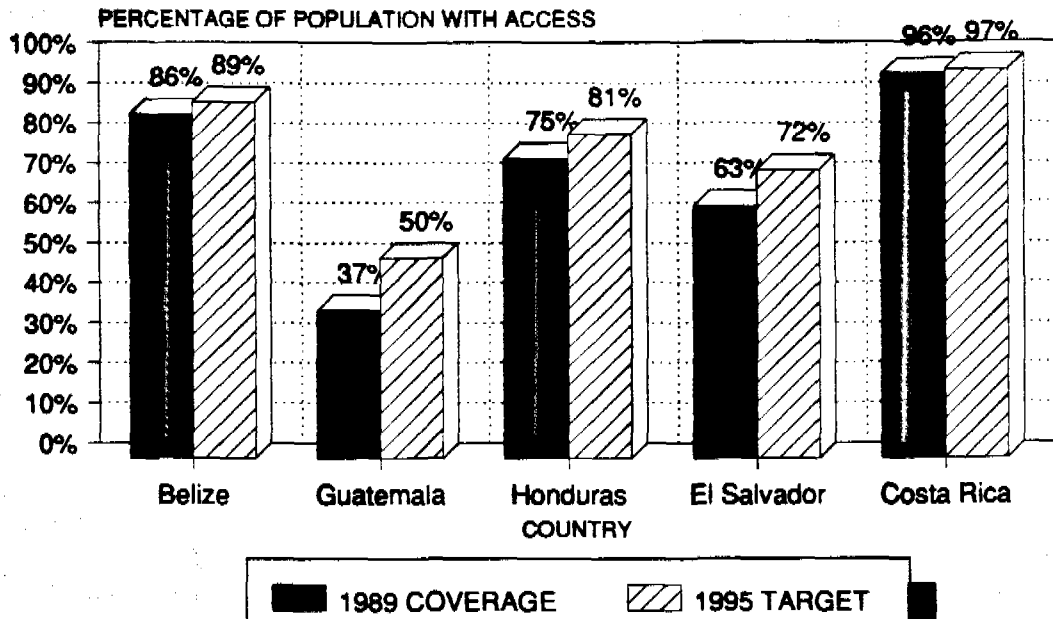
TABLE - 10

**SANITATION COVERAGE:
1989 COVERAGE VS. 1995 TARGETS**

		SANITATION									
COUNTRY	YEAR	TOTAL POPULATION	ALL AREAS		URBAN AREAS			RURAL AREAS			
			POP. SERVED	% SERVED	URBAN POP.	TOTAL SERVED	% SERVED	RURAL POP.	TOTAL SERVED	% SERVED	
BELIZE	1989:	180	154	86 %	95	86	91 %	85	68	80 %	
	1995:	211	188	89 %	113	105	93 %	98	82	84 %	
GUATEMALA	1989:	8,935	3,305	37 %	3,663	1,610	44 %	5,272	1,695	32 %	
	1995:	10,647	5,340	50 %	4,425	2,478	56 %	6,222	2,862	46 %	
HONDURAS	1989:	4,534	3,379	75 %	1,740	1,535	88 %	2,794	1,844	66 %	
	1995:	5,688	4,611	81 %	2,234	2,055	92 %	3,454	2,556	74 %	
EL SALVADOR	1989:	5,100	3,197	63 %	2,500	2,210	88 %	2,600	987	38 %	
	1995:	5,914	4,235	72 %	2,899	2,667	92 %	3,015	1,568	52 %	
COSTA RICA	1989:	2,941	2,831	96 %	1,371	1,371	100 %	1,570	1,460	93 %	
	1995:	3,444	3,356	97 %	1,676	1,676	100 %	1,768	1,680	95 %	
TOTAL:		1989:	21,690	12,866	59 %	9,369	6,812	73 %	12,321	6,054	49 %
		1995:	25,904	17,729	68 %	11,347	8,981	79 %	14,557	8,748	60 %

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

Figure 9
**CENTRAL AMERICA--SANITATION SECTOR
1989 COVERAGE LEVELS VS. 1995 TARGETS***



* Levels for total population.

TABLE - 11

INCREASE OVER 1989 COVERAGE LEVELS
NEEDED TO MEET 1995 TARGETS

	WATER SUPPLY			SANITATION		
	TOTAL	URBAN	RURAL	TOTAL	URBAN	RURAL
BELIZE	34	19	15	33	19	14
GUATEMALA	1,949	786	1,163	2,035	868	1,167
HONDURAS	1,221	506	715	1,232	520	712
EL SALVADOR	1,101	483	618	1,038	457	581
COSTA RICA	542	305	237	525	305	220
TOTAL	4,847	2,099	2,748	4,863	2,169	2,694

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

2.4 Funding Commitments and Shortfalls

In Table 12, the current funding commitments for each of the five countries are shown. The amounts in this table reflect investments that have been firmly committed and will be used to extend coverage to persons currently not served by basic water or sanitation services. Some of the current water and sanitation programs in Central America, however, contribute only partially to increasing coverage. In particular, some large urban development projects financed through loans with the Inter-American Development Bank and the World Bank are primarily focused on upgrading and rehabilitating existing water and sewerage systems. While the rehabilitation of existing systems, the construction of such off-site facilities as dams, reservoirs and treatment plants, and the provision of technical assistance to strengthen the institutional capacities of national agencies working in the water and sanitation sectors are important to the development of the sectors, such activities do not directly increase coverage. For many of these large urban projects, therefore, only 10 percent of the total project funds were considered to be allocated to increasing coverage.

Following is a breakdown by donor of firmly committed investments to increase water and sanitation coverage levels. Only host country funds committed in conjunction with programs of external support agencies are included in this analysis.

TABLE - 12
COMMITTED FUNDING AND ESTIMATED FUNDING
NEEDED TO MEET 1995 TARGETS , BY TYPE OF SERVICE
(1989 US\$ 000s)

	WATER SUPPLY			SANITATION			TOTAL
	TOTAL	URBAN	RURAL	TOTAL	URBAN	RURAL	
BELIZE-- MEET 1995 GOALS *	5,211	2,913	2,298	3,322	1,915	1,407	8,533
COMMITTED FUNDING	1,308	0	1,308	872	0	872	2,180
FUNDS NEEDED	3,903	2,913	990	2,450	1,915	535	6,353
GUATEMALA-- MEET 1995 GOALS *	196,215	63,667	132,548	95,789	79,857	15,932	292,004
COMMITTED FUNDING	38,222	1,410	36,812	6,228	1,590	4,638	44,450
FUNDS NEEDED	157,993	62,257	95,736	89,561	78,267	11,294	247,554
HONDURAS-- MEET 1995 GOALS *	104,038	46,508	57,530	134,536	115,182	19,354	238,574
COMMITTED FUNDING	14,100	4,371	9,729	68,400	57,635	10,765	82,500
FUNDS NEEDED	89,938	42,137	47,801	66,136	57,547	8,589	156,074
EL SALVADOR-- MEET 1995 GOALS *	145,117	88,902	56,215	45,295	36,796	8,499	190,412
COMMITTED FUNDING	78,137	25,720	52,417	18,013	9,480	8,533	96,150
FUNDS NEEDED	66,980	63,182	3,798	27,282	27,316	(34)	94,296
COSTA RICA-- MEET 1995 GOALS *	62,142	42,072	20,070	50,001	43,347	6,654	112,143
COMMITTED FUNDING	13,220	3,694	9,526	9,055	7,019	2,036	22,275
FUNDS NEEDED	48,922	38,378	10,544	40,946	36,328	4,618	89,868
TOTAL MEET 1995 GOALS *	512,723	244,062	268,661	328,943	277,097	51,846	841,666
COMMITTED FUNDING**	144,987	35,195	109,792	102,534	75,724	26,810	247,521
FUNDS NEEDED	367,736	208,867	158,869	226,409	201,373	25,036	594,179

* FROM THE 1989 BASE LEVEL OF COVERAGE

**Funds Currently Committed
to Regional Water and Sanitation Expansion,
by Source**

A.I.D.	\$85,155,000
IBD	82,000,000
KfW	25,500,000
National Counterpart Funds	20,200,000
European Economic Community (EEC)	15,000,000
Japanese International Cooperation Agency (JICA)	10,000,000
UNICEF	4,500,000
World Bank	2,300,000
Switzerland	1,750,000
Private Voluntary Organizations (PVOs)	550,000
Other	400,000
TOTAL	\$247,555,000

Clearly, A.I.D. plays an important role in supporting water and sanitation projects in Central America that are directed to expanding services to populations currently without access to basic water and sanitation facilities, particularly in rural and peri-urban areas. The figures above do not show, however, the relative importance of the IDB and the World Bank in financing the rehabilitation and upgrading of large municipal systems. These large projects, although not directly focused on extending coverage, play a critical role in maintaining existing water and sewerage systems serving major population centers and enable the future expansion of those systems.

To determine the levels of funding needed to meet the 1995 targets, the estimated number of additional persons with coverage needed for each of the four subsectors in each country (Table 11) was multiplied by the unit cost per capita of expanding coverage (see country profiles in the appendixes). These unit costs per capita, specific to each country, were derived by taking the 1988 PAHO unit cost reported in the 1988 Update and inflating it by 4.5 percent to reflect 1989 dollars. The resulting costs reflect the total funding needed to meet the 1995 targets. To obtain the amounts of additional investment needed, the amounts currently committed for expanding coverage were subtracted from the total cost of meeting the targets.

Figure 10 provides a graphic display of the total investment required to meet the 1995 targets in each subsector for the five countries. The shaded portion of the column indicates the level of funding currently committed, and the patterned section represents the shortfall in financing. As seen in Table 12, the funding needed to increase access to water supplies is approximately \$513 million for the region as a whole. With nearly \$145 million of that amount currently committed to this effort, a shortfall of \$368 million remains. The funding shortfall for sanitation facility expansion, \$226 million, is somewhat lower due to the lower unit costs of these systems in the rural areas. Overall, the total funding needed to meet the 1995 targets is estimated at \$841 million, and an investment shortfall of \$594 million remains.

Tables 13 and 14 provide breakdowns of the additional funding needed to meet the 1995 targets. Table 13 shows the funding shortfalls separated by country and by urban and rural sectors. The substantially higher shortfalls in investment needed to meet the urban targets (\$410 million versus \$184 million for the rural targets) are due primarily to the higher unit cost per capita of urban water and sanitation coverage in most countries. In Table 14, the funding shortfalls are annualized for the urban and rural subsectors in each country. For the region as a whole, \$99 million in additional investments is needed annually.

Figure 10
CENTRAL AMERICA
TOTAL INVESTMENT TO MEET 1995 TARGETS

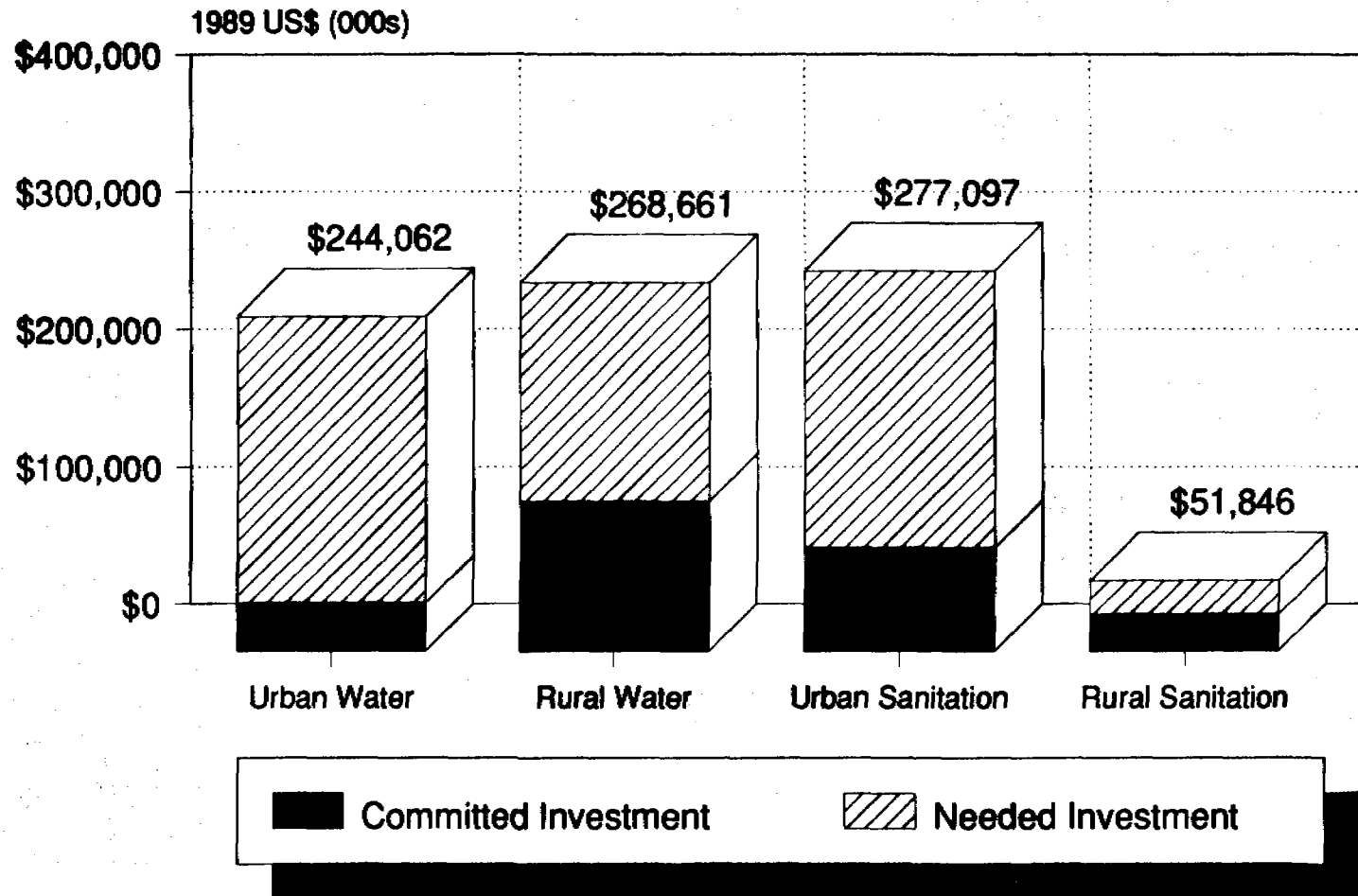


TABLE - 13

ESTIMATED ADDITIONAL FUNDING NEEDED
TO MEET 1995 TARGETS,
BY URBAN AND RURAL AREAS*
(1989 US\$, 000s)

COUNTRY	URBAN WATER	RURAL WATER	TOTAL
	SUPPLY AND SANITATION	SUPPLY AND SANITATION	
BELIZE	\$4,828	\$1,525	\$6,353
GUATEMALA	\$140,524	\$107,030	\$247,554
HONDURAS	\$99,684	\$56,390	\$156,074
EL SALVADOR	\$90,498	\$3,798	\$94,296
COSTA RICA	\$74,706	\$15,162	\$89,868
TOTAL	\$410,240	\$183,905	\$594,145

* SEE TABLE 12 FOR BREAKDOWN OF COSTS TO MEET 1995 TARGETS.

TABLE - 14

ANNUAL COSTS
TO FUND SHORTFALLS AND MEET 1995 TARGETS
(1989 US\$, 000s)

	URBAN AREAS		RURAL AREAS		TOTAL
	WATER SUPPLY	SANI- TATION	WATER SUPPLY	SANI- TATION	
BELIZE	\$486	\$319	\$165	\$89	\$1,059
GUATEMALA	\$10,376	\$13,045	\$15,956	\$1,882	\$41,259
HONDURAS	\$7,023	\$9,591	\$7,967	\$1,432	\$26,012
EL SALVADOR	\$10,530	\$4,553	\$633	\$0	\$15,716
COSTA RICA	\$6,396	\$6,055	\$1,757	\$770	\$14,978
TOTAL:	\$34,811	\$33,562	\$26,478	\$4,173	\$99,024

NOTE: Annual costs = total funding needed divided
by six (for 1990 through 1995).

3

CONCLUSIONS

In Chapter 2, the CAI objectives were discussed, and progress toward the objectives was analyzed. The WASH Project's 1995 targets, which will continue to track progress toward the provision of basic water and sanitation services to larger percentages of people in Central America, were also presented, along with the projected shortfalls in the funding required to achieve those targets. This chapter examines the prospects for achieving the 1995 targets in each of the countries in this study and in the region as a whole. The conclusions are based on the more detailed analysis of each country in the country profile appendixes.

3.1 Prospects for Meeting the 1995 Country Targets

3.1.1 Belize

The targets for Belize call for increasing overall (urban and rural combined) water supply coverage from 83 percent to 87 percent by 1995 and overall sanitation coverage from 86 percent to 89 percent. Given Belize's current population growth rate, an increase of 34,000 people with access to a safe water supply and 33,000 with sanitation facilities will be necessary over the next six years. Funding to expand services to these levels, however, is not currently in place. With the CIDA-funded Belize City Water and Sewerage project nearing completion, Belize will be without an externally supported program to increase water and sanitation coverage in the urban areas of the country. Although A.I.D. has extended its rural water and sanitation projects, funding for the rural sector is well below that needed to achieve the 1995 targets. Overall, Belize has a total funding shortfall of over \$6 million.

3.1.2 Guatemala

The 1995 targets have been set to increase urban water coverage in Guatemala from 70 percent to 76 percent, urban sanitation from 44 percent to 56 percent, rural water from 30 percent to 44 percent, and rural sanitation from 32 percent to 46 percent. Current funding to support the expansion of coverage in urban areas is minimal, and funding shortfalls for the urban water and sanitation goals are approximately \$62 million and \$78 million, respectively. In the rural sector, more funding has been committed, though an estimated \$96 million will be needed for rural water system construction and \$11 million for latrination projects. Loans currently being negotiated by the IDB and the World Bank will, if signed, provide funds for the development of these programs in the rural sector.

3.1.3 Honduras

Targets for Honduras have been set to raise urban water coverage from 92 percent to 94 percent, urban sanitation coverage from 88 percent to 92 percent, rural water coverage from 56 percent to 66 percent, and rural sanitation coverage from 66 percent to 74 percent. Shortfalls in funding for the urban targets are currently \$42 million for urban water and \$58 million for urban sanitation. The higher cost to meet the urban sanitation goals is due to the higher unit cost per capita of providing additional urban sewerage connections in the country (nearly double that for an urban water system construction). Two urban programs currently suspended because Honduras is having difficulty servicing its debt, the World Bank's San Pedro Sula loan and a ROCAP/Central American Bank for Economic Integration (CABEI) urban development project, will help Honduras to meet the urban goals if they are reactivated. In the rural sector, an additional \$48 million is needed for the construction of water systems, and almost \$9 million is needed for sanitation facilities.

3.1.4 El Salvador

The 1995 targets for El Salvador call for increases of 6 percentage points in urban water coverage to 82 percent, 4 percentage points in urban sanitation to 92 percent, 18 percentage points in rural water to 35 percent, and 14 percentage points in rural sanitation to 52 percent. Though the increases in rural coverage are by far the largest projected for any of the countries in this study, the funding needed to meet the rural sanitation goal has been met. The shortfall in meeting the rural water target is less than \$4 million. In the urban sector, however, the shortfalls are much larger—\$63 million for urban water and \$27 million for urban sanitation.

3.1.5 Costa Rica

Costa Rica has achieved 100 percent coverage in both urban water and urban sanitation; hence, the objective for 1995 is to maintain full coverage in both urban subsectors. To sustain these levels in the face of an annual urban growth rate of 3.4 percent, Costa Rica would have to provide water and sanitation services to an additional 305,000 urban residents. The current funding shortfalls to meet these goals are \$38 million for urban water system construction and expansion and \$36 million for urban sanitation facility construction and sewerage expansion. In the rural subsectors, the goals for 1995 call for 88 percent water supply coverage, a 4 percentage point increase, and 95 percent sanitation coverage, a 2 percentage point increase. Because the unit costs per capita of extending rural sanitation coverage—one-fourth that of urban sanitation—are low, only an additional \$5 million is needed to reach the target. Funds needed to construct rural water systems to meet the 1995 target total \$20 million, about \$10 million of which is currently committed.

3.1.6 Panama

As mentioned earlier, Panama was not included in the initial scope of work for this study, and a funding analysis of investments was not conducted. Due to the recent political changes in the country, however, and the renewed commitment to A.I.D. involvement in Panama, it is likely that Panama will benefit from future investments in water and sanitation development. Though coverage rates for 1988 have been included in this report (see Country Profile Appendix F), it is unclear whether Panama has been able to sustain the relatively high water and sanitation coverage rates reported in the 1988 Update. The withdrawal of investment by a number of external support agencies in conjunction with the recent fighting in Panama City may well have had a detrimental effect on the availability of functional water and sanitation facilities, particularly in the damaged areas of Panama.

3.2 Regional Summary

Clearly, the 1995 targets are ambitious. Yet, if the countries of Central America are to be able to provide basic water and sanitation services to a larger percentage of their population at the same time that they are experiencing rapid population growth, a great deal of both internal and external funding will be required. Of the estimated \$842 million necessary to meet the 1995 goals, \$248 million is currently committed to projects that will extend coverage. The funding shortfalls are, by subsector: \$209 million for urban water, \$159 million for rural water, \$201 million for urban sanitation, and \$25 million for rural sanitation.

The shortfalls in funding discussed, however, are just one obstacle (albeit a significant one) preventing Central American countries from further extending water and sanitation coverage. Country-specific political factors, large external debts, the inability of local institutions to absorb funds that have been committed, and delays in implementation also threaten the ability of the countries to continue progress toward the goal of providing adequate water and sanitation coverage for urban and rural populations.

While the funding shortfalls for the urban sector are notably larger than those in the rural sector, coverage levels in the rural sector are far below urban rates, and therefore, the funding and implementation of projects to extend coverage in the rural areas remain a priority. The WASH studies have further shown that A.I.D. has played a leading role in the construction of water and sanitation facilities in rural areas. Clearly, this involvement should be sustained or expanded, if possible. In the urban sector, the bulk of the financing to support municipal water and sanitation construction projects consists of loans from the IDB and the World Bank. Within the urban sector, A.I.D. has and should continue to focus on providing water and sanitation services to marginal, low-income communities where coverage rates (like those in the rural areas) are substantially lower than the urban average.

The priority countries for expanded water and sanitation programs are Guatemala and Honduras, which currently have funding shortfalls of \$248 million and \$156 million, respectively. In particular, Guatemala is in critical need of additional investments, because it has the lowest coverage rates in three of the four subsectors and has the second lowest rate in the fourth, rural water coverage. Countries with high coverage rates, namely Costa Rica and Belize, do not have the same need for A.I.D.-funded water and sanitation projects, though these countries are better equipped to efficiently absorb the funds necessary to meet the 1995 targets.

The financing of water and sanitation projects, in most cases, involves both local and external financing. While A.I.D. water supply and sanitation projects are normally funded with Development Assistance (DA) funds, in some cases the local funding component is also financed by A.I.D. with Economic Support Funds (ESF) for countries lacking the necessary counterpart funding. Because of the dearth of available local funds, A.I.D. may have to use a combination of DA and ESF monies to fund both the external and local share of some water and sanitation projects. A.I.D. could also assist countries with local capital formation to facilitate the increased availability of local counterpart funds for water and sanitation projects.

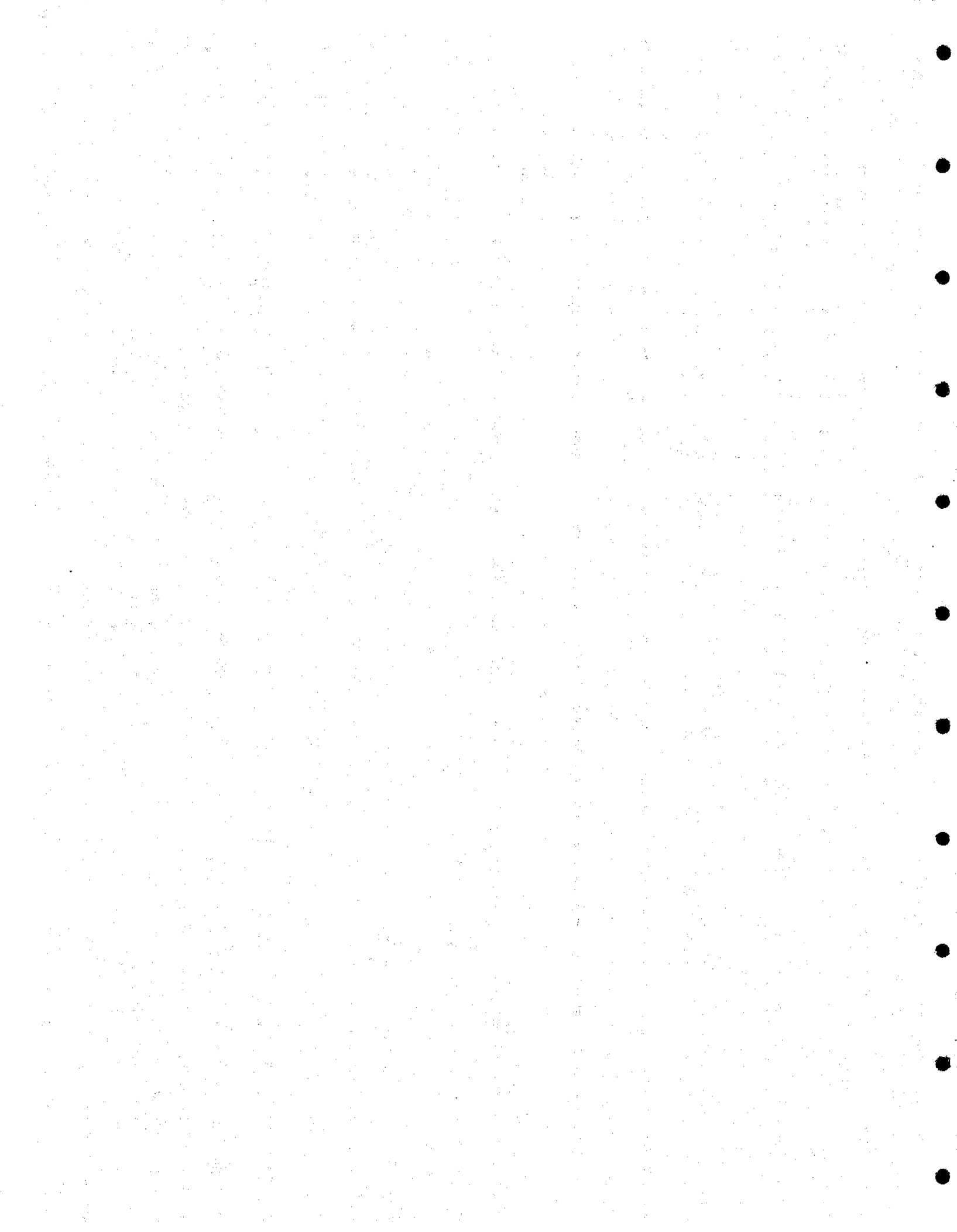
3.3 WASH's Lessons Learned

Over the past 10 years, the WASH Project has learned that the construction of water and sanitation systems alone is not enough to ensure the desired results of safe, accessible water and hygienic excreta disposal. Efforts to provide potable water and sanitary waste disposal must be integrated with other development activities; to succeed, they must provide hygiene education to communities served, train personnel in the operation and maintenance of the facilities, strengthen the local agencies and institutions which work in the water and sanitation sector, and involve the community to be served in the planning and execution of the project.

