TATION
OJECT



# PLANNING FOR CENTRAL AMERICA WATER SUPPLY AND SANITATION PROGRAMS

Operated by
CDM and Associates

Sponsored by the U.S. Agency
for International Development

**1611 N. Kent Street, Room 1002**
**Arlington, VA 22209-2111 USA**

**Telephone: (703) 243-8200**
**Telex No. WUI 64552**
**Cable Address WASHAID**

## WASH FIELD REPORT NO. 209

NOVEMBER 1987

The WASH Project is managed by Camp Dresser & McKee International Inc. Principal cooperating institutions and subcontractors are: Associates in Rural Development, Inc.; International Science and Technology Institute, Inc.; Research Triangle Institute; Training Resources Group; University of North Carolina at Chapel Hill

Prepared for
the LAC Bureau,
U.S. Agency for International Development
WASH Activity No. 334

WASH FIELD REPORT NO. 209

# PLANNING FOR CENTRAL AMERICA WATER SUPPLY AND SANITATION PROGRAMS

Prepared for the LAC Bureau,
U.S. Agency for International Development
under WASH Activity No. 334



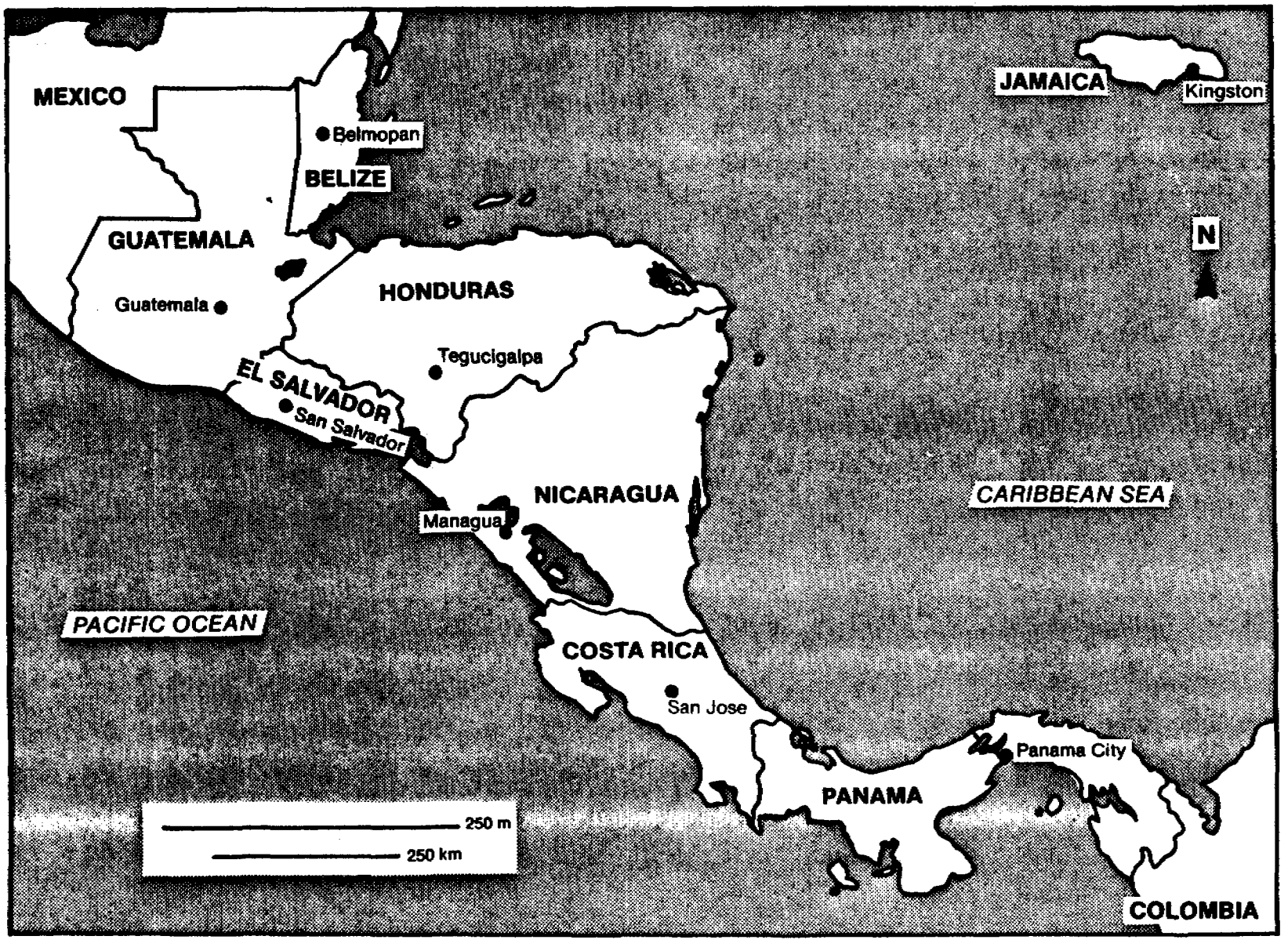
by

James F. Thomson
David Laredo
and
J. Ellis Turner

November 1987

Water and Sanitation for Health Project
Contract No. 5942-C-00-4085-00, Project No. 936-5942
is sponsored by the Office of Health, Bureau for Science and Technology
U.S. Agency for International Development
Washington, DC 20523

# CENTRAL AMERICA



## Table of Contents



**FIGURES**

## Table of Contents (cont'd)

## GLOSSARY OF ACRONYMS

| | |
|---|---|
| AID | U.S. Agency for International Development/Washington |
| ANDA | Administración Naciónal de Acueductos y Alcantarillados (National Water & Sever Authority - El Salvador) |
| ARRM | Americas Regional Resources Mobilization |
| CABEI | Central American Bank for Economic Integration |
| CAI | Central American Initiative |
| CARE | CARE International |
| CDC | Commonwealth Development Corporation |
| CDM | Camp Dresser & McKee International Inc. |
| CIDA | Canadian International Development Agency |
| CRS | Catholic Relief Services |
| DA | Development Assistance |
| DDD | Demographic Data for Development Project |
| EMPAGUA | Empresa Municipal para Agua de Guatemala (Municipal Water Authority - Guatemala City) |
| ESF | Economic Support Funds |
| FIDA | Finnish International Development Agency |
| FVA/PVC | Bureau for Food for Peace and Voluntary Assistance, Office of Private and Voluntary Cooperation |
| GOB | Government of Belize |
| GOCR | Government of Costa Rica |
| GOES | Government of El Salvador |
| GOG | Government of Guatemala |
| GOH | Government of Honduras |
| GOP | Government of Panama |
| GTZ | Deutsche Gesellschaft für Technische Zusammenarbeit (German Agency for Technical Cooperation) |

## GLOSSARY OF ACRONYMS (cont'd)

| | |
|---|---|
| HG | Housing Guarantee (RHUDO Loan Program) |
| IBRD | International Bank for Reconstruction and Development (World Bank) |
| IDAAN | Instituto de Acueductos y Alcantarillados Nacisnales (National Water and Sewer Authority - Panama) |
| IDB | Inter-American Development Bank |
| IDWSSD | International Drinking Water Supply and Sanitation Decade |
| INFOM | Instituto Naciónal de Fomento de Obras Municipales (National Agency for the Development of Public Works - Guatemala) |
| IPTBH | Improved Productivity Through Better Health Project (Belize) |
| IRD/Westinghouse | International Resources for Development/Westinghouse |
| ISTI | International Science & Technology Institute Inc. |
| JICA | Japanese International Cooperation Agency |
| KFW | Kreditanstalt für Wiederaufbau (Reconstruction Loan Corporation) |
| LAC | Bureau for Latin America and the Caribbean |
| LAC/CAP | Bureau for Latin America and the Caribbean, Office of Central American and Panamanian Affairs |
| LAC/DP | Bureau for Latin America and the Caribbean, Office of Development Programs |
| LAC/DR | Bureau for Latin America and the Caribbean, Office of Development Resources |
| MOH | Ministry of Health |
| MNR | Ministry of Natural Resources (Belize) |
| ODA | Overseas Development Administration |
| PAHO | Pan American Health Organization |
| PID | Project Identification Document |

## GLOSSARY OF ACRONYMS (cont'd)

| | |
|---|---|
| PLANSABAR | Plan Naciónal de Saneamiento Basico Rural (National Agency for Rural Sanitation - El Salvador) |
| PP | Project Paper |
| PRASAR | Proyecto de Agua y Saneamiento Rural (USAID-funded rural water supply and sanitation project in Honduras) |
| PRE/Housing | Bureau for Private Enterprise, Office of Housing |
| PVO | Private Voluntary Organization |
| RHUDO | Regional Housing and Urban Development Organization |
| SANAA | Servicio Autónomo Naciónal de Acueductos y Alcantarillados (National Autonomous Agency for Water and Sewerage - Honduras) |
| S&T/H | Bureau for Science and Technology, Office of Health |
| TA | Technical Assistance |
| UN | United Nations |
| UNDP | United Nations Development Programme |
| UNICEF | United Nations Children's Fund |
| USAID | U.S. Agency for International Development/Overseas Mission |
| VLWS | Village-Level Water Supply Project (Belize) |
| WASA | Water and Sanitation Authority (Belize) |
| WASH | Water and Sanitation for Health Project |
| WHO | World Health Organization |
| WS&S | Water Supply and Sanitation |

## ACKNOWLEDGMENTS

This report was prepared under the direction of J. Ellis Turner, WASH Activity Manager for the project. The report was written by David Laredo of CDM and James F. Thomson, with assistance from Mr. Turner. Additional support was provided to the team in planning, information collection, and data analysis by Maureen Lewis of the Urban Institute and Dr. Ron Johnson of Research Triangle Institute, and in data collection and computer operations by Carl Brown of CDM.

The team wishes to express its appreciation to Paula Feeney and Julie Klement of LAC/DR and to John Austin and Dennis Long of S&T/H for the encouragement that they provided throughout this project.

# EXECUTIVE SUMMARY

## Background

In March 1987, the LAC Bureau of the U.S. Agency for International Development (USAID) requested assistance from the Water and Sanitation for Health (WASH) Project to perform a "desk top" analysis of water supply and sanitation funding needs in Central America. The countries included in the study are Belize, Guatemala, Honduras, El Salvador, Costa Rica, and Panama. Baseline information for Nicaragua is also included in the report, but because USAID is not active in Nicaragua a funding analysis was not performed for that country.

The objectives of the study are to determine the existing levels of coverage, assess past and proposed investment plans, and determine whether or not additional funding will be required to meet the objective of the Central America Initiative (CAI). The CAI, developed in 1984, proposes to increase water and sanitation coverage in Central America by 25 percent by 1989.

To conduct the study, WASH provided a four person team. During the course of the study the WASH team requested and obtained information from the Pan American Health Organization, the LAC Bureau, PRE/Housing, each of the USAID missions in the countries included in the study, RHUDO/Honduras, RHUDO/Panama, CABEI, the World Bank, the Inter-American Development Bank, UNICEF and all other principal donors and private voluntary organizations that are active in Central America.

## Report Description

This report provides a summary of the WASH team's assessment and its recommendations. Included in the report are profiles for each country in the study, information on past (last five years), current, and proposed levels of investment, an assessment of whether the CAI targets can be met, what additional funding is required, and a discussion of the feasibility of stretching out the CAI plan from 1989 to 1992.

The main body of the report text presents a summary of the team's assessment of the countries that were studied and the region as a whole. Individual country profiles are contained in the report appendices. The team's principal findings and recommendations are presented in Chapter 3 of the report and highlighted below.

## Prospects for Meeting the CAI Objective

Since the formulation of the CAI in 1984, considerable progress has been achieved in the water supply and sanitation sector in Central America. Despite this progress, population growth and underfunding of the water supply and sanitation sector are leading to only small increases in levels of overall coverage. For example, even if the CAI objective is met (increasing regional total water supply coverage by 3.0 million persons and sanitation coverage by

2.6 million persons), the percentage of the populations with water supply coverage will increase only from 57.5 to 62.1 percent, and with sanitation coverage from 52.5 to 56.1 percent. In addition, in some countries rapid population growth will result in declines in coverage. In Honduras, for instance, meeting the CAI objective still means that urban water supply coverage will decrease from 82.6 to 80.2 percent.

In terms of funding needs, large commitments are required to meet the CAI objectives. After subtracting out all of the funding currently committed for 1986 onward, there is a regional shortfall of $240 million. Shortfalls by country are summarized below.

| COUNTRY | ADDITIONAL FUNDS NEEDED TO MEET THE CAI OBJECTIVE |
|---|---|
| Belize | $ 1.3 million |
| Guatemala | 65.1 million |
| Honduras | 50.6 million |
| El Salvador | 55.6 million |
| Costa Rica | 35.0 million |
| Panama | 32.3 million |
| **TOTAL** | **$239.9 million** |

The ability of countries to meet the CAI objective is limited not only by the availability of funding but also by the institutional capacity within each country to implement water supply and sanitation projects. Given the committed and potential funding and an assessment of countries' abilities to absorb investments, the prospects for meeting the CAI objective were determined and are summarized below.

**EXPECTED YEAR TO REACH CAI TARGET**

| | URBAN | | RURAL | |
|---|---|---|---|---|
| | WATER (yr) | SANITATION (yr) | WATER (yr) | SANITATION (yr) |
| Belize | post-1992 | 1989 | 1989 | 1989 |
| Guatemala | post-1992 | post-1992 | post-1992 | 1992 |
| Honduras | post-1992 | post-1992 | 1992 | 1989 |
| El Salvador | post-1992 | post-1992 | post-1992 | post-1992 |
| Costa Rica | 1989 | 1992 | post-1992 | 1989 |
| Panama | post-1992 | post-1992 | 1989 | post-1992 |

As shown in the above table, most of the countries will not be able to reach the CAI objective until 1992 or later. And, in addition to the funding needed to construct projects, additional funding (not yet determined) will be required to improve institutional capabilities to both implement and sustain projects in the water supply and sanitation sectors.

This report provides a mid-point review of progress toward the CAI objective. It provides information and analyses consistent with the level of study involved that will assist the LAC Bureau in making policy decisions and developing strategies for the sector. The report (along with the appendices) also provides a methodology and database that can be further refined and updated to increase the accuracy of assessing policy changes. Discussions of issues and alternatives for the bureau to consider and recommendations for further actions are also presented.

# Chapter 1

## INTRODUCTION

### 1.1 Purpose and Goals

AID'S LAC Bureau requested assistance from the Water and Sanitation for Health (WASH) Project in the preparation of a quickly compiled "desk top" study, using available documentation, to estimate the required levels of funding for the 1989 objective for AID's Central American Initiative (CAI) for water supply and sanitation. The CAI objectives were formulated from recommendations made by the Kissinger Bi-Partisan Commission Report (Jackson Report) for Central America prepared in 1984. The LAC Bureau request was directed at obtaining guidance as to whether the water supply and sanitation objective of the CAI could be met by 1989 or by 1992 if the timetable were "stretched out."

The goals of the study were to

- collect and analyze available data which would allow profiles to be prepared for the countries of Belize, Costa Rica, El Salvador, Guatemala, Honduras, Panama and Nicaragua--it was not possible to collect detailed data in Nicaragua;
- prepare estimates for the 1986 coverage levels in the urban and rural water supply and sanitation sectors and estimates of past investments in these sectors for the 1982-86 period;
- prepare descriptions and analyses by country for proposed projects and programs and, to the extent possible, compile estimates of committed funds for these programs. The basis for the proposed projects would be the PAHO Central American Plan developed in collaboration with these countries in 1985;
- estimate the increases in coverage required and the costs to meet the CAI objective;
- estimate what investments in addition to committed funds will be required to meet the CAI objective; and
- determine if the CAI objective in each country can be met by 1989 or, if not, by 1992.

The complete Scope of Work is presented as Attachment I.

## 1.2 WASH Involvement

The WASH Project furnished a four-person team for this assignment. Mr. James F. Thomson, a private consultant with over 20 years of sanitary engineering experience in AID--with many of those years in the LAC Bureau--served as the team leader. Other team members were Mr. David Laredo of Camp Dresser & McKee International Inc., Dr. Ron Johnson of Research Triangle Institute, and Dr. Maureen Lewis of the Urban Institute. The team represented a mix of experts who had extensive experience in sanitary engineering, program planning and finance, program design and implementation of LAC Bureau projects (through Mr. Thomson's and Dr. Lewis' experience), housing and urban development as related to AID water supply and sanitation programs, and ancillary programs of urban and rural water supply and sanitation sectors, including institutional development, operations training, and health education.

The team conducted planning sessions at the WASH office on March 19-20, 1987, and briefed AID/LAC Bureau personnel at that time regarding the detailed work plan derived from the LAC Bureau's scope of work, proposed methodology, information sources, the preliminary report outline, and schedule. Further, a cable (a copy is presented in Attachment II) requesting information from all AID missions in Central America was prepared.

## 1.3 Approach and Definitions

As outlined in the scope of work and by AID/LAC Bureau personnel, this study was to be conducted as a "desk top" study using available documentation, data gathered through interviews, data furnished by the AID missions in the countries involved, and experience of the team members and the WASH Project. No foreign travel was included--making the initial task to gather as much available, pertinent data as possible. These data, together with that furnished by the missions, were to be utilized as the basis for the overall analysis.

Briefly stated, the methodology utilized for this study was as follows:

- Levels of coverage for the rural and urban sectors in each country were estimated for 1980, the baseline year 1984, and 1986.
- The base year coverage values (numbers of persons served) were increased by 25 percent (reflecting the increase required by the CAI) to obtain the 1989 CAI objective.
- The required increase in coverage (persons) to meet the CAI objective was determined as the difference in the CAI value for 1989 and the existing 1986 coverage level. Using unit costs for water supply and sanitation for each country, estimates of the costs to serve this number of persons were prepared.

- Proposed projects and funding commitments were analyzed; a list of the proposed projects with "firm commitments" that also increased coverage was prepared. The total funding for committed projects was subtracted from the estimated cost to reach the 1989 CAI objective. The difference was the funding shortfall.

- The shortfall, in terms of required coverage and funding levels to meet the CAI objective, was analyzed and the implications for AID were presented.

A flow chart showing the steps in the methodology is shown in Figure 1.

Note that baseline information for Nicaragua is included in the report but, because AID is not active in Nicaragua, a funding analysis was not performed for that country.

### 1.3.1 Basis of Analysis

Several pertinent issues, basic to the manner in which the analyses would be carried out, were identified early in the study. These included:

- the definition of urban and rural populations;

- the definition of coverage as applied to water supply and sanitation service;

- the quality of coverage provided;

- the manner in which AID/RHUDO housing programs would affect coverage levels; and

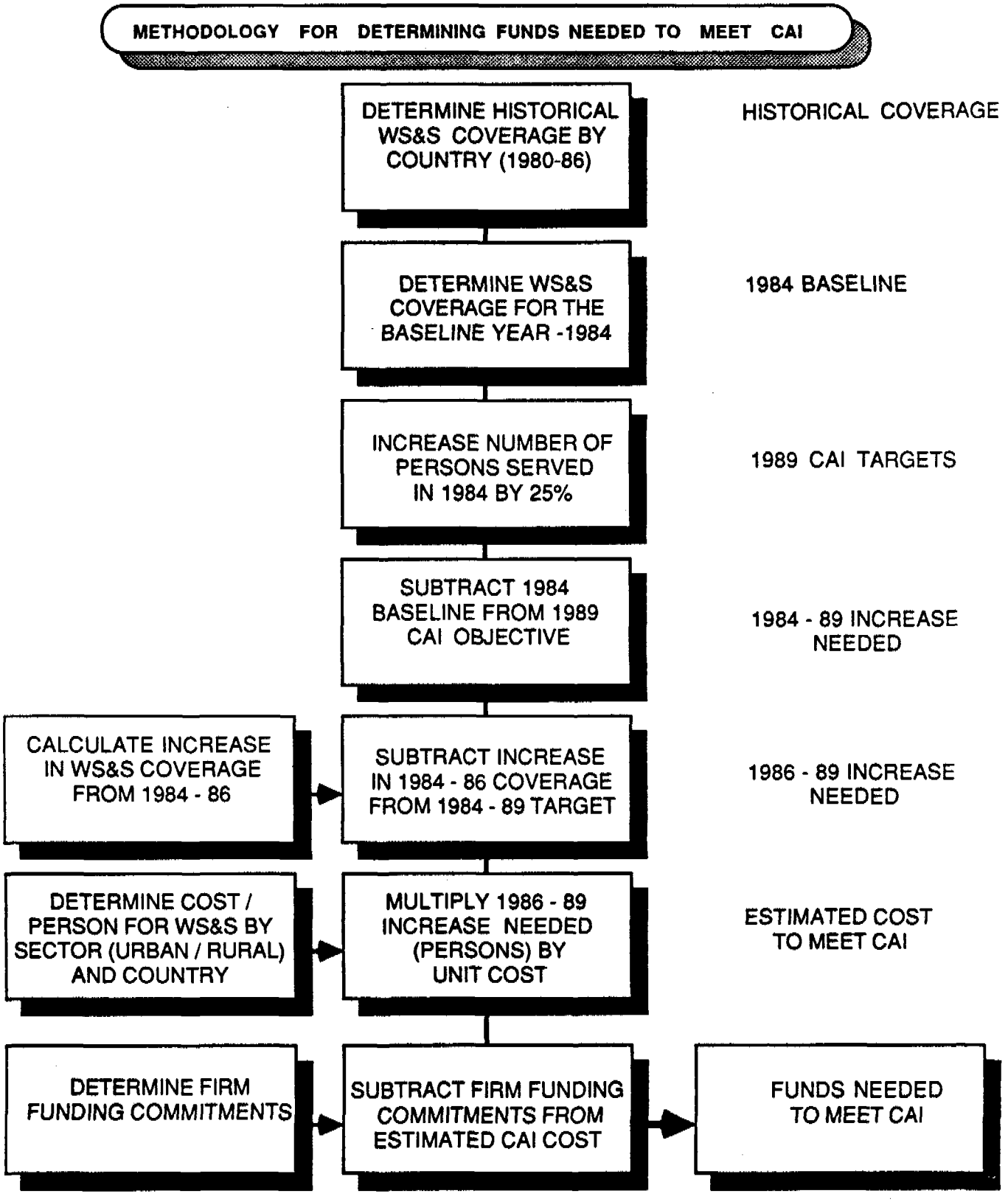
- the manner in which associated "non-infrastructure" projects, (i.e., health education and/or training) would be handled in terms of overall program requirements and investments.