While the focus of this report has been on those investments which directly expand coverage to previously unserved populations, investment in the non-physical infrastructure of the water and sanitation sector is necessary and can contribute to expanded coverage as well. The enhancement of a country's absorptive capacity, through the provision of technical assistance and training for national institutions working in the sector, is critical to improving the efficient implementation and sustainability of water and sanitation projects. Through such efforts, costly delays caused by weak organizational structures, poor use of human resources, and inadequate project preparation can be averted. In addition to an emphasis on the more efficient use of funds, other areas of improvement include the establishment of sound cost recovery schemes, the reduction of unaccounted for water in urban systems, and the use of alternative technologies to lower construction costs, particularly for urban sanitation. The benefits of providing technical assistance to support these improvements will likely be seen

in the future expansion of water and sanitation coverage, the improvement of existing systems, and the increased sustainability of these systems.

While donors play a crucial role in providing capital and technical assistance to support these efforts, local governments must establish and control development priorities. In addition, the communities themselves should be responsible for the facilities. The private sector can also play an important role in supporting the expansion and maintenance of water and sanitation facilities. Potential areas for local private sector involvement include the design of projects, the provision of materials (pipes, handpumps, cement, etc.), the construction of facilities, and the operation and maintenance of water and sanitation systems. It is important to note that, in WASH's experience, the realization of the goal of increased access to water and sanitation facilities requires substantial coordination among all the various agencies and institutions involved in the sector, as well as a long-term commitment to build not only the systems themselves but the local institutional capacity to maintain them.



INTRODUCTION TO THE APPENDIXES

Profiles of each of the five Central American countries covered by this report are included as appendixes. At the start of each appendix, current health, economic, and social indicators are provided, along with a brief introduction. Following this background information is a detailed discussion of the water and sanitation sector: the country's externally funded projects, current coverage levels, progress toward meeting the 1989 CAI objectives, the 1995 targets, and investment needed to meet the 1995 goals. After the discussion of each donor's program in a country, the total amount of committed funding included in the investment analysis is indicated.

DATA SOURCES

The sources of the statistics cited at the beginning of each appendix are as follows.

1989 Population (Urban, Rural)

Population figures were provided by each of the USAID missions, using figures from the government censuses. In cases in which the information was inconsistent with previously reported figures or other data, the USAID mission or WASH staff used their best judgment to determine accurate population figures. For Guatemala, previously reported figures were adjusted slightly to conform with more recent population projections. For El Salvador, the Ministry of Planning's population projections for 1989 were changed significantly to reflect migration to urban areas.

Population Growth Rates (Urban, Rural)

These figures were also provided by USAID missions and reflect 1989 growth rates.

Infant Mortality Rate

The Center for International Health Information (CIHI), an A.I.D.-funded activity, provided these figures, which represent estimates for 1989 of the number of infant deaths (under one year old) per 1,000 live births.

Child Mortality Rate

Also obtained from CIHI, these numbers reflect the number of deaths among 1,000 children who, having reached the age of one, died before they were five years old.

Mortality Rate due to Diarrheal/Intestinal Diseases

These rates were obtained from USAID missions and the Ministry of Public Health in each of the countries. They represent the number of deaths from diarrheal/intestinal diseases per 1,000 deaths.

Life Expectancy (Total, Male, Female), Adult Literacy, GNP per Capita (\$1987), GNP per Capita Annual Growth from 1965-87, and Average Annual Inflation from 1980-87

The World Bank's *1989 World Development Report* was the source of these figures.

Currency

The foreign currency exchange rates in this report were obtained from the Bank of America Global Trading and reflect official currency rates as of November 17, 1989.

COVERAGE AND INVESTMENT TABLES AND FIGURES

At the conclusion of each appendix, a number of tables and accompanying graphs provide a numerical and visual summary of coverage and investment trends. The tables and graphs appear in the same order in each of the appendixes, though they may be referenced at different points in the text.

Table 1

Table 1 shows population and urban and rural coverage figures for the water sector for selected years from 1980 through 1989. The 1989 CAI objectives and 1995 WASH targets are also included in this table.

Figure 1

This graph provides a visual reference for following the trends in both rural and water supply coverage from 1984 through 1989. Coverage levels for 1985 and 1987 in this series of graphs were projected as midpoints between the coverage reported for 1984 and 1986 and between 1986 and 1988, respectively.

Table 2 and Figure 2

This table and graph are identical in format to Table 1 and Figure 1. In this case, each refers to urban and rural sanitation coverage.

Table 3

Table 3 details the progress achieved in each country toward meeting the CAI objectives. It tracks gains or losses in coverage for the periods between 1984 and 1988 and between 1988 and 1989 and reports any shortfalls in meeting the CAI objectives.

Table 4

In this table, the coverage increases needed to meet the 1995 WASH targets are calculated.

Figures 3 and 4

These bar charts show existing 1989 coverage levels, 1989 CAI objective levels, and the 1995 WASH targets for each of the four subsectors of this study: urban water, rural water, urban sanitation, and rural sanitation. The unit of analysis in Figure 3 is numbers of people, and in Figure 4 it is the percentage of the population with coverage.

Table 5

Table 5 presents the projected shortfall in funds needed to meet the 1995 WASH targets. To calculate this figure, the number of additional persons with coverage needed to meet the 1995 targets (see Table 11 in Chapter 2) was multiplied by the unit costs per capita of constructing water supply systems and sanitation facilities. The resulting product is the total investment needed to meet the targets. Subtracting currently committed investments that will increase coverage from the total investment needed provides the funding shortfall for meeting the 1995 WASH targets. The unit cost per capita was derived by taking the PAHO unit cost reported in the 1988 Update and inflating it by 4.5 percent to reflect 1989 dollars.

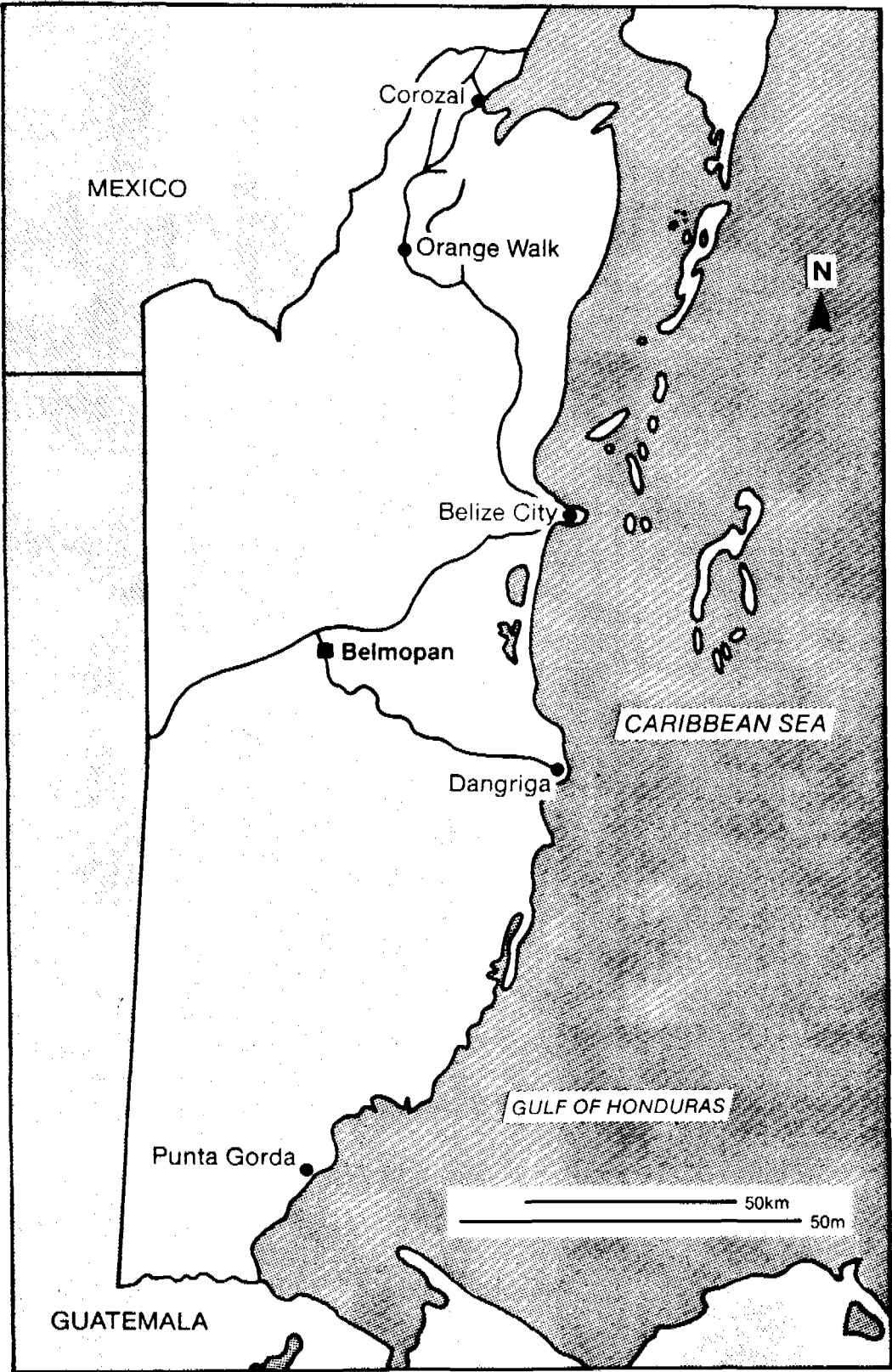
Figure 5

This stacked bar chart shows committed and needed investments to meet the 1995 WASH targets. The number at the top of each box represents the total amount of funding needed; currently committed investments are shown as partly filling in each box. The remaining space in the box represents the amount of needed investment yet to be committed.

APPENDIX A

BELIZE

BELIZE



A

COUNTRY PROFILE: BELIZE

COUNTRY BACKGROUND

With a land mass of 22,962 square kilometers and 180,000 inhabitants, Belize is the second smallest Central American nation and has the smallest population. The country is divided into six departments, each currently served by an externally funded water and sanitation project.

Due to the efforts of the Government of Belize (GOB) to improve the country's economy through economic stabilization measures and basic structural reforms, the economy experienced a real GDP growth of 5.7 percent annually in 1987 and 1988. Belize's GNP per capita of \$1,240 is the second highest in the region, behind that of relatively prosperous Costa Rica.

1989 Population:	180,000
Population Growth Rate:	2.7% (Urban—3%, Rural—2.4%)
Infant Mortality Rate:	23
Child Mortality Rate:	6
Mortality Rate due to Diarrheal/Intestinal Diseases:	33
Life Expectancy:	68 (66 Male, 71 Female)
Adult Literacy Rate:	99%
GNP per Capita:	\$1,240
GNP per Capita Annual Growth from 1965-87:	1.9%
Currency:	Dollar 2 = US \$1
Average Annual Inflation from 1980-87:	4.9%

Unlike in most of the countries in the region, diarrheal and intestinal diseases are not leading causes of death in Belize. PAHO reports that deaths due to intestinal infections have dropped by 60 percent. Expansion of the health care system in the early 1980s ensured that 75 percent of Belizeans had access to health care, though government expenditures in this sector have been slightly reduced since 1981.

Belize has two national agencies working in the water and sanitation sector, the Water and Sewerage Authority (WASA), an entity of the Ministry of Energy and Communications, and the Ministry of Natural Resources, which are responsible for the implementation of all water and sanitation projects. The National Coordinating Committee for Water Supply and Sanitation currently serves as a strictly advisory body to the GOB. It drafts policy guidelines for the water and sanitation sector but does not have the authority to enforce those policies.

INVESTMENT AND COVERAGE LEVELS

Current Projects

No new water or sanitation projects have been begun in Belize since late 1988. Two external support agencies, CIDA and A.I.D., continue to support water and sanitation projects in the country. CIDA's involvement, however, is nearly complete and, at present, it has no plans for a follow-on project. A UNICEF rural program in the Toledo District was completed in 1989.

- **UNICEF**

UNICEF has been active in the water and sanitation sector in the Toledo District of Belize since 1985. The Toledo program was successful in providing nearly 2,000 families with access to safe water and in completing the installation of over 400 ventilated pit latrines. UNICEF has also provided technical assistance to the GOB in preparing a national water and sanitation strategy covering both urban and rural areas of the country. Although UNICEF does not plan to continue the Toledo project, the United Nations Development Programme (UNDP) is examining the possibility of continuing this effort and extending it to serve refugee populations in the Toledo District. No funding information is available at this time.

Total Committed Funding to Increase Coverage (1990-1995): \$0

- **CIDA**

CIDA currently funds one ongoing program, the Belize City Water and Sewerage project. The project, which began in 1980 and will terminate in 1991, is currently in its last phase. Construction has been completed, and the remaining funds will be used for the procurement of replacement parts and the provision of training for the operation and maintenance of systems built during the course of the project. CIDA estimates that the project has benefitted 40,000 persons. CIDA will spend \$510,000 in 1990 and \$1.2 million in 1991; unlike in earlier phases, there is no host government contribution to this phase of the project. Because these monies will not add coverage, they have not been included in the investment analysis.

Total Committed Funding to Increase Coverage (1990-1995): \$0

- **A.I.D./CARE**

A.I.D. will continue to support, through mid-1991, two projects in this sector, covering five of the country's six districts: the Village Level Water and Sanitation (VLWS) project, implemented by CARE, and the Improved Productivity Through Better Health (IPTBH) project.

The VLWS project, scheduled for completion in June 1991, will provide, over the life of the project, approximately 10,800 persons in the northern districts of Corozal and Orange Walk with latrines and potable water through water system construction. A health education component of the project is supplemented by CARE's Maternal and Child Health and GROWTH projects, which continue to be active in these districts. Funding for the VLWS project will total \$400,000 in 1990 and \$397,000 in 1991. The IPTBH project, which has recently been extended through June 1991, contains a water component for the districts of Cayo, Stann Creek, and Belize. Although funding for the water component of the project will be increased to allow for the extension of the project, the exact amount has yet to be determined.

The A.I.D. and UNICEF projects are complementary in that they follow a standardized national approach; agencies in different districts use the same materials and technology and the same approach to the installation of water and sanitation facilities. The A.I.D., CARE, and GOB funding is shown below.

Source	VLWS	IPTBH	Other
USAID	---	930,000	---
CARE	154,000	---	---
GOB*	N/A	N/A	1,086,000
TOTAL	154,000	930,000	1,086,000

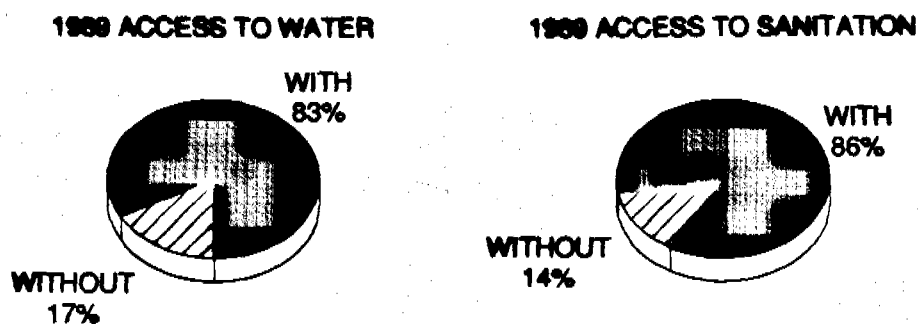
* GOB contributions shown are for all projects

Total Committed Funding to Increase Coverage (1990-1995): \$2,180,000.

Current Coverage

As shown in Tables A-1 and A-2 and Figures A-1 and A-2, Belize currently provides water and sanitation services to an estimated 91 percent of its urban population. In the rural areas of the country, where recent projects to expand coverage have been concentrated, the percentage of the population with access to a water system increased dramatically from 53 percent in 1988 to 75 percent by the end of 1989 (an additional 19,000 persons with coverage). Rural sanitation coverage also increased, though at a slower rate (4 percentage points), to a 1989 level of 80 percent.

The chart below shows the 1989 levels of access to water and sanitation services of the total Belizean population.



MEETING THE TARGETS

1989 CAI Objectives

Belize has been successful in surpassing its 1989 CAI objectives in all sectors except urban water, where coverage is needed for an additional 3,000 persons to meet the target. As seen in Table A-3, Belize exceeded the increase required to meet the 1989 CAI objective for rural water coverage by a wide margin; 37,000 people gained access in the period from 1984 through 1989. Gains were also recorded in rural sanitation coverage (19,000 additional people were provided with basic sanitation facilities) and urban sanitation (38,000 people gained access to an excreta disposal system).

1995 Targets

The targets for 1995 are shown in Table A-4 and Figures A-3 and A-4. To meet these goals, which are structured to reflect progress toward increasing the percentage of the population with basic water and sanitation services to full coverage by 2020, Belize would have to increase urban water coverage from 91 percent in 1989 to 93 percent in 1995, urban sanitation from 91 percent to 93 percent, rural water from 75 percent to 81 percent, and rural sanitation from 80 percent to 84 percent. Given Belize's current annual population growth rate of 2.7 percent, overall increases of 35,000 people with a safe water supply and 34,000 people with sanitation facilities would be necessary over the next six years to match these goals.

Meeting the 1995 Urban Water and Sanitation Targets

Due to the extremely small size of the Belizean population, meeting the 1995 targets would require a great deal less investment than in any other Central American nation. No funds are currently committed to increase coverage in the urban areas of the country, and thus, this sector has the greatest investment shortfall, although current coverage levels are substantially higher in the urban areas than in the rural ones. To meet the urban targets, \$2.9 million is needed for water system expansion and \$1.9 million is needed to provide sanitation facilities (Table A-5 and Figure A-5). CIDA has been working in Belize City on a water and sewerage project since 1980, but the Canadian government's involvement in this program will end in 1991, which will leave Belize without an externally funded urban water and sanitation program.

Meeting the 1995 Rural Water and Sanitation Targets

In the rural areas, the total investment needed to increase access to water systems to the target level is \$2.3 million, over \$1.3 million of which is currently committed. The expansion of rural sanitation facilities will require \$1.4 million through 1995, approximately \$900,000 of which is currently committed through ongoing projects sponsored by A.I.D. As shown in Table A-5 and Figure A-5, shortfalls in funding to meet the 1995 targets total nearly \$1 million for the construction of rural water systems and over \$500,000 for the building of sanitation facilities.

TABLE A - 1
BELIZE

ACTUAL WATER SUPPLY
COVERAGE VERSUS TARGETS

YEAR	TOTAL POP-ULATION	WATER SUPPLY							
		ALL AREAS		URBAN AREAS			RURAL AREAS		
		POP. SERVED	% SERVED	URBAN POP.	TOTAL SERVED	% SERVED	RURAL POP.	TOTAL SERVED	% SERVED
1980	146	99	68 %	73	71	97 %	73	28	38 %
BASELINE 1984	156	98	63 %	78	71	91 %	78	27	35 %
1986	162	112	69 %	83	79	95 %	79	33	42 %
1988	174	125	72 %	89	80	90 %	85	45	53 %
1989	180	150	83 %	95	86	91 %	85	64	75 %
CAI OBJ. FOR 1989	180	123	68 %	95	89	93 %	85	34	40 %
TARGETS FOR 1995	211	184	87 %	113	105	93 %	98	79	81 %

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

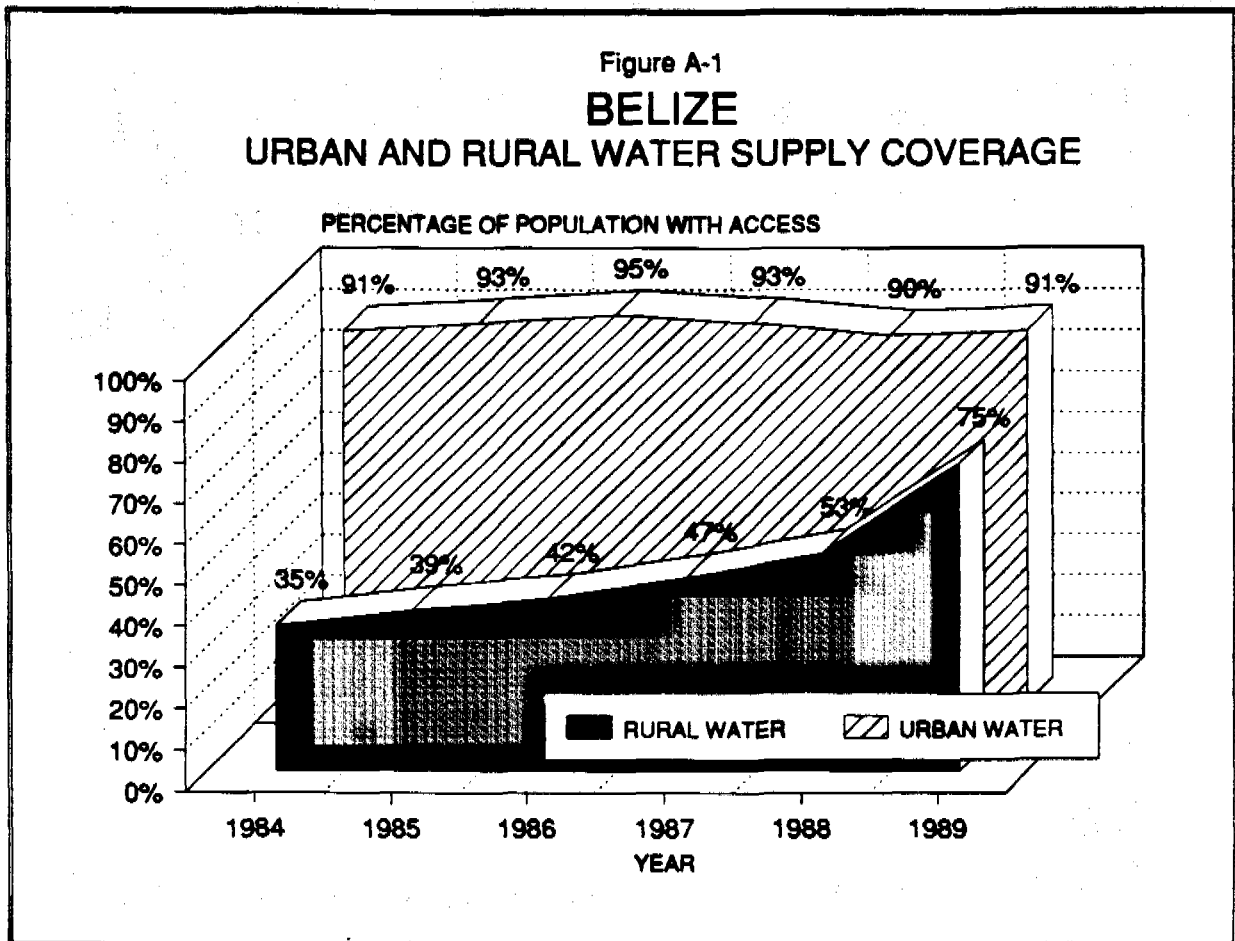


TABLE A - 2
 BELIZE

 ACTUAL SANITATION
 COVERAGE VERSUS TARGETS

YEAR	TOTAL POP-ULATION	SANITATION								
		ALL AREAS		URBAN AREAS			RURAL AREAS			
		POP. SERVED	% SERVED	URBAN POP.	TOTAL SERVED	% SERVED	RURAL POP.	TOTAL SERVED	% SERVED	
1980	146	96	66 %	73	43	59 %	73	53	73 %	
BASELINE 1984	156	97	62 %	78	48	62 %	78	49	63 %	
1986	162	124	77 %	83	69	83 %	79	55	70 %	
1988	174	145	83 %	89	80	90 %	85	65	76 %	
1989	180	154	86 %	95	86	91 %	85	68	80 %	
CAI OBJ. FOR 1989	180	121	67 %	95	60	63 %	85	61	72 %	
TARGETS FOR 1995	211	187	89 %	113	105	93 %	98	82	84 %	

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

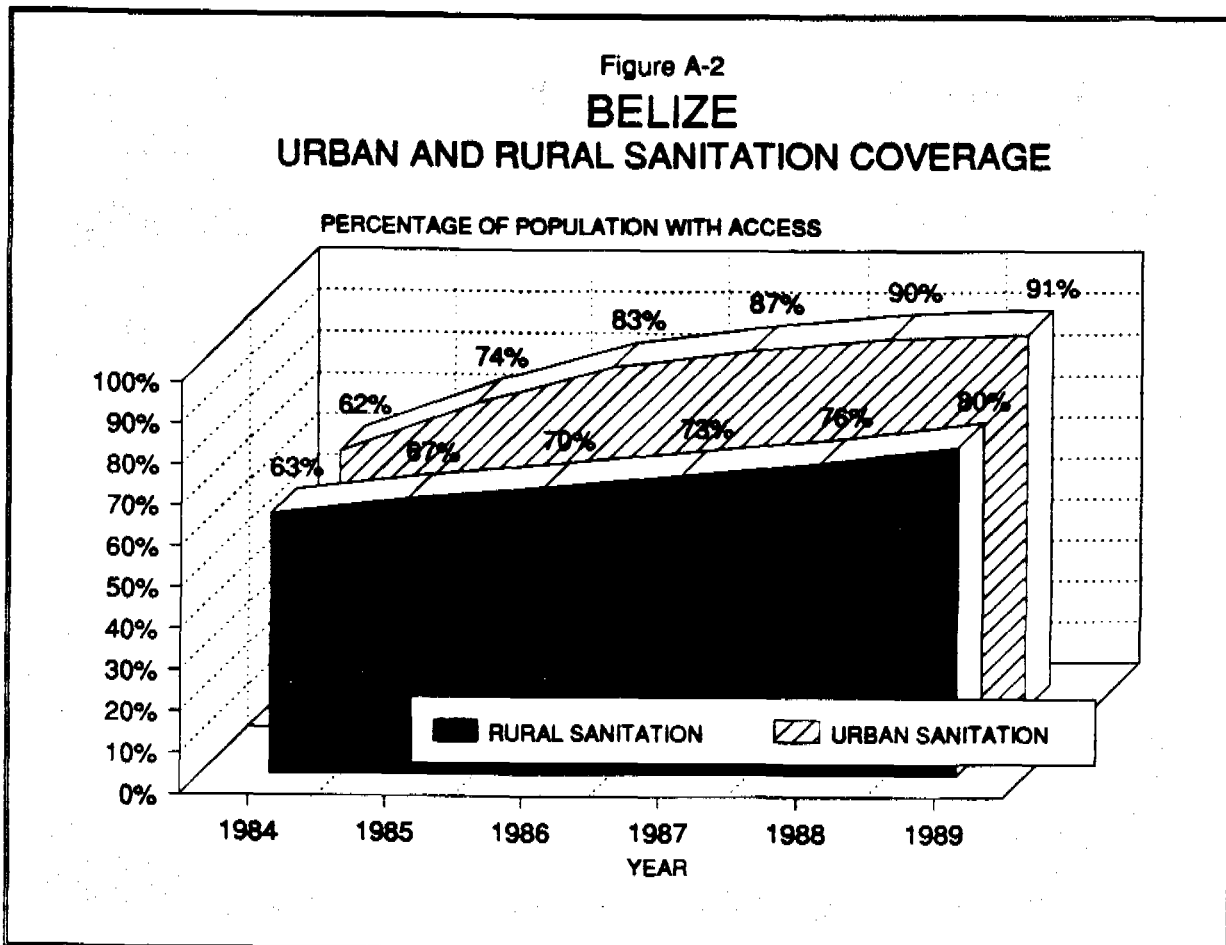


TABLE A - 3
BELIZE

SHORTFALLS
IN MEETING 1989 CAI OBJECTIVES

	WATER SUPPLY COVERAGE (PERSONS)			SANITATION COVERAGE (PERSONS)		
	TOTAL	URBAN	RURAL	TOTAL	URBAN	RURAL
CAI OBJECTIVE 1989	123	89	34	121	60	61
BASELINE 1984	98	71	27	97	48	49
REQUIRED INCREASE	25	18	7	24	12	12
ESTIMATED 1984-88 INCREASE	27	9	18	48	32	16
ESTIMATED 1988-89 INCREASE	25	6	19	9	6	3
CAI COVERAGE SHORTFALL	3	3	NONE	NONE	NONE	NONE

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

TABLE A - 4
BELIZE

COVERAGE INCREASES NEEDED
TO MEET 1995 TARGETS

	WATER SUPPLY COVERAGE (PERSONS)			SANITATION COVERAGE (PERSONS)		
	TOTAL	URBAN	RURAL	TOTAL	URBAN	RURAL
1995 TARGET	184	105	79	187	105	82
BASELINE 1989	150	86	64	154	86	68
REQUIRED INCREASE	34	19	15	33	19	14

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

Figure A-3
BELIZE
 1989 COVERAGE AND TARGETS (# OF PEOPLE)

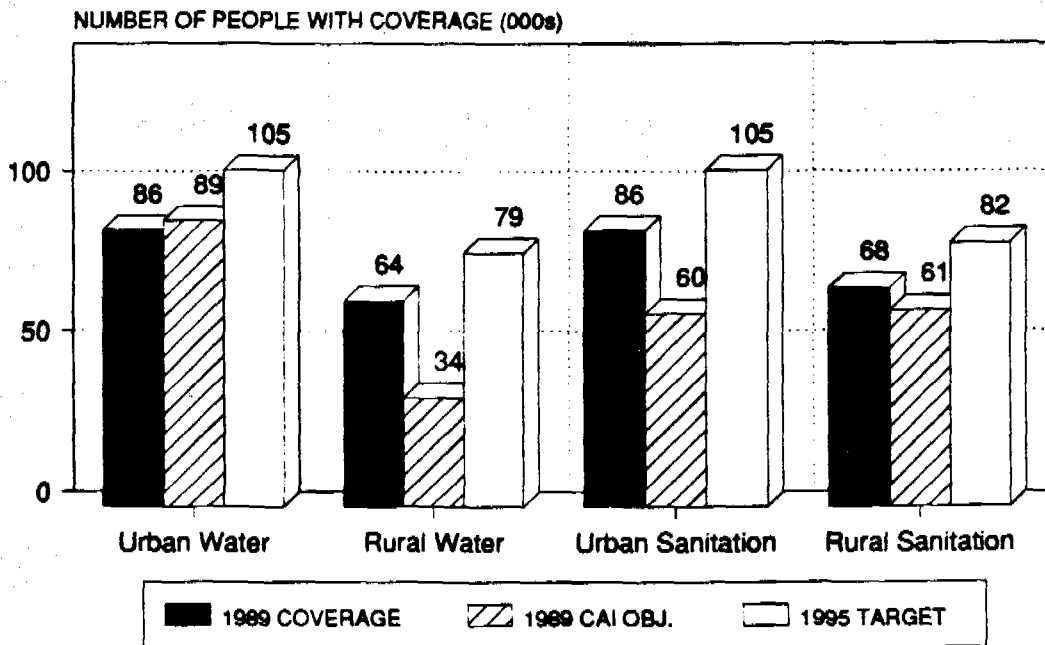


Figure A-4
BELIZE
 1989 COVERAGE AND TARGETS (% OF POP.)

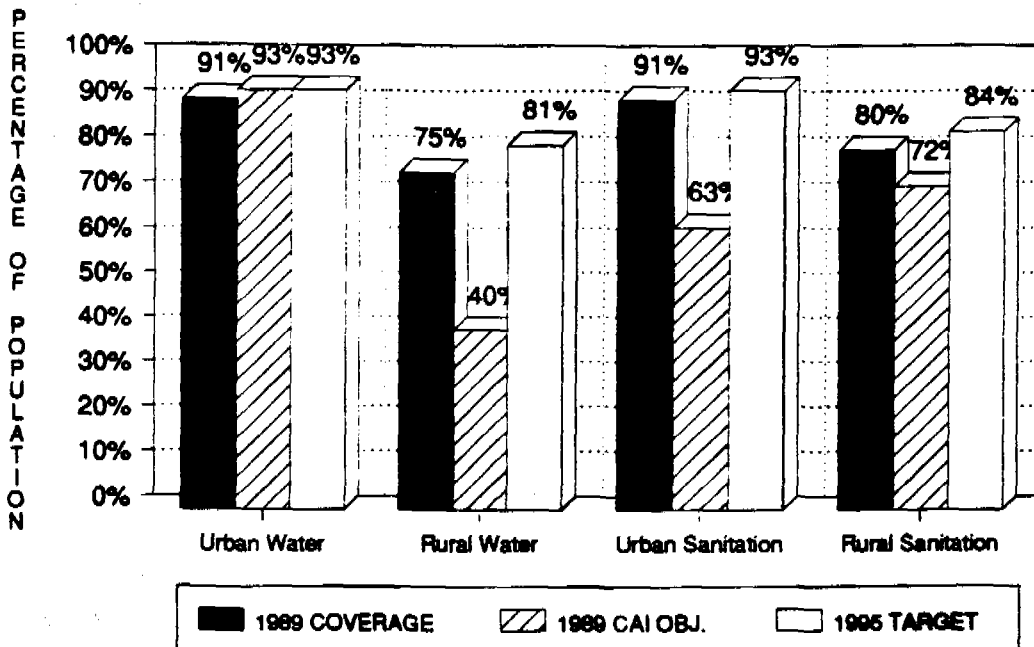
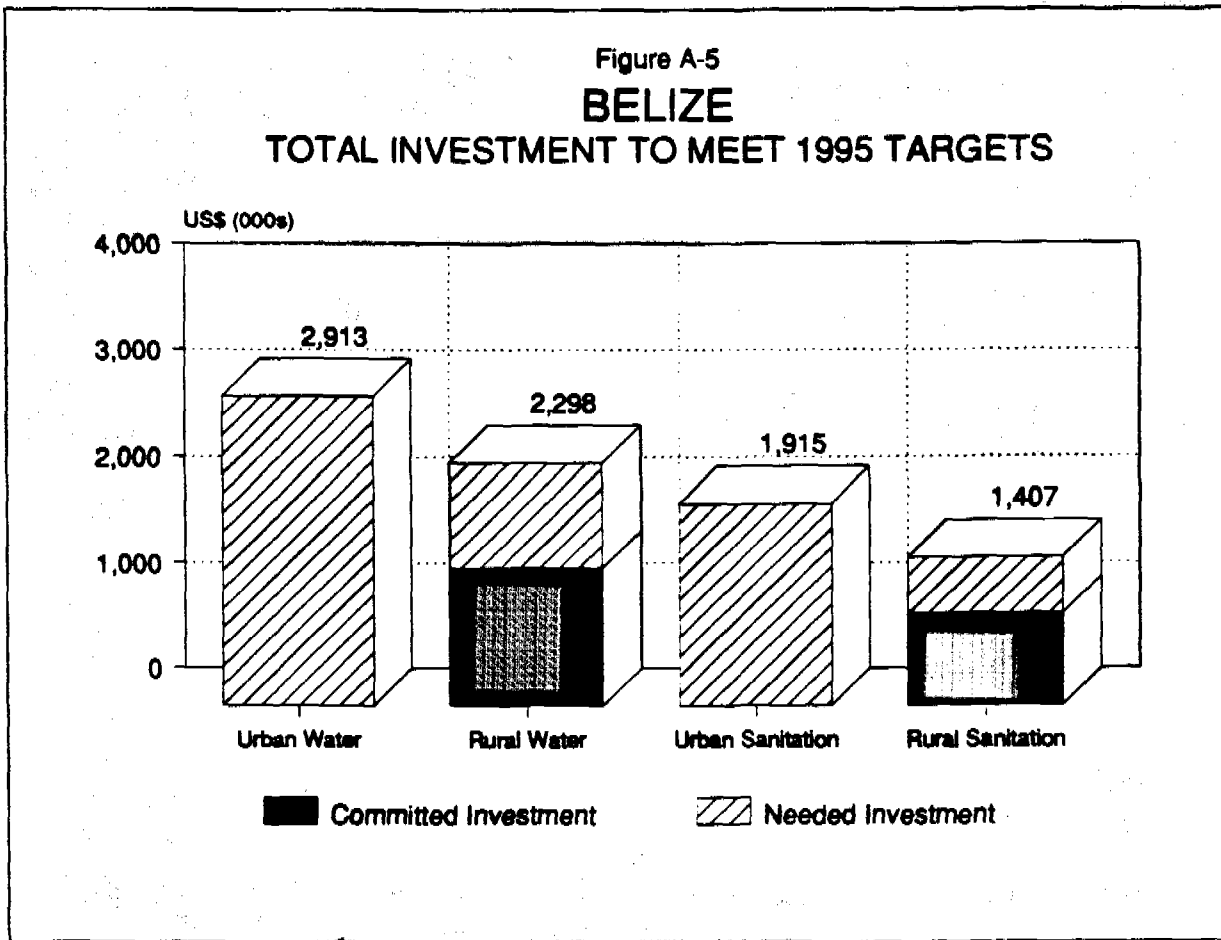


TABLE A - 5
BELIZE

PROJECTED SHORTFALL IN
FUNDING TO MEET 1995 TARGETS
(1989 US\$, 000s)

	WATER SUPPLY		SANITATION		TOTAL
	URBAN	RURAL	URBAN	RURAL	
SHORTFALL IN POPULATION COVERAGE (IN 000s)	19	15	19	14	67
ESTIMATED UNIT COST-- US\$ PER CAPITA	\$149	\$149	\$98	\$98	N/A
ESTIMATED TOTAL COST TO MEET 1995 TARGETS	\$2,913	\$2,298	\$1,915	\$1,407	\$8,533
FIRMLY COMMITTED INVESTMENTS (1)	NONE	\$1,308	NONE	\$872	\$2,180
PROJECTED FUNDING SHORTFALL	\$2,913	\$990	\$1,915	\$535	\$6,353

(1) ONLY THOSE INVESTMENTS THAT INCREASE COVERAGE



APPENDIX B

GUATEMALA



B

COUNTRY PROFILE: GUATEMALA

COUNTRY BACKGROUND

The most populous of Central American nations, Guatemala comprises 22 departments with over 16,000 small villages and 335 municipalities. Like other Central American nations, the country has faced increasing urbanization in recent years, although Guatemala maintains its predominantly rural character; nearly 60 percent of its population resides in rural areas.

The economy of Guatemala has suffered from the global economic depression of the early 1980s, accompanying high rates of unemployment, and ongoing guerilla activity. Overall, access to basic public infrastructure services for both rural and urban residents is limited. Over half of the population is currently without access to safe water and two-thirds is without excreta disposal systems. Water-related diseases, such as diarrheal and intestinal infections, are a leading cause of death in the country. Together with acute respiratory infections, these diseases are reported to account for 40 percent of all deaths.

The water and sanitation sector is currently served by three local government agencies and two coordinating committees. *Empresa Municipal de Agua de la Ciudad de Guatemala* (EMPAGUA) manages the water supply and sewerage needs of Guatemala City. *Instituto de Fomento de Obras Municipal* (INFOM) is responsible for the financing of water and sanitation in all other urban areas in the country; each city is responsible for operating the facilities. Management of the rural water supply and sanitation sector is provided by two units in the Ministry of Public Health, Environmental Sanitation Division (DSM) and *Unidad Ejecutora del Programa de Acueductos Rurales* (UNEPAR). The Government of Guatemala (GOG) also has two organizations that coordinate water and sanitation activities in the country: the *Comité Permanente de Coordinación de Agua Potable y Saneamiento* (COPECAS), which determines the regional distribution of activities, and the *Comité*

1989 Population:	8.94 million (Urban—3.49, Rural—5.54)
Population Growth Rate:	Urban—3.2%, Rural—2.8%
Infant Mortality Rate:	56
Child Mortality Rate:	40
Mortality Rate due to Diarrheal/Intestinal Diseases:	N/A
Life Expectancy:	63 (Male—61, Female—66)
Adult Literacy Rate:	Male—63%, Female 47%
GNP per Capita:	\$950
GNP per Capita Annual Growth from 1965-87:	1.2%
Currency:	Quetzal 2.85 = US \$1
Average Annual Inflation from 1980-87:	12.7%

Nacional de Agua (CONAGUA), which has been established to determine clear-cut water and sanitation development policies for the Government of Guatemala.

INVESTMENT AND COVERAGE LEVELS

Current Projects

Guatemala is served by a number of ongoing urban and rural programs in the water and sanitation sector. The World Bank has just begun a program to rehabilitate the Guatemala City water system. Two additional loans, one from the World Bank and another from the IDB, are currently being negotiated and will contain sizable water and sanitation components. Other agencies working in the sector include A.I.D., UNICEF, KfW, and PAHO.

- **A.I.D.**

A.I.D. currently maintains its involvement in Guatemala's water and sanitation sector with two programs. A third rural water and sanitation project, implemented by a local nongovernmental organization, Agua del Pueblo, has been terminated.

The decade-long Community Based Integrated Health and Nutrition Project (CBHNP) began in 1980 and will end in September 1990. Through this project, piped water supply systems and latrines are being constructed for approximately 400 small rural communities in six departments of the Guatemalan altiplano. The project is being executed by the DSM unit of the health ministry.

Recently, A.I.D. increased by \$500,000 its funding of the Water, Women and Health Project, a rural water and sanitation project implemented by CARE, which in turn executes the project through UNEPAR. The project, which provides water systems for rural villages in the western highlands of Guatemala, has been extended through December 1990.

The funding for these projects is shown below.

Source	CBHNP (1980-1990)	CARE/UNEPAR (1989-1991)
A.I.D.	\$10,800,000	\$1,500,000
GOG	8,100,000	2,000,000
Total	\$18,900,000	\$3,500,000

Total Committed Funding to Increase Coverage (1990-1995): \$2,750,000

- **IDB**

The IDB has supported rural water supply projects in Guatemala through UNEPAR for a number of years. In 1989, the fourth phase of this rural project was completed and a new four-year loan will run from 1990 to 1994. The UNEPAR loan project will increase water and sanitation coverage in rural areas by 100,000 persons. The IDB will provide \$23 million and the GOG will contribute \$7 million.

In addition, the IDB is currently negotiating a loan for municipal development in medium-sized cities, to be managed by INFOM. This loan, if signed, will provide approximately \$50 million and will contain a water and sanitation component. The preliminary analysis, however, has not yet been completed, and the size of the water and sanitation component is not yet known. Consequently, the loan has not been included in the funding analysis.

Total Committed Funding to Increase Coverage (1990-1995): \$30,000,000

- **World Bank**

Ratified by the Guatemalan congress in 1988, a new World Bank loan of \$23 million (provided through the IBRD) will be used to rehabilitate and expand the Guatemala City Water Supply System. Work began under the project with the start of a four-year World Bank consultancy to EMPAGUA to review the administrative management of EMPAGUA and to complete system designs prior to construction. An estimated 90 percent of this loan will be used for rehabilitation, but the program should serve as an impetus to future expansion of water coverage to residents of Guatemala City. The overall investment amounts for this project are shown below.

Source	1989 - 1995
IBRD	\$23,000,000
GOG	7,000,000
Total	\$30,000,000

Another World Bank project, the Social Funds Loan, is currently being developed and is expected to be signed in mid-1990. Although details are scarce at this time, the project is expected to have a significant water and sanitation component to benefit Guatemalans in dispersed, rural areas and will run from 1990 for three to five years.

For the purpose of the funding analysis, 10 percent of the Guatemala City loan has been considered as a committed investment to increase urban water coverage. Funds from the unsigned Social Funds Loan have not been included.

Total Committed Funding to Increase Coverage (1990-1995): \$3,000,000

- **UNICEF**

UNICEF's involvement in the water sector in Guatemala began with its Water Supply Programme for Small Rural Communities in 1981. Since that time, gravity-fed water systems have benefitted 220,000 people, and handpump installations are currently serving an estimated 69,000 people. Working with local communities and the divisions of Environmental Sanitation and Health of the Ministry of Public Health, UNICEF began in 1987 to expand on the earlier Water Supply Programme. By providing financial and technical assistance, UNICEF plans to assist 450 rural communities (135,000 people) with the construction of water systems, the installation of handpumps, the training of operations and maintenance personnel, and the conducting of health education activities. Progress on this rural water supply program has been promising and UNICEF has secured financing for 1990 (\$1.4 million) and 1991 (\$1.4 million). In addition to UNICEF's financing for the program, the communities served have donated significant amounts of their time and labor in order to lower project costs.

Another planned effort of UNICEF, together with the Guatemala Soroptimist International Club, will provide selected slum areas of Guatemala City with potable water and sanitation facilities. UNICEF hopes to expand its involvement in constructing latrines by creating a demand for the structures through the health education components of ongoing programs in rural and peri-urban communities.

Total Committed Funding to Increase Coverage (1990-1995): \$2,800,000

- **KfW**

The Federal Republic of Germany currently supports, through the KfW, rural water and sanitation development in Guatemala. After a long negotiation period, the execution of Phase I began in 1989. Financing for the four-year loan (1989-1993) is \$5.9 million and the project is being executed by UNEPAR. The program will finance between 60 and 80 water and sanitation projects, hygiene education programs, and the contracting of a consultant to advise UNEPAR.

Total Committed Funding to Increase Coverage (1990-1995): \$5,900,000

• **WHO/PAHO**

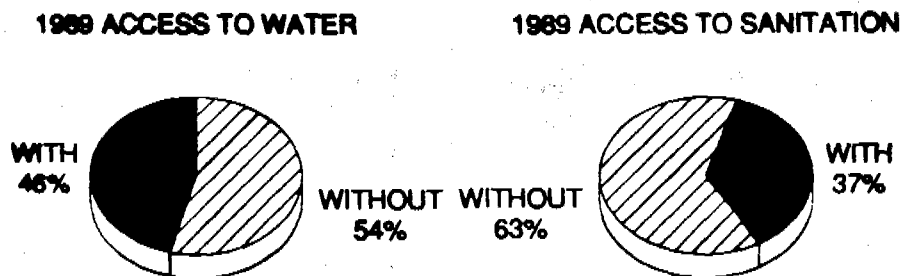
PAHO continues its involvement in the water sector of Guatemala by providing technical assistance in institution strengthening and by supporting the Regional School of Sanitary Engineering. Because these efforts will not directly increase coverage, PAHO's expenditures have not been included in the funding analysis.

Total Committed Funding to Increase Coverage (1990-1995): \$0

Current Coverage

In Guatemala, serious deficiencies in the provision of basic water and sanitation services to its residents remain despite the slight increases of 1 to 3 percentage points in water and sanitation coverage reported in 1989. As shown in Tables B-1 and B-2 and Figures B-1 and B-2, 70 percent of urban Guatemalans currently have access to potable water and 44 percent have access to sanitary excreta disposal systems. Among rural inhabitants, the levels are significantly lower for potable water (30 percent) and basic sanitation facilities (32 percent).

The chart below shows water and sanitation coverage for the total population.



MEETING THE TARGETS

1989 CAI Objectives

Since the start of the Central American Initiative in 1984, 652,000 people in Guatemala have gained access to water and an additional 705,000 people have gained access to sanitation facilities (Table B-3). In the five-year CAI period, which ended in 1989, two of Guatemala's goals have been met: rural water coverage has increased by 375,000 persons

(75,000 more than the 1989 CAI target), and rural sanitation coverage has grown by 395,000 persons (70,000 over the target). CAI goals for urban coverage in both water and sanitation, however, were not met as of the end of 1989. Urban sanitation coverage fell only 15,000 people short, but urban water coverage fell short by nearly 300,000 people.

1995 Targets

As shown in Table B-4 and Figures B-4 and B-5, the 1995 targets are set to raise urban water levels from 70 percent in 1989 to 76 percent in 1995 (786,000 additional people), urban sanitation from 44 percent to 56 percent (868,000 people), rural water from 30 percent to 44 percent (1,163,000 people), and rural sanitation from 32 percent to 46 percent (1,167,000 people). Overall, these targets call for an additional 2 million residents of Guatemala with access to a safe water supply and another 2 million with adequate sanitation facilities.

Meeting the 1995 Urban Water and Sanitation Targets

Because of the country's rapid urban population growth, currently at 3.2 percent annually, providing water and sanitation services to a larger percentage of the population will be costly. As detailed in Table B-5 and Figure B-5, the investment needed to meet the 1995 targets is substantial. Currently committed investments to increase coverage are minimal (approximately \$1.5 million each for urban water and sanitation). The shortfall in funding for urban water is approximately \$62 million, and \$78 million is needed to meet the urban sanitation target.

Some financing to achieve these goals, however, is in place or in the process of negotiation. As noted, the rehabilitation of Guatemala City's water system, which began under a \$23 million World Bank loan, will not directly result in the expansion of services but is expected to strengthen EMPAGUA measurably and should lay the groundwork for future expansion of the city's water system. Currently under negotiation is an IDB loan that will support the construction of water and sewerage systems for medium-sized cities throughout Guatemala. This loan program, if approved, will provide capital to increase substantially the number of persons in secondary cities with water and sanitation facilities. Further details on this proposed investment, however, are not available at this time, and any increases in coverage will not be seen for at least two years.

Meeting the 1995 Rural Water and Sanitation Targets

In the rural sector, total funding needs to meet the 1995 targets are approximately \$133 million for the construction of rural water systems and \$16 million for the building of basic sanitation facilities, such as pit latrines (Table B-5 and Figure B-5). The sizable difference in investment requirements is due to the fact that the unit cost per capita of installing a rural

water system, as reported by PAHO, is nearly 10 times that of the unit cost per capita of constructing simple excreta disposal systems.

Committed funding to meet the need for increased coverage in rural water totals \$37 million, and an estimated \$5 million has been allocated to rural sanitation. The shortfalls in funding to meet the 1995 targets are \$96 million for rural water and \$11 million for rural sanitation. There are, however, loans currently being negotiated by the IDB and the World Bank that, if signed, will aid greatly in meeting Guatemala's investment needs in the rural water and sanitation sectors. Nonetheless, it is clear that A.I.D., through its rural programs, has played an important role in this sector in the past and should consider expanding this involvement in the future.

TABLE B - 1

GUATEMALA

ACTUAL WATER SUPPLY
COVERAGE VERSUS TARGETS

YEAR	WATER SUPPLY								
	TOTAL POP-ULATION	ALL AREAS		URBAN AREAS			RURAL AREAS		
		POP. SERVED	PERCENT SERVED	URBAN POP.	TOTAL SERVED	PERCENT SERVED	RURAL POP.	TOTAL SERVED	PERCENT SERVED
1980	7,000	3,200	46 %	2,700	2,400	89 %	4,300	800	19 %
BASELINE 1984	7,800	3,500	45 %	3,100	2,300	74 %	4,700	1,200	26 %
1986	8,196	3,700	45 %	3,357	2,400	71 %	4,839	1,300	27 %
1988	8,682	3,880	45 %	3,552	2,450	69 %	5,130	1,430	28 %
1989	8,935	4,152	46 %	3,663	2,577	70 %	5,272	1,575	30 %
1989 CAI OBJECTIVE	8,935	4,375	49 %	3,663	2,875	78 %	5,272	1,500	28 %
1995 TARGET	10,647	6,101	57 %	4,425	3,363	76 %	6,222	2,738	44 %

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

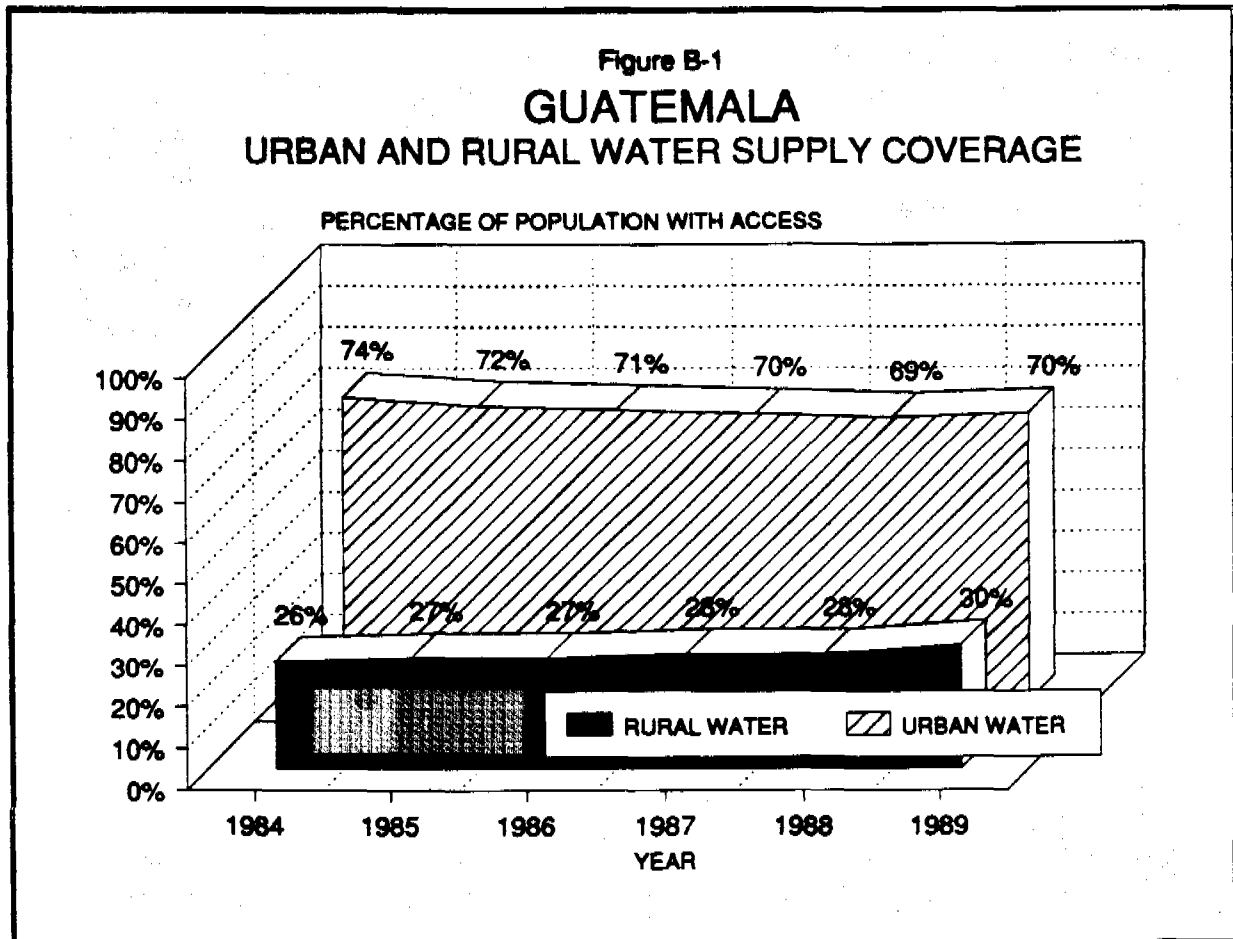


TABLE B - 2

GUATEMALA

ACTUAL SANITATION
COVERAGE VERSUS TARGETS

YEAR	TOTAL POP-ULATION	SANITATION							
		ALL AREAS		URBAN AREAS			RURAL AREAS		
		POP. SERVED	PERCENT SERVED	URBAN POP.	TOTAL SERVED	PERCENT SERVED	RURAL POP.	TOTAL SERVED	PERCENT SERVED
1980	7,000	2,100	30 %	2,700	1,200	44 %	4,300	900	21 %
BASELINE 1984	7,800	2,600	33 %	3,100	1,300	42 %	4,700	1,300	28 %
1986	8,196	2,800	34 %	3,357	1,400	42 %	4,839	1,400	29 %
1988	8,682	3,000	35 %	3,552	1,450	41 %	5,130	1,550	30 %
1989	8,935	3,305	37 %	3,663	1,610	44 %	5,272	1,695	32 %
1989 CAI OBJECTIVE	8,935	3,250	36 %	3,663	1,625	44 %	5,272	1,625	31 %
1995 TARGET	10,647	5,340	50 %	4,425	2,478	56 %	6,222	2,862	46 %