These issues are discussed in Section 1.3.2 below. They are noted here so as to identify the "definitional framework" used by the team for this study.

### 1.3.2 Definitional Framework

The definitions that were used in the study are presented below. In general, the data on population and coverage by country conformed to these definitions. However, when conflicting data were obtained, the information that conformed most closely to these definitions was used.

## FIGURE 1


METHODOLOGY FOR DETERMINING FUNDS NEEDED TO MEET CAI
DETERMINE HISTORICAL WS&S COVERAGE BY COUNTRY (1980-86)
HISTORICAL COVERAGE
DETERMINE WS&S COVERAGE FOR THE BASELINE YEAR -1984
1984 BASELINE
INCREASE NUMBER OF PERSONS SERVED IN 1984 BY 25%
1989 CAI TARGETS
SUBTRACT 1984 BASELINE FROM 1989 CAI OBJECTIVE
1984 - 89 INCREASE NEEDED
CALCULATE INCREASE IN WS&S COVERAGE FROM 1984 - 86
SUBTRACT INCREASE IN 1984 - 86 COVERAGE FROM 1984 - 89 TARGET
1986 - 89 INCREASE NEEDED
DETERMINE COST / PERSON FOR WS&S BY SECTOR (URBAN / RURAL) AND COUNTRY
MULTIPLY 1986 - 89 INCREASE NEEDED (PERSONS) BY UNIT COST
ESTIMATED COST TO MEET CAI
DETERMINE FIRM FUNDING COMMITMENTS
SUBTRACT FIRM FUNDING COMMITMENTS FROM ESTIMATED CAI COST
FUNDS NEEDED TO MEET CAI

Urban and Rural Populations were defined using the definition of the country under study. In very general terms, population centers of over 2,000 persons were defined as urban, and all others as rural. However, exceptions to this general rule exist depending upon the country involved, and, in some cases, the agency within the country.

Water Supply Coverage is defined as the provision of water supply service either through direct connection within the home or family compound or through easy access. Easy access in urban areas is defined as a public standpost or fountain within 200 meters of the home and, in rural areas, as a water supply source at a distance from the home which would not cause family members to spend a disproportionate amount of time fetching water.

Sanitation Coverage is defined for urban areas as service provided through sewer systems or individual in-house or in-compound facilities (latrines, septic tanks). For rural areas it is defined as service provided through individual in-house or in-compound excreta disposal facilities (latrines).

AID/RHUDO Housing Projects ordinarily provide a cost component for site improvements which are dedicated to providing water supply and wastewater service. However, these projects might provide little or no increase in coverage if urban dwellers benefiting from the housing solutions had coverage before the project began. RHUDO programs were considered on a country-by-country basis, and estimates of new coverage were obtained.

Quality of coverage varies due to the differing levels of service that exist, both within countries and throughout the region. For example, a given urban area may be directly connected to the water distribution system but may receive small quantities of water supplied for only a few hours per day, whereas in other areas, or in another country, such service may be at higher volume levels on a continuous basis. There was no way, based upon a "desk top" study, to apply any "quality measure" to the type of coverage claimed in any of the countries under study. Such an evaluation is only possible through on-site visits that permit personal observations, interviews with operating personnel and utility managers, analysis of operating data, and "customer satisfaction" surveys. Thus analyses of quality of coverage were necessarily excluded from this study.

Non-Infrastructure Projects - To be effective, water and sanitation programs must include non-infrastructure projects. Some examples of such projects include institutional development and training to properly operate

the infrastructure, tariff collection and commercial systems to provide funds for operation, maintenance and replacement costs, and health education to optimize the health benefits of such infrastructure.

The need for inclusion of such projects into water and sanitation programs is well recognized. However, while such projects increase sustainability of coverage, no new coverage is provided by investments in these program elements. Work on this report revealed the need for such projects. Where they have been identified from existing documents, these types of projects are listed under the committed and potential investments for each country--even if they do not lead to new coverage. However, these "software" investments do not represent total country needs of such investments. Further, it was not possible to evaluate the "quality" of the investments which were identified. Additional study is needed to thoroughly identify the types and costs of the investments that are needed to support increased coverage.

In addition, many rehabilitation projects, and/or those which provide new water sources, often do not immediately provide new coverage. Instead, higher levels of service and sustainability of coverage are provided. Such projects were also considered as necessary components of overall programs in the analyses herein and were described and utilized in various analyses. However, they were afforded no "credit" in terms of adding coverage.

## 1.4 Sources of Information

Approximately 40 reports and data packages were reviewed for this report. In addition, some 20 individuals were interviewed (personally or by telephone) and 12 organizations contacted. A complete bibliography and list of persons and/or organizations contacted are provided in Attachment IV.

During the preparation of this report, the effort benefited from one team member's visiting Guatemala (on another project) and the visit of the WASH activity manager for this report to Belize, on an ongoing WASH initiative. These visits allowed the latest pertinent data to be obtained and AID mission personnel, and staff members of these countries' institutions to be interviewed.

It is well to note that a great deal of the information utilized for this report often presented somewhat conflicting data, and the team members' judgment often was required in determining what data to use. In general, data provided via cables from the AID missions or contained in AID Annual Action Plans and/or Project Papers was utilized, unless there was an overriding reason for not doing so.

Data on committed and/or proposed funding was taken from the January 1987 update of the PAHO Central American Plan and from mission-supplied data and other sources. Data for unit costs was developed based upon the cost data presented in the country reports prepared for PAHO's Central American Plan and/or United Nations summary reports which presented updates on the individual country efforts with regard to meeting their objectives for the International Drinking Water Supply and Sanitation Decade. These costs, provided by LAC, were adjusted to 1986 levels by using inflation factors for each country.

## 1.5 Report Organization

This report is organized into three chapters, six appendices, and four attachments. After this short introductory chapter, Chapters 2 and 3 are organized as follows:

Chapter 2 defines the CAI with respect to water supply and sanitation sectors in the total seven country region and by individual country, reviews the funding requirements to meet the CAI objective, and discusses the past and committed funding.

Chapter 3 presents the shortfalls in funding for meeting the CAI objective, implications for AID, and alternatives and recommendations for meeting the CAI objective.

Appendices A through G are the country profiles for Belize, Guatemala, Honduras, El Salvador, Costa Rica, Panama, and Nicaragua, respectively. Appendices H and I contain the lists of committed and potential investments for each country.

Each country profile is organized in the following format:

I. Coverage - Past (1980), Baseline (1984), Current (1986), and Projected (CAI 1989)

   A. Population and Coverage Data

   B. Results

II. Past Investments and Proposed Projects

   A. Past Investments

   B. Proposed Projects

C. Meeting the CAI Objective: Funds Required

D. Other Constraints to Achieving the CAI Objective

III. Implications for AID

Further, each of the profiles has the following tables:

Table 1: Historical Water Supply Coverage Versus CAI Objective

Table 2: Historical Sanitation Coverage Versus CAI Objective

Table 3: Projected Shortfalls in Meeting CAI Objective

Table 4: Estimated Cost to Achieve CAI Objective

Table 5: Projected Funding Shortfall to Meet CAI Objective

and the following figures:

Figure 1: 1989 CAI Objective vs. 1984 & 1986 Coverage

Figure 2: Estimated Funding Needs by Sector to Meet CAI Objective

In addition the report includes background material that is contained in the following attachments:

Attachment I: Scope of Work
Attachment II: *Information Requests Sent to the AID Missions*
Attachment III: Bibliography
Attachment IV: Individuals and Organizations Contacted.

## Chapter 2

## WATER SUPPLY AND SANITATION IN CENTRAL AMERICA

### 2.1 The Central American Initiative (CAI)

The Bipartisan Commission identified water supply and sanitation as areas of importance in promoting improved health status through preventive primary health care and recommended expansion of activity in the sector. The LAC Bureau has set an objective for 1989 of increasing by 25 percent the number of individuals covered in 1984 by water supply and sanitation systems.

Meeting the targets for water supply and sanitation coverage in the region addresses a major goal of the Bipartisan Commission on Central America--increased equity and spreading of benefits of economic growth. Increasing the coverage levels of water supply and sanitation services is expected to distribute the benefits of economic growth more evenly across the population and to contribute to improved health. Such improvements are basic to the U.S. Government's efforts to accelerate development in Central America.

CAI objective population coverage has been established for each of the four sub-sectors (urban water, urban sewerage, rural water, and rural sanitation) for each country in the study.

### 2.2 Existing Coverage and Projected Needs (CAI Objective)

Past, current (1986), and projected population and coverage estimates were obtained from the following sources: the Demographic Data for Development project (used by the LAC Bureau for population estimates), USAID Missions, WHO, the Pan American Health Organization, and regional profiles on International Drinking Water Supply and Sanitation Decade (IDWSSD) progress.

Variations in population bases and in coverage figures reported by different sources for different years made it difficult to establish population estimates or coverage as absolute figures. Differences in the definitions of coverage and inconsistencies in the criteria for differentiating between urban and rural populations may also have affected some of the reporting. In spite of inconsistencies in numbers and conflicting concepts and definitions, the WASH team believes that the coverage figures developed and used in the study and presented in this report represent a reasonable basis for the analysis made and the conclusions drawn.

At the present time, urban areas of Central America are relatively well served with water supply. Coverage data (by country) for 1986 is shown in Table 1. As indicated, urban water supply coverage varies from a low of 70.6 percent in Guatemala to 99.0 percent in Costa Rica. Rural areas, on the other hand, exhibit a high degree of variability in coverage, from 20.1 percent in El Salvador to 83.0 percent in Costa Rica. For the region as a whole, water supply coverage for urban and rural areas averages 80.8 percent and 39.9 percent, respectively.

Current (1986) sanitation coverage is shown in Table 2. As indicated, urban sanitation coverage varies from 41.2 percent in Guatemala to 99 percent in Costa Rica.

TABLE - 1

EXISTING WATER SUPPLY
COVERAGE IN CENTRAL AMERICA
1986

| | | WATER SUPPLY | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | TOTAL | ALL AREAS | | URBAN AREAS | | | RURAL AREAS | | |
| | POP-ULATION | POP. SERVED | PERCENT SERVED | URBAN POP. | TOTAL SERVED | PERCENT SERVED | RURAL POP. | TOTAL SERVED | PERCENT SERVED |
| BELIZE | 162 | 112 | 69.1% | 83 | 79 | 95.2% | 79 | 33 | 41.8% |
| GUATEMALA | 8,300 | 3,700 | 44.6% | 3,400 | 2,400 | 70.6% | 4,900 | 1,300 | 26.5% |
| HONDURAS | 4,581 | 2,983 | 65.1% | 1,884 | 1,533 | 81.4% | 2,697 | 1,450 | 53.8% |
| EL SALVADOR | 4,800 | 2,081 | 43.4% | 2,000 | 1,518 | 75.9% | 2,800 | 563 | 20.1% |
| COSTA RICA | 2,531 | 2,281 | 90.1% | 1,126 | 1,115 | 99.0% | 1,405 | 1,166 | 83.0% |
| PANAMA | 2,249 | 1,831 | 81.4% | 1,195 | 1,183 | 99.0% | 1,054 | 648 | 61.5% |
| TOTAL: | 22,623 | 12,988 | 57.4% | 9,688 | 7,828 | 80.8% | 12,935 | 5,160 | 39.9% |

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

TABLE - 2

EXISTING SANITATION
COVERAGE IN CENTRAL AMERICA
1986

| | | SANITATION | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | TOTAL | ALL AREAS | | URBAN AREAS | | | RURAL AREAS | | |
| | POP-ULATION | POP. SERVED | PERCENT SERVED | URBAN POP. | TOTAL SERVED | PERCENT SERVED | RURAL POP. | TOTAL SERVED | PERCENT SERVED |
| BELIZE | 162 | 124 | 76.5% | 83 | 69 | 83.1% | 79 | 55 | 69.6% |
| GUATEMALA | 8,300 | 2,800 | 33.7% | 3,400 | 1,400 | 41.2% | 4,900 | 1,400 | 28.6% |
| HONDURAS | 4,581 | 2,877 | 62.8% | 1,884 | 1,485 | 78.8% | 2,697 | 1,392 | 51.6% |
| EL SALVADOR | 4,800 | 2,758 | 57.5% | 2,000 | 1,772 | 88.6% | 2,800 | 986 | 35.2% |
| COSTA RICA | 2,531 | 2,442 | 96.5% | 1,126 | 1,115 | 99.0% | 1,405 | 1,327 | 94.4% |
| PANAMA | 2,249 | 1,425 | 63.4% | 1,195 | 729 | 61.0% | 1,054 | 696 | 66.0% |
| TOTAL: | 22,623 | 12,426 | 54.9% | 9,688 | 6,570 | 67.8% | 12,935 | 5,856 | 45.3% |

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

Rural areas show higher degrees of coverage for sanitation than for water supply, varying from 28.6 percent in Guatemala to 94.4 percent in Costa Rica. For the region as a whole, sanitation coverage for urban and rural areas averages 67.8 percent and 45.3 percent, respectively.

The changes in water supply and sanitation coverage fom 1980-86 for the entire Central American region are shown in Figure 2.

To determine the projected needs (in terms of increased coverage) to meet the CAI objective, the team developed the 1984 baseline levels of coverage and estimated the increases that should be achieved by 1989. The 1989 level was obtained by increasing the 1984 baseline by 25 percent. Comparisons of the baseline and the CAI objective are shown in Tables 3 and 4.

Although water supply coverage for the region will increase by 3.0 million persons if the CAI objective is met, Table 3 shows that the level of coverage will increase only from 57.5 percent to 62.1 percent. Similarly, sanitation coverage (Table 4) will increase by 2.6 million persons but the level of coverage will increase only from 52.5 percent to 56.1 percent. In certain countries, the level of coverage will actually decline, even if the objectives are met. In other words, because of population growth, the CAI's 25 percent increase in the number of persons served is not enough to ensure that there will be substantial increases in the level of coverage, or even that coverage will remain constant in all sectors.

## 2.3 Levels and Sources of Recent Investment

### 2.3.1 Introduction

Table 5, Funding Assessment by Country, shows past investments (1982-86), committed funding (from 1986 on), and potential investments (from 1986 on). Funding included in the columns for committed projects is separated into projects that will contribute to increased water supply and sanitation coverage and funding for projects that do not increase coverage. For the past and potential investments (which are tentative and not well documented) separation into coverage and non-coverage ("other than coverage") projects was not possible in all cases and therefore is not included in this table. The non-coverage-producing projects are those that are only for rehabilitation, institution building, human resource development, and other activities intended to promote sustainability of service.

### 2.3.2 Recent Investments

As indicated in Table 5, approximately $657 million was invested in water supply and sanitation in Central America during the 1982-86 period. In some cases it was not possible to ascertain if the past investments fit exactly within this time period. However, the list provides the team's best estimate of what can be considered "recent" funding. Of the $657 million, the Inter-American Development Bank contributed approximately $286 million or about 44 percent. Most of IDB's loans have been directed toward urban areas. National governments invested approximately $142 million (22 percent) and AID, including PRE/Housing, invested about $96.6 million (15 percent).

FIGURE - 2

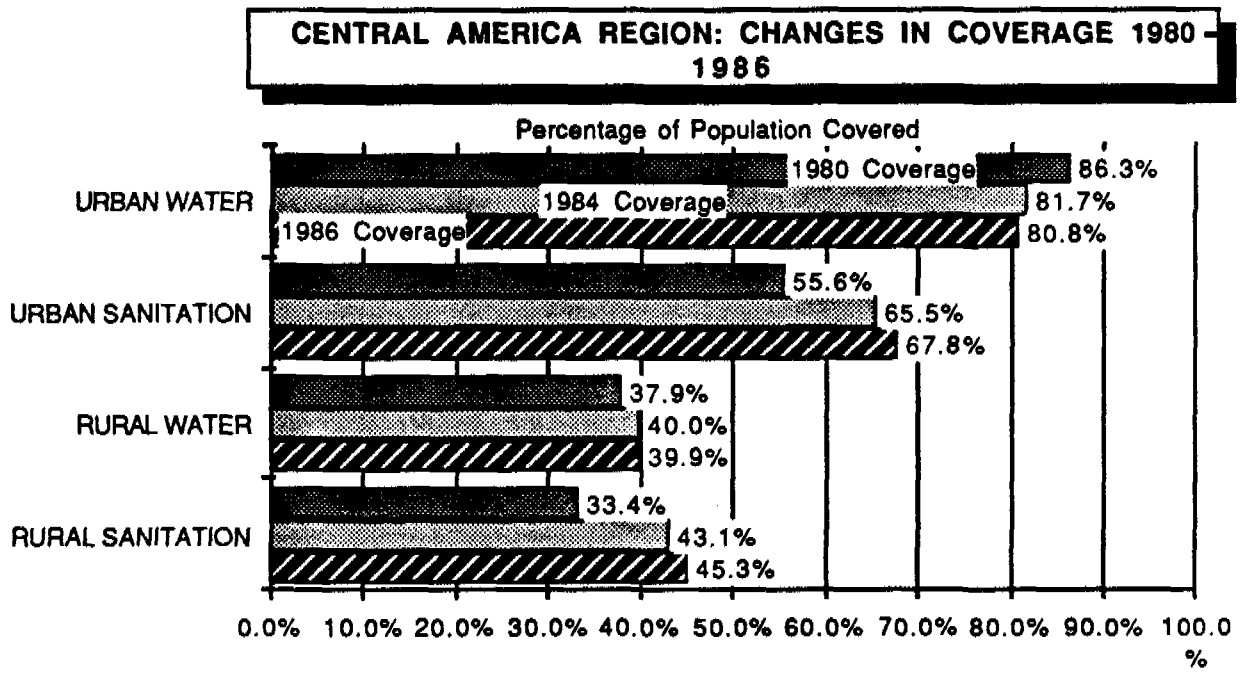

CENTRAL AMERICA REGION: CHANGES IN COVERAGE 1980 - 1986
Percentage of Population Covered
URBAN WATER
1980 Coverage
1984 Coverage
1986 Coverage
86.3%
81.7%
80.8%
URBAN SANITATION
55.6%
65.5%
67.8%
RURAL WATER
37.9%
40.0%
39.9%
RURAL SANITATION
33.4%
43.1%
45.3%
0.0% 10.0% 20.0% 30.0% 40.0% 50.0% 60.0% 70.0% 80.0% 90.0% 100.0 %

TABLE - 3

WATER SUPPLY COVERAGE:
1984 BASELINE VS. 1989 CAI OBJECTIVE

| | YEAR | TOTAL POP-ULATION | WATER SUPPLY: ALL AREAS POP. SERVED | ALL AREAS PERCENT SERVED | URBAN AREAS URBAN POP. | URBAN AREAS TOTAL SERVED | URBAN AREAS PERCENT SERVED | RURAL AREAS RURAL POP. | RURAL AREAS TOTAL SERVED | RURAL AREAS PERCENT SERVED |
|---|---|---|---|---|---|---|---|---|---|---|
| BELIZE | 1984: | 156 | 98 | 62.8% | 78 | 71 | 91.0% | 78 | 27 | 34.6% |
| | 1989: | 170 | 123 | 72.4% | 90 | 89 | 98.9% | 80 | 34 | 42.5% |
| GUATEMALA | 1984: | 7,800 | 3,500 | 44.9% | 3,100 | 2,300 | 74.2% | 4,700 | 1,200 | 25.5% |
| | 1989: | 9,100 | 4,400 | 48.4% | 3,800 | 2,900 | 76.3% | 5,300 | 1,500 | 28.3% |
| HONDURAS | 1984: | 4,299 | 2,726 | 63.4% | 1,700 | 1,405 | 82.6% | 2,599 | 1,321 | 50.8% |
| | 1989: | 5,027 | 3,407 | 67.8% | 2,190 | 1,756 | 80.2% | 2,837 | 1,651 | 58.2% |
| EL SALVADOR | 1984: | 4,700 | 2,261 | 48.1% | 1,980 | 1,445 | 73.0% | 2,720 | 816 | 30.0% |
| | 1989: | 5,245 | 2,826 | 53.9% | 2,185 | 1,806 | 82.7% | 3,060 | 1,020 | 33.3% |
| COSTA RICA | 1984: | 2,405 | 2,154 | 89.6% | 1,070 | 1,059 | 99.0% | 1,335 | 1,095 | 82.0% |
| | 1989: | 2,800 | 2,640 | 94.3% | 1,484 | 1,324 | 89.2% | 1,316 | 1,316 | 100.0% |
| PANAMA | 1984: | 2,157 | 1,643 | 76.2% | 1,127 | 1,116 | 99.0% | 1,030 | 527 | 51.2% |
| | 1989: | 2,393 | 1,963 | 82.0% | 1,305 | 1,305 | 100.0% | 1,088 | 658 | 60.5% |
| TOTAL: | 1984: | 21,517 | 12,382 | 57.5% | 9,055 | 7,396 | 81.7% | 12,462 | 4,986 | 40.0% |
| | 1989: | 24,735 | 15,359 | 62.1% | 11,054 | 9,180 | 83.0% | 13,681 | 6,179 | 45.2% |

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

TABLE - 4

SANITATION COVERAGE:
1984 BASELINE VS. 1989 CAI OBJECTIVE

| | | | SANITATION | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | ALL AREAS | | URBAN AREAS | | | RURAL AREAS | | |
| | YEAR | TOTAL POP-ULATION | POP. SERVED | PERCENT SERVED | URBAN POP. | TOTAL SERVED | PERCENT SERVED | RURAL POP. | TOTAL SERVED | PERCENT SERVED |
| BELIZE | 1984: | 156 | 97 | 62.2% | 78 | 48 | 61.5% | 78 | 49 | 62.8% |
| | 1989: | 170 | 122 | 71.8% | 90 | 60 | 66.7% | 80 | 62 | 77.5% |
| GUATEMALA | 1984: | 7,800 | 2,600 | 33.3% | 3,100 | 1,300 | 41.9% | 4,700 | 1,300 | 27.7% |
| | 1989: | 9,100 | 3,250 | 35.7% | 3,800 | 1,625 | 42.8% | 5,300 | 1,625 | 30.7% |
| HONDURAS | 1984: | 4,299 | 2,560 | 59.5% | 1,700 | 1,349 | 79.4% | 2,599 | 1,211 | 46.6% |
| | 1989: | 5,027 | 3,200 | 63.7% | 2,190 | 1,686 | 77.0% | 2,837 | 1,514 | 53.4% |
| EL SALVADOR | 1984: | 4,700 | 2,355 | 50.1% | 1,980 | 1,485 | 75.0% | 2,720 | 870 | 32.0% |
| | 1989: | 5,245 | 2,944 | 56.1% | 2,185 | 1,856 | 84.9% | 3,060 | 1,088 | 35.6% |
| COSTA RICA | 1984: | 2,405 | 2,319 | 96.4% | 1,070 | 1,059 | 99.0% | 1,335 | 1,260 | 94.4% |
| | 1989: | 2,800 | 2,640 | 94.3% | 1,484 | 1,324 | 89.2% | 1,316 | 1,316 | 100.0% |
| PANAMA | 1984: | 2,157 | 1,367 | 63.4% | 1,127 | 687 | 61.0% | 1,030 | 680 | 66.0% |
| | 1989: | 2,393 | 1,709 | 71.4% | 1,305 | 859 | 65.8% | 1,088 | 850 | 78.1% |
| TOTAL: | 1984: | 21,517 | 11,298 | 52.5% | 9,055 | 5,928 | 65.5% | 12,462 | 5,370 | 43.1% |
| | 1989: | 24,735 | 13,865 | 56.1% | 11,054 | 7,410 | 67.0% | 13,681 | 6,455 | 47.2% |

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND .

TABLE - 5

FUNDING ASSESSMENT
BY COUNTRY
(COSTS IN THOUSANDS)

| COUNTRY | | | PAST INVESTMENTS (1982-86) | COMMITTED FUNDING (1986 ON) | | POTENTIAL INVESTMENTS |
|---|---|---|---|---|---|---|
| | | | | CONTRIBUTE TO INCREASED COVERAGE | OTHER THAN COVERAGE | CONTRIBUTE TO INCREASED COVERAGE |
| BELIZE | WATER SUPPLY: | URBAN | | $0 | | $0 |
| | | RURAL | | $2,765 | | $0 |
| | SANITATION: | URBAN | | $970 | | $0 |
| | | RURAL | | $1,842 | | $0 |
| | | TOTAL | $29,219 | $5,577 | $0 | $0 |
| GUATEMALA | WATER SUPPLY: | URBAN | | $1,015 | | $31,034 |
| | | RURAL | | $7,557 | | $10,900 |
| | SANITATION: | URBAN | | $1,145 | | $34,996 |
| | | RURAL | | $840 | | $0 |
| | | TOTAL | $173,000 | $10,557 | $23,148 | $76,930 |
| HONDURAS | WATER SUPPLY: | URBAN | | $1,761 | | $18,565 |
| | | RURAL | | $27,792 | | $20,425 |
| | SANITATION: | URBAN | | $4,311 | | $18,565 |
| | | RURAL | | $9,264 | | $20,425 |
| | | TOTAL | $96,000 | $43,128 | $39,891 | $77,980 |
| EL SALVADOR | WATER SUPPLY: | URBAN | | $8,913 | | $31,000 |
| | | RURAL | | $23,804 | | $36,600 |
| | SANITATION: | URBAN | | $855 | | $36,800 |
| | | RURAL | | $196 | | $14,400 |
| | | TOTAL | $123,000 | $33,768 | $90,525 | $118,800 |
| COSTA RICA | WATER SUPPLY: | URBAN | | $27,600 | | $29,900 |
| | | RURAL | | $2,050 | | $0 |
| | SANITATION: | URBAN | | $0 | | $0 |
| | | RURAL | | $92 | | $0 |
| | | TOTAL | $120,000 | $29,742 | $11,250 | $29,900 |
| PANAMA | WATER SUPPLY: | URBAN | | $2,141 | | $105,000 |
| | | RURAL | | $1,426 | | $0 |
| | SANITATION: | URBAN | | $2,619 | | $0 |
| | | RURAL | | $0 | | $0 |
| | | TOTAL | $116,000 | $6,186 | $67,365 | $105,000 |
| TOTAL | WATER SUPPLY: | URBAN | | $41,430 | | $215,499 |
| | | RURAL | | $65,394 | | $67,925 |
| | SANITATION: | URBAN | | $9,900 | | $90,361 |
| | | RURAL | | $12,234 | | $34,825 |
| | | TOTAL | $657,219 | $128,958 | $232,179 | $408,610 |

### 2.3.3 Committed Funding

Using "Priority Health Needs in Central America Progress Report," dated January 1987, as a base, the team selected "approved" projects for the list of committed funding. To this list the team added information from interviews, mission cables, and other reports and data. Note that the funding represented by this list, provided in Appendix H and summarized in Table 5, is separated into those projects which are principally directed to increasing water supply and sanitation coverage and other water supply and sanitation projects. The reason for making this distinction is to enable the LAC Bureau to see how committed projects measure up directly against the CAI objective. It should be noted, however, that, to be effective, programs should also include the other investments that, although not adding directly to coverage, help to ensure that the investments have a maximum impact and promote sustainability of coverage. Such investment areas include those for health education, institutional assessment and development, training, and the development of critical information for project implementation (sector plans, groundwater inventories, mapping, etc.). Experience has shown that such investments in projects are of critical importance to the success of water supply and sanitation programs. However, information is not available to assess the degree to which these areas will be addressed and what additional funding will be needed.

As shown in Table 5, committed investments amount to approximately $129 million. Of this amount AID has committed approximately $47.1 million. This amount includes approximately $15.8 million in RHUDO funds that will lead to increased coverage.

Under the Central America Urban Housing and Shelter program, RHUDO (PRE/H) is investing the following amounts in improving water supply and sanitation infrastructure.

| | |
|---|---|
| • Costa Rica | $15,000,000 |
| • El Salvador | 9,500,000 |
| • Guatemala | 9,000,000 |
| • Honduras | $ 9,200,000 |
| **TOTAL** | **$42,700,000** |

Because these RHUDO funds are directed to upgrading existing housing in urban areas not all will increase coverage. In Costa Rica, for example, where urban coverage is already 99-100 percent, the RHUDO program will provide upgraded, not new, coverage. Although this type of increase in the level of service is desirable and needed, funding for the Costa Rica program has not been included as funding that will increase coverage.

In El Salvador, information provided by RHUDO indicates that in San Salvador 30 percent of the people in the program target area do not have access (by WHO/PAHO standards) to an acceptable water supply. Therefore, 30 percent of the RHUDO/El Salvador program is considered as contributing to increased coverage; the rest is upgrading. In a similar fashion, the RHUDO programs in

Guatemala and Honduras are considered to have 24 percent and 66 percent of their funding, respectively, contributing to increased coverage. These percentages were used in determining the amount of funding that will increase coverage.

In addition to the upgrading programs that are described above, funding is available under the Central American Urban Housing and Shelter program for new housing. RHUDO estimates that some of the new housing units will also contribute to new coverage, but at a much lower percentage than for the upgrading programs. No estimate of the contribution of the housing program to new coverage is available. However, RHUDO is reviewing the program information to establish an estimate.

### 2.3.4 Potential Investments

The estimated potential investments were developed from a list of potential projects selected from PAHO's Priority Health Needs report and from interviews, mission cables, and other reports and data. The estimates include planned projects that have not obtained firm funding commitments. A list of potential projects is included in Appendix I and summarized in Table 5. Note that the potential projects shown in Table 5 include only coverage-producing projects. The projects range from being close to funded to those which are on country and institution "wish lists." The purpose for including such a summary in this study is to indicate, relative to any funding shortfall in meeting the CAI objective, the amount of project funding that could be considered available under even the most optimistic circumstances. For some countries, even the commitment of all the potential funding is not sufficient to ensure that the CAI objective can be met. The list of potential projects also establishes a starting point for any negotiations to increase water supply and sanitation funding.

The information in Table 5 shows the amount of potential funding for each country. For the region as a whole, projects totaling almost $409 million are being considered for implementation in the near future. Note, however, that there are two constraints to this investment level. First, as noted above, the project list is tentative. Second, even if this level of funding were made available, the absorptive capacity in each country could constrain the rate at which projects could be implemented.

## 2.4 Determination of Funding Needed to Meet the CAI Objective

Using the information developed in Tables 3 and 4, the net increase in coverage (in terms of persons) that is required to meet the CAI objective was determined. Note that the required increase is from the 1984 baseline to the 1989 CAI objective. From this number, the estimated gain in coverage between 1984 and 1986 was subtracted to arrive at the target increase in coverage that is required in the 1986-89 period.

This information is presented in Table 6 for each country. For the region, a total increase in water supply coverage of 2,371,000 persons is needed, while for sanitation, the required increase is 1,459,000 persons.

TABLE - 6

INCREASE FROM 1986 WATER SUPPLY
AND SANITATION COVERAGE NEEDED
TO MEET 1989 CAI OBJECTIVE

| | WATER SUPPLY | | | SANITATION | | |
|---|---|---|---|---|---|---|
| | TOTAL | URBAN | RURAL | TOTAL | URBAN | RURAL |
| BELIZE | 11 | 10 | 1 | 7 | NONE | 7 |
| GUATEMALA | 700 | 500 | 200 | 450 | 225 | 225 |
| HONDURAS | 424 | 223 | 201 | 323 | 201 | 122 |
| EL SALVADOR | 745 | 288 | 457 | 186 | 84 | 102 |
| COSTA RICA | 359 | 209 | 150 | 209 | 209 | NONE |
| PANAMA | 132 | 122 | 10 | 284 | 130 | 154 |
| TOTAL | 2,371 | 1,352 | 1,019 | 1,459 | 849 | 610 |

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

To convert the target numbers for increased coverage (in Table 6) to costs, the increase in persons was multiplied by the estimated unit costs per person for water supply and sanitation for each country. The unit cost information and tables showing the above calculations are shown in Table 4 of each country profile (see appendices). The resulting costs (from 1986 levels of coverage) needed to meet the CAI objective are shown in Table 7.

To determine what additional funding will be required after all committed funding is expended, the estimated amount of committed funding was subtracted from the cost to meet the CAI objective. The additional funds needed are also shown in Table 7.

For the region as a whole, $240 million in funding is required (over and above existing firm commitments) to meet the CAI objective. For water supply the required amount is $135.5 million and for sanitation $104.5 million. Table 8 shows the same costs summarized for urban and rural areas. For the region, $200.8 million of the $240 million shortfall is for urban areas and $39.1 million is for rural areas. This difference reflects both the lower costs for rural projects and the greater increases in coverage that are required by applying the 25 percent increase to an already high base of coverage in the urban sectors.

TABLE - 7

ESTIMATED FUNDING NEEDED
TO MEET 1989 CAI OBJECTIVES - BY TYPE OF SERVICE
(COSTS IN THOUSANDS)

| | WATER SUPPLY | | | SANITATION | | | |
|---|---|---|---|---|---|---|---|
| | TOTAL | URBAN | RURAL | TOTAL | URBAN | RURAL | TOTAL |
| BELIZE COST TO MEET CAI* | 1,430 | 1,300 | 130 | 595 | 0 | 595 | 2,025 |
| COMMITTED FUNDING | 2,765 | 0 | 2,765 | 2,812 | 970 | 1,842 | 5,577 |
| FUNDS NEEDED | 1,300 | 1,300 | 0 | 0 | 0 | 0 | 1,300 |
| GUATEMALA COST TO MEET CAI* | 55,000 | 35,000 | 20,000 | 20,700 | 18,000 | 2,700 | 75,700 |
| COMMITTED FUNDING | 8,572 | 1,015 | 7,557 | 1,985 | 1,145 | 840 | 10,557 |
| FUNDS NEEDED | 46,428 | 33,985 | 12,443 | 18,715 | 16,855 | 1,860 | 65,143 |
| HONDURAS COST TO MEET CAI* | 31,910 | 17,840 | 14,070 | 41,721 | 38,793 | 2,928 | 73,631 |
| COMMITTED FUNDING | 29,553 | 1,761 | 27,792 | 13,575 | 4,311 | 9,264 | 43,128 |
| FUNDS NEEDED | 16,079 | 16,079 | 0 | 34,482 | 34,482 | 0 | 50,561 |
| EL SALVADOR COST TO MEET CAI* | 82,183 | 46,080 | 36,103 | 7,206 | 5,880 | 1,326 | 89,389 |
| COMMITTED FUNDING | 32,717 | 8,913 | 23,804 | 1,051 | 855 | 196 | 33,768 |
| FUNDS NEEDED | 49,466 | 37,167 | 12,299 | 6,155 | 5,025 | 1,130 | 55,621 |
| COSTA RICA COST TO MEET CAI* | 36,180 | 25,080 | 11,100 | 25,916 | 25,916 | 0 | 62,096 |
| COMMITTED FUNDING | 29,650 | 27,600 | 2,050 | 92 | 0 | 92 | 29,742 |
| FUNDS NEEDED | 9,050 | 0 | 9,050 | 25,916 | 25,916 | 0 | 34,966 |
| PANAMA COST TO MEET CAI* | 16,050 | 15,250 | 800 | 21,810 | 19,500 | 2,310 | 37,860 |
| COMMITTED FUNDING | 3,567 | 2,141 | 1,426 | 2,619 | 2,619 | 0 | 6,186 |
| FUNDS NEEDED | 13,109 | 13,109 | 0 | 19,191 | 16,881 | 2,310 | 32,300 |
| TOTAL COST TO MEET CAI* | 222,753 | 140,550 | 82,203 | 117,948 | 108,089 | 9,859 | 340,701 |
| COMMITTED FUNDING** | 87,321 | 38,910 | 48,411 | 13,489 | 8,930 | 4,559 | 100,810 |
| FUNDS NEEDED | 135,432 | 101,640 | 33,792 | 104,459 | 99,159 | 5,300 | 239,891 |

* FROM THE 1986 BASE LEVEL OF COVERAGE

**TOTAL COMMITTED FUNDING REFLECTS THE AMOUNT NEEDED FOR THE REGION AND DOES NOT INCLUDE THE EXCESS AMOUNT FROM ANY INDIVIDUAL COUNTRY.

TABLE - 8

ESTIMATED FUNDING NEEDED
TO MEET 1989 CAI OBJECTIVES
- BY URBAN AND RURAL AREAS*
(COSTS IN THOUSANDS)

| COUNTRY | URBAN WATER SUPPLY AND SANITATION | RURAL WATER SUPPLY AND SANITATION | TOTAL |
|---|---|---|---|
| BELIZE | $1,300 | $0 | $1,300 |
| GUATEMALA | $50,840 | $14,303 | $65,143 |
| HONDURAS | $50,561 | $0 | $50,561 |
| EL SALVADOR | $42,192 | $13,429 | $55,621 |
| COSTA RICA | $25,916 | $9,050 | $34,966 |
| PANAMA | $29,990 | $2,310 | $32,300 |
| TOTAL | $200,799 | $39,092 | $239,891 |

* SEE TABLE 7 FOR BREAKDOWN OF COSTS TO MEET CAI, COMMITTED FUNDING AND FUNDS NEEDED

## Chapter 3

## CONCLUSIONS

### 3.1 Coverage and Funding Shortfalls

Coverage and funding shortfalls can be determined from examining Tables 5 through 8. The manner in which the values in these tables were determined was presented in Chapter 2. As discussed in Chapter 2, Table 5 presents committed and potential investments. In Table 5 only projects from the committed investments that increase coverage are used in determining the funding needs.

Table 6 indicates, by country and region, the increased number of persons requiring coverage to meet the CAI objective. Funding shortfalls are shown in Tables 7 and 8. Figure 3 presents a graphic comparison by country of the total funding (cost) required to meet the CAI objective versus the committed funding.

For the region as a whole, approximately 2.4 million persons will require water supply and 1.5 million persons will require sanitation coverage between 1986 and 1989 for the CAI objective to be met. The shortfall in funding to provide this coverage is approximately $240 million for both the urban and rural sectors ($135.5 million for water supply and $104.5 million for sanitation). This level of investment represents approximately $180 million in foreign exchange (see Section 3.2).

On a country basis, the following points are pertinent:

**Belize**

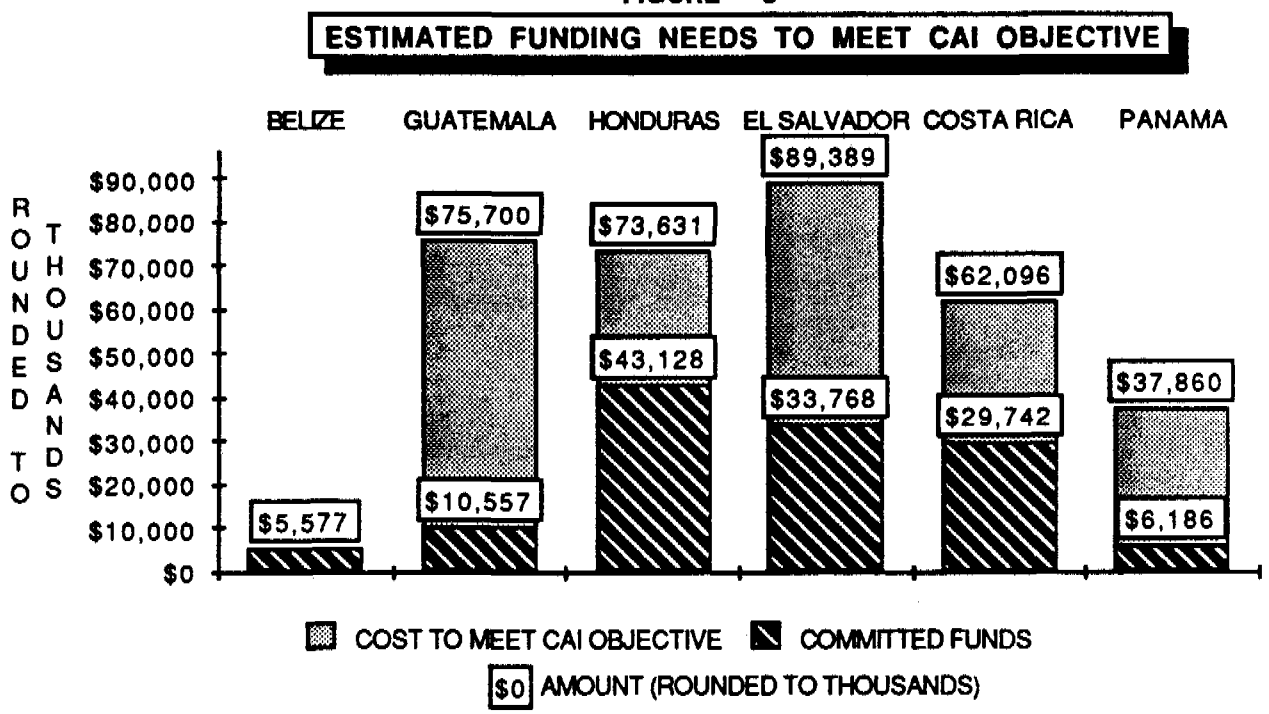
A shortfall of $1.3 million is projected for urban water supply, and no committed or potential projects are planned. Therefore, the CAI objective for urban water supply will not be met by 1992. However, coverage in this sector will still be greater than 95 percent. All other sectors will achieve the CAI objective by 1989.

**Guatemala**

Funding shortfalls exist in all of Guatemala's sectors. In the urban sector, approximately $34 million and $17 million shortfalls exist for water supply and sanitation, respectively. In the rural sector water supply and sanitation sector shortfalls are approximately $12 million and $1.9 million.

It is doubtful if the CAI objective can be met in the urban areas by 1992. The IDB and other donors have indicated their interest in making substantial investments in the urban sector; however, the implementation of the projects involved, especially the Secondary Cities Program, will not cause large additions in coverage to occur until the mid-1990s.

FIGURE - 3


ESTIMATED FUNDING NEEDS TO MEET CAI OBJECTIVE
BELIZE
GUATEMALA
HONDURAS
EL SALVADOR
COSTA RICA
PANAMA
ROUNDED TO THOUSANDS
$90,000
$80,000
$70,000
$60,000
$50,000
$40,000
$30,000
$20,000
$10,000
$0
$5,577
$75,700
$10,557
$73,631
$43,128
$89,389
$33,768
$62,096
$29,742
$37,860
$6,186
COST TO MEET CAI OBJECTIVE
COMMITTED FUNDS
$0 AMOUNT (ROUNDED TO THOUSANDS)

In the rural sectors the CAI objective may be achieved by 1992 provided that:

- USAID, as indicated in its 1988 Action Plan, includes a substantial component ($5-$6 million) for rural water supply and sanitation.

- Other donors and PVOs provide funding for the rural sector at a level of $4-$5 million per year for the next several years. This is possible based upon the expectations of the Guatemalan institutions involved and the experience of the past several years.

However, because of the likely difficulty in implementing such large programs, the rural water supply sector is not projected to meet the CAI target until after 1992.

**Honduras**

Shortfalls in funding exist in the urban sectors at levels of approximately $16 million and $34 million for water supply and sanitation, respectively.

The CAI objective for urban water supply could be met by 1992, only if the projects for Tegucigalpa and ten other cities are implemented by then, and some additional coverage is provided by the ongoing project in San Pedro Sula. However, there are no firm indications that the project implementation will proceed as required.

There is little committed funding indicated in the sanitation sector, and thus the CAI objective will not be met for urban sanitation, even by 1992.

There are no shortfalls indicated in the rural sectors of Honduras. Thus, the CAI objective in the rural sector should be met. However, because of the time required to implement such a large program, the rural water supply objective will not be achieved until 1992.

**El Salvador**

In the urban water sector there is a projected shortfall of approximately $37 million, and for urban sanitation the committed funding of only $855,000 leaves a shortfall of $5.0 million. It is doubtful if the CAI objective for the urban water sector can be met by 1992. Even if all the potential projects materialized, there would still be a shortfall of over $18 million. The urban sanitation sector has a lower shortfall

and a high level of potential projects. However, there are no indications that any of these projects will be implemented over the next few years. Thus, it is doubtful if the CAI objective for the urban sanitation sector will be reached even by 1992.

In the rural sector there is a shortfall of $12.3 million for water supply and $1.1 million for sanitation. Projects under consideration could provide more than enough funding to meet the CAI objective in the rural sector by 1989, especially if AID's rural water supply project (519-0320) is implemented over the next few years. However, low project implementation rates by El Salvador's institutions have caused problems in the past, and this low capacity for project implementation could cause delays in meeting the CAI objective.

## Costa Rica

Water supply in the urban areas appears to have adequate levels of firmly committed funding to allow the CAI objective to be met by 1989. Rural water supply, however, has a funding shortfall of $9 million, and will not meet the CAI objective until after 1992.

Rural sanitation can meet the CAI objective by 1989. However, there is a substantial funding shortfall in the urban sanitation sector of approximately $26 million.

Because the 1986 coverage levels in all sectors are already high and the GOCR has not been soliciting the support of international lending agencies, it appears that the GOCR intends to maintain the high level of existing coverage by financing investments with its own funds. To meet the CAI objective for the urban sanitation sector by 1989, approximately $9 million per year of GOCR funds would be required over three years. For the objectives to be met by 1992, about $4.5 million per year would be required over six years.

The team concluded that the GOCR would probably make investments at the rate of $4 to $5 million per year to provide coverage in line with population growth. Thus, meeting the CAI objective in the urban sanitation sector by 1992 is at least possible.

## Panama

The shortfalls in the urban water supply and sanitation sectors are approximately $13 million and $17 million, respectively. In the rural sector, the shortfall is about $2.3 million for the sanitation sector; there is no shortfall for rural water supply. Panama's planning documents do not indicate any other (potential) water supply or sanitation projects in the rural sector over the next several years.

Based on the above, the rural water supply sector will meet the CAI objective by 1989. It is probable that the CAI objective in the rest of Panama's sectors will not be met even by 1992. However, AID/Panama data indicates the GOP will spend up to three times the level of funding (some $126 million) over the next several years than was spent during the 1982-86 period. If this funding materializes, there is a strong possibility that all sectors could meet the CAI objectives by 1992.

The cost to meet the CAI objective versus the committed funding, by country, is illustrated graphically in Figure 3.

The following matrix summarizes the discussion presented above in terms of the estimated year in which various sectors will meet the CAI objective:

| | URBAN | | RURAL | |
|---|---|---|---|---|
| | WATER (yr) | SANITATION (yr) | WATER (yr) | SANITATION (yr) |
| Belize | post-1992 | 1989 | 1989 | 1989 |
| Guatemala | post-1992 | post-1992 | post-1992 | 1992 |
| Honduras | post-1992 | post-1992 | 1992 | 1989 |
| El Salvador | post-1992 | post-1992 | post-1992 | post-1992 |
| Costa Rica | 1989 | 1992 | post-1992 | 1989 |
| Panama | post-1992 | post-1992 | 1989 | post-1992 |

## 3.2 Implications and Funding Needs to the Meet the CAI Objective

From the data provided in Chapter 2, in Section 3.1, and in the individual country profiles, it appears that the critical countries, in terms of meeting the CAI objective by 1989, are Guatemala, Honduras, El Salvador, and Panama. If the target year for meeting the CAI objective is stretched to 1992, the same countries are still unable to meet the CAI objectives in a majority of sectors.

While the required funding levels for the stretch-out program are very high, several programs already being considered but not yet committed may offer AID the opportunity to substantially improve coverage by 1992. These are discussed in the individual country profiles in the appendices.

Tables 9 and 10 indicate the annual investment required by country/sector, given the shortfalls of committed funds, to meet the CAI objective. Table 9 shows the annual funding needed to meet the CAI objective by 1989 (two years), and Table 10 shows the annual funding to meet the objective by 1992 (five years).

Using data gathered from PAHO, the approximate levels of foreign exchange required for the annual and total investments to fund the shortfalls were determined.

TABLE - 9

ANNUAL COSTS
TO FUND SHORTFALLS AND MEET CAI TARGETS BY 1989
(IN $1986 - THOUSANDS)

| | URBAN AREAS | | RURAL AREAS | | TOTAL |
|---|---|---|---|---|---|
| | WATER SUPPLY | SANI-TATION | WATER SUPPLY | SANI-TATION | |
| BELIZE | $650 | $0 | $0 | $0 | $650 |
| GUATEMALA | $16,993 | $8,428 | $6,222 | $930 | $32,572 |
| HONDURAS | $8,040 | $17,241 | $0 | $0 | $25,281 |
| EL SALVADOR | $18,584 | $2,513 | $6,150 | $565 | $27,811 |
| COSTA RICA | $0 | $12,958 | $4,525 | $0 | $17,483 |
| PANAMA | $6,555 | $8,441 | $0 | $1,155 | $16,150 |
| TOTAL: | $50,820 | $49,580 | $16,896 | $2,650 | $119,946 |

NOTE: Determination of annual costs is based on dividing total funding needed by two (for FY1988 and 1989).

TABLE - 10

ANNUAL COSTS
TO FUND SHORTFALLS AND MEET CAI TARGETS BY 1992
(IN $1986 - THOUSANDS)

| | URBAN AREAS | | RURAL AREAS | | TOTAL |
|---|---|---|---|---|---|
| | WATER SUPPLY | SANI-TATION | WATER SUPPLY | SANI-TATION | |
| BELIZE | $260 | $0 | $0 | $0 | $260 |
| GUATEMALA | $6,797 | $3,371 | $2,489 | $372 | $13,029 |
| HONDURAS | $3,216 | $6,896 | $0 | $0 | $10,112 |
| EL SALVADOR | $7,433 | $1,005 | $2,460 | $226 | $11,124 |
| COSTA RICA | $0 | $5,183 | $1,810 | $0 | $6,993 |
| PANAMA | $2,622 | $3,376 | $0 | $462 | $6,460 |
| TOTAL: | $20,328 | $19,832 | $6,758 | $1,060 | $47,978 |

NOTE: Determination of annual costs is based on dividing total funding needed by five (for FY1988 through 1992).

On average, water supply and sanitation projects for the region are comprised of 75 percent foreign exchange and 25 percent local currency. Although these averages vary slightly by country, for the purposes of this report, the regionwide average was used. Figure 4 shows the estimated foreign exchange and local currency components of the funding shortfall for each country. For the total shortfall of $240 million, approximately $180 million will be required in foreign exchange and $60 million in local currency.

Another point which should be noted regarding the external/local funding breakdown is pertinent to AID investments in the region. AID water supply and sanitation interventions are normally funded through Development Assistance (DA) funds. However, the local portion of funds for water supply and sanitation sector projects is, at times, also funded by AID--through Economic Support Funds (ESF). Therefore, providing funding to meet the CAI objective may require funding of both the external portion of a project through DA funding and the local share through ESF funding--especially in those countries where the level of required counterpart funding is not available.

Other issues and alternatives must also be considered prior to determining the policy framework to meet the CAI objective. These are discussed below in Section 3.3.

## 3.3 Alternatives and Issues in Meeting the CAI Objective

During its work on this report, the team faced many issues concerning meeting the CAI objective vis-a-vis planned country programs. Further, the research conducted and analyses performed for this study also provided the team with a basis for conceptualizing several alternatives for AID action with regard to meeting these objectives. These issues and alternatives are discussed below.

### 3.3.1 Issues/Alternatives

The following issues and/or alternatives are pertinent to the formulation of AID's program for water and sanitation in Central America:

- CAI Target Levels - Table 11 indicates the country targets in terms of percent coverage required to meet the CAI objective and presents an indication of whether it can be met by 1989, 1992, or post-1992. The table was compiled using the first two tables of each country profile and the matrix shown at the end of the last section.

  As shown in Table 11 and discussed in Section 3.2 and the country profiles, a great many of the sectors involved will reach the levels required to meet the CAI objective by 1989 or 1992. However, coverage levels, especially in the rural areas, will still be low. The CAI objective to raise existing (1984) coverage levels by 25 percent does not provide sufficient emphasis on the areas where the need is the greatest.

FIGURE - 4

**ESTIMATED FOREIGN EXCHANGE & LOCAL CURRENCY NEEDS TO MEET CAI OBJECTIVE**

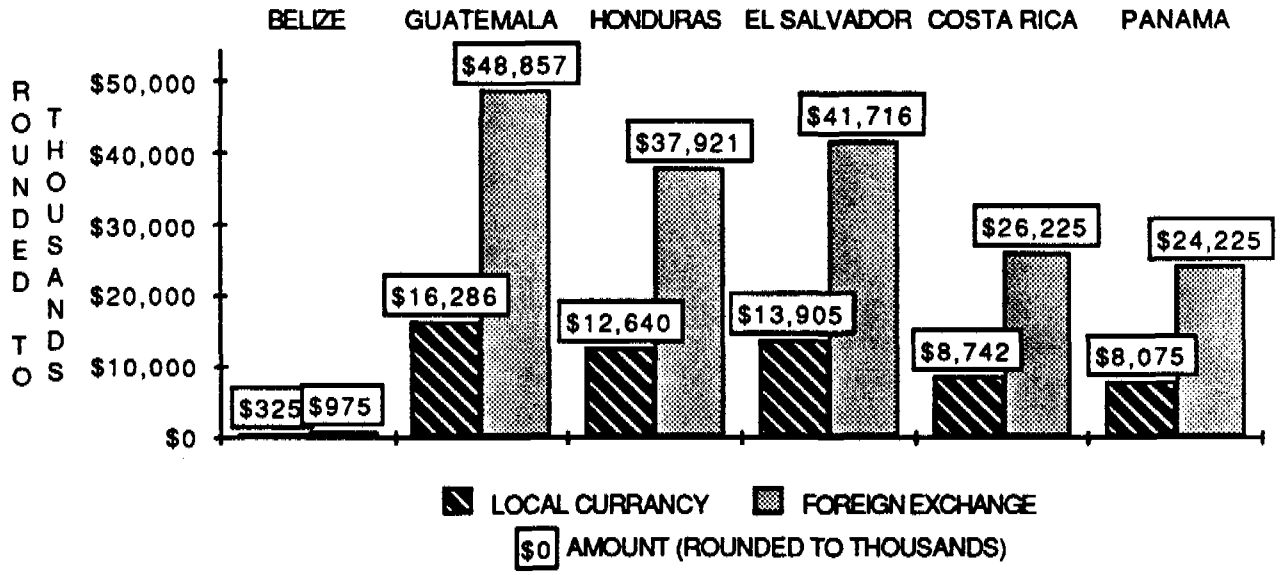


TABLE 11

LEVELS OF COVERAGE AT CAI TARGET
AND
EXPECTED YEAR TO REACH TARGET

| C O U N T R Y | % SERVED AT 1989 CAI TARGET | | | | | | EXPECTED YEAR TO REACH TARGET | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | SUB SECTOR | | | | | | | | | |
| | URBAN | | RURAL | | COUNTRYWIDE | | URBAN | | RURAL | |
| | Water | Sanit. | Water | Sanit. | Water | Sanit. | Water | Sanit. | Water | Sanit. |
| Belize | 99 | 67 | 42 | 78 | 72 | 72 | post-1992 | 1989 | 1989 | 1989 |
| Guatemala | 76 | 43 | 28 | 31 | 48 | 36 | post-1992 | post-1992 | post-1992 | 1992 |
| Honduras | 80 | 77 | 58 | 53 | 68 | 64 | post-1992 | post-1992 | 1992 | 1989 |
| El Salvador | 83 | 85 | 33 | 36 | 54 | 56 | post-1992 | post-1992 | post-1992 | post-1992 |
| Costa Rica | 89 | 89 | 100 | 100 | 94 | 94 | 1989 | 1992 | post-1992 | 1989 |
| Panama | 100 | 66 | 60 | 78 | 82 | 71 | post-1992 | post-1992 | 1989 | post-1992 |

- Using Country Targets Rather than Sector Targets: The analysis herein, based upon the LAC Bureau's scope of work, considered the CAI objective for each subsector in each country. An alternative concept would be to view the countries as single entities and measure the CAI objective against an overall country-wide level of coverage. This approach would be applicable to Honduras, for example. Improving water supply and sanitation coverage in the rural sectors appears to be supported by very well-financed projects. The potential for exceeding the CAI target is high, and it may be better for AID to work towards increasing the pace of coverage in the rural sector and to measure the provision of coverage (i.e., service) on an overall country basis. This, in effect, leaves out the urban sectors. However, coverage in the Honduran urban sectors will be relatively high, even with little or no increase over the next several years. A similar approach could be used in other countries.

- Investments to Increase the Absorptive Capacity of a Country: This concept represents an alternative to directly providing coverage through infrastructure. Many countries could provide adequate annual increasing coverage if they could better utilize available investments and/or prepare projects for construction more efficiently. Examples of delays caused by weak organizational structures, less than optimum use of available manpower or funds, and/or improper project preparation abound throughout the region.

  Examples include:

  - The Secondary Cities Project in Guatemala suffered a two-year delay, due to very slow consultant selection, and delays of over a year in authorizing the project to start after the contract was signed.

  - A two-year delay in Honduras was caused by SANAA's problems in utilizing funds for the San Pedro Sula Project and the IDB's Third Rural Sector Loan. Both loans were available as of early 1985 and both had very small amounts appropriated by 1986.

  - Delays in the implementation of rural water and sanitation projects were experienced by PLANSABAR in El Salvador. This agency is now using the private sector to speed up the design of projects.

- The AID-financed PRASAR project in Honduras has not been able to expend $5 million of the $18 million budget even with a project extension from four years to seven.

Technical Assistance (TA) investments by AID directed towards providing institution building for sector organizations could bring about increased coverage in all sectors by allowing a greater rate of project implementation. Also, such investments might provide the institutions with more efficient mechanisms for coordinating external aid to various programs.

### 3.3.2 Recommendations for Further Actions

This report presents the LAC Bureau with a basic methodology to use in determining the effect of investments that will provide increased coverage of water supply and sanitation services. The methodology includes a complete database program based on an easily utilized electronic spreadsheet. The program can easily accommodate new or revised data and will compute new program costs for various coverage levels or target years or as data on project or unit costs change or funding commitments are updated.

The program can also accommodate a limited number of "what if" questions including analyses to allow testing of programs of varying investment levels and sectoral distribution. For instance, the LAC Bureau could easily determine what effect a proposed program of a given size or focus would have on country and regional coverage. The recommended actions that are presented in the following section could be used to update the database that has already been developed.

The recommendations for follow-up work are as follows:

1. The accuracy of the data utilized in this report should be improved by developing more detailed information for country profiles. This includes work by individuals or teams at the country level to

   - confirm the selection of projects that are listed on the committed list in Appendix H--or add other projects;
   - determine the status, timing, and probability of participation of donors in committed and proposed investments;
   - determine the financing arrangements (donor and agencies involved) and projected increases in coverage for these projects;

- review how the mix of potential investments addresses the sector needs and how potential AID investments can best meet its country objectives; and

- determine the details of selected programs to better understand the characteristics (i.e., costs, implementation strategies, and technical assistance) of country-specific projects--especially useful are those international lending agencies or donors who utilize comprehensive appraisal and evaluation reports in their programs.

2. The absorptive capacities of the implementing institutions in each country should be determined. This includes a determination of

   - the institution's past history of fulfilling project responsibilities,

   - the methods used to implement projects, and

   - the capacity to plan, supervise, and generally implement projects.

   This information can be used to better assess the ability of counterpart agencies to support the annual levels of investment that are shown in Tables 9 and 10.

3. AID should determine, at the country level, the need for additional assistance that will lead to increased sustainability of existing projects and better implementation (through institutional and human resource development) of future projects. Such assistance may include training in management, operations and maintenance, or other technical areas; the development of better health education programs; assistance in locating groundwater resources, etc.

**ATTACHMENT I**

**Scope of Work**

LAC Bureau: Planning For
Central America WS&S Programs

## SCOPE OF WORK

### Background

The LAC Bureau has requested assistance from the WASH project to determine the level of funding required from USAID, other donors, and national sources to expand water supply and sanitation coverage in Central America. From this study, the LAC Bureau will determine the feasibility of stretching out the Central America Initiative through FY 1992 and, in collaboration with PRE/Housing, will set priorities for the funding of both urban and rural WS&S projects. Six countries are to be covered in the study: Guatemala, Honduras, Belize, Panama, Costa Rica, and El Salvador. Information needed for the analysis is to be obtained from LAC/DR, WASH, RHUDO, PAHO, World Bank, Inter-American Development Bank, UNICEF, AID field missions, and others. No international travel is expected for this level of effort.

### Scope of Work

Objectives. The objectives of the WASH assistance to the LAC Bureau are as follows:

1. Obtain information on existing WS&S coverage (for both urban and rural areas) on a country by country basis.

2. Obtain information on past and current levels of investment in WS&S for each country over the last five years (for both urban and rural areas).

3. Develop a country profile for each country using tables and graphs to illustrate existing coverage and investment.

4. Review the objectives of the Central America Initiative (CAI) for water supply and sanitation coverage by 1989.

5. Review PAHO's Central America Plan which was developed in collaboration with the countries. The plan provides a list of funded and unfunded projects in water and sanitation.

6. Using the above information, determine if the CAI objectives can be met by each country by 1989 under proposed levels of funding.

7. If the CAI objectives cannot be met by 1989, determine the additional resources needed to meet them (a) by 1989 and (b) by 1992. The estimated resources that are required for each country shall be programmed on an annual basis with costs broken down into foreign exchange and local currency outlays. Financing requirements for each host country and external donors shall also be identified.

Team Skills. To accomplish the above objectives, WASH will provide a two person team with the following mix of skills:

- o Water and Sanitation Planning (Sanitary Engineer)
- o Financial/Budgeting analyst in WS&S Programs
- o Experience in design and implementation of WS&S programs in the LAC region
- o Experience with AID programming of WS&S

In addition to the two person team, WASH will provide two specialists in housing and/or selected areas of WS&S projects (i.e. Institutional Development, Health Education) as resource persons for the team. The resource persons will provide the team with:

- o Familiarity with AID's health and housing programs
- o Familiarity with donor activity and programs in the LAC region

WASH will conduct a two day team planning meeting for the team members to familiarize the team with the scope of work, to develop a work plan and to define responsibilities. WASH will hold coordination meetings with LAC/DR and PRE/H on a weekly basis.

Report. The data gathered by the WASH team shall be presented in a report to LAC/DR and PRE/H. The report shall be structured to highlight key findings and recommendations through formatting, bullets, tables and graphics, with a minimum of narrative. The summary tables shall include country-by-country data and a summary financial table showing estimated annual AID funding requirements, by country, to achieve the WS&S objectives by 1989 and 1992. The report shall also contain a two page executive summary.

WASH will be responsible for producing the draft report for the LAC Bureau, including wordprocessing, computer usage (for database or graphics), and reproductions. WASH will produce 50 copies of the draft report and up to 200 copies of the final report.

Timing. The assistance to be provided by WASH is expected to start on or about March 19, 1987. The draft report will be submitted to LAC/DR and PRE/H for review by April 30, 1987.