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

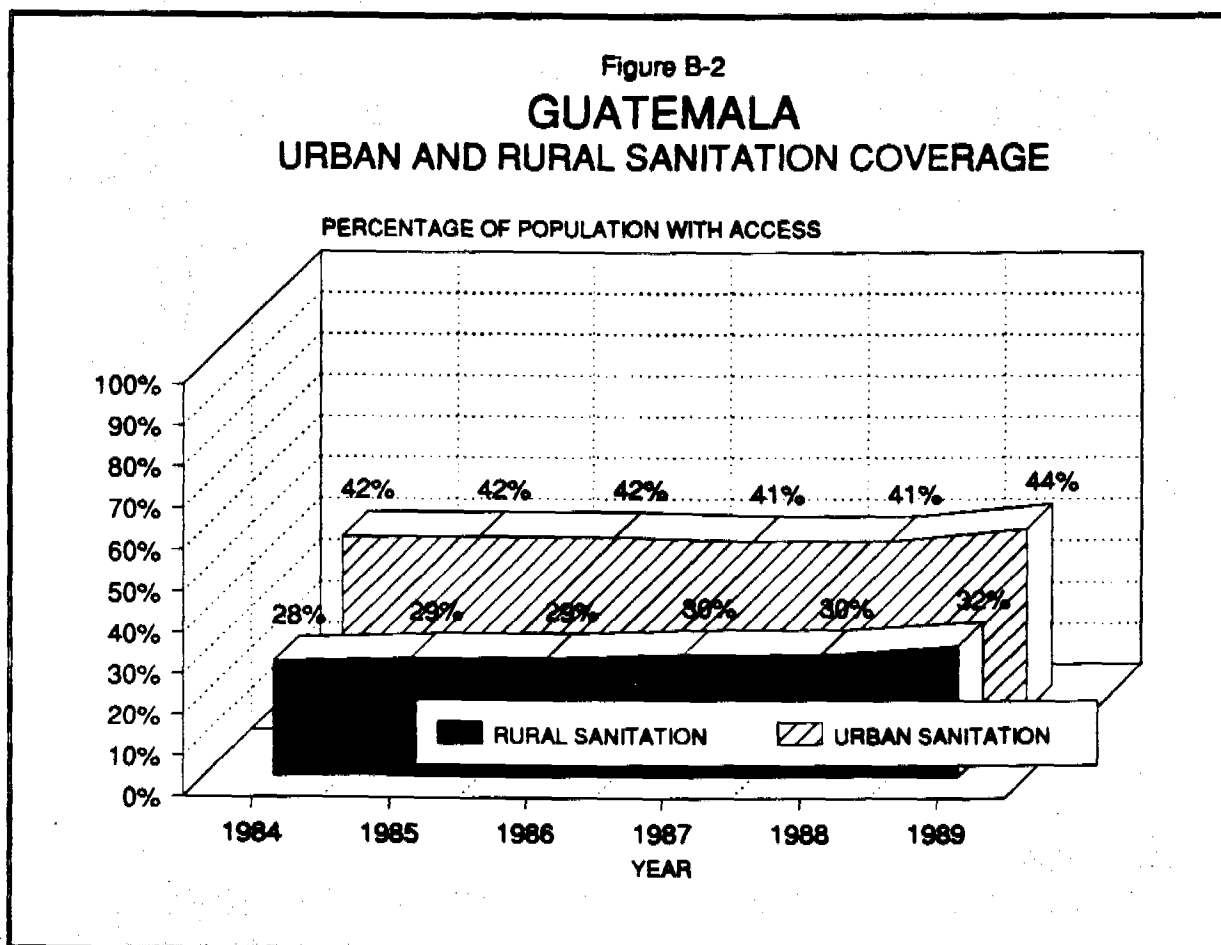


TABLE B - 3
GUATEMALA

SHORTFALLS
IN MEETING THE 1989 CAI OBJECTIVE

	WATER SUPPLY COVERAGE (PERSONS)			SANITATION COVERAGE (PERSONS)		
	TOTAL	URBAN	RURAL	TOTAL	URBAN	RURAL
1989 CAI OBJECTIVE	4,375	2,875	1,500	3,250	1,625	1,625
BASELINE 1984	3,500	2,300	1,200	2,600	1,300	1,300
REQUIRED INCREASE	875	575	300	650	325	325
ESTIMATED 1984-88 GAIN	380	150	230	400	150	250
ESTIMATED 1988-89 GAIN	272	127	145	305	160	145
CAI COVERAGE SHORTFALL	298	298	NONE	15	15	NONE

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

TABLE B - 4
GUATEMALA

COVERAGE INCREASES NEEDED
TO MEET 1995 TARGETS

	WATER SUPPLY COVERAGE (PERSONS)			SANITATION COVERAGE (PERSONS)		
	TOTAL	URBAN	RURAL	TOTAL	URBAN	RURAL
TARGET FOR 1995	6,101	3,363	2,738	5,340	2,478	2,862
BASELINE 1989	4,152	2,577	1,575	3,305	1,610	1,695
REQUIRED INCREASE	1,949	786	1,163	2,035	868	1,167

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

Figure B-3
GUATEMALA
 1989 COVERAGE AND TARGETS (# OF PEOPLE)

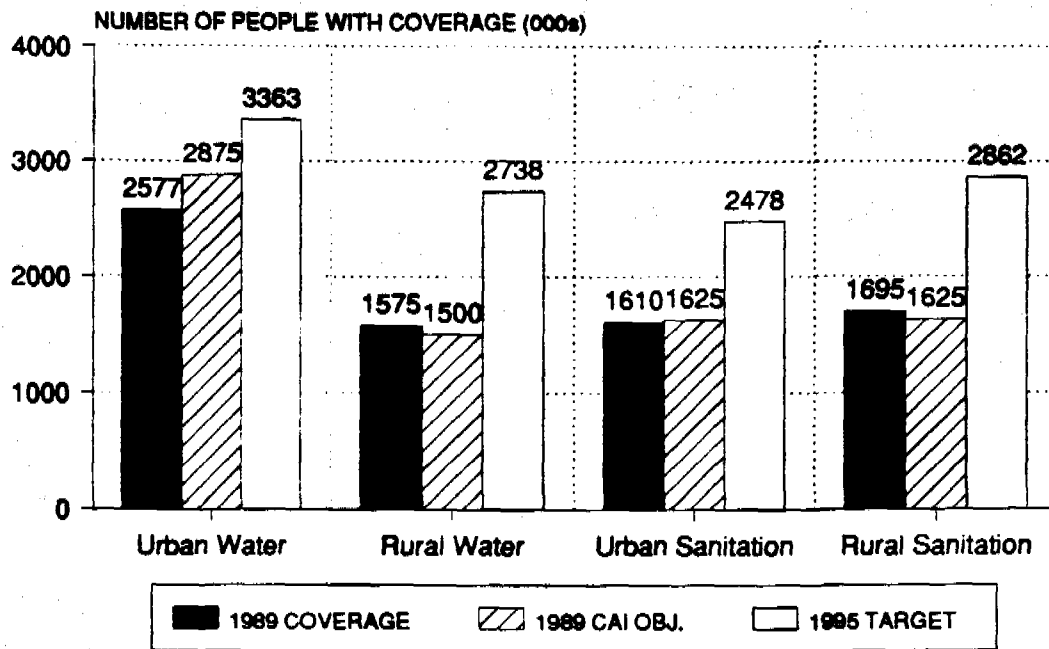


Figure B-4
GUATEMALA
 1989 COVERAGE AND TARGETS (% OF POP.)

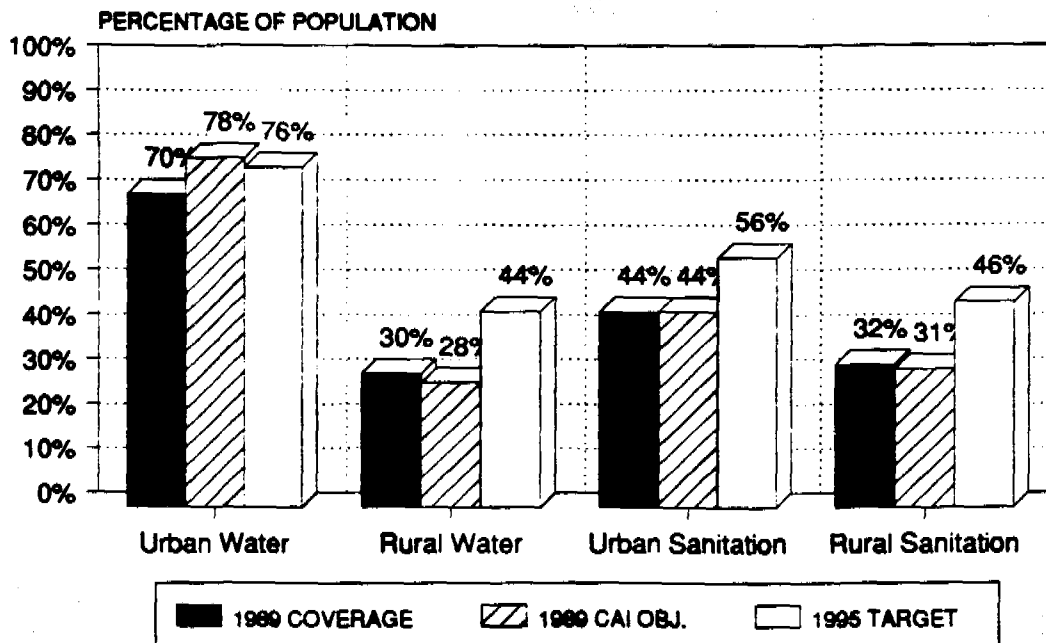


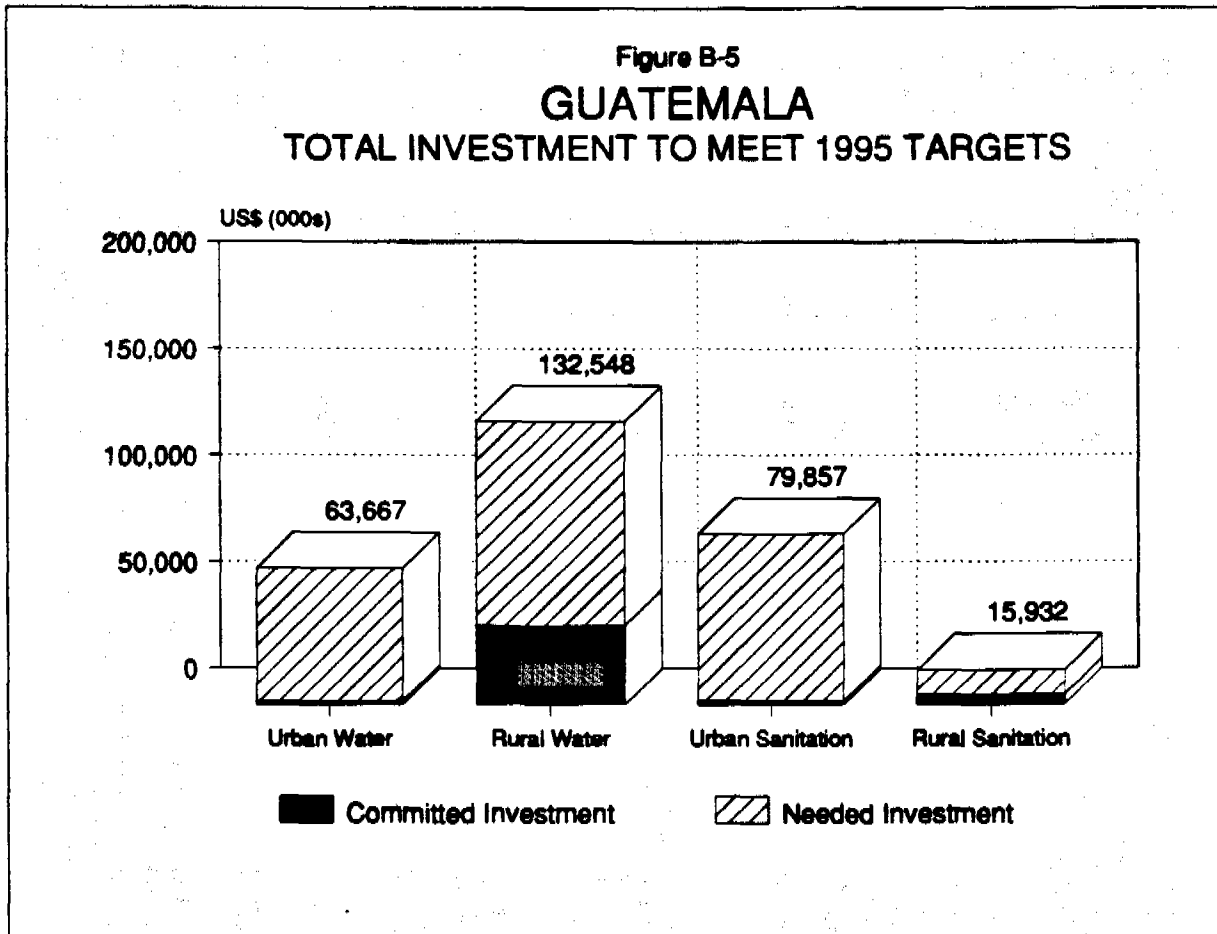
TABLE B - 5

GUATEMALA

PROJECTED FUNDING
SHORTFALL TO MEET 1995 TARGETS
(1989 US\$, 000s)

	WATER SUPPLY		SANITATION		TOTAL
	URBAN	RURAL	URBAN	RURAL	
SHORTFALL IN POPULATION COVERAGE (IN 000s)	786	1,163	868	1,167	3,984
ESTIMATED UNIT COST-- US\$ PER CAPITA	\$81	\$114	\$92	\$14	N/A
ESTIMATED TOTAL COST TO MEET 1995 TARGETS	\$63,667	\$132,548	\$79,857	\$15,932	\$292,004
FIRMLY COMMITTED INVESTMENTS (1)	\$1,410	\$36,812	\$1,590	\$4,638	\$44,450
PROJECTED FUNDING SHORTFALL	\$62,257	\$95,736	\$78,267	\$11,294	\$247,554

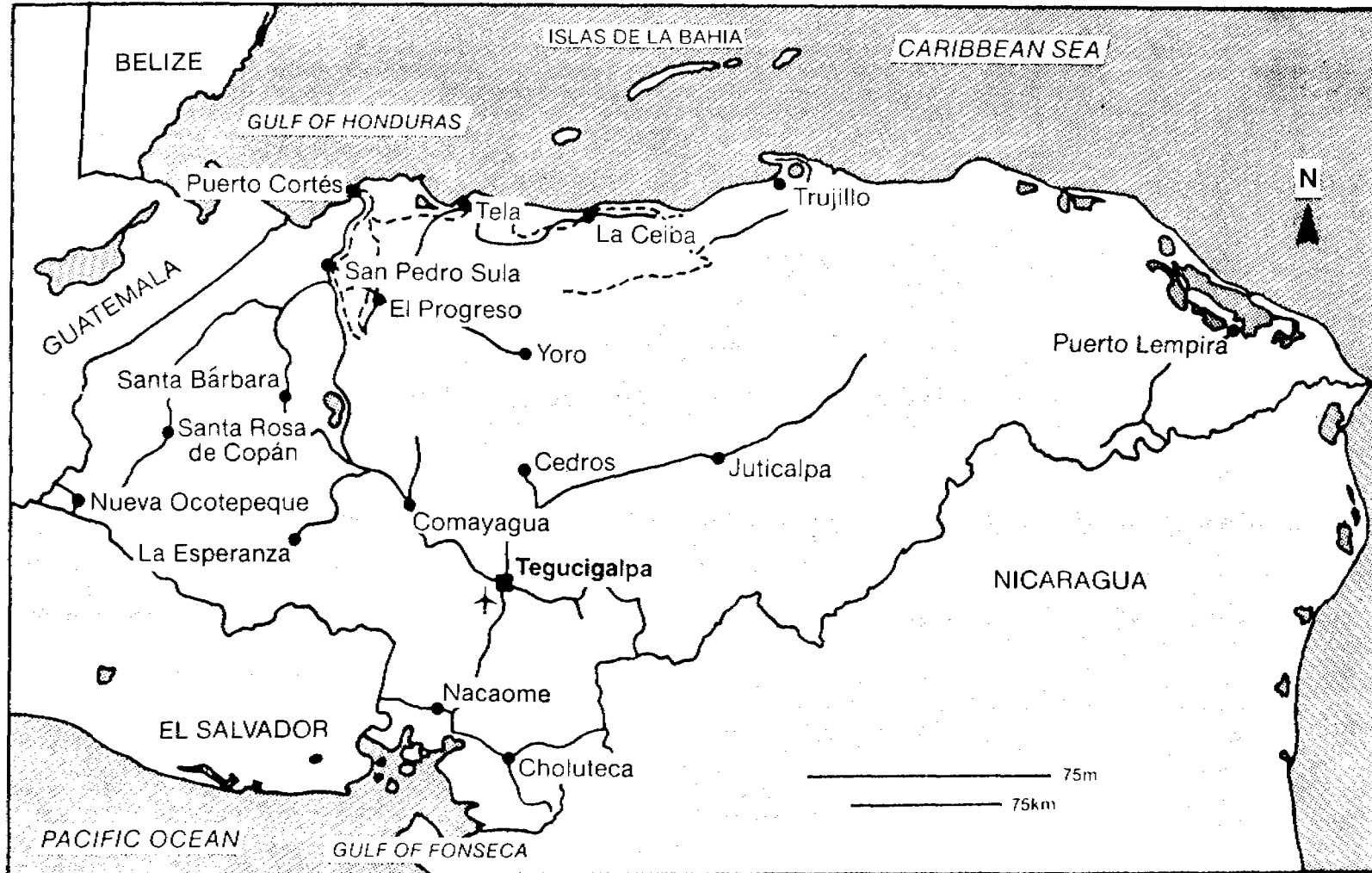
(1) ONLY THOSE INVESTMENTS WHICH INCREASE COVERAGE



APPENDIX C

HONDURAS

HONDURAS



C

COUNTRY PROFILE: HONDURAS

COUNTRY BACKGROUND

Honduras, with a total land area of 112,088 square kilometers, is currently experiencing the most rapid population growth in the region. Although the urban population is growing at a faster rate than its rural counterpart, over 60 percent of Hondurans live in rural areas. The economy of the country has grown slightly in recent years, but unemployment rates of 20 to 30 percent persist and the agricultural sector, Honduras's largest, suffers from low productivity.

The current status of health care in the country is poor. Although Honduras's infant mortality rate has declined from 115/1,000 live births in the mid-1970s to 65/1,000 in 1989, the country continues to have one of the highest infant mortality rates in Central America. Diarrheal disease is the leading reported cause of death, accounting for 29 percent of all infant deaths. High infant mortality rates and high incidence rates of diarrheal and intestinal diseases are particularly acute in rural and peri-urban areas lacking primary health care and water and sanitation facilities.

Responsible for the water and sanitation sector of Honduras are two national institutions. *Servicio Autónomo Nacional de Acueductos y Alcantarillados (SANAA)* is responsible for water and sanitation services for Honduran communities with populations over 500, and the Bureau of Environmental Health in the Ministry of Health (MOH) provides services to villages with fewer than 500 residents. Within the definitional framework of this report, in which rural areas are defined as communities of under 2,000 residents, both SANAA and the MOH work in the rural sector. A number of Honduran cities have also established their own municipal water and sewerage institutions.

1989 Population:	4.53 million (Urban—1.74, Rural—2.79)
Population Growth Rate:	Urban—4.25%, Rural—3.18%
Infant Mortality Rate:	65
Child Mortality Rate:	37
Mortality Rate due to Diarrheal/Intestinal Diseases:	137
Life Expectancy:	65 (Male—62, Female—67)
Adult Literacy:	Male—61%, Female 58%
GNP per Capita (\$1987):	\$810
GNP per Capita Annual Growth from 1965-87:	0.7%
Currency:	Lempira 2.00 = US \$1
Average Annual Inflation from 1980-87:	4.9%

INVESTMENT AND COVERAGE LEVELS

Current Projects

At present, Honduras benefits from a number of water and sanitation programs. For the city of Tegucigalpa, a dam and water treatment facility are being constructed with funds and technical assistance from the governments of Italy and France. Once completed, the dam will double the quantity of raw water available to the Tegucigalpa metropolitan area and its environs, alleviating the current shortage of water in the city. Although the current program does not directly increase the number of residents with water services, extension of the water system will likely follow the provision of increased quantities of water. However, another source of funding in the water sector, the World Bank loan to rehabilitate San Pedro Sula's water system, was suspended in 1989 due to the inability of the Government of Honduras (GOH) to service its debts. The World Bank may lift its suspension if the government adopts a program of economic reform.

- **A.I.D.**

A.I.D. currently sponsors three water and sanitation projects. Under USAID/Honduras's Employment Generation Project, disbursements in support of water and sanitation activities will be \$11 million from 1990 to 1992; the project will serve an estimated 158,000 persons throughout Honduras. The program is coordinated by SANAA and the respective municipalities in which the project is being executed.

The Health Sector II Project, which began in mid-1988 and will run through 1995, contains a water and sanitation component of \$18 million. Under this project, water and sanitation facilities will be established in the northern and northwestern sections of the country to contribute to the improvement of the health of an estimated 360,000 Hondurans. SANAA and the MOH are responsible for the implementation of the project, which will build on the achievements of A.I.D.'s earlier water and sanitation efforts—Health Sector I and the Rural Water and Sanitation projects.

The third project, RHUDO/ROCAP/CABEI's Central American Shelter and Urban Development Program, contains a water and sanitation component for both on-site and off-site facilities. The construction of on-site facilities will be supported by Housing Guaranty funds, and off-site construction will be supported with Development Assistance monies. This regional program, however, was suspended in mid-1989 at the request of ROCAP until CABEI, the executing agency, can supply evidence of its liquidity. Consequently, funds for this regional RHUDO/ROCAP project have not been included as committed investment.

Total Committed Funding to Increase Coverage (1990-1995): \$26,000,000

- **UNICEF**

In 1987, UNICEF, in collaboration with SANAA, began its Urban Basic Services Project, which focused on community-based efforts to promote health, nutrition, and safe water and sanitation. This project has extended coverage, thus far, to 35,000 people living in poor urban areas (barrios marginales) and has recently been extended to include nine more of these squatter communities. In addition, UNICEF, also through SANAA, has begun a water and sanitation project in Tegucigalpa to benefit 15,000 slum residents. An important component of this project is the self-financing mechanism that it employs. Initially, UNICEF covers 70 percent of the costs of the project and the remaining 30 percent is borne by the GOH. Within four years, however, the community served by the system, through cost-recovery schemes, pays back the cost of the project, which goes into a revolving fund to be used for projects in other areas. UNICEF will contribute \$900,000 to this project in 1990; increased funding in subsequent years is likely though not yet confirmed.

Total Committed Funding to Increase Coverage (1990-1995): \$900,000

- **IDB**

The IDB currently funds three active water and sanitation programs in Honduras. The Four Cities Project provides for a wide range of water system expansions and improvements, for the mid-sized cities of Tela, Zihuatepeque, La Paz-Cane, and Juticalpa. Of the total \$24 million loan, \$7.4 million has been disbursed thus far.

The second IDB loan, the Tegucigalpa Water and Sewerage Project, provides for an extensive program of rehabilitation, system improvements, and expansion to extend coverage. The projects funded under this \$54 million loan, which was ratified in 1987, are being executed by SANAA. Progress on the IDB program, however, suffered an 18-month delay in implementation due to SANAA's limited institutional capacity to absorb new projects. In particular, SANAA's manpower resources have been severely drained by its work on a large dam and water treatment plant supported by the Italian and French governments.

The third program is a rural project that provides for both new water system construction and latrinization for approximately 250 communities. Although the loan agreements have been signed for several years, the first disbursements for these programs were not made until 1988. As of September 1989, 30 percent of the \$24 million loan had been disbursed. Committed monies for the three programs are as shown below:

Source	Four Cities	Tegucigalpa	Rural
IDB	\$24,000,000	\$54,000,000	\$24,000,000
GOH	6,000,000	6,000,000	3,000,000
TOTAL	\$30,000,000	\$60,000,000	\$27,000,000

Because the funds from the Four Cities and Tegucigalpa loans support mainly rehabilitation efforts, only a fraction of these loans has been credited toward increasing coverage. The rural water supply project, however, has been included in the funding analysis in its entirety.

Total Committed Funding to Increase Coverage (1990-1995): \$23,700,000

- **World Bank**

The World Bank's single water program in Honduras, with joint financing of \$42.5 million from various sources, aims at rehabilitating and extending the water supply system of San Pedro Sula, the country's second largest city. As noted, however, this loan has been suspended due to the GOH's failure to make payments on its debts. Nearly \$7.7 million of the IBRD's \$19.6 million share of the loan has been disbursed, and the design of two storage tanks and additional distribution systems was completed prior to the loan suspension. The World Bank may reinstate the loan if the new government (elected in November 1989) adopts a program of economic reform. The San Pedro Sula project is also financed by the United Kingdom's Commonwealth Development Corporation, France, and Norway. Within Honduras, the municipal water division of San Pedro Sula and SANAA contribute to the project.

Total Committed Funding to Increase Coverage (1990-1995): \$0

- **The Japanese International Cooperation Agency (JICA)**

JICA currently contributes \$10 million to a rural water supply and irrigation project, and the GOH provides an additional \$2 million. The project, which will run from 1989 to 1994, consists of water studies and well drilling in rural areas. Since the project is in part devoted to providing water for irrigation purposes, a portion of the overall project funds has been included in the investment analysis.

Total Committed Funding to Increase Coverage (1990-1995): \$10,000,000

- **European Economic Community (EEC)**

The EEC is supporting a five-year rural water project in Honduras. The project began in 1989 and is scheduled to run through 1994. Funding from the EEC will total \$16.5 million and the GOH will provide \$7 million.

Total Committed Funding to Increase Coverage (1990-1995): \$20,000,000

- **KfW**

KfW is in the process of completing a three-year well-drilling project. Since 1986, 46 communities with populations from 900 to 1,500 have benefitted from this project. Because this project is ending, funding information has not been included in the investment analysis.

Total Committed Funding to Increase Coverage (1990-1995): \$0

- **Italy and France**

Although the projects will not directly increase coverage, the governments of Italy and France are sponsoring the construction, for the city of Tegucigalpa, of a concrete dam, a water treatment plant, and transmission lines from the dam to the plant. Once completed, the reservoir and treatment plant will serve residents of Tegucigalpa already linked to the distribution system. The Italians are building the dam and installing the pipelines, and the French are purchasing the necessary equipment. The dam is scheduled to be completed by the end of 1990, although construction, which began in January 1989, has been slowed due to SANAA's institutional capacity problems. Funding for the project has not been incorporated in the investment analysis.

Total Committed Funding to Increase Coverage (1990-1995): \$0

- **Switzerland**

The Swiss are currently working in the departments of Cortes and Yoro, among the poorest areas in the country. Targets for the project, which will run from 1989 to 1991 include the construction of 40 water systems, 165 excavated wells, 4,000 pit latrines, and 6,000 water-seal latrines. Overall, the project will provide 37,000 inhabitants with water and 67,000 with sanitation. The Swiss have provided a grant of \$1.75 million and the MOH is providing \$800,000.

Total Committed Funding to Increase Coverage (1990-1995): \$1,750,000

- **WHO/PAHO**

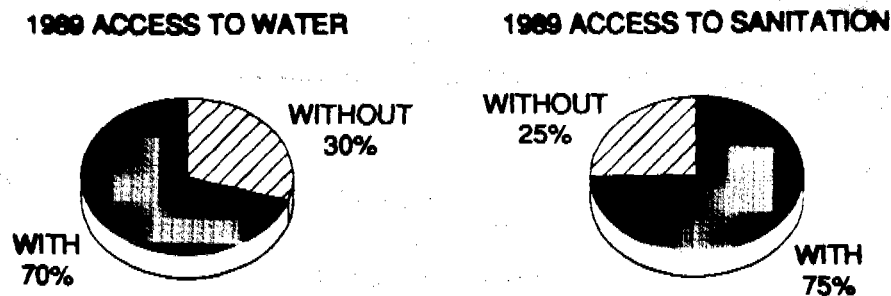
PAHO's water and sanitation focus in Honduras is the provision of sanitation facilities to inhabitants of barrios marginales. Funding through 1991 will be \$382,000, only a portion of which will go to increasing coverage.

Total Committed Funding to Increase Coverage (1990-1995): \$150,000

Current Coverage

As shown in Tables C-1 and C-2 and Figures C-1 and C-2, Honduras has made progress since 1980 in providing water and sanitation services to an increasingly large percentage of the rural population. In 1989, 56 percent of the rural population was served by a water system (a gain of 40 percent over 1980) and 66 percent had access to basic sanitation facilities (a gain of 154 percent since 1980). Urban water and sanitation coverage, however, remained the same or decreased in the period from 1980 to 1986, increased substantially between 1986 and 1988, and declined again from 1988 to 1989. During 1989, urban water coverage dropped from 97 percent to 92 percent, and urban sanitation fell from 93 percent to 88 percent. This change in coverage levels appears to be, in part, a correction of unrealistically large gains reported in the period from 1986 to 1988, when urban water coverage increased by 20 percent and urban sanitation levels rose 18 percent. In addition, the population figures reported in 1988 appear to have been too low, and the new, higher 1989 population figures further lowered the percentage of the urban population with water and sanitation coverage.

The chart below shows 1989 water and sanitation coverage levels for the overall population.



MEETING THE TARGETS

1989 CAI Objectives

As shown in Table C-3, Honduras has been successful in meeting only one of the 1989 CAI objectives—rural sanitation. In this subsector, an additional 633,000 people were provided with excreta disposal systems from 1984 to 1989. In each of the other subsectors, Honduras fell short of the CAI goals. While an additional 244,000 residents of rural areas gained access to a water system, the 1989 goals called for an additional 86,000 beyond that. Goals in urban water and sanitation required the addition of 335,000 persons with these services, but the coverage levels reported in 1989 fell short of this amount by 146,000 people for urban water and 151,000 for urban sanitation.

1995 Targets

The 1995 targets are set at a substantial increase in the percentage of Honduras's population with access to water and sanitation services over the next six years (Table C-4 and Figures C-3 and C-4). For the urban areas of the country, 94 percent coverage has been set as a target for water coverage and 92 percent for sanitation coverage, an increase of 506,000 persons with water and 520,000 persons with sanitation facilities. Targets for rural Honduras are even more ambitious as current coverage levels are well below the urban rates. The rural targets are set to raise water coverage from 56 percent in 1989 to 66 percent by 1995 and increase access to sanitation services from 66 percent to 74 percent of the rural population. To meet these rural targets, 715,000 more persons with access to a water system and 712,000 more persons with access to basic sanitation facilities would have to be added to existing levels.

Meeting the 1995 Urban Water and Sanitation Targets

The funding needed for Honduras to meet the 1995 targets in urban areas, as shown in Table C-5 and Figure C-5, is substantial. To expand and construct urban water systems, over \$46 million is needed, only \$4 million of which is currently committed. The expansion of urban sanitation services requires larger amounts of financing, \$115 million over the next six years, and \$58 million is currently committed. The higher cost of meeting the urban sanitation target is due primarily to the higher unit cost of providing this service (over twice the unit cost per capita of water coverage).

Given the current levels of investment, shortfalls of \$42 million in funds for urban water projects and \$58 million in funds for urban sanitation projects persist. With the suspension of the World Bank's loan program for San Pedro Sula and the GOH's debt problems, it is unclear whether Honduras will be able to attract the investment necessary to meet these 1995 targets, though the IDB loans, which were delayed in implementation, should begin to have an increased effect on the expansion of services in urban areas. The RHUDO/CABEI urban development program, which has currently been suspended, will, if it resumes operations, also contribute to the expansion of water and sanitation services.

Meeting the 1995 Rural Water and Sanitation Targets

To meet the 1995 goal of 66 percent coverage in rural water, an estimated \$58 million would have to be dedicated to this effort, of which \$10 million has been committed through the IDB, A.I.D., and the Swiss government (Table C-5 and Figure C-5). In the rural sanitation sector, less investment is required because the unit cost per capita for the construction of basic sanitation facilities is less than a third of that for constructing rural water systems. Of the roughly \$19 million needed for rural sanitation, \$11 million has been programmed to increase coverage, leaving a shortfall of over \$8 million.

TABLE C - 1
HONDURAS

ACTUAL WATER SUPPLY
COVERAGE VERSUS TARGETS

YEAR	TOTAL POPULATION	WATER SUPPLY							
		ALL AREAS		URBAN AREAS			RURAL AREAS		
		POP. SERVED	PERCENT SERVED	URBAN POP.	TOTAL SERVED	PERCENT SERVED	RURAL POP.	TOTAL SERVED	PERCENT SERVED
1980	3,754	2,226	59 %	1,368	1,272	93 %	2,386	954	40 %
BASELINE 1984	4,299	2,726	63 %	1,700	1,405	83 %	2,599	1,321	51 %
1986	4,581	2,983	65 %	1,884	1,533	81 %	2,697	1,450	54 %
1988	4,377	3,054	70 %	1,669	1,619	97 %	2,708	1,435	53 %
1989	4,534	3,159	70 %	1,740	1,594	92 %	2,794	1,565	56 %
CAI OBJECTIVE 1989	4,534	3,391	75 %	1,740	1,740	100 %	2,794	1,651	59 %
NEW TARGETS 1995	5,688	4,380	77 %	2,234	2,100	94 %	3,454	2,280	66 %

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

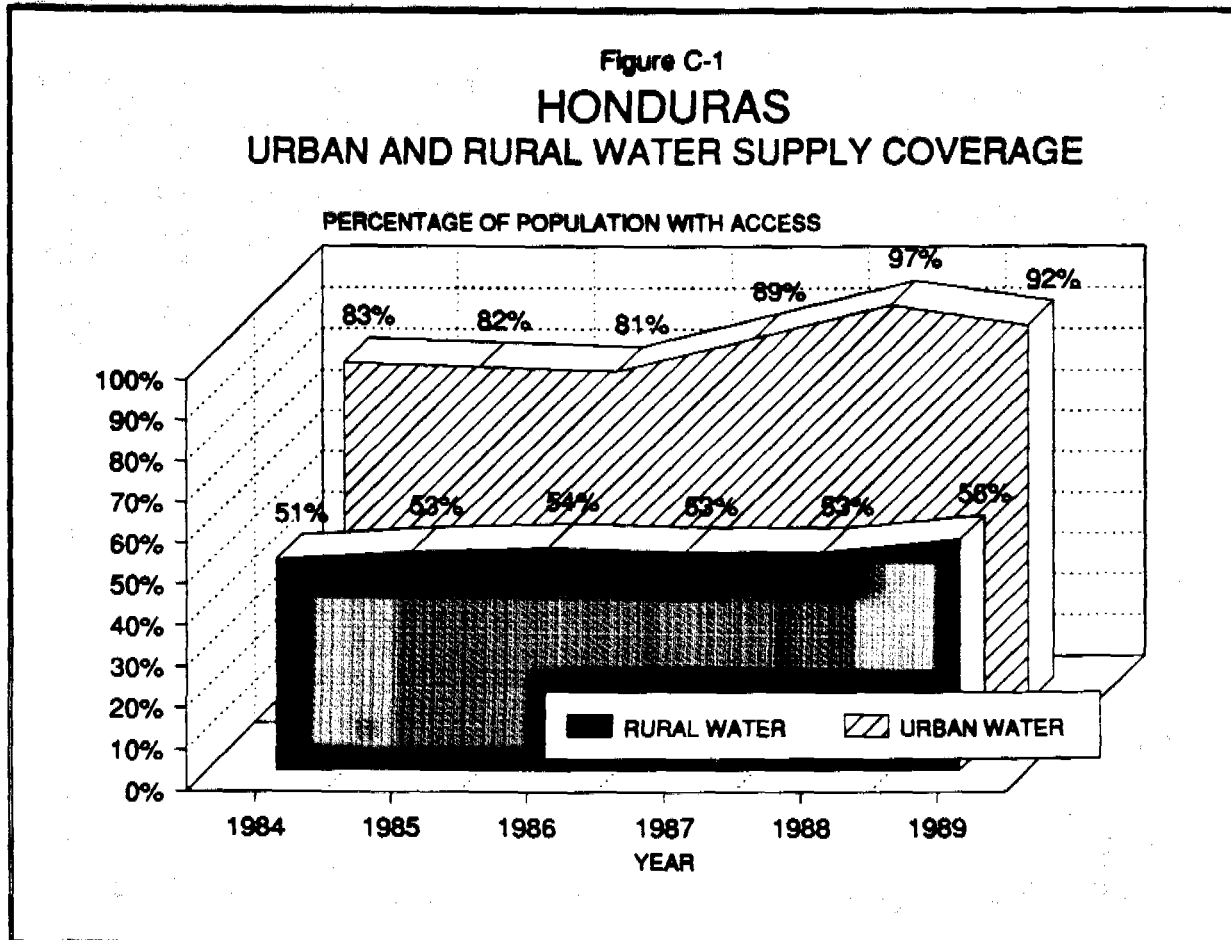


TABLE C - 2
HONDURAS

ACTUAL SANITATION
COVERAGE VERSUS TARGETS

YEAR	TOTAL POPULATION	SANITATION							
		ALL AREAS		URBAN AREAS			RURAL AREAS		
		POP. SERVED	PERCENT SERVED	URBAN POP.	TOTAL SERVED	PERCENT SERVED	RURAL POP.	TOTAL SERVED	PERCENT SERVED
1980	3,754	1,290	34 %	1,368	670	49 %	2,386	620	26 %
BASELINE 1984	4,299	2,560	60 %	1,700	1,349	79 %	2,599	1,211	47 %
1986	4,581	2,877	63 %	1,884	1,485	79 %	2,697	1,392	52 %
1988	4,377	3,068	70 %	1,669	1,552	93 %	2,708	1,516	56 %
1989	4,534	3,379	75 %	1,740	1,535	88 %	2,794	1,844	66 %
CAI OBJECTIVE 1989	4,534	3,200	71 %	1,740	1,686	97 %	2,794	1,514	54 %
TARGETS FOR 1995	5,688	4,611	81 %	2,234	2,055	92 %	3,454	2,556	74 %

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

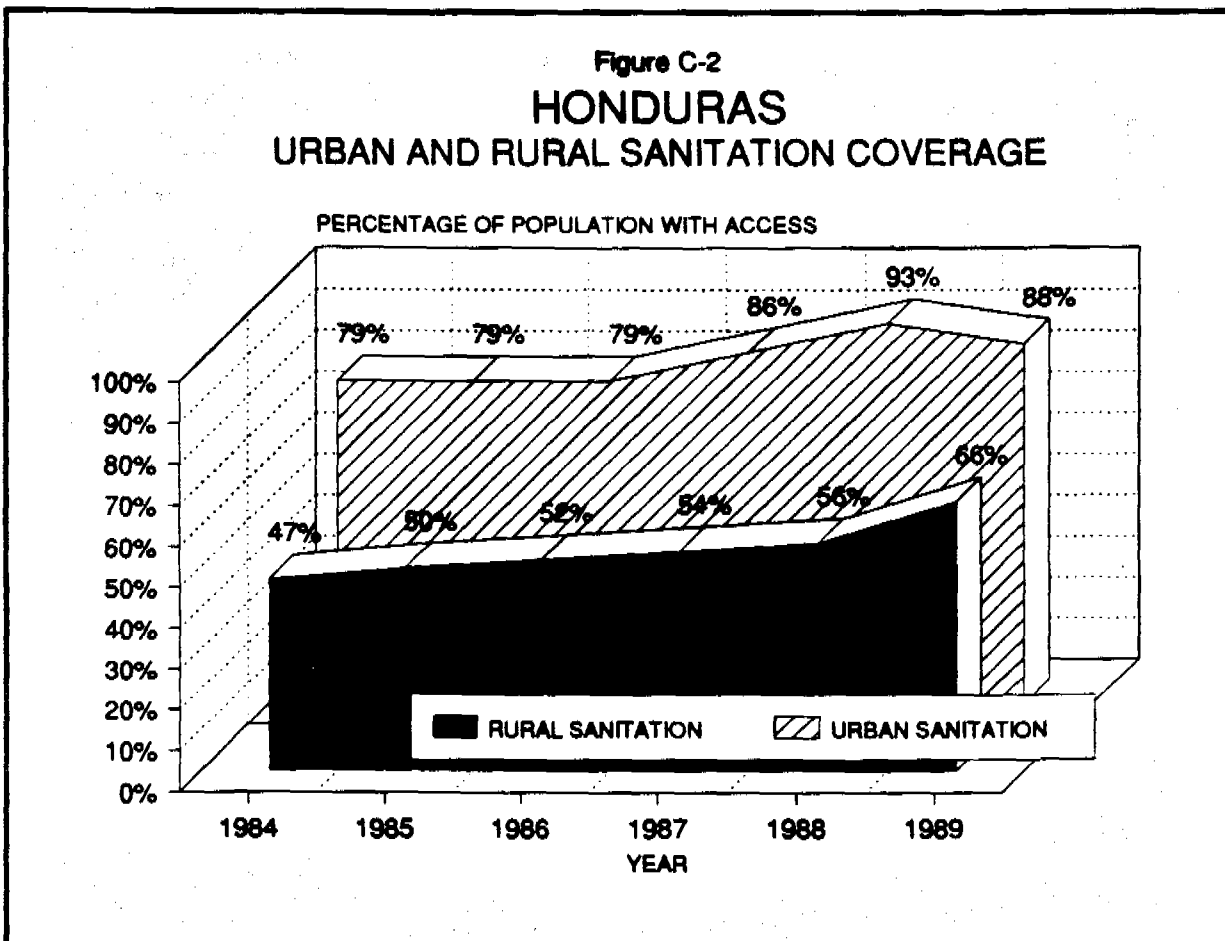


TABLE C - 3
HONDURAS

PROJECTED SHORTFALLS
IN MEETING CAI OBJECTIVE

	WATER SUPPLY COVERAGE (PERSONS)			SANITATION COVERAGE (PERSONS)		
	TOTAL	URBAN	RURAL	TOTAL	URBAN	RURAL
CAI OBJECTIVE 1989	3,391	1,740	1,651	3,200	1,686	1,514
BASELINE 1984	2,726	1,405	1,321	2,560	1,349	1,211
REQUIRED INCREASE	665	335	330	640	337	303
ESTIMATED 1984-88 GAIN	328	214	114	508	203	305
ESTIMATED 1988-89 GAIN	105	-25	130	311	-17	328
CAI COVERAGE SHORTFALL	232	146	86	151	151	NONE

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

TABLE C - 4
HONDURAS

COVERAGE INCREASES NEEDED
TO MEET 1995 TARGETS

	WATER SUPPLY COVERAGE (PERSONS)			SANITATION COVERAGE (PERSONS)		
	TOTAL	URBAN	RURAL	TOTAL	URBAN	RURAL
1995 TARGETS	4,380	2,100	2,280	4,611	2,055	2,556
BASELINE 1989	3,159	1,594	1,565	3,379	1,535	1,844
REQUIRED INCREASE	1,221	506	715	1,232	520	712

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

Figure C-3
HONDURAS
 1989 COVERAGE AND TARGETS (# OF PEOPLE)

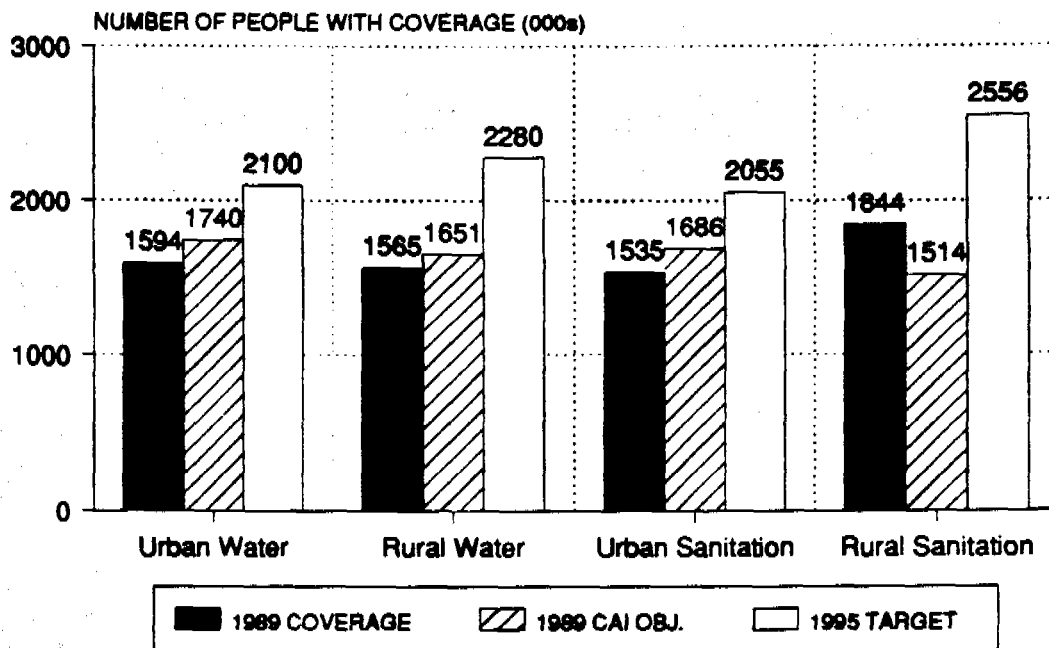


Figure C-4
HONDURAS
 1989 COVERAGE AND TARGETS (% OF POP.)

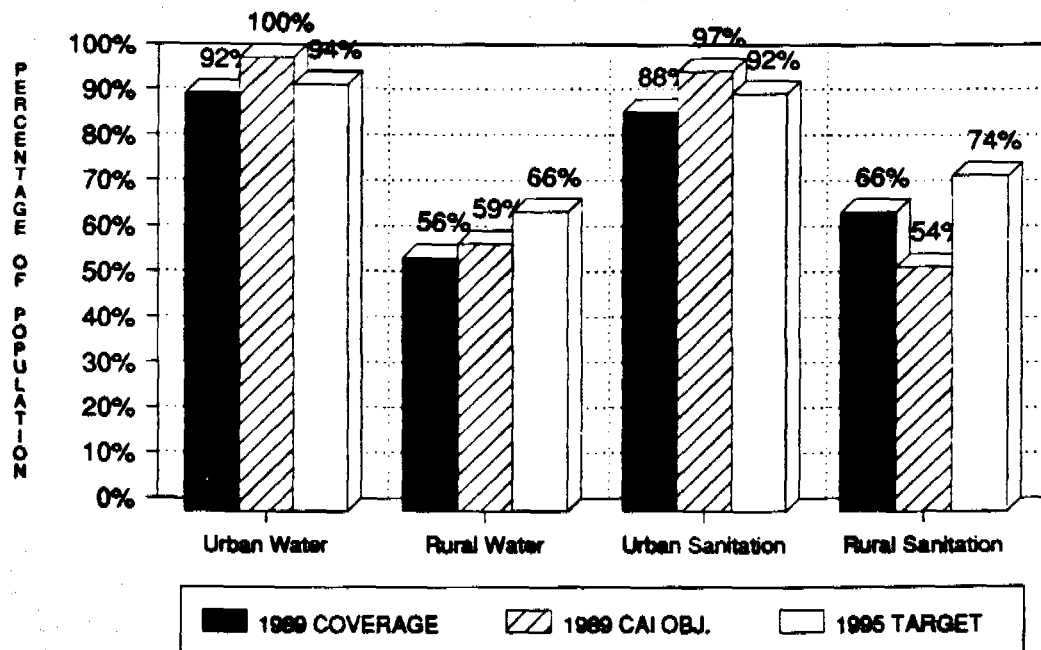
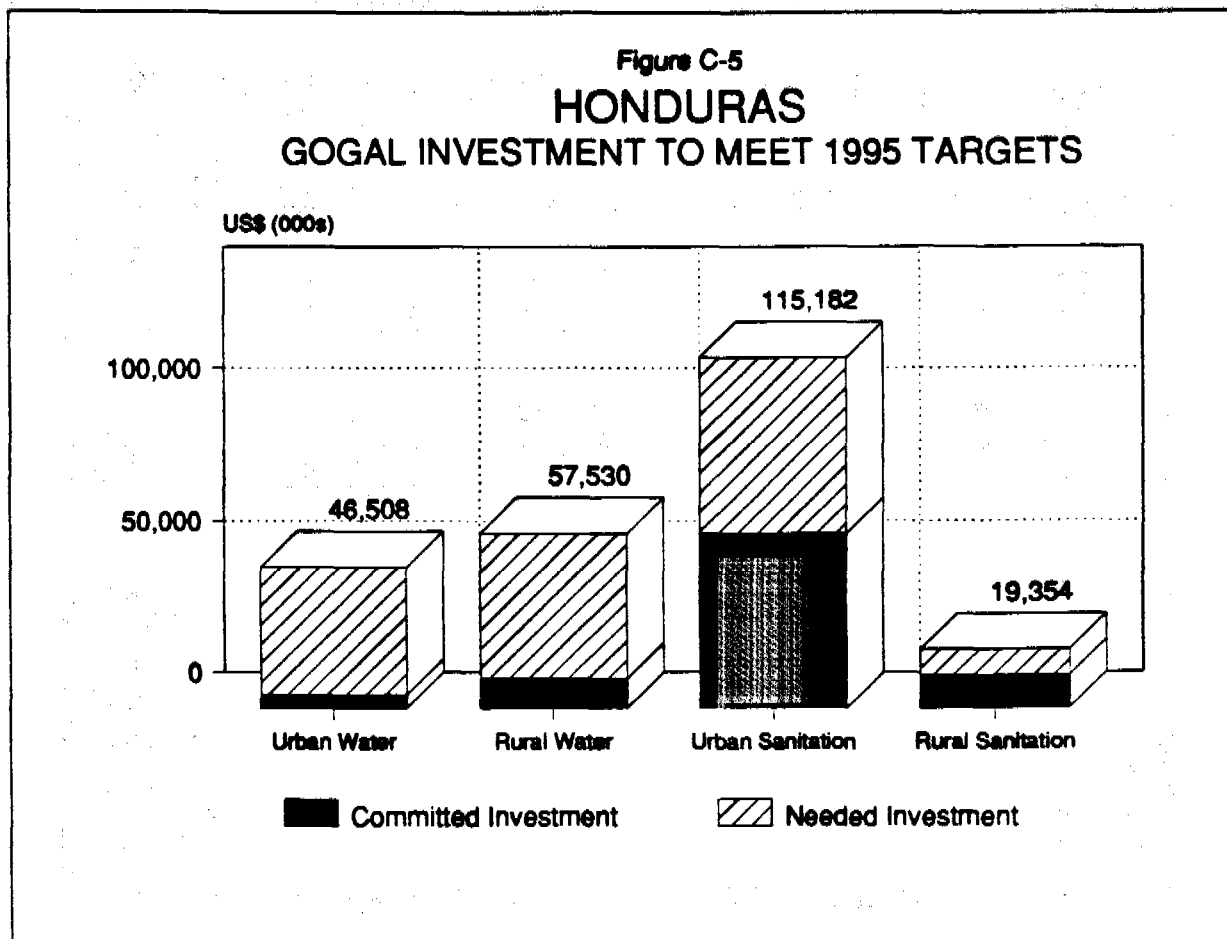


TABLE C - 5
HONDURAS

PROJECTED FUNDING
SHORTFALL TO MEET 1995 TARGETS
(1989 US\$, 000s)

	WATER SUPPLY		SANITATION		TOTAL
	URBAN	RURAL	URBAN	RURAL	
SHORTFALL IN POPULATION COVERAGE (IN 000s)	506	715	520	712	2,453
ESTIMATED UNIT COST-- US\$ PER CAPITA	\$92	\$80	\$222	\$27	N/A
ESTIMATED TOTAL COST TO MEET 1995 TARGETS	\$46,508	\$57,530	\$115,182	\$19,354	\$238,574
FIRMLY COMMITTED INVESTMENTS (1)	\$4,371	\$9,729	\$57,635	\$10,765	\$82,500
PROJECTED FUNDING SHORTFALL	\$42,137	\$47,801	\$57,547	\$8,589	\$156,074

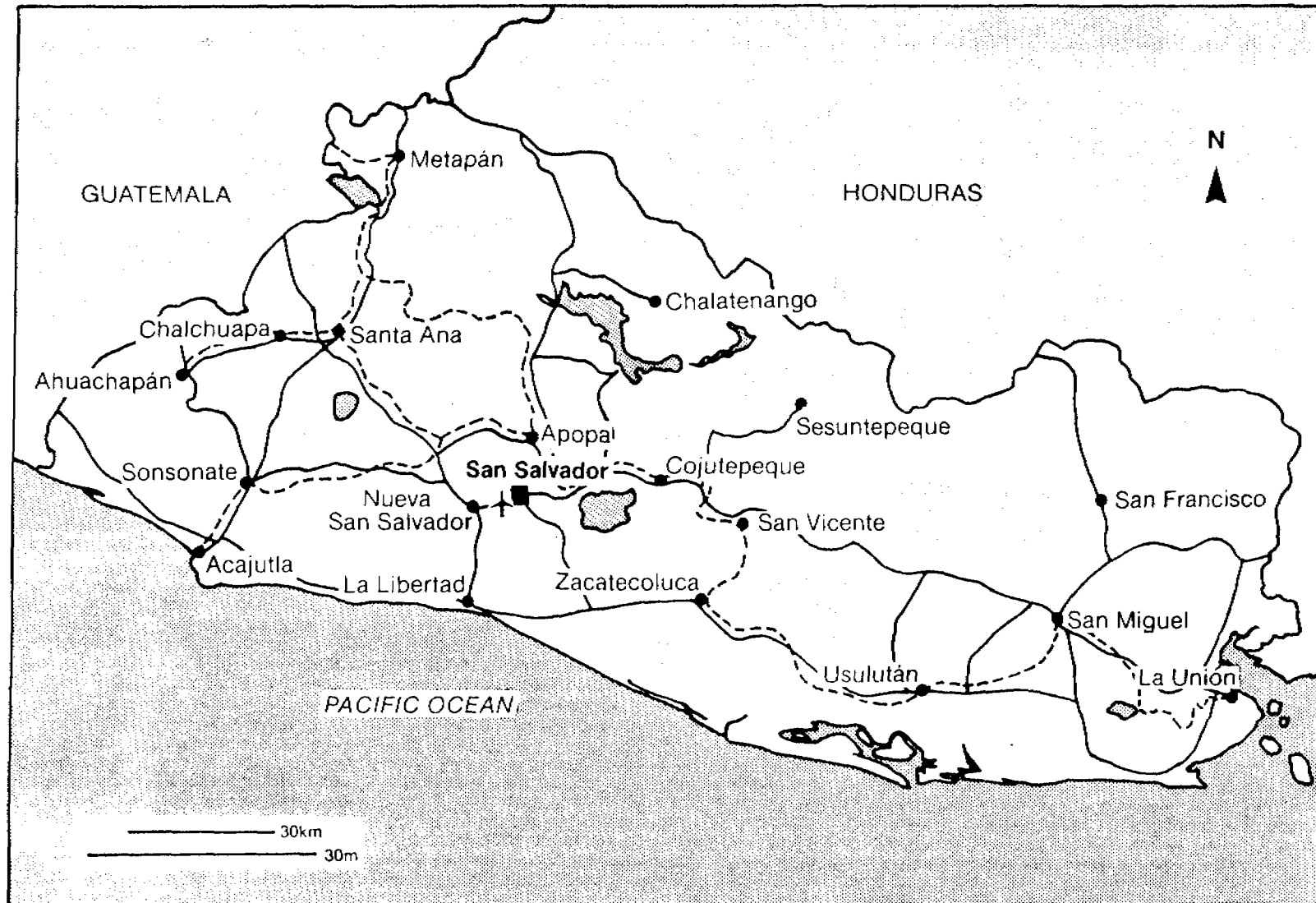
(1) ONLY THOSE INVESTMENTS WHICH INCREASE COVERAGE



APPENDIX D

EL SALVADOR

EL SALVADOR



D

COUNTRY PROFILE: EL SALVADOR

COUNTRY BACKGROUND

The Republic of El Salvador, with a population of 5.1 million and a land mass of only 21,040 square kilometers, is the most densely populated country in the Americas. The country is divided geographically into three distinct areas: the mountainous region to the east (with elevations up to 2,700 meters above sea level), the central plateau, and the region along the Pacific Coast.