## ATTACHMENT II

## Information Request Sent to AID Missions

UNCLASSIFIED

AID/LAC/HN:J KLEMENT:DC:2949T
03-19-87 647-5136
AID/LAC/DR:T BROWN

ST/H:J AUSTIN {SUBS}
LAC/DP:P SELLAR {DRAFT}
LAC/DP:C ZUVEKAS {DRAFT}
LAC/CAP:P STUKEL {PHONE}
AID/LAC/HN:P FEENEY
PRE/H:S LOW {PHONE}

IMMEDIATE GUATEMALA, PANAMA IMMEDIATE, SAN JOSE IMMEDIATE, SAN SALVADOR IMMEDIATE, BELIZE IMMEDIATE, TEGUCIGALPA IMMEDIATE

AIDAC GUATEMALA FOR ROCAP AND USAID

E.O. 12356: N/A

TAGS:

TB TB
JK JK
PF PF

SUBJECT: CENTRAL AMERICA INITIATIVE STRETCH OUT PLAN: WATER SUPPLY AND SANITATION PROGRAMS

1. THE LAC BUREAU IN COLLABORATION WITH PRE/H IS CONDUCTING A STUDY TO DETERMINE FUNDING NEEDS TO EXPAND WATER SUPPLY AND SANITATION {WSS} COVERAGE IN CENTRAL AMERICA. THIS IS BEING DONE TO REFINE PRELIMINARY PROJECTIONS AND COST ESTIMATES MADE IN THE CENTRAL AMERICA INITIATIVE STRETCH-OUT PLAN THROUGH FY 1992, SENT TO CONGRESS ON MARCH 1.

2. THE OBJECTIVES OF THE STUDY ARE: {1} TO DEVELOP PROFILES {FOR BOTH URBAN AND RURAL AREAS AND ON A COUNTRY-BY-COUNTRY BASIS} FOR EXISTING WSS COVERAGE; PAST COVERAGE {PREVIOUS FIVE YEARS}, CURRENT COVERAGE, AND PROPOSED LEVELS OF INVESTMENT IN WSS BY USAID, OTHER DONORS, AND NATIONAL SOURCES; AND {2} TO DETERMINE WHETHER CAI OBJECTIVES CAN BE MET FOR EACH COUNTRY BY 1989, AND {3} IF NOT, WHAT THE DOLLAR COSTS WOULD BE FOR

UNCLASSIFIED

MEETING THE CAI OBJECTIVES BY 1992.

3. THE PROPOSED STUDY IS A DESK-TOP LEVEL ANALYSIS TO BE CONDUCTED IN WASHINGTON, D.C. BY A TEAM PROVIDED BY THE ST/HEALTH WATER AND SANITATION FOR HEALTH (WASH) PROJECT. THE STUDY WILL BEGIN IN LATE MARCH AND IS SCHEDULED FOR COMPLETION BY APRIL 30, 1987.

4. LAC BUREAU AND PRE/H ARE SEEKING MISSION, ROCAP AND RHUDO INPUTS TO THIS STUDY. WE REQUEST COUNTRY/MISSION-SPECIFIC INFORMATION THAT WOULD BE RELEVANT TO THE STUDY, INCLUDING:

--(A) EXISTING WSS COVERAGE (URBAN AND RURAL), BOTH NUMBERS OF PEOPLE (OR HOUSEHOLDS) AND PERCENTAGE OF PEOPLE (HOUSEHOLDS) COVERED;

--(B) PAST, CURRENT AND PROPOSED LEVELS OF INVESTMENT, BY SOURCE OF FUNDING, 1982 THROUGH 1992;

--(C) LISTING OF PAST (1982 THROUGH 1986), A.I.D.'S CURRENT AND PROPOSED WSS PROJECTS OR HOUSING PROJECTS WITH A WSS COMPONENT. FOR THESE WSS OR RELATED PROJECTS, PLEASE PROVIDE BACKGROUND INFORMATION (COSTS, COVERAGE TARGETS, IMPLEMENTING ORGANIZATION, START/COMPLETION DATES, ETC.); AND

--(D) ANY OTHER INFORMATION AVAILABLE ON THE ACTIVITIES OF OTHER DONORS, HOST GOVERNMENTS, AND PVO'S.

5. ALL RELEVANT INFORMATION WHICH IS READILY AVAILABLE, REPEAT READILY AVAILABLE, SHOULD BE FORWARDED TO JOHN AUSTIN, ST/H, FOR WASH, TO BE RECEIVED BY NO LATER THAN APRIL 3, 1987. WE RECOGNIZE THIS IS A TALL ORDER WITH A VERY SHORT DEADLINE.

6. LAC BUREAU REQUESTS DESIGNATION OF AN APPROPRIATE CONTACT PERSON AT EACH MISSION, RHUDO AND/OR ROCAP OFFICE.

7. IF YOU HAVE QUESTIONS, PLEASE CONTACT J. ELLIS TURNER AT WASH (703-243-8200). YY

## ATTACHMENT III

## Bibliography

## WASH ACTIVITY 334
## LAC LIST OF PUBLICATIONS REFERENCED

12 GUATEMALA RESUMEN DEL PLAN NACIONAL PARA EL DECENIO INTERNACIONAL DEL ABASTECIMEIENTO DE AGUA POTABLE Y DEL SANEAMIENTO (DIAAPS)
**DONE BY:**
SEPTEMBER 1983
**AGENCIES COVERED:**
**COUNTRIES COVERED:** GUATEMALA

17 REPORT OF THE NATIONAL BIPARTISAN COMMISSION ON CENTRAL AMERICA, JANUARY 1984
**DONE BY:**
JACKSON INITIATIVE
**AGENCIES COVERED:**
**COUNTRIES COVERED:** BELIZE COSTA RICA EL SALVADOR GUATEMALA
HONDURAS PANAMA NICARAGUA

11 REPUBLICA DE PANAMA, PLAN NACIONAL DE NECESIDADES PRIORITARIAS DE SALUD, RESUMEN Y COMENTARIOS DEL SECTOR DE AGUA POTABLE Y SANEAMIENTO 1985-1990
**DONE BY:**
**AGENCIES COVERED:**
**COUNTRIES COVERED:**
PANAMA

35 PRIMARY HEALTH CARE: PROGRESS AND PROBLEMS, AN ANALYSIS OF 52 AID-ASSISTED PROJECTS - AUGUST 1982
**DONE BY:** AMERICAN PUBLIC HEALTH ASSOCIATION
**AGENCIES COVERED:** USAID
**COUNTRIES COVERED:** EL SALVADOR GUATEMALA
HONDURAS PANAMA NICARAGUA

## WASH ACTIVITY 334
## LAC LIST OF PUBLICATIONS REFERENCED

15 REPORT TO CONGRESS: A PLAN FOR FULLY FUNDING THE RECOMMENDATIONS OF THE NATIONAL BIPARTISAN COMMISSION ON CENTRAL AMERICA, MARCH 1987
**DONE BY:** DEPARTMENT OF STATE OMB
SPECIAL REPORT NO. 162
**AGENCIES COVERED:** STATE
**COUNTRIES COVERED:** BELIZE COSTA RICA EL SALVADOR GUATEMALA HONDURAS PANAMA NICARAGUA

14 EVALUACION RAPIDA DEL SECTOR ABASTECIMIENTO DE AGUA Y SANEAMIENTO EN GUATEMALA
**DONE BY:** PAHO
**AGENCIES COVERED:** PAHO
**COUNTRIES COVERED:** GUATEMALA

24 FINAL REPORT ON AMERICAS REGIONAL EXTERNAL SUPPORT CONSULTATION IN CONNECTION WITH THE INTERNATIONAL DRINKING WATER SUPPLY AND SANITATION DECADE - APRIL 1986
**DONE BY:** PAHO
**AGENCIES COVERED:** PAHO, IDB GER. MIN ECON COOP
**COUNTRIES COVERED:** BELIZE COSTA RICA EL SALVADOR GUATEMALA HONDURAS PANAMA NICARAGUA

9 HONDURAS WATER SUPPLY AND SEWERAGE SECTOR STUDY, MAY 1979
**DONE BY:** PAHO
**AGENCIES COVERED:** PAHO WORLD BANK
**COUNTRIES COVERED:**
HONDURAS

## WASH ACTIVITY 334
## LAC LIST OF PUBLICATIONS REFERENCED

6 INTERNATIONAL DRINKING WATER SUPPLY AND SANITATION DECADE, REGIONAL PROGRESS REPORT, SEPTEMBER 1986
**DONE BY:** PAHO
UPDATES OF 83/85 DATA
**AGENCIES COVERED:** PAHO
**COUNTRIES COVERED:** BELIZE COSTA RICA EL SALVADOR GUATEMALA HONDURAS PANAMA NICARAGUA

25 INTERNATIONAL DRINKING WATER SUPPLY AND SANITATION DECADE--REGIONAL PROGRESS - CORRIGENDUM - MAY 1986
**DONE BY:** PAHO
**AGENCIES COVERED:** PAHO
**COUNTRIES COVERED:** BELIZE COSTA RICA EL SALVADOR GUATEMALA HONDURAS PANAMA NICARAGUA

3 PRIORITY HEALTH NEEDS IN CENTRAL AMERICA AND PANAMA
**DONE BY:** PAHO
**AGENCIES COVERED:** PAHO
**COUNTRIES COVERED:** BELIZE COSTA RICA EL SALVADOR GUATEMALA HONDURAS PANAMA NICARAGUA

30 PRIORITY HEALTH NEEDS IN CENTRAL AMERICA AND PANAMA - WATER AND SANITATION
**DONE BY:** PAHO
**AGENCIES COVERED:** PAHO
**COUNTRIES COVERED:** COSTA RICA EL SALVADOR GUATEMALA HONDURAS PANAMA NICARAGUA

4 PRIORITY HEALTH NEEDS IN CENTRAL AMERICA AND PANAMA, PROGRESS REPORT-HEALTH AS A BRIDGE FOR PEACE
**DONE BY:** PAHO
SUMMARIES TO 1986
**AGENCIES COVERED:** PAHO
**COUNTRIES COVERED:** BELIZE COSTA RICA EL SALVADOR GUATEMALA HONDURAS PANAMA NICARAGUA

## WASH ACTIVITY 334
## LAC LIST OF PUBLICATIONS REFERENCED

5 PRIORITY HEALTH NEEDS IN CENTRAL AMERICA AND PANAMA,GUATEMALA SUMMARY OF THE NATIONAL PLAN FOR THE INTERNATIONAL DRINKING WATER SUPPLY AND SANITATION DECADE (IDWSSD)
**DONE BY:** PAHO
PREPARED WITH SEPT 1983 ADTA
**AGENCIES COVERED:** PAHO
**COUNTRIES COVERED:** GUATEMALA

2 REPORT TO THE DIRECTOR QUADRENNIAL 1982-1985 ANNUAL 1985
**DONE BY:** PAHO
**AGENCIES COVERED:** PAHO
**COUNTRIES COVERED:** COSTA RICA EL SALVADOR GUATEMALA HONDURAS PANAMA NICARAGUA

22 REPUBLIC OF PANAMA: WATER SUPPLY AND SANITATION SECTOR STUDY - DRAFT REPORT - DECEMBER 1979
**DONE BY:** PAHO
**AGENCIES COVERED:** PAHO
**COUNTRIES COVERED:**
PANAMA

16 DRINKING WATER AND SANITATION FOR THE DIPERSED RURAL POPULATION IN LATIN AMERICA
**DONE BY:** UNITED NATIONS
UN ECONIMIC COMMISSION FOR LATIN AMERICA AND CARIBBEAN
**AGENCIES COVERED:** UN ECLAC
**COUNTRIES COVERED:** COSTA RICA EL SALVADOR GUATEMALA HONDURAS PANAMA NICARAGUA

## WASH ACTIVITY 334
## LAC LIST OF PUBLICATIONS REFERENCED

27 BELIZE: ACTION PLAN FY 1987-1988 - MAY 1986
**DONE BY:** USAID
**AGENCIES COVERED:** USAID
**COUNTRIES COVERED:** BELIZE

23 FINAL REPORT: LATIN AMERICAN ASSESSMENT OF PVO TRAINING NEEDS WITH RECOMMENDATIONS OF USPVO'S AND USAID - SEPTEMBER 1981
**DONE BY:** USAID MAYO-BROWN, CAROLYN
**AGENCIES COVERED:** USAID PVO'S
**COUNTRIES COVERED:** BELIZE COSTA RICA EL SALVADOR GUATEMALA HONDURAS PANAMA

26 GAUTEMALA: FY 1987/1988 ACTION PLAN - MAY 1986
**DONE BY:** USAID USAID
**AGENCIES COVERED:**
**COUNTRIES COVERED:** GUATEMALA

13 GUATEMALA RURAL WATER SUPPLY PROGRAM, A MID-TERM EVALUATION OF USAID-FINANCED PROJECTS TO AGUA DEL PUEBLO AND CARE GUATEMALA
**DONE BY:** USAID ELMENDORF, DR. MARY
**AGENCIES COVERED:** USAID CARE
**COUNTRIES COVERED:** GUATEMALA

18 REPORT TO THE PRTESIDENT AND THE CONGRESS ON A PALN FOR FULLY FUNDING THE RECOMMENDATIONS OF THE NATIONAL BIPARTISAN COMMISSION ON CENTRAL AMERICA - FEBRUARY 1987
**DONE BY:** USAID
**AGENCIES COVERED:** STATE USAID
**COUNTRIES COVERED:** BELIZE COSTA RICA EL SALVADOR GUATEMALA HONDURAS PANAMA

## WASH ACTIVITY 334
## LAC LIST OF PUBLICATIONS REFERENCED

31 ROCAP PROJECT PAPER CA SHELTER & URBAN DEVELOPMENT - SEPTEMBER 1986
**DONE BY:** USAID
**AGENCIES COVERED:** USAID
**COUNTRIES COVERED:** COSTA RICA EL SALVADOR GUATEMALA
HONDURAS

33 URBAN INFRASTRUCTURE: PILOT STUDIES AND DEVELOPEMNT STRATEGIES
**DONE BY:** USAID PETERSON, GEORGE E.
CABEI RHUDO
**AGENCIES COVERED:** USAID
**COUNTRIES COVERED:** COSTA RICA EL SALVADOR GUATEMALA
HONDURAS

1 USAID FY88-89 ACTION PLAN FOR HONDURAS
**DONE BY:** USAID
**AGENCIES COVERED:** USAID
**COUNTRIES COVERED:**
HONDURAS

29 USAID/COSTA RICA: ACTION PLAN FY 1988 -- FY 1989
**DONE BY:** USAID
**AGENCIES COVERED:** USADI
**COUNTRIES COVERED:** COSTA RICA

7 USAID/EL SALVADOR FY 1988-1989 ACTION PLAN
**DONE BY:** USAID
**AGENCIES COVERED:** USAID
**COUNTRIES COVERED:** EL SALVADOR

28 USAID/PANAMA: ACTION PLAN FY 1987 - FY 1988 - APRIL 1986
**DONE BY:** USAID
**AGENCIES COVERED:** USAID
**COUNTRIES COVERED:**
PANAMA

## WASH ACTIVITY 334
## LAC LIST OF PUBLICATIONS REFERENCED

32 USAID: CONGRESSIONA; PRESENTATION FISCAL YEAR 1988 ANNEX III - LATIN AMERICA AND THE CARIBBEAN
**DONE BY:** USAID
**AGENCIES COVERED:** USAID
**COUNTRIES COVERED:** BELIZE COSTA RICA EL SALVADOR GUATEMALA HONDURAS PANAMA

21 EL SALVADOR: DECENIO INTERNACIONAL DEL AGUA Y SANEAMIENTO, ESTUDIO DEL SECTOR ABASTECIMIENTO DE AGUA Y SANEAMIENTO
**DONE BY:** WHO
**AGENCIES COVERED:** WHO GERMAN SOC. TECH CO
**COUNTRIES COVERED:** EL SALVADOR

10 INTERNATIONAL DRINKING WATER SUPPLY AND SANITATION DECADE
**DONE BY:** WHO
REPRINT FROM WHO STATISTICS 1985
**AGENCIES COVERED:** WHO
**COUNTRIES COVERED:** COSTA RICA EL SALVADOR HONDURAS PANAMA NICARAGUA

8 INTERNATIONAL DRINKING WATER SUPPLY AND SANITATION DECADE, CATALOG OF EXTERNAL SUPPORT, DECEMBER 1985
**DONE BY:** WHO
**AGENCIES COVERED:** WHO, CARE, WORLD VS SAVE THE CHLD., CRS
**COUNTRIES COVERED:** COSTA RICA EL SALVADOR GUATEMALA HONDURAS PANAMA NICARAGUA

## WASH ACTIVITY 334
## LAC LIST OF PUBLICATIONS REFERENCED

20 REPUBLIC OF COSTA RICA: COMMUNITY WATER SUPPLY AND SANITATION RAPID ASSESSMENT OF CURRENT AND PROJECTED SECTOR DEVELOPMENT - OCTIBER 1978
**DONE BY:** WHO
**AGENCIES COVERED:** WHO
**COUNTRIES COVERED:** COSTA RICA

34 DEVELOPMENT OF HUMAN RESOURCES IN THE WATER SUPPLY AND SANITATION SECTOR IN LATIN AMERICA AND THE CARIBBEAN
**DONE BY:** WORLD BANK TITUS AUATIN, INC.
WORKING DRAFT PAPER
**AGENCIES COVERED:**
**COUNTRIES COVERED:** GUATEMALA

19 GUATEMALA: WATER SUPPLY AND SEWERAGE SECTOR STUDY - SEPTEMBER 1977
**DONE BY:** WORLD BANK
**AGENCIES COVERED:** WORLD BANK
**COUNTRIES COVERED:** GUATEMALA

## ATTACHMENT IV

## People and Organizations Contacted

## People and Organizations Contacted

Paula Feeney - LAC/DR
Julie Klement - LAC/DR
Jim Fox - LAC/DP
Maria Mamlook - LAC/CAP
Robert Burke - LAC/DR
Clarence Zuvekas - LAC/DR
Ed (Ward) Campbell - Desk Officer/Belize
Jack Miller - USAID/Honduras
Oscar Delgado - USAID/Costa Rica
John Austin - ST/H
Dennis Long - ST/H
Karen Miller - ST/H
Sonny Low - PRE/H
Alexandria Panehal - RHUDO/Honduras
Steve Bergen - FVA/PVC
Roberto Figueroa - USAID/Guatemala
Sam Dowding - USAID/Belize
Ellen Jamison - Bureau of the Census
Katrina Galway - DDD/IRD/Westinghouse
Jean Pease - ISTI
Mark Schneider - PAHO
Olman Cordero - PAHO
Vincente Witt - PAHO
Juan Alfaro - IDB
Klaus Kresse - GTZ
Bill Barker - IBRD
Andy Karp - IBRD
Adrienne Nassau - IBRD
Alan Thys - IBRD
Norma Espinoza - CARE
Karen Hikson - CARE
Lennie Vargas - CRS
Mark Schomer - Save the Children Federation, USA
Rafael Semmes - Save the Children Federation, USA
Don Weisbrod - World Vision
Martin Beyer - UNICEF
Per Engbak - UNICEF
Jaqueline Hartvelt - UNDP
Carlos Gomez - Exec. Director, Agua Del Pueblo, Guatemala
Engr. Lopes - INFOM/Guatemala
Octavio Cordon - Cordon y Merida/Guatemala

# APPENDIX A

## Country Profile: Belize

## Country Profile: Belize

### I. COVERAGE - PAST (1980), BASELINE (1984), CURRENT (1986), AND PROJECTED (CAI 1989)

#### A. Population and Coverage Data (See Tables A-1 and A-2)

Population data and projections for Belize were obtained from the American Regional Resources Mobilization (ARRM) profile, dated April 1986. These population projections are close to the projections also provided by USAID/Belize.

Coverage data (number of people served) obtained from the mission were used to establish the baseline year 1984. However, the mission estimate of rural sanitation coverage (11 percent) was inconsistent with other sources of data that showed rural sanitation coverage reached much higher levels as early as 1980. For this reason, ARRM data, instead of mission data, were used to establish the level of 1984 rural sanitation coverage.

For reference, population and coverage data are also shown for 1980. The 1980 data were obtained from WHO reports. For the urban areas, the 1980 and 1984 data appear to be consistent. However, for the rural areas they are not consistent, and it is not possible to determine if a decline in coverage actually occurred.

The estimated coverage for 1986 was obtained from mission estimates of the coverage added between 1984 and 1986 from ongoing projects.

#### B. Results

Belize has made substantial progress in providing water supply and sanitation services to both urban and rural populations. Tables A-1 and A-2 show coverage data for 1980, the 1984 baseline, and the estimated 1986 coverage. The tables also show the coverage that is required to meet the CAI objective for 1989. Figure A-1 illustrates graphically the levels of coverage in 1984 and 1986 compared to the coverage that will result if the CAI objective is met.

In the urban sector, water supply coverage reached 95 percent by 1986 (representing an increase in coverage of 8,000 persons from 1980 to 1986). However, because of the rate of population growth in the urban areas, the percentage of the population covered actually declined between 1980 and 1986 (from 97.3 percent to 95 percent). In spite of the decline, urban water supply coverage is still high and there has also been substantial improvement in the level of service that has been achieved, particularly in Belize City (the largest population center).

Sanitation (principally sewerage) coverage in the urban areas of Belize increased significantly from 1980 to 1986. Coverage increased from about 59 percent to 83 percent, an addition of 26,000 persons.

In the rural sector, coverage gains have also been significant -- increasing from approximately 38 percent to almost 42 percent in water supply, adding about 5,000 persons. For rural sanitation, coverage data between 1980 and 1984 is inconsistent. However, coverage data show an increase of 6,000 persons between 1984 and 1986 to a level of 69.6 percent coverage.