Over the past few decades, El Salvador, like its Central American neighbors, has experienced continuing internal migration from rural to urban areas. This movement

is due, in part, to declining productivity and incomes in the agricultural sector as a result of the global recession in 1980, which drastically reduced prices for El Salvador's major agricultural exports, including cotton, coffee, and sugar. The ongoing urbanization has been further fueled by a decade-long internal conflict, which had been waged, until November 1989, primarily in the rural areas.

Infant and child mortality rates have declined in recent years, but diarrheal and intestinal diseases persist as major health problems due to the lack of clean water supplies and sanitation services, as well as a weak health care system.

The two most important national agencies working in the water and sanitation sector are the *Administración Nacional de Acueductos y Alcantarillados (ANDA)* and *Plan Nacional de Saneamiento Básico Rural (PLANSABAR)*. ANDA is responsible for the provision of water services and sanitation facilities to urban populations of over 2,000 persons and to rural villages with under 300 residents. The remaining towns, those with populations between 300 and 2,000, are served by PLANSABAR, an entity of the Ministry of Public Health. El Salvador is also served by two coordinating committees, *Comité Nacional de Instituciones de Agua Potable y Saneamiento (CONIAPOS)* and *Comité Ejecutivo Protector de los Recursos Hídricos (CEPRHI)*. CONIAPOS is a water policy-determining body, and CEPRHI acts in an advisory capacity to all government institutions engaged in water-related activities.

1989 Population:	5.1 million (Urban—2.5, Rural—2.6)
Population Growth Rate:	Urban—2.5%, Rural—3.5%
Infant Mortality Rate:	56
Child Mortality Rate:	24
Mortality Rate due to Diarrheal Diseases:	45
Life Expectancy:	63 (Male—60, Female—67)
Adult Literacy:	Male—75%, Female—69%
GNP per Capita:	\$860
GNP per Capita Annual Growth from 1965-80:	-0.4%
Currency:	Colon 5 = US \$1
Inflation from 1980-87:	16.5%

INVESTMENT AND COVERAGE LEVELS

Current Projects

At present, El Salvador benefits from a number of water and sanitation projects sponsored by A.I.D., the IDB, UNICEF, K/W, and several private voluntary organizations. In 1989, A.I.D. began a project with a large rural water and sanitation component, which should enable El Salvador to make substantial progress toward providing basic services to rural Salvadorans.

- **UNICEF**

UNICEF's water and sanitation program in El Salvador is focused on the construction of rural water supplies and sanitation facilities. This program, which spends approximately \$400,000 annually, consists primarily of small drilling projects in the coastal areas of the country.

Total Committed Funding to Increase Coverage (1990-1995): \$400,000

- **A.I.D.**

USAID/El Salvador currently has several active water and sanitation projects and two new water and sanitation projects—the Public Services Improvement Project and the Oriente 89 Plan.

The largest of A.I.D.'s projects in the water and sanitation sector, the Public Services Improvement Project, began in 1989 and includes a water and sanitation component for rural areas of El Salvador of \$40 million. The bulk of the funds will go to support the construction of water systems, with some money going to support the construction of pit latrines and health education. The project is scheduled to run through 1994 and is expected to benefit approximately 600,000 people.

The Oriente 89 Plan, which also began in 1989, is a smaller scale (\$4 million) project and will increase water system coverage by 18,500 persons in urban areas of eastern El Salvador. The Chalatenango 88 Project, the Earthquake Reconstruction Project, and the National Program for Popular Housing also provide for the construction and expansion of water systems in urban areas. Collectively, they will provide coverage to approximately 170,000 people. In addition, A.I.D. funds the Public Services Restoration Project, which supports maintenance and repair costs for existing systems.

Except for the Earthquake Reconstruction Project, which is implemented by the *Dirección General de Reconstrucción* (DRG), all of A.I.D.'s projects are implemented by ANDA.

Funding for A.I.D.'s projects is shown below:

Project	Start/Completion	Amount
Public Services Improv.	1989-1994	\$40,000,000
Oriente 89 Plan	1989-1991	4,000,000
Chalatenango 88	1989-1990	6,000,000
Earthquake Reconstruction	1987-1990	3,500,000
Popular Housing	1988-1990	1,200,000
Public Services Restoration	1987-1990	1,000,000
Total		\$55,700,000

Total Committed Funding to Increase Coverage (1990-1995): \$45,600,000

IDB

The IDB currently has three ongoing loan projects in El Salvador, the largest of which funds major water system and sanitation improvements for the city of San Salvador. Components of this project include a new treatment plant, river intake, well field, transmission mains, reservoirs, extension of the distribution system, and substantial rehabilitation work. Although the project is still in its first phase, construction has begun. This project is estimated to benefit 1.6 million persons. A second IDB project, to serve rural communities, will involve the construction of water supply systems to serve 230,000 persons. Finally, a much smaller project aims at constructing emergency works to repair damage done by the 1987 earthquake.

Source	San Salvador (1988-1993)	Rural (1988-1992)	Emergency (1988-1992)
IDB	\$166,000,000	\$21,000,000	\$3,100,000
GOES	18,500,000	7,000,000	350,000
Total	\$184,500,000	\$28,000,000	\$3,450,000

Total Committed Funding to Increase Coverage (1990-1995): \$36,625,000

- **PVOs**

The private voluntary organizations of Save the Children, World Relief/El Salvador, and the International Rescue Committee are also working in the water supply and sanitation sector. Emphasizing the construction of latrines and water wells in the rural areas of El Salvador, these organizations plan to extend coverage by nearly 17,000 people through their current projects. PVO funding is distributed by organization as follows.

Organization	Start/Completion	Amount
World Relief/El Salv.	1985-1989	\$600,000
Save the Children	1989-1993	\$300,000
Intl. Rescue Cmte.	1988-1990	\$200,000
Total		\$1,100,000

Total Committed Funding to Increase Coverage (1990-1995): \$550,000

- **KfW**

The German development financing agency, KfW, is currently in the process of beginning two water and sanitation projects in El Salvador. One will provide water and sanitation facilities to 15 municipalities, to the benefit of approximately 45,000 people in the central zone of the country. Though feasibility studies for the work were completed in 1987, the \$8.2 million loan is still being ratified by the Salvadoran government. The second project, which is a follow-on to a completed A.I.D. project, involves extending water systems and, in some cases, sewerage lines. This project, also estimated to serve nearly 45,000, will be financed by a \$5.4 million loan. The government's financial contributions to both projects, which will run from 1990 to 1993, are expected to be minimal. Because both loans are in the final stages of approval, they have been included in the funding analysis.

Total Committed Funding to Increase Coverage (1990-1995): \$13,600,000

- **WHO/PAHO**

PAHO's Community Water Supply program in El Salvador focuses on improving and expanding drinking water systems by promoting new and ongoing water and sanitation projects in addition to expanding latrine use and health education programs. During 1990-1991, \$306,000 will be spent to support these educational efforts.

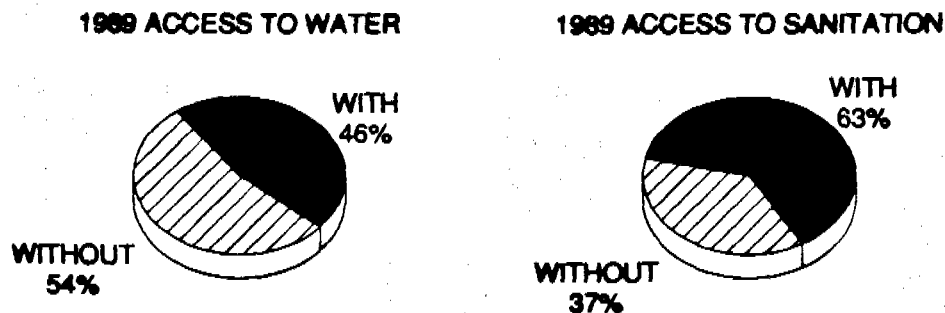
Total Committed Funding to Increase Coverage (1990-1995): \$0

Current Coverage

About 49 percent of El Salvador's residents live in urban areas, up from the 42 percent reported in the 1988 Update. These revisions were based on information obtained from the Population Reference Bureau of El Salvador's Ministry of Planning, which showed that previous population projections underestimated the rapid urbanization of the country. As a consequence of this adjustment, the urban population for 1989 increased by 400,000 people over 1988 (Tables D-1 and D-2). While both urban water and sanitation coverage levels show increases in the number of persons with basic services, the adjustment in population figures has led to urban water coverage falling from 90 percent in 1988 to 76 percent in 1989, and to urban sanitation coverage falling from 93 percent to 88 percent.

In the rural areas of the country, gains of 65,000 additional persons with access to a water system and 3,000 with excreta disposal facilities were recorded in 1989. With the restructuring of the 1989 population figures, these gains translate into an increase of 4 percentage points in both rural water coverage (to 17 percent) and rural sanitation coverage (to 38 percent). With less than one in five rural residents with access to a water system and nearly two-thirds without even basic sanitation facilities, El Salvador is in great need of expanding these services to its rural population.

The chart below shows the 1989 water and sanitation coverage levels for the total Salvadoran population.



MEETING THE TARGETS

1989 CAI Objectives

As shown in Table D-3, El Salvador has been successful in meeting the urban water and sanitation targets, but did not reach either of the rural goals. Over the five-year period from 1984 to 1989, El Salvador has expanded and constructed water systems to serve an additional 450,000 urban residents. Access to urban sanitation during the same period was extended to over 725,000 persons.

In the rural areas of the country, however, water coverage experienced a steady decline over the period from 1984 to 1988, and then an increase in 1989, when coverage rose from 372,000 persons to 437,000. Even with the increase in 1989, current coverage levels are nearly half those reported in 1984. The number of rural Salvadorans with access to sanitation facilities increased slightly from 1984 to 1986 and has remained constant since then, with approximately 990,000 persons covered by some form of sanitation facility.

1995 Targets

In order to meet the 1995 targets for El Salvador, significant increases in the percentage of the population with access to water and sanitation services will be necessary (Table D-4 and Figures D-4 and D-5). The 1995 targets call for increasing urban water coverage from the current 76 percent to 82 percent, urban sanitation from 88 percent to 92 percent, rural water from 17 percent to 35 percent, and rural sanitation from 38 percent to 52 percent. To meet these goals within the next six years, urban water coverage must increase by 483,000 people, urban sanitation by 457,000, rural water by 618,000, and rural sanitation by 581,000.

Meeting the 1995 Urban Water and Sanitation Targets

The investment required to meet the 1995 urban water and sanitation goals totals over \$125 million, \$89 million to support the expansion of water services to urban residents and \$37 million to provide residents with sanitation facilities (Table D-5 and Figure D-5). Currently, through GOES, A.I.D., and IDB investments, nearly \$26 million has been committed for urban water service expansion and \$9.5 million for urban sanitation programs. Shortfalls in funding to meet the water and sanitation targets are \$63 million and \$27 million, respectively. If the urban targets are to be met by 1995, considerably increased support in these areas is required.

Meeting the Rural Water and Sanitation Targets

Most of the funding required to meet the 1995 rural water and sanitation goals has been committed by A.I.D. through its Public Services Improvement Project, which will run through 1994 and is expected to benefit 600,000 rural residents of El Salvador. Despite the commitment by A.I.D. and other donors of nearly \$61 million to expand water and sanitation services to rural Salvadorans currently unserved, an additional \$4 million is needed to support the construction of rural water systems. WASH projects that sufficient funding to raise the rural sanitation coverage level to the target of 52 percent has already been committed.

TABLE D - 1
EL SALVADOR

ACTUAL WATER SUPPLY
COVERAGE VERSUS TARGETS

YEAR	WATER SUPPLY								
	TOTAL POP-ULATION	ALL AREAS		URBAN AREAS			RURAL AREAS		
		POP. SERVED	PERCENT SERVED	URBAN POP.	TOTAL SERVED	PERCENT SERVED	RURAL POP.	TOTAL SERVED	PERCENT SERVED
1980	4,540	2,330	51 %	1,900	1,280	67 %	2,640	1,050	40 %
BASELINE 1984	4,700	2,261	48 %	1,980	1,445	73 %	2,720	816	30 %
1986	4,800	2,081	43 %	2,000	1,518	76 %	2,800	563	20 %
1988	4,934	2,236	45 %	2,072	1,864	90 %	2,862	372	13 %
1989	5,100	2,331	46 %	2,500	1,894	76 %	2,600	437	17 %
1989 CAI OBJECTIVE	5,100	2,826	55 %	2,500	1,806	72 %	2,600	1,020	39 %
1995 TARGET	5,914	3,432	58 %	2,899	2,377	82 %	3,015	1,055	35 %

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

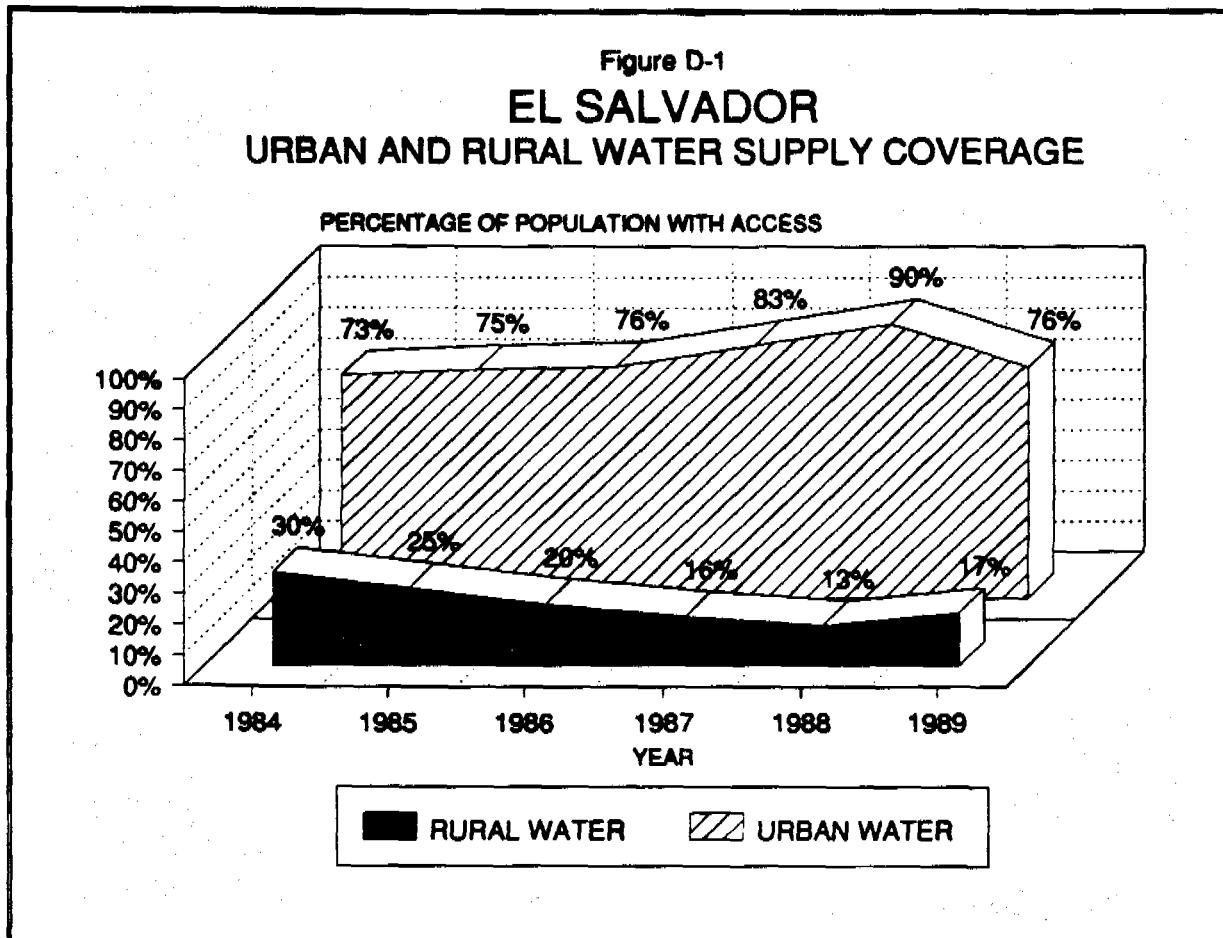


TABLE D - 2
EL SALVADOR

ACTUAL SANITATION
COVERAGE VERSUS TARGETS

YEAR	TOTAL POP-ULATION	SANITATION							
		ALL AREAS		URBAN AREAS			RURAL AREAS		
		POP. SERVED	PERCENT SERVED	URBAN POP.	TOTAL SERVED	PERCENT SERVED	RURAL POP.	TOTAL SERVED	PERCENT SERVED
1980	4,540	1,600	35 %	1,900	910	48 %	2,640	690	26 %
BASELINE 1984	4,700	2,355	50 %	1,980	1,485	75 %	2,720	870	32 %
1986	4,800	2,756	57 %	2,000	1,772	89 %	2,800	984	35 %
1988	4,934	2,911	59 %	2,072	1,927	93 %	2,862	984	34 %
1989	5,100	3,197	63 %	2,500	2,210	88 %	2,600	987	38 %
1989 CAI OBJECTIVE	5,100	2,944	58 %	2,500	1,856	74 %	2,600	1,088	42 %
1995 TARGET	5,914	4,235	72 %	2,899	2,667	92 %	3,015	1,568	52 %

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

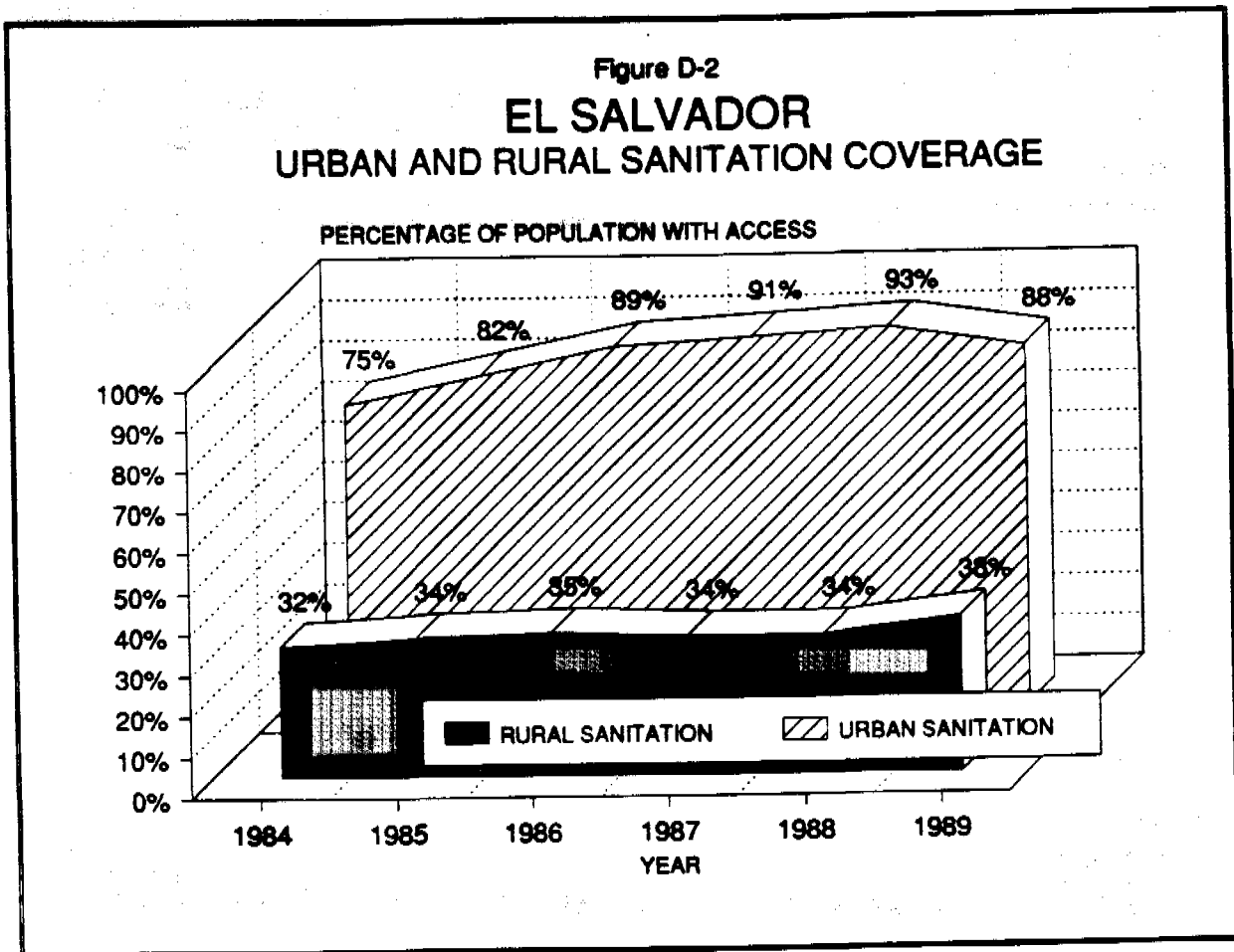


TABLE D - 3
EL SALVADOR

SHORTFALLS
IN MEETING THE 1989 CAI OBJECTIVE

	WATER SUPPLY COVERAGE (PERSONS)			SANITATION COVERAGE (PERSONS)		
	TOTAL	URBAN	RURAL	TOTAL	URBAN	RURAL
1989 CAI OBJECTIVE	2,826	1,806	1,020	2,944	1,856	1,088
BASELINE 1984	2,261	1,445	816	2,355	1,485	870
REQUIRED INCREASE	565	361	204	589	371	218
ESTIMATED 1984-88 GAIN	(25)	419	(444)	556	442	114
ESTIMATED 1988-89 GAIN	95	30	65	286	283	3
CAI COVERAGE SHORTFALL	583	NONE	583	101	NONE	101

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

TABLE D - 4
EL SALVADOR

COVERAGE INCREASES NEEDED
TO MEET 1995 TARGETS

	WATER SUPPLY COVERAGE (PERSONS)			SANITATION COVERAGE (PERSONS)		
	TOTAL	URBAN	RURAL	TOTAL	URBAN	RURAL
1995 TARGET	3,432	2,377	1,055	4,235	2,667	1,568
BASELINE 1989	2,331	1,894	437	3,197	2,210	987
REQUIRED INCREASE	1,101	483	618	1,038	457	581

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

Figure D-3
EL SALVADOR
 1989 COVERAGE AND TARGETS (# OF PEOPLE)

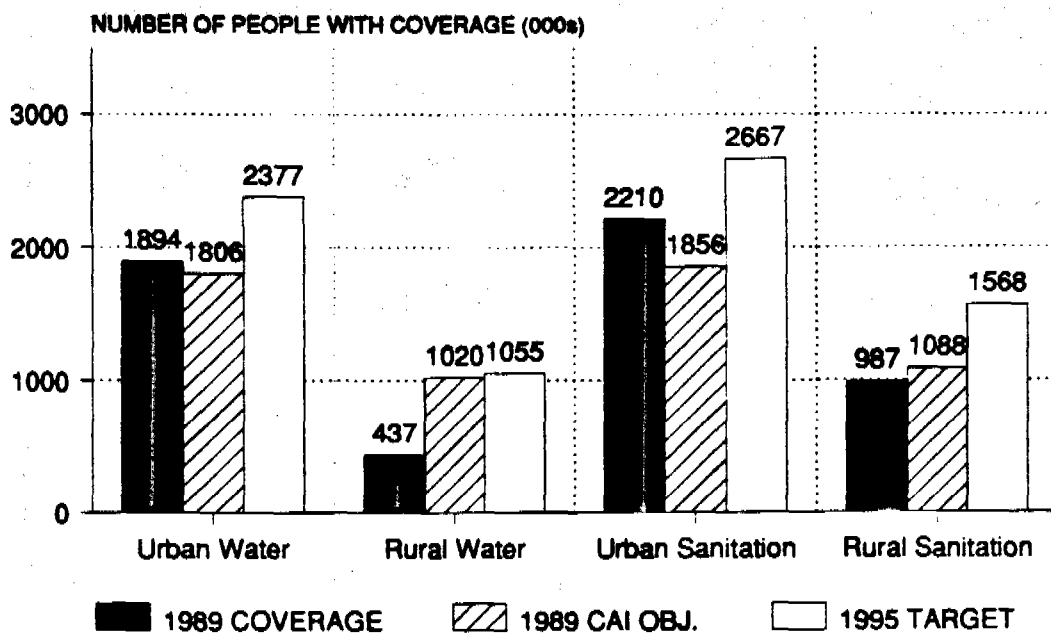


Figure D-4
EL SALVADOR
 1989 COVERAGE AND TARGETS (% OF POP.)

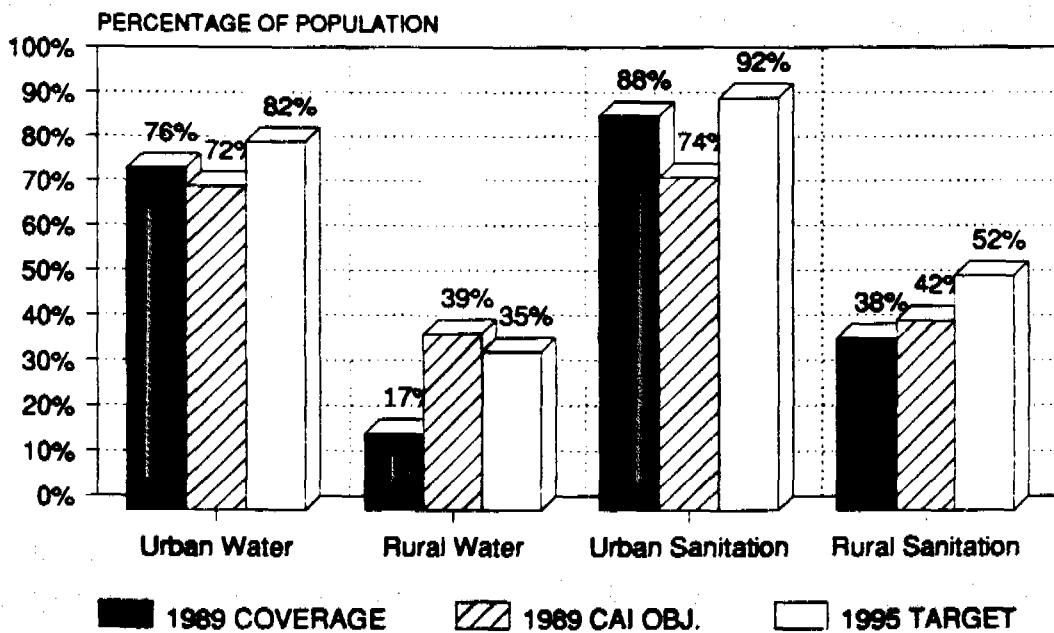
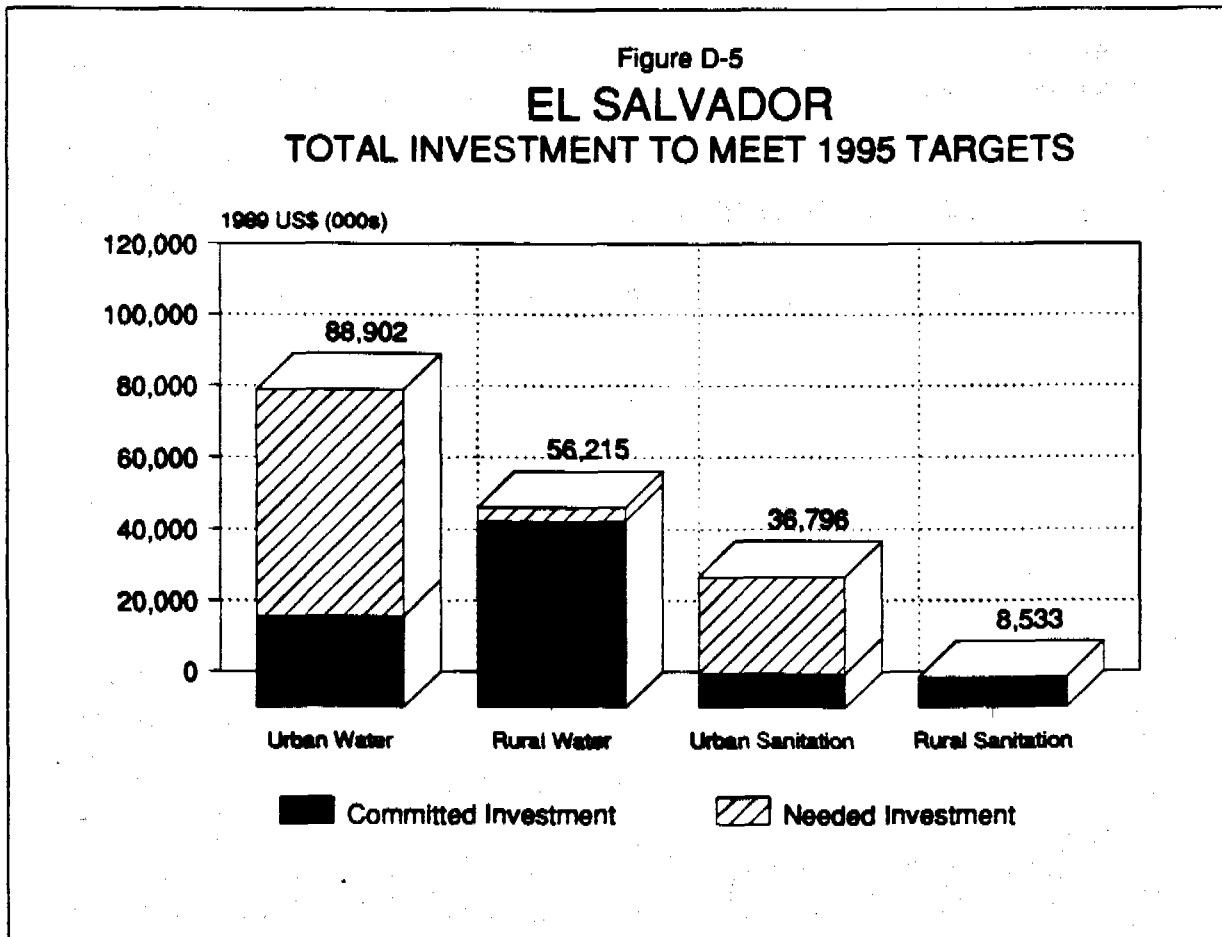


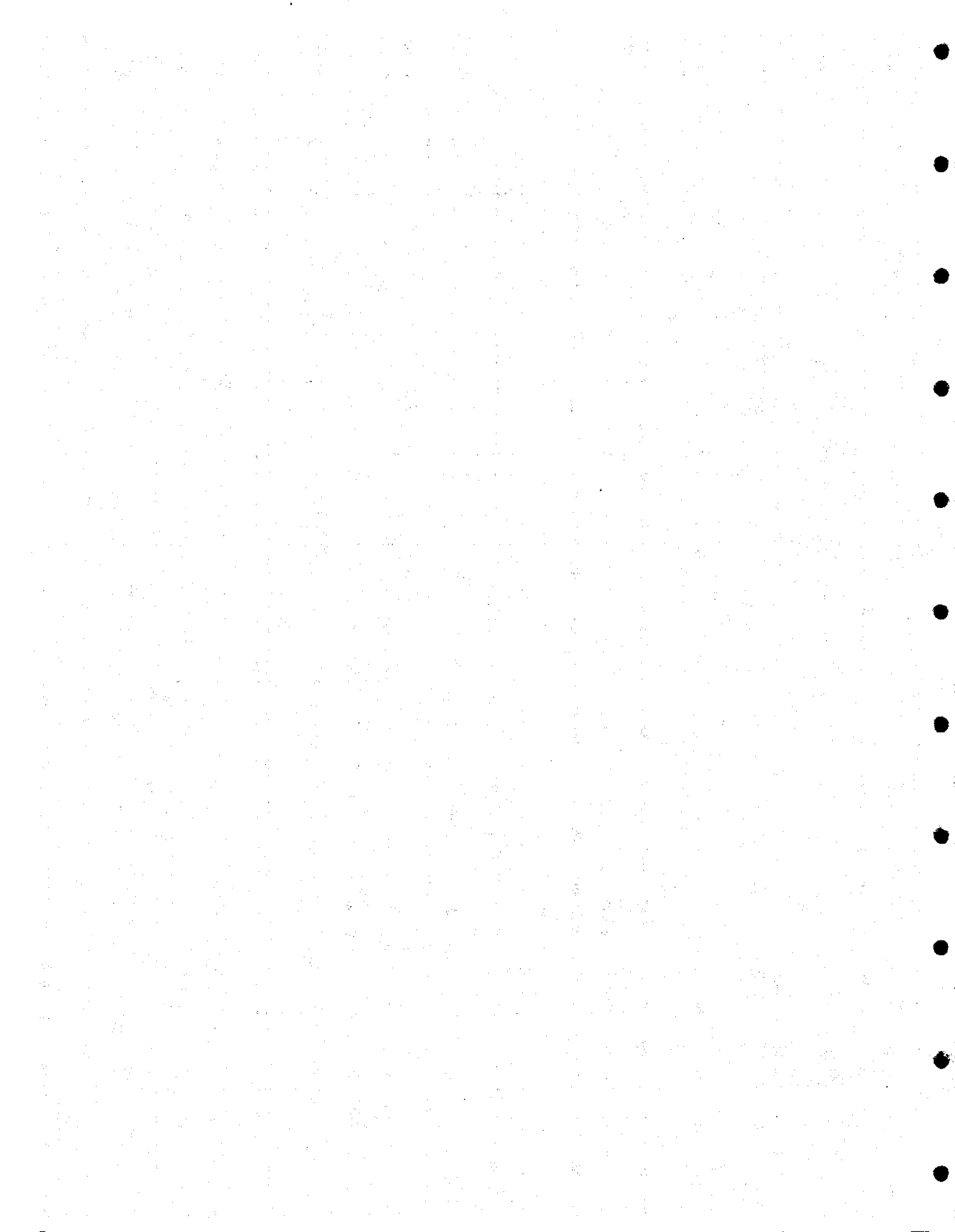
TABLE D - 5
EL SALVADOR

PROJECTED FUNDING
SHORTFALL TO MEET 1995 TARGETS
(1989 US\$, 000s)

	WATER SUPPLY		SANITATION		TOTAL
	URBAN	RURAL	URBAN	RURAL	
SHORTFALL IN POPULATION COVERAGE (IN 000s)	483	618	457	581	2,140
ESTIMATED UNIT COST-- US\$ PER CAPITA	\$184	\$91	\$80	\$15	N/A
ESTIMATED TOTAL COST TO MEET 1995 TARGETS	\$88,902	\$56,215	\$36,796	\$8,499	\$190,412
FIRMLY COMMITTED INVESTMENTS (1)	\$25,720	\$52,417	\$9,480	\$8,533	\$96,150
PROJECTED FUNDING SHORTFALL	\$63,182	\$3,798	\$27,316	NONE	\$94,296

(1) ONLY THOSE INVESTMENTS WHICH INCREASE COVERAGE

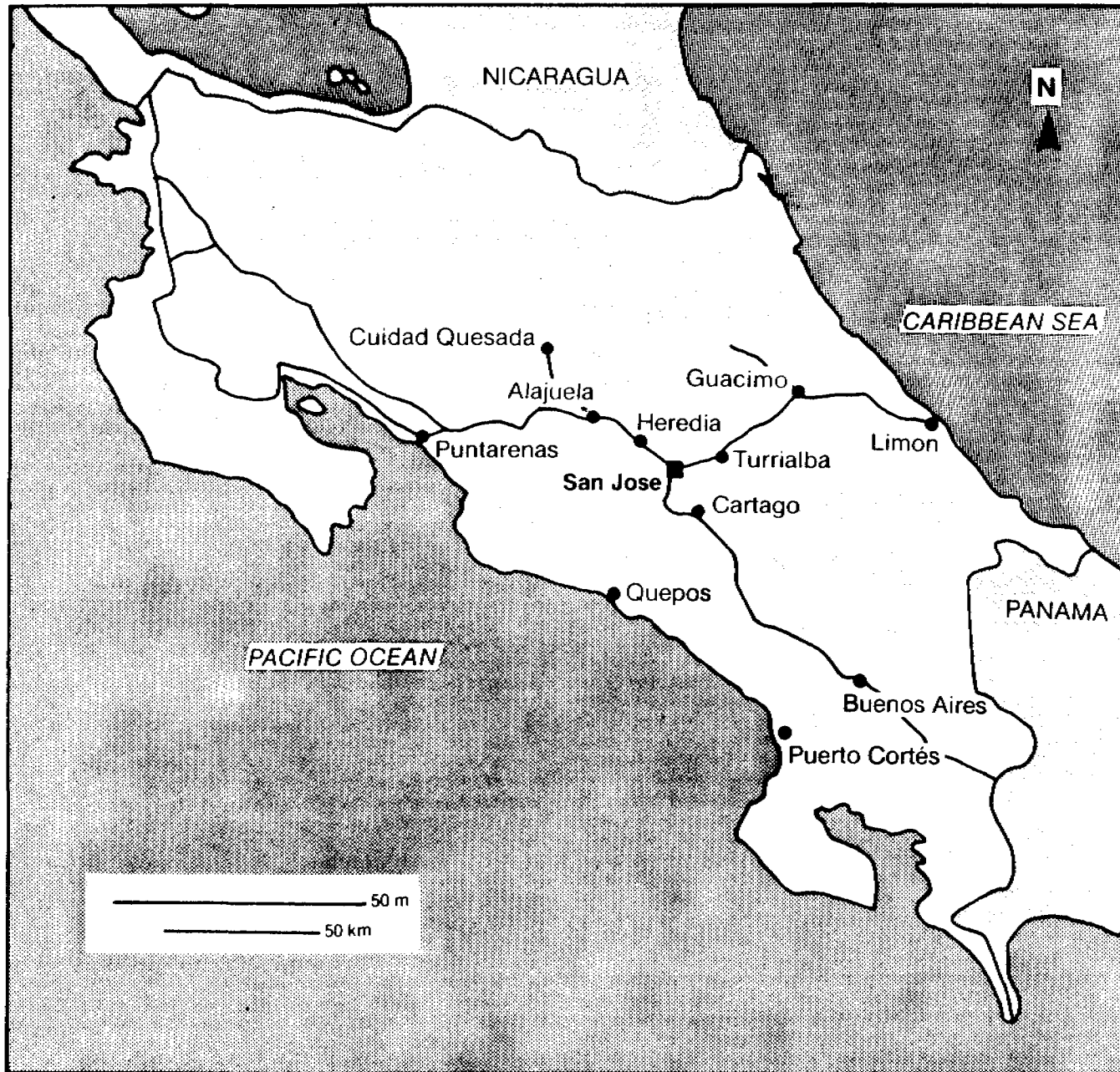




APPENDIX E

COSTA RICA

COSTA RICA



E

COUNTRY PROFILE: COSTA RICA

COUNTRY BACKGROUND

Situated between Nicaragua to the north and Panama to the southeast, the Republic of Costa Rica covers a land area of 50,909 square kilometers. The country, with 34 river basins, has sufficient surface and groundwater resources, although the pollution of surface water resources by industrial, agricultural, and domestic waste constitutes a health problem.

Costa Rica has the highest life expectancy rate, the greatest GNP per capita, and the lowest infant and child mortality rates in Central America. Investment in public health is a priority for the Government of Costa Rica (GOCR), and high levels of health service coverage are maintained in rural and urban parts of the country. As a result of these policies and investments, infant and child mortality rates have dropped, and sizable reductions have been achieved in the incidence of preventable diseases, such as acute diarrhea. Despite this progress, however, nearly one in six rural Costa Ricans lacks access to potable water, and, in the poorest areas of the country, mortality rates are twice the national average.

Three local institutions work in the water and sanitation sector. *Instituto Costarricense de Acueductos y Alcantarillados (AyA)* is Costa Rica's national water and sewerage agency and has the authority to determine policies in water and sanitation. *Instituto de Fomento y Asesoría Municipal (IFAM)* and the Ministry of Health, through its Department of Wells and Sanitation, are also active in the sector.

Total Population:	2.94 million (Urban—1.37, Rural—1.57)
Population Growth Rate:	Urban—3.4%, Rural—2.0%
Infant Mortality Rate:	18
Child Mortality Rate:	4
Mortality Rate due to Diarrheal Diseases:	26
Life Expectancy:	75 (Male—73, Female 77)
Adult Literacy:	Male—94%, Female—93% (1985)
GNP Per Capita (\$1987):	\$1,670
GNP per Capita Annual Growth from 1965-87:	1.5%
Currency:	Colon 83.45 = US \$1
Average Annual Inflation from 1980-87:	28.6%

INVESTMENT AND COVERAGE LEVELS

Current Projects

External assistance to Costa Rica in the supply of water and sanitation services is limited. USAID/Costa Rica, which has a single local currency generating project in operation through mid-1990, does not plan to work in this sector in the near future. The IDB has one loan program totaling \$28.3 million, and a major project for San Jose, carried out under a World Bank loan, ended this year with a follow-on loan program yet to be negotiated. Other external support agencies working in the country include UNICEF, WHO/PAHO, and KfW.

- **UNICEF**

UNICEF's program in the water supply and sanitation sector supports efforts to provide access to safe water for 50,000 families living in the town of Talamanca, the area with Costa Rica's highest infant mortality rate. UNICEF has provided materials and equipment for deep well drilling and handpump installation. This project is being implemented by the MOH's Department of Wells and Sanitation. In the future, UNICEF may expand the Talamanca project to other areas without access to clean water. UNICEF is also providing the services of a technical consultant to analyze MOH efforts and plans in the water and sanitation sector. Currently, UNICEF spends \$200,000 annually to support its program in Costa Rica.

Total Committed Funding to Increase Coverage (1990-1995): \$400,000

- **A.I.D.**

A.I.D.'s RHUDO/CABEI program to support urban development in Costa Rica and three other Central American countries has been suspended until CABEI can demonstrate evidence of its liquidity. USAID/Costa Rica, however, continues to sponsor a local currency program administered by AyA. With Economic Support Fund monies of \$10,625,000, AyA is constructing and rehabilitating water systems in the rural and urban areas of Costa Rica. This program is expected to run through mid-1990; USAID has no plans to begin any new projects in this sector for at least the next two years.

Total Committed Funding to Increase Coverage (1990-1995): \$10,625,000

- **IDB**

The IDB has one active loan program in Costa Rica. The program, which was initiated in 1986 and is scheduled for completion in 1992, has three components: water supply

improvement projects for secondary cities, a rural project aimed at building new water systems in small towns, and a sewerage project for Puntarenas. It is estimated that 281,000 urban dwellers and 19,000 rural inhabitants will benefit from improved water systems and that 23,400 residents of Puntarenas will receive sewerage services. Work under this loan will be implemented by AyA. Funding for the program is as follows.

Source	1986-1992
IDB	\$28,300,000
GOCR	15,100,000
Total	\$43,400,000

Because this program is primarily intended to rehabilitate existing systems, only a fraction of the total amount has been included as investment committed to increase coverage.

Total Committed Funding to Increase Coverage (1990-1995): \$5,000,000

- **World Bank**

The World Bank completed disbursements to the Costa Rica National Water Supply Company in 1989 for its sole loan project in this sector. The objective of this \$55 million project, which began in 1981, was to improve the water system serving San Jose by expanding existing water production facilities and installing a 30-kilometer transmission water main and a secondary distribution system.

Total Committed Funding to Increase Coverage (1990-1995): \$0

- **WHO/PAHO**

PAHO's technical assistance for community water systems and environmental health for 1990 and 1991 will be approximately \$300,000. PAHO actively supports the coordination and development of the managerial capacity of institutions working in the water and health sectors, along with the evaluation and selection of appropriate technologies for well drilling and water pumping.

Total Committed Funding to Increase Coverage (1990-1995): \$250,000

- **KfW**

KfW is negotiating a new loan with the GOCR to support the rehabilitation and expansion of rural water supply and sanitation facilities in approximately 100 small and medium-sized villages. The \$6 million loan contract has cleared nearly all government reviews, and funding information for the three-year project, scheduled to begin in 1990, has been included in the investment analysis.

Total Committed Funding to Increase Coverage (1990-1995): \$6,000,000

- **National Government**

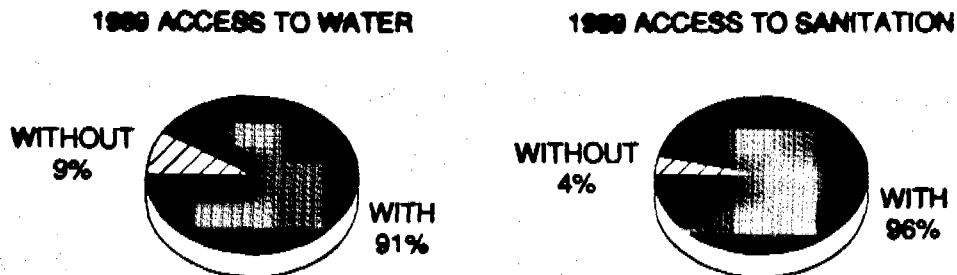
While the Government of Costa Rica may fund some water and sanitation projects without assistance from an international donor, WASH believes that the majority of these government monies are used for non-coverage activities. The extent of the GOCR's financial support for projects to expand water and sanitation coverage is not known at this time.

Total Committed Funding to Increase Coverage (1990-1995): N/A

Current Coverage

Costa Rica maintains the highest levels of water supply and sanitation in Central America. As shown in Tables E-1 and E-2 and Figures E-1 and E-2, Costa Rica has maintained full (100 percent) coverage in urban water, and in 1989 attained full urban sanitation coverage. In the rural areas, an increase in rural water coverage of 1 percentage point (to 84 percent of the population) has been achieved; rural sanitation coverage remains at 93 percent. It should be noted, however, that the 1989 population figures project a larger percentage of the 1989 population living in the rural areas than was reported in 1988. This change in the population distribution between the rural and urban sectors lowers the overall water coverage from 92 percent in 1988 to 91 percent in 1989.

The chart below shows total population coverage in water and sanitation.



MEETING THE TARGETS

1989 CAI Objectives

In the period from 1984 to 1989, Costa Rica has been successful in meeting or exceeding all of the CAI targets save one, rural sanitation. As shown in Table E-3, both urban water and sanitation coverage levels increased by 312,000 (47,000 people more than the CAI goal). In the rural areas of the country, the target of 221,000 additional persons with access to water was met in 1989, but the rural sanitation target of 315,000 additional persons with access to excreta disposal facilities fell 110,000 persons short.

1995 Targets

The 1995 goals for Costa Rica mean that full water and sanitation coverage would have to be maintained in urban areas in the face of an annual urban growth rate of 3.4 percent (Table E-4 and Figures E-3 and E-4). By 1995, this would require providing services in both water and sanitation to approximately 305,000 more people. In the rural areas, the new goals aim to increase the percentage of rural inhabitants with access to potable water from 84 percent to 88 percent (237,000 additional persons) and to increase rural sanitation from 93 percent to 95 percent coverage (220,000 persons). Overall, the 1995 targets call for increases of 542,000 people with access to a safe water supply and 525,000 people with access to sanitation facilities.

Meeting the 1995 Urban Water and Sanitation Targets

Although Costa Rica attained full coverage in urban water and sanitation in 1989, significant levels of funding will be necessary to sustain those levels over the next six years. Over this period of time, an additional 305,000 people are projected to require these services, and the cost to meet this growth is projected at approximately \$85 million, \$42 million to fund water system construction and expansion and \$43 million for additional sanitation facilities and sewerage expansion (Table E-5 and Figure E-5).

Of the \$42 million needed to maintain full urban water coverage, \$4 million is currently committed to this effort, leaving a deficit of \$38 million. Committed investments to sustain full urban sanitation coverage total \$7 million, leaving a shortfall of \$36 million. These calculations are based on the assumption that the projected increases in the size of the urban population of Costa Rica over the next six years will have to be met with added coverage for each additional urban resident. Investment in projects or loans that provide funds for the maintenance and repair of existing water and sewerage systems, such as the IDB secondary cities loan, have not been included in their entirety in the funding analysis shown in Table E-5 and Figure E-5. Instead, only 10 percent of the IDB loan has been considered as an investment that will provide increased coverage.

Meeting the 1995 Rural Water and Sanitation Targets

Funding needed to meet the 1995 goal of 88 percent rural water coverage is estimated at \$20 million. With \$10 million currently committed to this effort, an additional \$10 million will be needed if the target is to be met. Significantly lower levels of investment, however, are needed to meet the rural sanitation targets by 1995, due to the relatively low cost of supplying rural Costa Ricans with basic sanitation facilities (\$30 per capita). To meet the 1995 target of 95 percent sanitation coverage, \$7 million will be needed, \$2 million of which is currently committed.

TABLE E - 1
COSTA RICA

ACTUAL WATER SUPPLY
COVERAGE VERSUS TARGETS

YEAR	TOTAL POP-ULATION	WATER SUPPLY							
		ALL AREAS		URBAN AREAS			RURAL AREAS		
		POP. SERVED	PERCENT SERVED	URBAN POP.	TOTAL SERVED	PERCENT SERVED	RURAL POP.	TOTAL SERVED	PERCENT SERVED
1980	2,210	1,960	89 %	1,025	1,025	100 %	1,185	935	79 %
BASELINE 1984	2,405	2,154	90 %	1,070	1,059	99 %	1,335	1,095	82 %
1986	2,531	2,281	90 %	1,126	1,115	99 %	1,405	1,166	83 %
1988	2,790	2,572	92 %	1,490	1,490	100 %	1,300	1,082	83 %
1989	2,941	2,690	91 %	1,371	1,371	100 %	1,570	1,319	84 %
1989 CAI OBJECTIVE	2,941	2,640	90 %	1,371	1,324	97 %	1,570	1,316	84 %
1995 TARGET	3,444	3,232	94 %	1,676	1,676	100 %	1,768	1,556	88 %

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

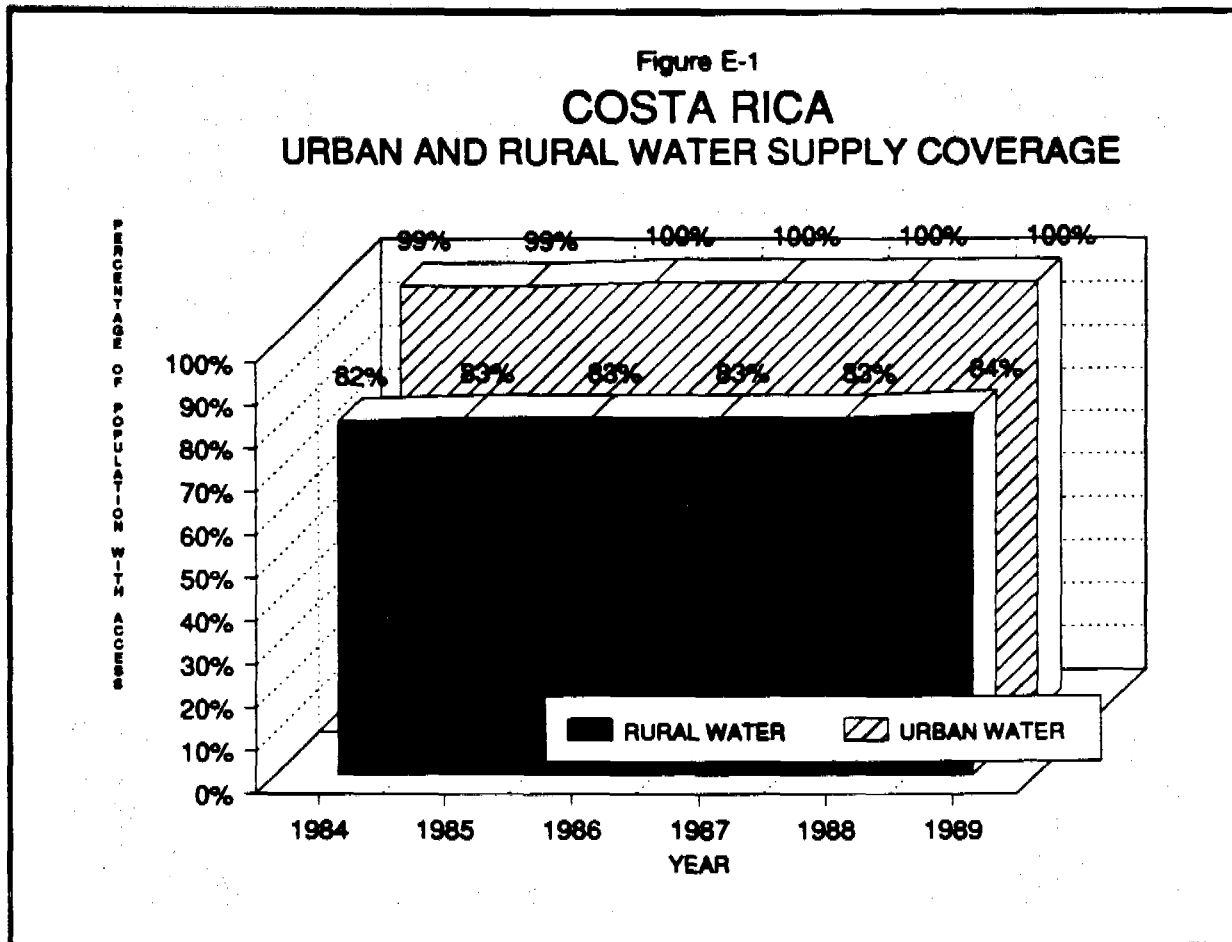


TABLE E - 2
COSTA RICA

ACTUAL SANITATION
COVERAGE VERSUS TARGETS

YEAR	SANITATION								
	TOTAL POP-ULATION	ALL AREAS		URBAN AREAS			RURAL AREAS		
		POP. SERVED	PERCENT SERVED	URBAN POP.	TOTAL SERVED	PERCENT SERVED	RURAL POP.	TOTAL SERVED	PERCENT SERVED
1980	2,210	2,044	92 %	1,025	1,016	99 %	1,185	1,028	87 %
BASELINE 1984	2,405	2,319	96 %	1,070	1,059	99 %	1,335	1,260	94 %
1986	2,531	2,442	96 %	1,126	1,115	99 %	1,405	1,327	94 %
1988	2,790	2,678	96 %	1,490	1,475	99 %	1,300	1,203	93 %
1989	2,941	2,831	96 %	1,371	1,371	100 %	1,570	1,460	93 %
1989 CAI OBJECTIVE	2,941	2,894	98 %	1,371	1,324	97 %	1,570	1,570	100 %
1995 TARGET	3,444	3,356	97 %	1,676	1,676	100 %	1,768	1,680	95 %