## II. PAST INVESTMENTS AND PROPOSED PROJECTS

### A. Past Investments

Since 1982 there have been four major projects in Belize's water supply and sanitation sector. These projects and their characteristics are summarized below. The following funding levels are based on estimated expenditures through 1986 and do not include funding for the period after 1986--which is discussed in the next section.

1. The Village Level Water Supply and Sanitation (VLWS) Project (Rural - Orange Walk and Corozal).

- Funding (1984-86)

| | | |
|---|---|---|
| -- | USAID/B (Proj 505-0024) | $212,000 |
| -- | CARE | 275,000 |
| -- | GOB | 100,000 |
| | **TOTAL** | **$587,000** |

The VLWS project was initiated in July 1984 and is scheduled for completion in December 1987. The project will install 100 handpumps in 14 villages and water systems in 2 villages. Latrines will be installed in all 16 project villages. Latrine installation and usage ratios are high (over 90 percent). The VLWS project will serve an estimated 6,300 beneficiaries. Using an estimated completion figure of 50 percent, the gains in coverage as of 1986 are projected to be 3,150 beneficiaries for both water supply and sanitation. The project also includes a strong health education component.

2. The Improved Productivity Through Better Health Project (IPTBH) (Rural - Belize, Stann Creek, and Cayo Districts).

- Funding (1985-86)

| | | |
|---|---|---|
| -- | USAID/B (Proj. 505-0018) | $500,000 |
| -- | GOB | 340,000 |
| | **TOTAL** | **$840,000** |

The IPTBH project was initiated in 1985 and is scheduled for completion in 1989. The project will install up to 500 handpumps in 60-90 villages. About 50 percent of the target population will receive latrines. Because the project is off to a slow start, no new coverage (zero beneficiaries) has been included in the 1985-86 project period. Ultimately, the project will serve approximately 30,100 persons with water supply and 16,800 persons with sanitation facilities. The project also includes a health education component, the purchase and rehabilitation of drilling equipment and new vehicles. In addition the IPTBH project is supporting the development and staffing of a water quality testing lab for the Water and Sanitation Authority (WASA).

3. UNICEF Rural Water Supply and Sanitation Project (Rural - Toledo District).

- Estimated Funding (1985-86)

| | | |
|---|---|---|
| -- | UNICEF | $467,000 |
| -- | GOB | 25,000 |
| | **TOTAL** | **$492,000** |

The UNICEF project began in 1985 and is scheduled for completion in late 1987. The project will install up to 150 handpumps in approximately 20 villages. Latrines will also be installed in the project villages. When completed, the project will serve approximately 5,000 to 6,000 persons. As of 1986 the estimated number of persons served is approximately 2,800 for both water supply and sanitation. In addition to providing water supply and sanitation facilities, the project purchased a new rotary drill rig for the GOB and provided training to the drilling crew for one year.

4. Belize City Water Supply and Sewerage Project (Urban)

- Estimated Funding (1980-86)

| | | |
|---|---|---|
| -- | CIDA | $22,600,000 |
| -- | GOB | 4,700,000 |
| | **TOTAL** | **$27,300,000** |

The Belize City Water and Sewerage project is a seven year program funded by the Canadian International Development Agency (CIDA) and the GOB. Based on the connection rate to the new water and sewer systems, the estimated number of persons served through 1986 is estimated at 28,000 for water supply and 21,000 for sewerage. The project will eventually serve about 40,000 persons. Note, however, that many of the beneficiaries represent improved rather than new service. This has been considered in determining the estimated 1984-86 gain in coverage.

In summary, from 1982 through 1986 there has been a total investment of approximately $29 million in the water supply and sanitation sector in Belize. Of this amount USAID has contributed approximately $0.7 million.

B. Proposed Projects

All four of the projects discussed above will be continued into the period 1987-89. Estimated levels of investment and the number of additional beneficiaries for this period are shown below. All funding for these projects has been committed. No new projects are proposed for the foreseeable future.

1. VLWS Project

- Future Funding (through 1987)

| | | |
|---|---|---|
| -- | USAID/B (Proj. 505-0017) | $488,000 |
| -- | GOB | 160,000 |
| -- | CARE | 65,000 |
| | **TOTAL** | **$713,000** |

The project will be extended to June 1988. However, no additional funds (above the existing commitments) are anticipated. The project is expected to add approximately 3,200 beneficiaries in the 1987-89 period.

2. IPTBH Project

- Future Funding (through 1989)

| | | |
|---|---|---|
| -- | USAID/B (Proj. 505-0018) | $2,508,000 |
| -- | GOB | 1,050,000 |
| | **TOTAL** | **$3,558,000** |

As the project progresses, all of the proposed beneficiaries could be added during the 1987-89 period. This would add approximately 30,000 persons with water supply and 17,000 persons with latrines. However, USAID anticipates that additional funds and a project extension may be required to meet the project's targets.

3. UNICEF - Toledo District

- Future Funding (estimated) through 1987

| | | |
|---|---|---|
| -- | UNICEF | $311,000 |
| -- | GOB | 25,000 |
| | **TOTAL** | **$336,000** |

Although the project is behind schedule, UNICEF is committed to its completion. An estimated additional 2,800 beneficiaries will be added to both water supply and sanitation during the 1987-89 period.

4. Belize City Water Supply and Sewerage

- Future Funding (through 1987)

| | | |
|---|---|---|
| -- | CIDA | $970,000 |

In the Belize City project, the rate of increase of coverage has slowed because of the inability of occupants (many are tenants and/or have low incomes) to finance water and sewer connections or provide in-house plumbing facilities. Both USAID and GOB are attempting to correct this problem. Although the prospect for correcting the anticipated number of beneficiaries during the project period is not good, it is anticipated that the target will eventually be reached with little outside funding required. The estimated numbers of additional beneficiaries in the 1987-89 period are 12,000 and 19,000 for water supply and sanitation, respectively. Note however, that many of the beneficiaries do not represent new coverage.

In summary, approximately $6 million in funding has been committed to the water supply and sanitation sector in Belize. Of this amount USAID is providing $3 million.

Estimated funding needs to meet the CAI objective are illustrated graphically in Figure A-2.

## C. Meeting the CAI Objective: Funds Required

Projected shortfalls in meeting the CAI objective, in terms of population coverage, are shown in Table A-3. In Belize, additional urban water supply coverage for about 10,000 persons will be needed to meet the CAI objective. The estimated cost is $1,300,000. Because there are no committed or potential investments in the urban water area, the CAI objective will not be met, even by 1992. However, the CAI objective will be exceeded for sanitation in urban areas. In the rural areas water supply coverage must be increased by 1,000 persons and sanitation coverage by 7,000 persons to meet the CAI objective.

Table A-4 shows the estimated funding that will be required to meet the CAI, based on estimated unit costs and the shortfalls presented in Table A-3. In Belize, from 1987-89, investments of $130,000 will be required in rural water supply, $1,300,000 in urban water supply, and $595,000 in rural sanitation. As shown in Table A-5, the committed funds for this period ($2,765,000 for rural water supply and $1,842,000 for rural sanitation) will ensure that the objectives for all areas will be met--with the exception of urban water supply.

## D. Other Constraints to Achieving the CAI Objective

With the exception of urban water supply there appear to be no constraints to achieving the CAI objective through the installation of new facilities. However, there are constraints which may hamper the sustainability of the achieved level of coverage:

- lack of trained manpower--both professional and support,
- inadequate cost-recovery framework,
- operations and maintenance deficiencies,
- deficiencies in well drilling and well installation practices,
- lack of counterpart involvement in the management and critical support (i.e., health education) of ongoing projects, and
- reluctance of some residents of Belize City to connect to the new systems.

As of April 1987, counterpart responsibility (mostly well and handpump installation) for the implementation of all projects in Belize shifted from the Ministry of Health to the Ministry of Natural Resources (MNR). This shift could be positive, but availability of personnel and funds to support the required efforts of the MNR is uncertain.

## III. IMPLICATIONS FOR AID

Although the CAI objective for urban water supply is unlikely to be met by 1992, the level of coverage will still be greater than 95 percent. Therefore, AID may wish to consider all of the CAI physical targets satisfied for Belize. However, none of the current projects appear to address the constraints which may hamper sustainability. There is a need for funds for human resources development (especially in the MNR), well drilling training, health education programming and delivery, and in operations and maintenance planning and management.

In addition, it should be noted that the high level of sanitation coverage for urban areas is skewed by the high coverage in Belize City and Belmopan. In other urban areas, there are still significant percentages of the population without sanitation coverage. Furthermore, some of the coastal urban areas are served by latrines and septic tanks--which are causing environmental pollution. In such areas, upgrading to sewerage systems will be necessary.

Because of these deficiencies, continued assistance to Belize will be required to ensure that both the existing coverage and the quality of coverage are at least maintained and, if possible, increased.

TABLE A - 1
BELIZE
---
HISTORICAL WATER SUPPLY
COVERAGE VERSUS CAI OBJECTIVE

| 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 | 146 | 99 | 67.8% | 73 | 71 | 97.3% | 73 | 28 | 38.4% |
| BASELINE 1984 | 156 | 98 | 62.8% | 78 | 71 | 91.0% | 78 | 27 | 34.6% |
| 1986 | 162 | 112 | 69.1% | 83 | 79 | 95.2% | 79 | 33 | 41.8% |
| CAI OBJECTIVE 1989 | 170 | 123 | 72.4% | 90 | 89 | 98.9% | 80 | 34 | 42.5% |

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

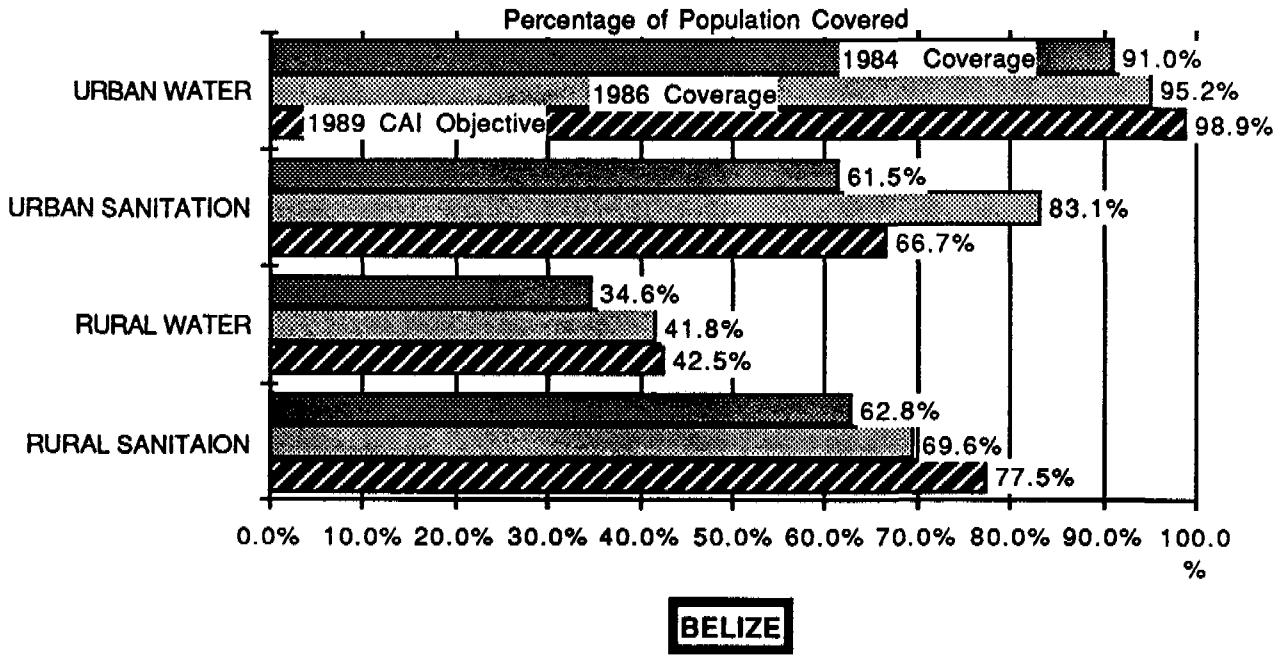
TABLE A - 2
BELIZE
---
HISTORICAL SANITATION
COVERAGE VERSUS CAI OBJECTIVE

| 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 | 146 | 96 | 65.8% | 73 | 43 | 58.9% | 73 | 53 | 72.6% |
| BASELINE 1984 | 156 | 97 | 62.2% | 78 | 48 | 61.5% | 78 | 49 | 62.8% |
| 1986 | 162 | 124 | 76.5% | 83 | 69 | 83.1% | 79 | 55 | 69.6% |
| CAI OBJECTIVE 1989 | 170 | 122 | 71.8% | 90 | 60 | 66.7% | 80 | 62 | 77.5% |

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

FIGURE A - 1

**1989 CAI OBJECTIVE VS. 1984 & 1986 COVERAGE**




**BELIZE**

TABLE A - 3
BELIZE
.....
PROJECTED SHORTFALLS
IN MEETING CAI OBJECTIVE

| | WATER SUPPLY COVERAGE (PERSONS) | | | SANITATION COVERAGE (PERSONS) | | |
|---|---|---|---|---|---|---|
| | TOTAL | URBAN | RURAL | TOTAL | URBAN | RURAL |
| CAI OBJECTIVE 1989 | 123 | 89 | 34 | 122 | 60 | 62 |
| BASELINE 1984 | 98 | 71 | 27 | 97 | 48 | 49 |
| REQUIRED INCREASE | 25 | 18 | 7 | 25 | 12 | 13 |
| ESTIMATED 1984-86 GAIN | 14 | 8 | 6 | 27 | 21 | 6 |
| CAI COVERAGE SHORTFALL | 11 | 10 | 1 | 7 | NONE | 7 |

TABLE A - 4
BELIZE
.....
ESTIMATED COST TO
ACHIEVE CAI OBJECTIVE

| | WATER SUPPLY | | | SANITATION | | |
|---|---|---|---|---|---|---|
| | TOTAL | URBAN | RURAL | TOTAL | URBAN | RURAL |
| SHORTFALL IN POPULATION COVERAGE SHOWN IN THOUSANDS | 11 | 10 | 1 | 7 | NONE | 7 |
| ESTIMATED UNIT COST - $ PER CAPITA | N/A | 130 | 130 | N/A | N/A | 85 |
| ESTIMATED TOTAL COST ($ IN THOUSANDS) | $1,430 | $1,300 | $130 | $595 | NONE | $595 |

TOTAL ESTIMATED COST: $2,025,000

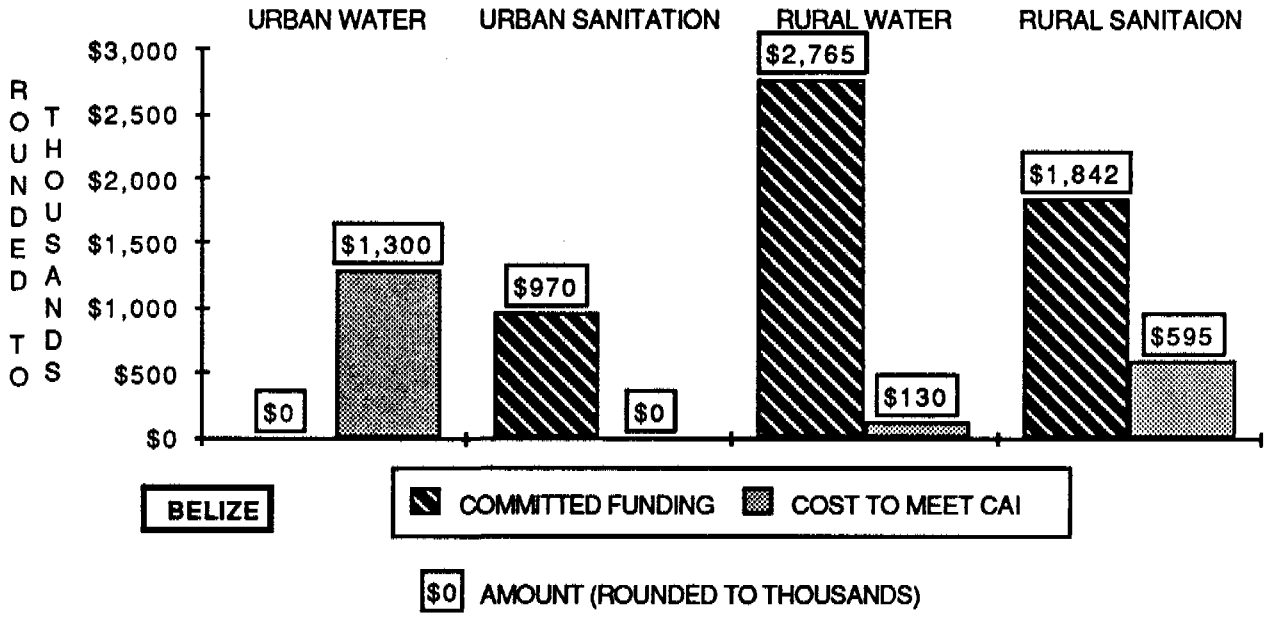
TABLE A - 5
BELIZE
.....
PROJECTED FUNDING
SHORTFALL TO MEET CAI
(COSTS IN THOUSANDS)

| | WATER SUPPLY | | SANITATION | | UN- | |
|---|---|---|---|---|---|---|
| | URBAN | RURAL | URBAN | RURAL | SPECIFIED | TOTAL |
| ESTIMATED TOTAL COST TO MEET CAI | $1,300 | $130 | NONE | $595 | NONE | $2,025 |
| FIRMLY COMMITED INVESTMENTS (1) | NONE | $2,765 | $970 | $1,842 | NONE | $5,577 |
| PROJECTED FUNDING SHORTFALL | $1,300 | NONE | NONE | NONE | NONE | $1,300 |
| POTENTIAL OTHER FUNDING (1) | NONE | NONE | NONE | NONE | NONE | $0 |

(1) ONLY THOSE INVESTMENTS WHICH INCREASE COVERAGE

FIGURE A - 2

**ESTIMATED FUNDING NEEDS BY SECTOR TO MEET CAI OBJECTIVE**



# APPENDIX B

## Country Profile: Guatemala

## Country Profile: Guatemala

### I. COVERAGE - PAST (1980), BASELINE (1984), CURRENT (1986), AND PROJECTED (CAI 1989)

#### A. Population and Coverage Data (See Tables B-1 and B-2)

Population data and projections for Guatemala were obtained from the Demographic Data for Development (DDD) project (IRD/Westinghouse) and converted from mid-year to year-end figures.

Coverage data (number of people served) obtained from USAID/Guatemala were used to establish the baseline year 1984 for both water supply and sanitation. However, the percent coverage was calculated using the population figures provided by DDD--which are somewhat different from population figures reported by the mission but are consistent with WHO and IDB population estimates. Using the DDD population estimates, the percent coverage for the baseline year is lower than the mission percentages for urban water supply and sanitation and higher than the mission percentages for both rural water supply and sanitation.

The estimated coverage (people served) in 1986 was obtained directly from estimated coverage for that year and from estimates of the added coverage from ongoing projects.

For reference, population and coverage data are also shown for 1980. However, these data, obtained from regional profiles on resource mobilization and from International Drinking Water Supply and Sanitation Decade progress reports, are not always consistent with later data reported from the same sources and the mission for 1984. No attempt was made to reconcile the inconsistencies between 1980 and 1984 data.

#### B. Results

Coverage data for Guatemala are shown in Tables B-1 and B-2. The analysis conducted for this report indicates that the level of coverage for urban water supply in the 1980-86 period was maintained at a constant level of approximately 2.4 million persons while the percent of the population covered dropped from 88.9 percent to 70.6 percent. In this same period sewerage coverage in urban areas was extended to approximately 200,000 persons, with the percent served dropping slightly from approximately 44.4 percent to 41 percent.

In the rural areas, during the 1980-86 period approximately 500,000 additional persons were provided with both water supply and sanitation coverage, with the percent of the population served increasing from approximately 18.6 percent to 26.5 percent for water supply and 20.9 percent to 28.6 percent for sanitation. These increases in the coverage in rural areas are noteworthy. However, as of 1986 only about 28 percent of the rural population was served with water supply and sanitation services.

Tables B-1 and B-2 also show the CAI objectives for 1986, the 1984 baseline and estimated 1986 coverage. A comparison of the 1986 coverage and the CAI objectives for 1989 indicates the increased coverage that is required to meet the objectives. Figure B-1 illustrates graphically the levels of coverage in 1984 and 1986 compared to the coverage that will result if the CAI objective is met.

## II. PAST INVESTMENTS AND PROPOSED PROJECTS

### A. Past Investments

The activities of three agencies drive Guatemala's water and sanitation sectors. EMPAGUA handles the water supply and sewerage needs for Guatemala City; the Institute of Municipal Development (INFOM) handles the financing needs for all other urban places, with the cities responsible for operating the facilities. Two units within the Ministry of Health are responsible for the rural water supply and sanitation sectors. It is well to note that the 330 urban centers or cities in Guatemala are classified as such by legal definition. While most rural centers are classified as places having fewer than 2,000 persons, many of the urban centers (about 15 percent of the total) also had fewer than 2,000 persons according to the 1981 census.

Sector investments by these three agencies for the 1981-86 period averaged approximately $21 million (1986 levels) per year. The available funding levels were much higher, and several documents indicated that the sector as a whole was able to absorb only about 55 percent of the available funds.

An examination of investments in the 1982-86 period indicates that about 70 percent of the total for the period were for urban areas (about equally split in the water and sanitation sectors). Over 80 percent of the investments in the rural sector were for water supply.