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

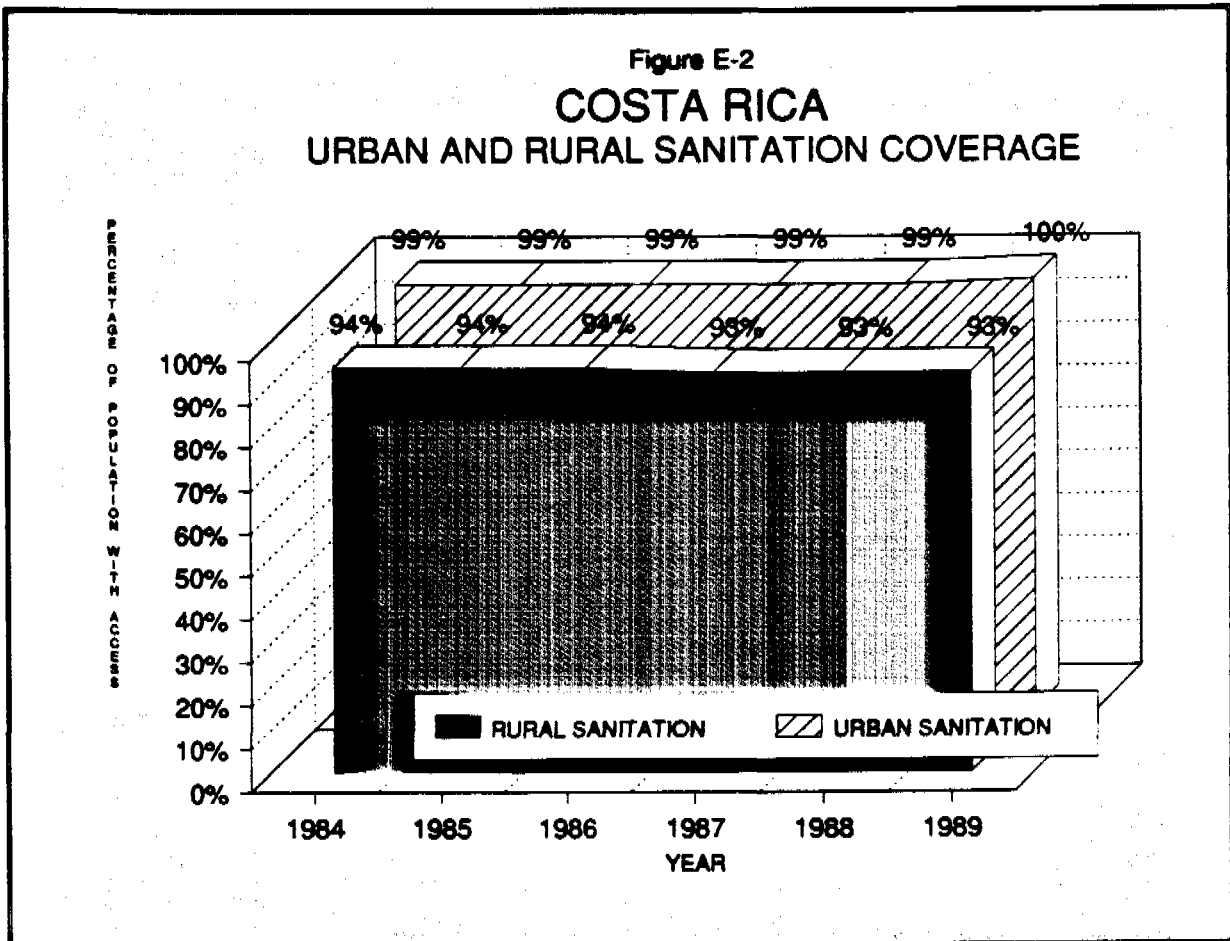


TABLE E - 3
COSTA RICA

SHORTFALLS

IN MEETING 1989 CAI OBJECTIVE

	WATER SUPPLY COVERAGE (PERSONS)			SANITATION COVERAGE (PERSONS)		
	TOTAL	URBAN	RURAL	TOTAL	URBAN	RURAL
1989 CAI OBJECTIVE	2,640	1,324	1,316	2,894	1,324	1,570
BASELINE 1984	2,154	1,059	1,095	2,319	1,059	1,260
REQUIRED INCREASE	486	265	221	575	265	310
ESTIMATED 1984-88 GAIN	418	431	(13)	359	416	(57)
ESTIMATED 1988-89 GAIN	118	(119)	237	153	(104)	257
CAI COVERAGE SHORTFALL	NONE	NONE	NONE	110	NONE	110

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

TABLE E - 4
COSTA RICA

COVERAGE INCREASES NEEDED
TO MEET 1995 TARGETS

	WATER SUPPLY COVERAGE (PERSONS)			SANITATION COVERAGE (PERSONS)		
	TOTAL	URBAN	RURAL	TOTAL	URBAN	RURAL
1995 TARGET	3,232	1,676	1,556	3,356	1,676	1,680
BASELINE 1989	2,690	1,371	1,319	2,831	1,371	1,460
REQUIRED INCREASE	542	305	237	525	305	220

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

Figure E-3
COSTA RICA
 1989 COVERAGE AND TARGETS (# OF PEOPLE)

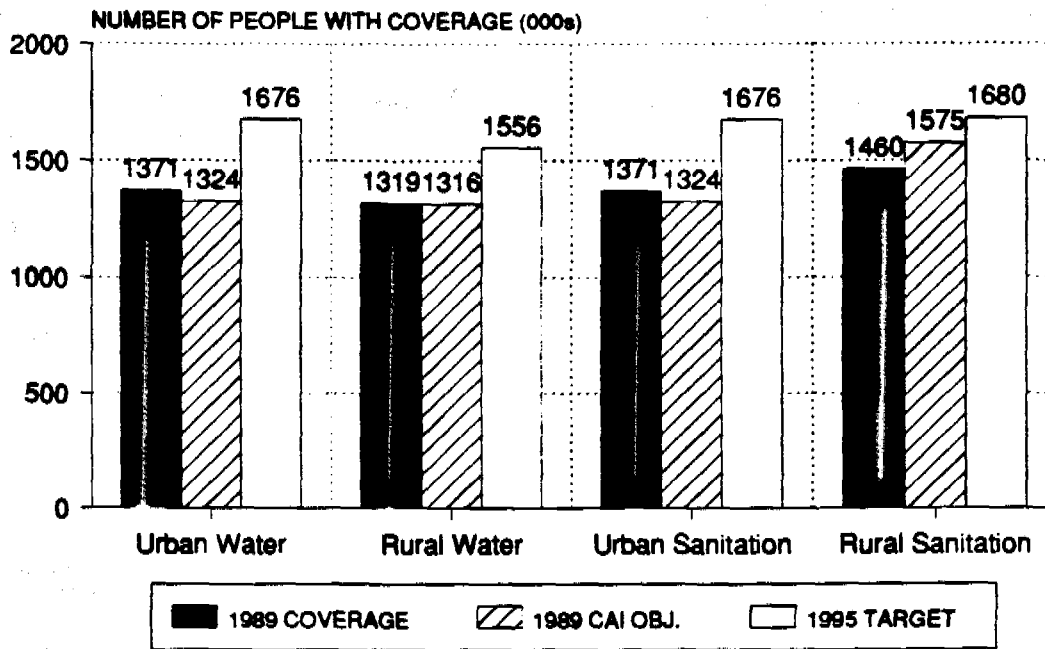


Figure E-4
COSTA RICA
 1989 COVERAGE AND TARGETS (% OF POP.)

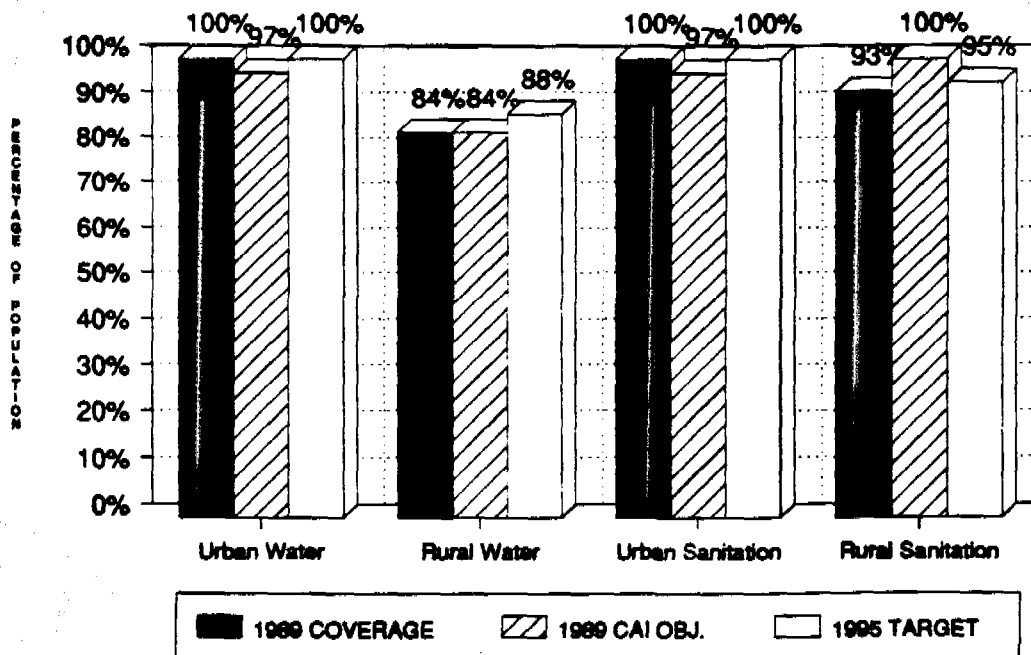
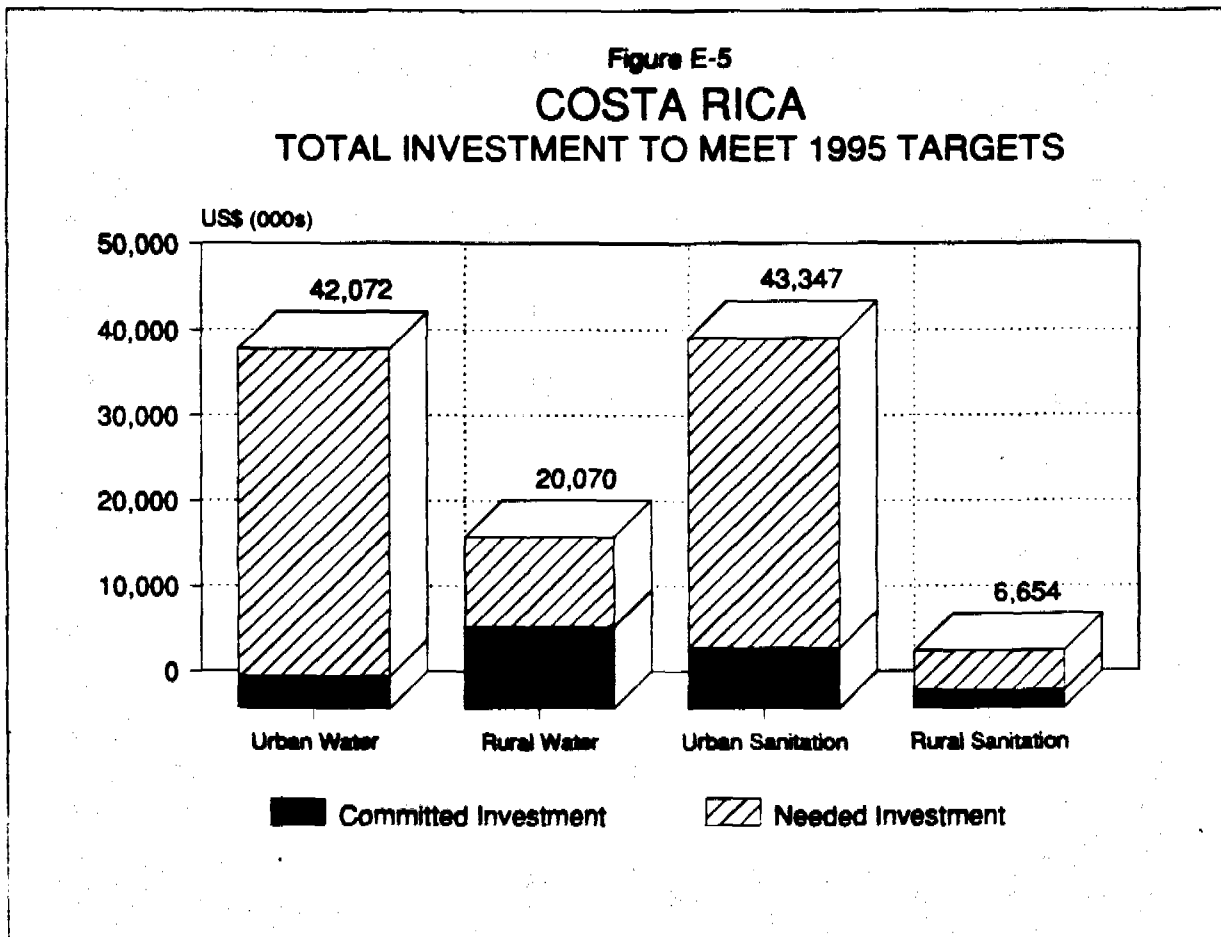


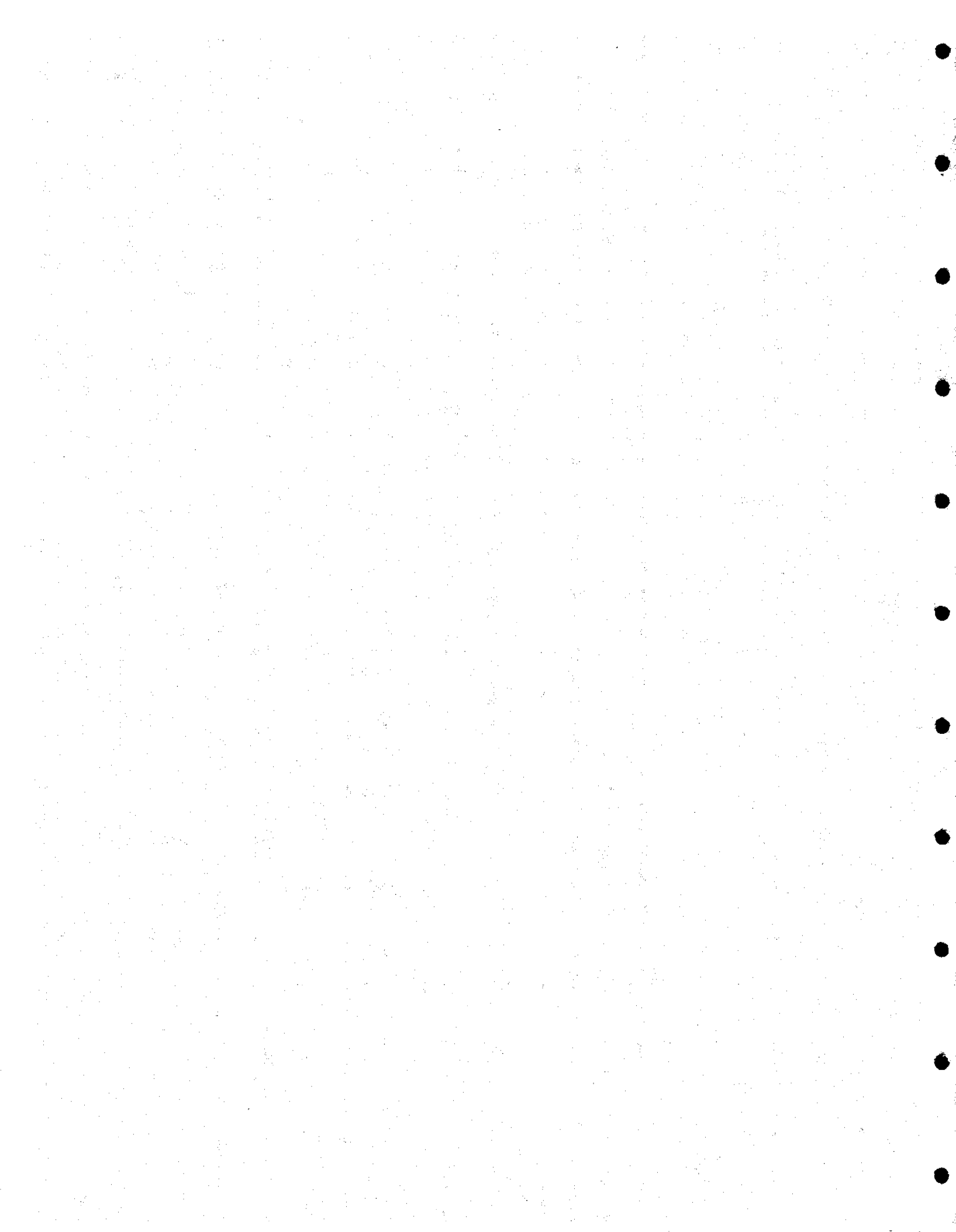
TABLE E - 5
COSTA RICA

PROJECTED FUNDING
SHORTFALL TO MEET 1995 TARGETS
(1989 US\$, 000s)

	WATER SUPPLY		SANITATION		TOTAL
	URBAN	RURAL	URBAN	RURAL	
SHORTFALL IN POPULATION COVERAGE (IN 000s)	305	237	305	220	1,067
ESTIMATED UNIT COST-- US\$ PER CAPITA	\$138	\$85	\$142	\$30	N/A
ESTIMATED TOTAL COST TO MEET 1995 TARGETS	\$42,072	\$20,070	\$43,347	\$6,654	\$112,143
FIRMLY COMMITTED INVESTMENTS (1)	\$3,694	\$9,526	\$7,019	\$2,036	\$22,275
PROJECTED FUNDING SHORTFALL	\$38,378	\$10,544	\$36,328	\$4,618	\$89,868

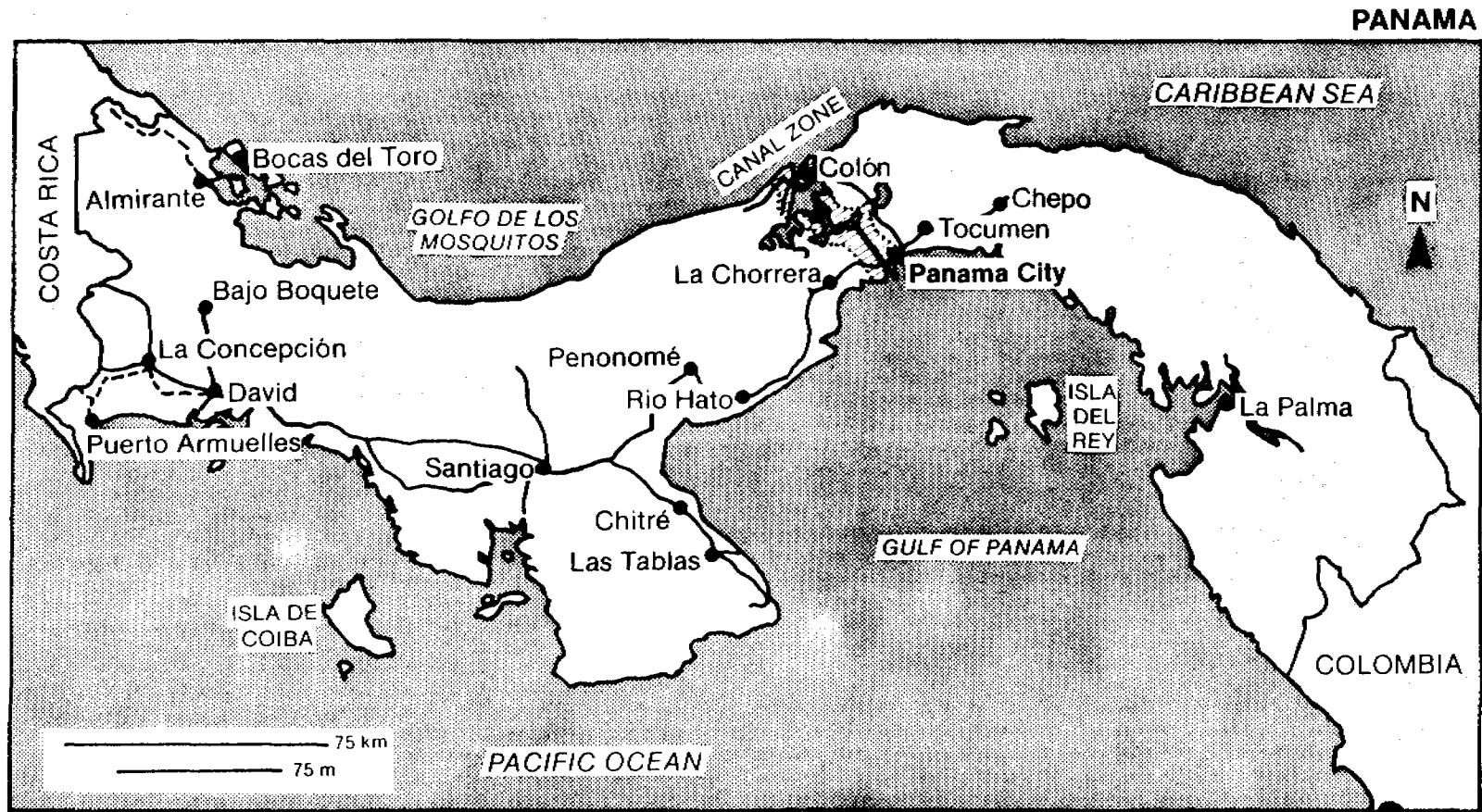
(1) ONLY THOSE INVESTMENTS WHICH INCREASE COVERAGE





APPENDIX F

PANAMA



F

COUNTRY PROFILE: PANAMA

Since A.I.D. has not been active in Panama in recent years, it was not originally included as one of the countries examined in this report. However, because of recent political changes in Panama, WASH believed that it would be useful to include baseline information on Panama's water and sanitation sector. The text and tables which follow have been taken directly from WASH's 1988 *Planning for Central America Water Supply and Sanitation Programs*. It should be noted that the coverage and investment information included here shows the status of the sector in 1988 and does not reflect any possible changes in coverage resulting from the fighting in late 1989.

INTRODUCTION

Political instability brought externally financed water and sanitation projects to a standstill in Panama. At the end of 1988, the World Bank had completed a program of water system improvements with the *Instituto de Acueductos y Alcantarillados Nacionales (IDAAN)*, Panama's national water and sanitation agency, and now has no new projects. UNICEF has transferred project funds from Panama to Nicaragua. The IDB has one ongoing loan program in Panama aimed at water system improvements in Panama City and other cities. The program consists of two separate loans that date from early in the decade and to date are about 80 percent disbursed. Nevertheless, no disbursements were made in 1988, and none were expected in 1989 or thereafter until political conditions are resolved. Each loan is valued at \$13,000,000, with a total counterpart contribution of \$14,000,000. Since 80 percent of these funds are now disbursed, and since they are aimed at improvements rather than new coverage, none of these amounts are considered as firmly committed to extend coverage.

MEETING THE CAI OBJECTIVE

Despite severe problems, Panama has progressed in both water and sanitation coverage since 1986. As of the end of 1988, 100 percent coverage existed in urban water. In urban sanitation and rural water, the CAI objectives were exceeded. In rural sanitation, the CAI objective is not yet achieved. Although 100 percent coverage existed in 1988 for urban water, the CAI objective is based on the projected population for 1989, which has not yet been reached. Coverage figures are presented in Tables F-1 and F-2.

With the current development activity all but stopped, it cannot be expected that Panama will meet the CAI objective for urban water and rural sanitation in 1989, or even 1992. It remains questionable, moreover, whether existing coverage can be maintained. Funding needs are summarized in Tables F-4 and F-5.

TABLE F - 1
PANAMA

**HISTORICAL WATER SUPPLY
COVERAGE VERSUS CAI OBJECTIVE**

YEAR	WATER SUPPLY								
	TOTAL POP- ULATION	ALL AREAS		URBAN AREAS			RURAL AREAS		
		POP. SERVED	PERCENT SERVED	URBAN POP.	TOTAL SERVED	PERCENT SERVED	RURAL POP.	TOTAL SERVED	PERCENT SERVED
1980	1,977	1,527	77 %	1,003	913	91 %	974	614	63 %
BASELINE 1984	2,157	1,843	76 %	1,127	1,118	99 %	1,030	527	51 %
1986	2,249	1,831	81 %	1,195	1,183	99 %	1,054	648	61 %
1988	2,305	1,981	86 %	1,230	1,220	99 %	1,075	761	71 %
CAI OBJECTIVE 1989	2,393	1,963	82 %	1,305	1,305	100 %	1,088	658	60 %

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

TABLE F - 2
PANAMA

**HISTORICAL SANITATION
COVERAGE VERSUS CAI OBJECTIVE**

YEAR	SANITATION								
	TOTAL POP- ULATION	ALL AREAS		URBAN AREAS			RURAL AREAS		
		POP. SERVED	PERCENT SERVED	URBAN POP.	TOTAL SERVED	PERCENT SERVED	RURAL POP.	TOTAL SERVED	PERCENT SERVED
1980	1,977	1,225	62 %	1,003	650	65 %	974	575	59 %
BASELINE 1984	2,157	1,367	63 %	1,127	687	61 %	1,030	680	66 %
1986	2,249	1,425	63 %	1,195	729	61 %	1,054	696	66 %
1988	2,305	1,856	81 %	1,230	1,071	87 %	1,075	785	73 %
CAI OBJECTIVE 1989	2,393	1,709	71 %	1,305	859	66 %	1,088	850	78 %

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

TABLE F - 3

PANAMA

**PROJECTED SHORTFALLS
IN MEETING CAI OBJECTIVE**

	WATER SUPPLY COVERAGE (PERSONS)			SANITATION COVERAGE (PERSONS)		
	TOTAL	URBAN	RURAL	TOTAL	URBAN	RURAL
CAI OBJECTIVE 1989	1,963	1,305	658	1,709	859	850
BASILINE 1984	1,643	1,116	527	1,367	687	680
REQUIRED INCREASE	320	189	131	342	172	170
ESTIMATED 1984-86 GAIN	188	67	121	58	42	16
ESTIMATED 1986-88 GAIN	150	37	113	431	342	89
CAI COVERAGE SHORTFALL	85	85	NONE	65	NONE	65

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

TABLE F - 4

PANAMA

**ESTIMATED COST TO
ACHIEVE CAI OBJECTIVE**

	WATER SUPPLY			SANITATION		
	TOTAL	URBAN	RURAL	TOTAL	URBAN	RURAL
SHORTFALL IN POP- ULATION COVERAGE SHOWN IN THOUSANDS	85	85	NONE	65	NONE	65
ESTIMATED UNIT COST - \$ PER CAPITA	N/A	\$138	\$88	N/A	\$165	\$17
ESTIMATED TOTAL COST (\$ IN THOUSANDS)	\$11,730	\$11,730	NONE	\$1,105	NONE	\$1,105

TOTAL ESTIMATED COST: **\$12,835,000**

**TABLE F - 5
PANAMA**

**PROJECTED FUNDING
SHORTFALL TO MEET CAI
(COSTS IN THOUSANDS)**

	WATER SUPPLY		SANITATION		UN-SPECIFIED	TOTAL
	URBAN	RURAL	URBAN	RURAL		
ESTIMATED TOTAL COST TO MEET CAI	\$11,730	NONE	NONE	\$1,105	NONE	\$12,835
FIRMLY COMMITTED INVESTMENTS (1)	NONE	NONE	NONE	NONE	NONE	\$0
PROJECTED FUNDING SHORTFALL	\$11,730	NONE	NONE	\$1,105	NONE	\$12,835

(1) ONLY THOSE INVESTMENTS WHICH INCREASE COVERAGE