Sector investments for the 1982-86 period by donor and the GOG are summarized below:

| Source of Funds | Approximate Amount ($1986-million) |
|---|---|
| GOG | $71 |
| Inter-American Development Bank (IDB) | 75 |
| AID | 5 |
| Govt of Japan | 5 |
| Govt of Canada | 3 |
| UN Agencies and PAHO | 3 |
| PVOs | 7 |
| Others | 4 |
| **TOTAL** | **$173 million** |

(Note: AID/Guatemala has reported IDB investments of approximately $138 million in the 1982-86 period. The value used above was obtained by prorating figures available from past IDB annual reports.)

The largest external donor, by far, has been the Inter-American Development Bank. However, AID, the Governments of Japan and Canada, several United Nations agencies, and PVOs have exhibited a great deal of activity in the sector. (The patterns of external aid provided by IDB over the past five years reflect this agency's historical role in providing the largest amounts of aid for the water supply and sanitation sectors in Guatemala since 1960.) Guatemalan and IDB officials contacted with regard to this assignment indicated that these same institutions and other governments (Federal Republic of Germany and Scandinavian countries) will continue their activities in the sector.

## B. Proposed Projects

Guatemala's planned investments in the water supply and sanitation sector were developed for PAHO's 1985 Central American Plan. This initiative caused the GOG to modify its objectives for the International Drinking Water Supply and Sanitation Decade to meet those of the PAHO plan. The investments to meet these objectives form a series of priority programs for various sector components. As external aid becomes available, the GOG intends to direct this aid to these priority programs. An examination of the available (but sketchy) documentation indicates the following programs to which sector investments will be directed:

1. Guatemala City-Metro Area Water Supply - The program consists of seven projects of two to four year duration to improve the water supply for Guatemala City and its environs. The estimated cost is $70 million, and specific project characteristics include the development of new water sources, improvements to the distribution system and extensions to new service areas, and optimization of operation or the distribution system. The project would provide additional coverage to approximately 400,000 people, including population growth to the mid- or late 1990s, and improve service to an equal number.

2. Guatemala City-Metro Area Sewerage - The program consists of two projects of three years duration to provide sewage collection and treatment services to the approximately 200,000 persons currently not served within the sewerage service area of Guatemala City. The estimated program cost is approximately $22 million.

3. Secondary Cities (329) Water Supply and Sewerage - The program consists of one large project to plan and construct facilities to provide water supply and sewerage facilities to service all secondary cities in the country. Planning is now underway and is expected to be completed by mid-1988. Construction will be contingent upon available funds, estimated at $72 million. The coverage to newly served people is estimated at 300,000 to 400,000; the implementation effort is estimated at five to ten years.

4. Rural Water Supply and Sanitation - This program consists of four projects, three for providing water supply and sanitation services to specific areas of the country, and a fourth project, nationwide in scope, to provide latrines for all persons not so served. The three water supply and sanitation projects will utilize various forms of appropriate technology and will provide service to approximately 300,000 persons. Implementation will take place over three to five years, and the estimated cost is approximately $20 million. The "latrinization" program includes a health education component and is planned to provide latrines to approximately 1.5 million persons. Its estimated cost is $13 million and implementation could take 8 to 12 years.

5. Non-Infrastructure Projects - A national program is planned with elements to provide groundwater investigations to identify additional sources, preventive maintenance, upgrading of water quality through chlorination and increased laboratory monitoring and added control, environmental monitoring and statistical compilation, and training for system operations, monitoring, and control. The program's several components are scheduled to take three to six years to complete, and its cost is estimated at approximately $7 million.

Programs 1 through 5 are summarized below:

| Program | NAME | Estimated Cost ($1986-Millions) | Added Coverage | Schedule (years) |
|---|---|---|---|---|
| 1 | Guatemala City WS | 70 | 400,000 (WS) | 4 |
| 2 | Guatemala City Sewerage | 22 | 200,000 (Sewerage) | 3 |
| 3 | Secondary Cities Water Supply and Sewerage | 72 | 300,000 to 400,000 (WS & Sewerage) | 5 to 10 |
| 4a | Rural Water Supply and Sanitation: Specific Projects | 20 | 300,000 (WS & Sanitation) | 3 to 5 |
| 4b | Rural Water Supply and Sanitation: Latrinization | 13 | 1,500,000 (Sanitation) | 8 to 12 |
| 5 | Non-Infrastructure Projects | 7 | N/A | 3 to 6 |
| | **TOTAL COST** | **$204 million** | | |

Guatemala's planning calls for an investment of approximately $204 million over the next 10 years or so, to provide water supply and sewerage coverage to approximately 600,000 to 700,000 urban dwellers and water supply and sanitation coverage to approximately 300,000 and 1.8 million rural dwellers, respectively. The programs are also planned to increase the level of service to several hundred thousand people and to improve the general level of operations, monitoring, and control nationwide.

Based upon the planning documents reviewed, the GOG expects to finance the programs described by obtaining approximately two-thirds of the costs from external aid. (Rural communities are expected to furnish up to 20 percent of the cost of their projects through the provision of materials and labor.) This would require approximately $140 million of external aid from various sources.

Commitments of external aid for the programs described above are as follows:

- The Government of Japan has provided $16 million towards the Guatemala City water supply program, and a portion of this program (concerned with the development of new water supply sources) is underway.

- The IDB has indicated its willingness to furnish up to $30 million towards the secondary cities water supply and sanitation program.

- The GOG is negotiating with UNICEF to provide approximately $11 million towards the rural water supply and sanitation program.

- The World Bank has indicated its willingness to finance sector-wide institutional development projects to a level of about $1 million.

- AID's Action Plan for FY 1988 has indicated that a portion of its Highlands Environmental Sanitation Project will include a rural water supply and sanitation component estimated at $5.5 million, to provide 10,000 households (approximately 50,000 persons) in the western portion of the country with water supply and sanitation facilities.

- AID's RHUDO program for Guatemala calls for some 70,000 housing solutions to be provided over the next several years. The water supply and sewerage component of this program is estimated at approximately $9 million, and, based upon the number of housing solutions, represents service to 300,000 to 350,000 urban dwellers.

C. Meeting the CAI Objective: Funds Required

Projected shortfalls in meeting the CAI objective, in terms of population coverage, are shown in Table B-3. The estimated costs to provide the required coverage are shown in Table B-4. The required increases in coverage and the estimated costs are summarized below.

| SERVICE | REQUIRED INCREASE IN COVERAGE (No. of Persons) | ESTIMATED COST ($-1986) |
|---|---|---|
| URBAN | | |
| Water Supply | 500,000 | $35,000,000 |
| Sanitation | 225,000 | 18,000,000 |
| Subtotal | 725,000 | $53,000,000 |
| RURAL | | |
| Water Supply | 200,000 | 20,000,000 |
| Sanitation | 225,000 | 2,700,000 |
| Subtotal | 425,000 | $22,700,000 |
| **TOTAL** | **1,150,000** | **$75,700,000** |

Thus, the estimated costs to meet CAI objective would be approximately $75.7 million, and water supply and sanitation coverage would be extended by 700,000 and 450,000 persons respectively.

Table B-5 shows the level of funding which is presently committed to each of the sectors. In the urban sector, of the $35,000,000 needed for water supply, only $1,015,000 is committed, leaving a shortfall of $33,985,000. There are potential projects that could add about $31 million in funding, if approved, but these are tentative, at best. For sanitation the estimated funding to meet the CAI objective is $18,000,000, of which only $1,145,000 is committed. The funding shortfall for sanitation is estimated to be $16,855,000. Approximately $35 million in project funding is being considered but has not been approved. In summary, given the level of committed funding, there are large shortfalls in both urban water supply and sanitation.

The IDB, the source normally providing such large aid infusions for capital intensive projects, appears to be interested in funding the secondary cities program. However, any added coverage from this program is at least two to three years away.

The AID-RHUDO program may add some coverage in the urban areas receiving the housing solutions. However it is extremely difficult to estimate the level of added coverage. Conceivably, the housing improvements may provide only upgraded service to urban dwellers who were relocated from areas already being covered. This intervention itself would only represent a small portion of the total required to meet the CAI objective. It is doubtful that the CAI objective for Guatemala's urban areas can be reached even by 1992.

As shown in Table B-5, of the $20,000,000 needed for water supply in the rural sector only $7,557,000 is committed; and for sanitation, of the $2,700,000 needed, only $840,000 is committed. These commitments are from small PVO projects. The shortfalls, then, are $12,443,000 for water supply and $1,860,000 for sanitation. Potential projects could provide $10,900,000 for combined rural water and sanitation, if approved, and an unspecified amount of funding may be available from UNICEF.

Added coverage in the rural sector, possibly up to 160,000 persons in the next several years, could be provided by potential AID (from the FY 1988 Action Plan) and UNICEF interventions. This, of course, assumes the UNICEF negotiations are successfully completed. However, only a portion of the total facilities to be funded through these interventions could be expected on-line by the end of calendar year 1989. Further, it is doubtful that UNICEF would fund the reported $11 million potential intervention. Information received by the WASH team indicates that UNICEF's annual program for all of Central America will be approximately $2.5 million per year for the next several years.

However, if the funding can be obtained, it appears that the capacity exists in the rural sector in Guatemala to implement the required projects to meet the CAI objective. As indicated from AID's Action Plan and activities of sector institutions over the past several years, approximately 120 projects for rural water supply and sanitation can be successfully implemented on an annual basis. This total number of projects would represent service to approximately 60,000 persons per year and infers that the absorptive capacity of the Ministry of Health agencies involved is about $7 million per year.

Based upon past experience, PVOs, UN agencies, and bilateral donors (in addition to AID and UNICEF) could be expected to contribute most of the $7 million annual total required. These expected interventions, combined with the described AID project, would allow the CAI objective for rural sanitation to be met, at least by 1992. Realistically, the rural water supply objective will probably be achieved after 1992.

Estimated funding needs to meet the CAI objective are illustrated graphically in Figure B-2.

## D. Other Constraints to Achieving the CAI Objective

The greatest constraint in terms of meeting the CAI objective is the lack of funding for the urban sector. Without large infusions of funds, it is very doubtful the CAI objective can be met, even by 1992.

At present there is a shortfall of funding to meet the CAI objective in the rural sector. However, if the expected funding as described above is obtained, the capability exists to meet the CAI objective by 1992.

## III. IMPLICATIONS FOR AID

Because of substantial shortfalls in committed funding, only rural sanitation is likely to meet the CAI objective by 1992.

Although AID's program in Guatemala is not directed towards large capital-intensive investments. There are some significant opportunities, however, for AID investments to increase coverage in the urban sector by 1992. The secondary cities program, while urban in nature, covers literally hundreds of small cities. (Over 75 percent of the 329 cities involved are under 5,000 in population [by 1981 census] and about 60 percent are in the 2,000-5,000 population range.) For any number of these small cities AID could provide significant coverage with a relatively small investment.

The Guatemala City sewerage project, estimated at $22 million, may offer good opportunities for AID to participate at least in a co-financing role.

The new coverage provided by the RHUDO intervention should be determined prior to making any final decisions on urban sector investments.

AID's health and child survival programs provide it with an opportunity to optimize the benefits of the rural water supply and sanitation facilities. Inclusion in these programs of health education components would be a relatively inexpensive method of obtaining such benefits.

TABLE B - 1
GUATEMALA
.....
HISTORICAL WATER SUPPLY
COVERAGE VERSUS CAI OBJECTIVE

| 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 | 7,000 | 3,200 | 45.7% | 2,700 | 2,400 | 88.9% | 4,300 | 800 | 18.6% |
| BASELINE 1984 | 7,800 | 3,500 | 44.9% | 3,100 | 2,300 | 74.2% | 4,700 | 1,200 | 25.5% |
| 1986 | 8,300 | 3,700 | 44.6% | 3,400 | 2,400 | 70.6% | 4,900 | 1,300 | 26.5% |
| CAI OBJECTIVE 1989 | 9,100 | 4,400 | 48.4% | 3,800 | 2,900 | 76.3% | 5,300 | 1,500 | 28.3% |

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

TABLE B - 2
GUATEMALA
.....
HISTORICAL SANITATION
COVERAGE VERSUS CAI OBJECTIVE

| 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 | 30.0% | 2,700 | 1,200 | 44.4% | 4,300 | 900 | 20.9% |
| BASELINE 1984 | 7,800 | 2,600 | 33.3% | 3,100 | 1,300 | 41.9% | 4,700 | 1,300 | 27.7% |
| 1986 | 8,300 | 2,800 | 33.7% | 3,400 | 1,400 | 41.2% | 4,900 | 1,400 | 28.6% |
| CAI OBJECTIVE 1989 | 9,100 | 3,250 | 35.7% | 3,800 | 1,625 | 42.8% | 5,300 | 1,625 | 30.7% |

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

FIGURE B - 1

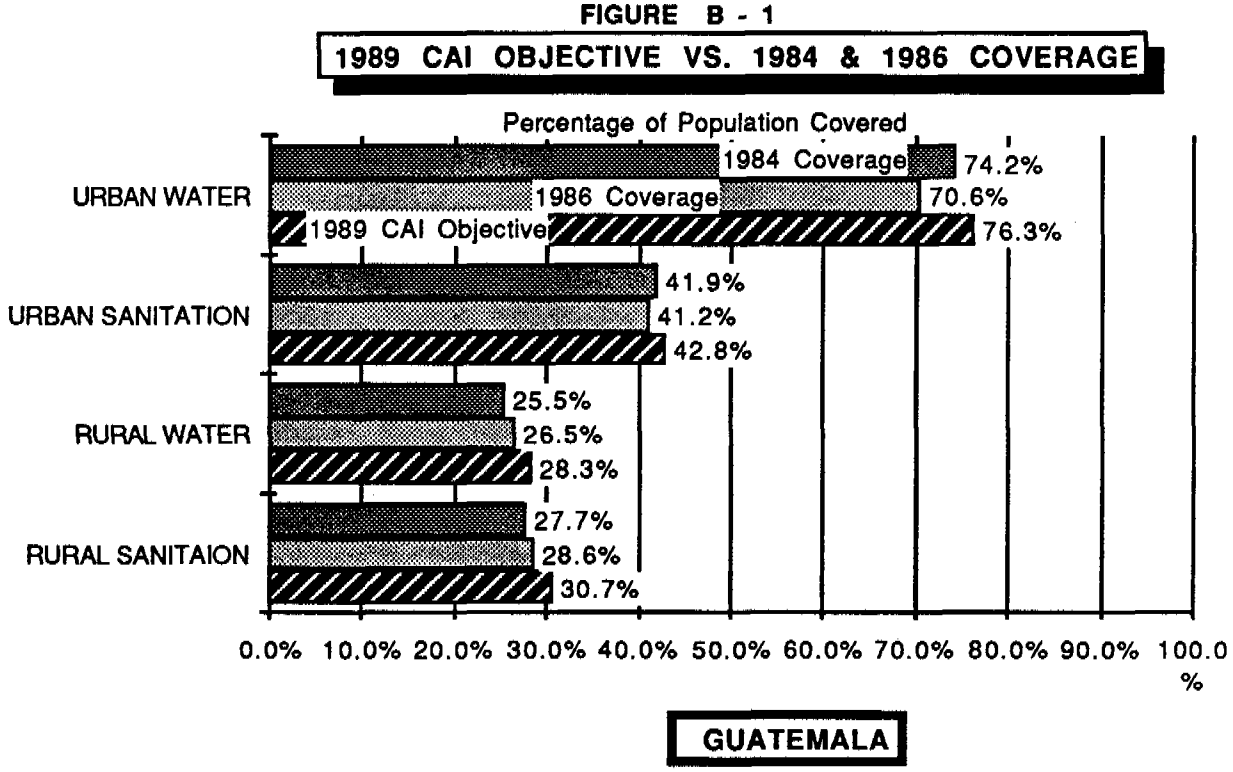

1989 CAI OBJECTIVE VS. 1984 & 1986 COVERAGE
Percentage of Population Covered
URBAN WATER
1984 Coverage
74.2%
1986 Coverage
70.6%
1989 CAI Objective
76.3%
URBAN SANITATION
41.9%
41.2%
42.8%
RURAL WATER
25.5%
26.5%
28.3%
RURAL SANITAION
27.7%
28.6%
30.7%
0.0% 10.0% 20.0% 30.0% 40.0% 50.0% 60.0% 70.0% 80.0% 90.0% 100.0 %
GUATEMALA

TABLE B - 3
GUATEMALA

PROJECTED SHORTFALLS
IN MEETING CAI OBJECTIVE

| | WATER SUPPLY COVERAGE (PERSONS) | | | SANITATION COVERAGE (PERSONS) | | |
|---|---|---|---|---|---|---|
| | TOTAL | URBAN | RURAL | TOTAL | URBAN | RURAL |
| CAI OBJECTIVE 1989 | 4,400 | 2,900 | 1,500 | 3,250 | 1,625 | 1,625 |
| BASELINE 1984 | 3,500 | 2,300 | 1,200 | 2,600 | 1,300 | 1,300 |
| REQUIRED INCREASE | 900 | 600 | 300 | 650 | 325 | 325 |
| ESTIMATED 1984-86 GAIN | 200 | 100 | 100 | 200 | 100 | 100 |
| CAI COVERAGE SHORTFALL | 700 | 500 | 200 | 450 | 225 | 225 |

TABLE B - 4
GUATEMALA
.....
ESTIMATED COST TO
ACHIEVE CAI OBJECTIVE

| | WATER SUPPLY | | | SANITATION | | |
|---|---|---|---|---|---|---|
| | TOTAL | URBAN | RURAL | TOTAL | URBAN | RURAL |
| SHORTFALL IN POPULATION COVERAGE SHOWN IN THOUSANDS | 700 | 500 | 200 | 450 | 225 | 225 |
| ESTIMATED UNIT COST - $ PER CAPITA | N/A | 70 | 100 | N/A | 80 | 12 |
| ESTIMATED TOTAL COST ($ IN THOUSANDS) | $55,000 | $35,000 | $20,000 | $20,700 | $18,000 | $2,700 |

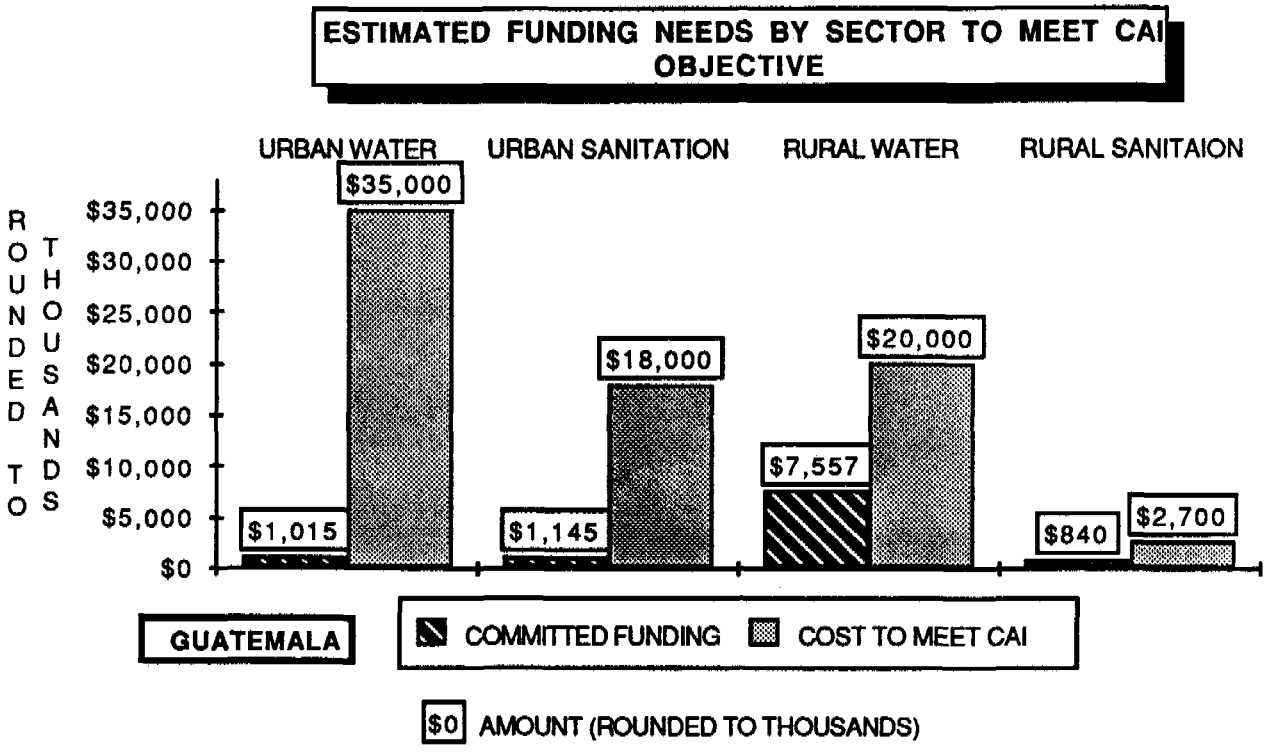
TOTAL ESTIMATED COST: $75,700,000

TABLE B - 5
GUATEMALA
.....
PROJECTED FUNDING
SHORTFALL TO MEET CAI
(COSTS IN THOUSANDS)

| | WATER SUPPLY | | SANITATION | | UN- | |
|---|---|---|---|---|---|---|
| | URBAN | RURAL | URBAN | RURAL | SPECIFIED | TOTAL |
| ESTIMATED TOTAL COST TO MEET CAI | $35,000 | $20,000 | $18,000 | $2,700 | NONE | $75,700 |
| FIRMLY COMMITED INVESTMENTS (1) | $1,015 | $7,557 | $1,145 | $840 | NONE | $10,557 |
| PROJECTED FUNDING SHORTFALL | $33,985 | $12,443 | $16,855 | $1,860 | NONE | $65,143 |
| POTENTIAL OTHER FUNDING (1) | $31,034 | $10,900 | $34,996 | NONE | NONE | $76,930 |

(1) ONLY THOSE INVESTMENTS WHICH INCREASE COVERAGE

FIGURE B - 2


ESTIMATED FUNDING NEEDS BY SECTOR TO MEET CAI OBJECTIVE
URBAN WATER
URBAN SANITATION
RURAL WATER
RURAL SANITAION
ROUNDED TO THOUSANDS
$35,000
$30,000
$25,000
$20,000
$15,000
$10,000
$5,000
$0
$35,000
$1,015
$18,000
$1,145
$20,000
$7,557
$840
$2,700
GUATEMALA
COMMITTED FUNDING
COST TO MEET CAI
$0 AMOUNT (ROUNDED TO THOUSANDS)

# APPENDIX C

## Country Profile: Honduras

## Country Profile: Honduras

I. COVERAGE - PAST (1980), BASELINE (1984), CURRENT (1986), AND PROJECTED (CAI 1989)

A. Population and Coverage Data (See Tables C-1 and C-2)

Population data and projections for Honduras were obtained from the Demographic Data for Development (DDD) project (IRD/Westinghouse) and converted from mid-year to year-end figures.

Coverage data for 1986 (number of people served) were provided by two mission sources: Tegucigalpa cable 06289 and the FY 1988 Action Plan. However, there were large discrepancies between these two sources. The WASH team contacted the mission and determined that urban coverage data from the cable was based on strict definitions of water supply and sanitation (i.e., household connections and indoor toilets, respectively). Coverage data in the Action Plan was based on definitions of water supply and sanitation that also included easy access and on-site latrines, respectively. These latter definitions are closer to the definitions generally used by WHO and PAHO. For this reason, coverage data for both urban and rural water supply and sanitation from the Action Plan was used for 1984 and 1986. Percent coverage was calculated using the DDD population figures. Use of the DDD population distribution results in much lower coverage rates for urban water supply and sanitation than were reported in the Action Plan.

For reference, population and coverage data are also shown for 1980. These data were obtained from WHO and the Americas Regional Resource Mobilization Profile. Although these data appear reasonable, no attempt was made to analyze these data for consistency with later data (i.e., for 1984 and 1986).

B. Results

Coverage data for Honduras are shown in Tables C-1 and C-2. The analysis conducted for this report indicates that in urban areas in the 1980-86 period, levels of coverage for urban water supply decreased from 93 percent to 81.4 percent, while the level of urban sanitation coverage increased from approximately 49 percent to 78.8 percent. This represents an increase in coverage of approximately 261,000 persons in the urban water supply and 815,000 persons in urban sanitation over the 1980-86 period.

Increases during the 1980-86 period in the rural sector were also high. Water supply coverage increased from 40 percent to 53.8 percent and sanitation increased from 26 percent to 51.6 percent. These increases represent 496,000 additional persons provided with water supply and some 772,000 with sanitation coverage. These increases are major accomplishments. However, it should be recognized that as of 1986 the rural sector coverage levels for both water supply and sanitation services extended to only about 50 percent of the total rural population.

Tables C-1 and C-2 also show the CAI objective for 1989, the 1984 baseline, and estimated 1986 coverage. A comparison of the 1986 coverages and the CAI objective for 1989 shows the increases in coverage that are required to meet the objectives. Figure C-1 illustrates graphically the levels of coverage in 1984 and 1986 compared to the coverage that will result if the CAI objective is met.

## II. PAST INVESTMENTS AND PROPOSED PROJECTS

### A. Past Investments

The water supply and sanitation sector in Honduras has several significant institutions which drive it. SANAA is responsible for providing water supply and sewerage services for all communities with populations over 500 (i.e., SANAA has both urban and rural responsibilities). Of the 283 municipalities in the country, SANAA operates the facilities in 128, with individual communities owning and operating 155 urban water systems and 33 sewerage systems. The Bureau of Environmental Sanitation in the Ministry of Health (MOH) is responsible for providing service to villages with populations less than 500.

Many Honduran cities have responsibilities to provide extensions to their water supply and sewerage service areas. The Municipal Water Division of the City of San Pedro Sula, for example, was established as an administrative unit to provide water supply and sewerage services for the city.

There is little definitive documentation on the annual investment levels and/or absorptive capacity of these agencies. However, data from several reports and conversations with WASH, CDM, and World Bank personnel indicate that the overall absorptive capacity of the institutions in the water supply and sanitation sectors is between 50 and 60 percent of the available funds. The complex relationship between the agencies within the sectors and their somewhat weak organizational structures have often caused delays in program implementation. Two prime examples of such delays are the loan to San Pedro Sula (made by the World Bank) and the third IDB Rural Water Supply loan. Both of these loans were finalized in 1984; however, no significant expenditures were made prior to 1987. SANAA, in particular, is overcommitted in attempting to implement large rural water supply and sanitation projects with both AID, IDB, and in smaller projects with CARE.

Sector investments for the 1982-86 period by GOH and donors are approximately as follows:

| Source of Funds | Approximate Amount ($ million - 1986) |
|---|---|
| GOH (including cities) | $25 |
| IDB | 34 |
| AID (including RHUDO) | 30 |
| EEC | 5 |
| Government of Switzerland | 1 |
| PVOs and Others | 1 |
| **TOTAL** | **$96 million** |

This total does not reflect the World Bank's $41 million loan package for the San Pedro Sula Water Supply and Drainage Project, (including some $10 million of GOH funds, and $11 million from the CDC) or the IDB's 1984 Rural Water Supply loan of $24 million.

At a 60 percent absorptive capacity, annual spending for both sectors over the 1982-86 period was approximately $12 million per year. (i.e., 96 x 0.6 ÷ 5 = 11.5).

The largest external donor has been IDB. However, the 1982-86 investment totals indicate the very strong role AID has played in both sectors. Information obtained by the consultants indicates that both IDB and AID expect to continue their high level of activity in the sector. The Governments of Italy, France, Great Britain, West Germany, Canada, and Japan, together with the EEC and various PVOs, also expect to be active, but at lower levels of involvement.

## B. Proposed Projects

GOH planned investments in the water supply and sanitation sectors stem from national planning studies and an attempt to meet the country's long-term objectives for the International Drinking Water and Sanitation Decade. (GOH Decade objectives were adopted by the GOH for the PAHO 1985 Central American Health Initiative.) For purposes of this profile, these investments have been combined into five programs. Based upon an examination of the available, but sketchy documentation, the following programs are those to which the GOH wishes to direct investments:

1. Tegucigalpa Water Supply - This program consists of three projects with an estimated cost of approximately $32 million. Specific project characteristics include the development of a new water source to relieve critical water shortages (the city's supply can now meet only 50 percent of the estimated demand), improvements to the distribution system, and extensions to new service areas. The projects would provide new service to approximately 80,000 persons and improve service to a majority of city residents.

2. Other Urban Water Supply and Sewerage - This program consists of two projects with an estimated cost of approximately $28 million. Specific project characteristics include improvements and expansions of the water supply systems of "ten cities," and construction of 27 urban water systems and 3 sewerage systems. The projects would provide new water supply service to approximately 120,000 persons (this is a rough estimate because the only designation in the documentation was for approximately 70,000 persons in "27 urban areas"), and improve service to those already served in the "ten cities." Sewerage service would be newly provided to approximately 8,000 persons.

3. Rural Water Supply and Sanitation - This program consists of four projects with an estimated cost of approximately $80 million. Specific project characteristics include construction of some 300 new water supply systems, 10,000 wells and 100,000 latrines, the rehabilitation of 200 existing water supply systems, plus training of community workers and health education. The number of newly served persons is estimated at approximately 800,000 (both with water supply and sanitation), plus rehabilitated water supply service to approximately 180,000 persons.

4. Non-Infrastructure Projects - This program consists of a national project for ground water source investigations, training for system operations and administration, and formation of community development organizations. The estimated cost is approximately $4 million.

Programs 1 through 4 are summarized below:

| Program | Name | Estimated Cost (1986-$millions) | Added Coverage |
|---|---|---|---|
| 1 | Tegucigalpa Water Supply | $36 | 80,000 (W.S.) |
| 2 | Other Urban Water Supply and Sewerage | 28 | 120,000 (W.S.)<br>8,000 (Sewerage) |
| 3 | Rural Water Supply and Sanitation | 80 | 800,000 (WS&S) |
| 4 | Non-Infrastructure Projects | 4 | NA |
| | **TOTAL** | **148** | |

As shown above, planning in Honduras calls for an investment of approximately $148 million. The specific implementation time span was not indicated in the documentation but appears to be for a ten year period, with approximately 90 percent of the Tegucigalpa WS investments being expended by the end of 1990. New water supply and sewerage coverage would be provided to approximately 200,000 and 8,000 urban dwellers, respectively. New rural water supply and sanitation services would be provided to approximately 800,000 persons and upgraded levels of water supply, through rehabilitation of existing systems, to an additional 180,000 rural dwellers.

Note that the San Pedro Sula Water Supply and Drainage Project has been omitted from the above discussion. No specific documentation regarding the project characteristics was available for this study. However, based upon the very limited information that was available, it appears that additional coverage might be relatively small, as most of the investments would be directed towards rehabilitation of existing facilities and improved service to persons already served.

Based upon the planning documents reviewed, the GOH expects to finance the programs by obtaining approximately two-thirds of the costs from external aid. This would require approximately $98 million of external aid from various sources. (Rural communities are expected to furnish up to 30 percent of the capital costs for water supply systems and provide funds for ongoing operation and maintenance.)

Commitments of external aid are described below. These commitments have been difficult to document. The GOH has indicated that many of the programs are already under way, but no mention has been made regarding specific financing arrangements. Thus, the following discussion regarding commitments of external aid is somewhat tentative.

- The IDB's 1984 Rural Water Supply Loan should be available, almost in its entirety, for the sector. Based upon the estimated 1986 unit costs developed for this assignment, this total should be sufficient to provide rural water supply and sanitation service to approximately 230,000 persons.

- GOH planning documents indicate that the Government of Italy has "approved" $26 million to finance the source development aspects of the Tegucigalpa Water Supply program, and FIDA has "approved" $5 million to finance the "ten cities" urban water supply project.

- GOH planning documents further indicate that it is negotiating with the IDB to finance the groundwater source investigations included in the non-infrastructure projects.

- AID/Honduras has indicated it intends to include a rural water supply and sanitation component (including health education and community development services) in its Health Sector II project. The total AID grant would be approximately $7.5 million, and the GOH has pledged a contribution of approximately $3 million. This total of approximately $10.5 million should be sufficient to provide rural water supply and sanitation services to approximately 100,000 persons (based upon unit costs developed for this assignment). There have been indications from AID/Honduras that funding for this project may be as high as $20 million.

- AID's RHUDO program for Honduras calls for 50,000 housing solutions to be provided over the next several years. The water supply and sewerage component of this program is estimated at approximately $9.2 million, and based upon the number of housing solutions, represents service to approximately 250,000 urban dwellers. However, much of this service is likely to be replacement, not new, coverage.

C. Meeting the CAI Objective: Funds Required

Projected shortfalls in meeting the CAI objective, in terms of population coverage, are shown in Table C-3. The estimated costs to provide the required coverage are shown in Table C-4. The required increases in coverage and the estimated costs are summarized below:

| SERVICE | REQUIRED INCREASE IN COVERAGE (No. of Persons) | ESTIMATED COST ($-1986) |
|---|---|---|
| URBAN | | |
| Water Supply | 223,000 | $17,840,000 |
| Sanitation | 201,000 | 38,793,000 |
| Subtotal | 424,000 | $56,633,000 |
| RURAL | | |
| Water Supply | 201,000 | $14,070,000 |
| Sanitation | 122,000 | 2,928,000 |
| Subtotal | 323,000 | $16,998,000 |
| **TOTAL** | **747,000** | **$73,631,000** |

The estimated costs to meet the CAI objective in Honduras would be approximately $74 million. Water supply and sanitation coverage would be increased by 424,000 and 323,000 persons respectively (combining the urban and rural areas).

Table C-5 shows the level of funding which is presently committed to each of the sectors. Note, from the information presented in the table, that in the urban sector an additional $16,079,000 is needed to meet the CAI objective for water supply. Of this amount, approximately $18,565,000 may potentially be available from projects that are under consideration. For sanitation, committed funding leaves a shortfall of $34,482,000. About $18,565,000 of this amount may be available from projects that are in the planning stage.

In the rural sector after deducting committed funding, no additional funds are needed to meet the CAI objective for water supply or sanitation.

Based upon the commitments of AID discussed above, increases in coverage in the rural sector could be recognized through IDB and AID interventions. Based upon AID's rural sector investments in the 1981-86 period, approximately $5 to $6 million per year could be absorbed by the Ministry of Public Health. Based upon current estimated unit costs, this dollar volume could provide water supply and sanitation sector coverage to 50,000 to 60,000 rural dwellers per year. Assuming the IDB loan is immediately available (since it has been "in the pipeline" since 1984 and there are ongoing IDB funded rural water supply and sanitation projects to which funds from the third loan could be added), rural coverage could increase by approximately 100,000 by 1989, and 250,000 by 1992.

As per the above, and based upon adding coverage to 50,000 to 60,000 rural dwellers per year, the CAI objective for rural areas in Honduras should be met for the sanitation sector for 1989 and for the water supply sector by 1992.

To meet the shortfall in urban coverage, a project in water supply and sanitation in San Pedro Sula or additional AID/RHUDO programs could lead to a closing of the gap for meeting the CAI objective. However, the need to commit nearly all of the potential funding for the water supply sector and the lack of funding for urban sanitation indicates that the CAI objective for the urban areas will not be met, even by 1992.

The problem with estimating new coverage from AID/RHUDO interventions has been discussed in previous country profiles in this report. However, even if added coverage is provided to only one quarter of the estimated 250,000 (say 65,000) persons affected by the RHUDO intervention, this portion would represent a sizable portion of the added coverage needed to meet the CAI objective in the urban sector.

The urban water and sanitation sector in Honduras, with no increases in coverage, will still have almost 80 percent coverage for water supply and sewerage services. The 1986 coverage levels in the urban area, approximately 81 and 78 percent for water supply and sewerage respectively, indicate that SANAA has had reasonable success in providing coverage. It is thus doubtful, based upon SANAA's past performance, that it would allow coverage in these sectors to significantly deteriorate.

Estimated funding needs to meet the CAI objective are illustrated graphically in Figure C-2.

## D. Other Constraints to Achieving the CAI Objective

There should be no constraints to meeting the CAI objective in the rural areas.

The CAI objective for urban water supply may be met if SANAA can implement the projects related to source development and extensions of the water supply system in Tegucigalpa over the next few years and if the RHUDO intervention and the San Pedro Sula project add additional coverage. Further investigation to determine the added coverage offered by these two projects and further determination of the implementation schedule of the Tegucigalpa water supply program are necessary before final decisions on meeting CAI urban sector objectives can be made.

## III. IMPLICATIONS FOR AID

The immediate need, in terms of the CAI objective, is funding for the urban sector. However, AID may, in effect, decide to "forego" this sector, due to the relatively high coverage levels, the probable increases in coverage in San Pedro Sula, and the possible coverage additions based upon the AID/RHUDO interventions. AID would then concentrate on accelerating the pace of investments in the rural areas. Such action could cause the overall increases in coverage to be at levels which would allow the CAI objective, on a countrywide level, to be met.

Before any final decision is made for Honduras with regard to the CAI objective, the new coverage levels from the RHUDO and San Pedro Sula projects should be determined.

TABLE C - 1
HONDURAS
.....
HISTORICAL WATER SUPPLY
COVERAGE VERSUS CAI OBJECTIVE

| 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 | 3,754 | 2,226 | 59.3% | 1,368 | 1,272 | 93.0% | 2,386 | 954 | 40.0% |
| BASELINE 1984 | 4,299 | 2,726 | 63.4% | 1,700 | 1,405 | 82.6% | 2,599 | 1,321 | 50.8% |
| 1986 | 4,581 | 2,983 | 65.1% | 1,884 | 1,533 | 81.4% | 2,697 | 1,450 | 53.8% |
| CAI OBJECTIVE 1989 | 5,027 | 3,407 | 67.8% | 2,190 | 1,756 | 80.2% | 2,837 | 1,651 | 58.2% |

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

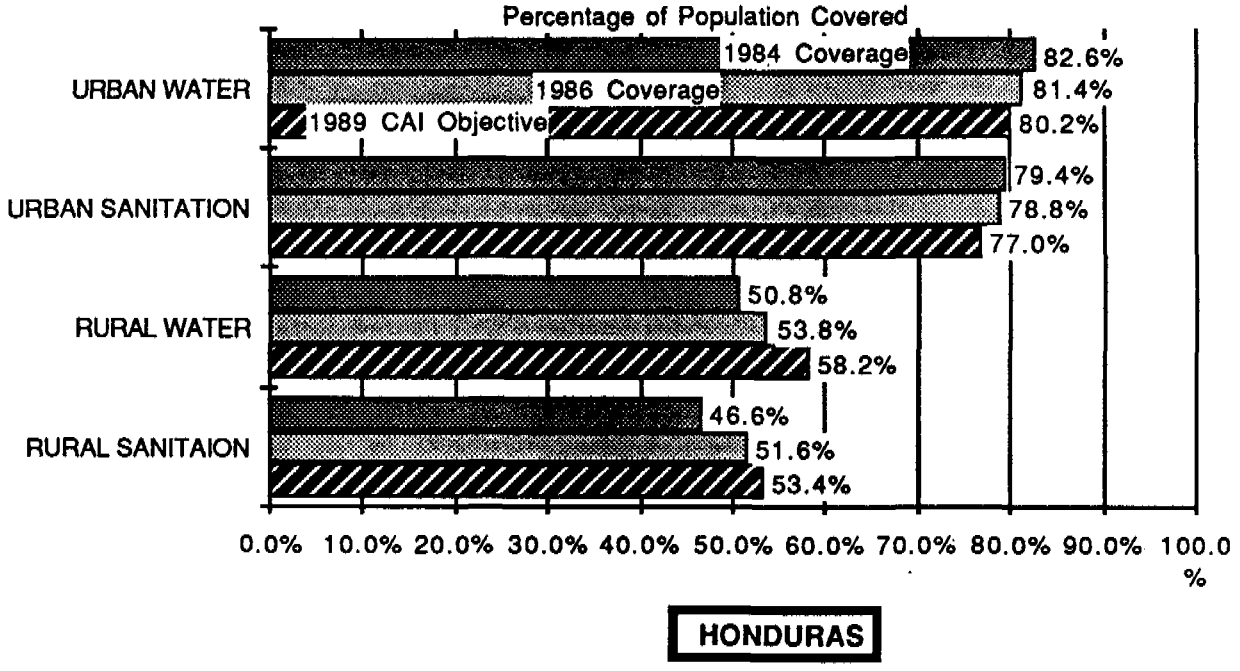
TABLE C - 2
HONDURAS
.....
HISTORICAL SANITATION
COVERAGE VERSUS CAI OBJECTIVE

| 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 | 3,754 | 1,290 | 34.4% | 1,368 | 670 | 49.0% | 2,386 | 620 | 26.0% |
| BASELINE 1984 | 4,299 | 2,560 | 59.5% | 1,700 | 1,349 | 79.4% | 2,599 | 1,211 | 46.6% |
| 1986 | 4,581 | 2,877 | 62.8% | 1,884 | 1,485 | 78.8% | 2,697 | 1,392 | 51.6% |
| CAI OBJECTIVE 1989 | 5,027 | 3,200 | 63.7% | 2,190 | 1,686 | 77.0% | 2,837 | 1,514 | 53.4% |

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

**FIGURE C - 1**

**1989 CAI OBJECTIVE VS. 1984 & 1986 COVERAGE**




**HONDURAS**

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 | 3,407 | 1,756 | 1,651 | 3,200 | 1,686 | 1,514 |
| BASELINE 1984 | 2,726 | 1,405 | 1,321 | 2,560 | 1,349 | 1,211 |
| REQUIRED INCREASE | 681 | 351 | 330 | 640 | 337 | 303 |
| ESTIMATED 1984-86 GAIN | 257 | 128 | 129 | 317 | 136 | 181 |
| CAI COVERAGE SHORTFALL | 424 | 223 | 201 | 323 | 201 | 122 |

TABLE C - 4
HONDURAS
.....
ESTIMATED COST TO
ACHIEVE CAI OBJECTIVE

| | WATER SUPPLY | | | SANITATION | | |
|---|---|---|---|---|---|---|
| | TOTAL | URBAN | RURAL | TOTAL | URBAN | RURAL |
| SHORTFALL IN POPULATION COVERAGE SHOWN IN THOUSANDS | 424 | 223 | 201 | 323 | 201 | 122 |
| ESTIMATED UNIT COST - $ PER CAPITA | N/A | 80 | 70 | N/A | 193 | 24 |
| ESTIMATED TOTAL COST ($ IN THOUSANDS) | $31,910 | $17,840 | $14,070 | $41,721 | $38,793 | $2,928 |

TOTAL ESTIMATED COST: $73,631,000

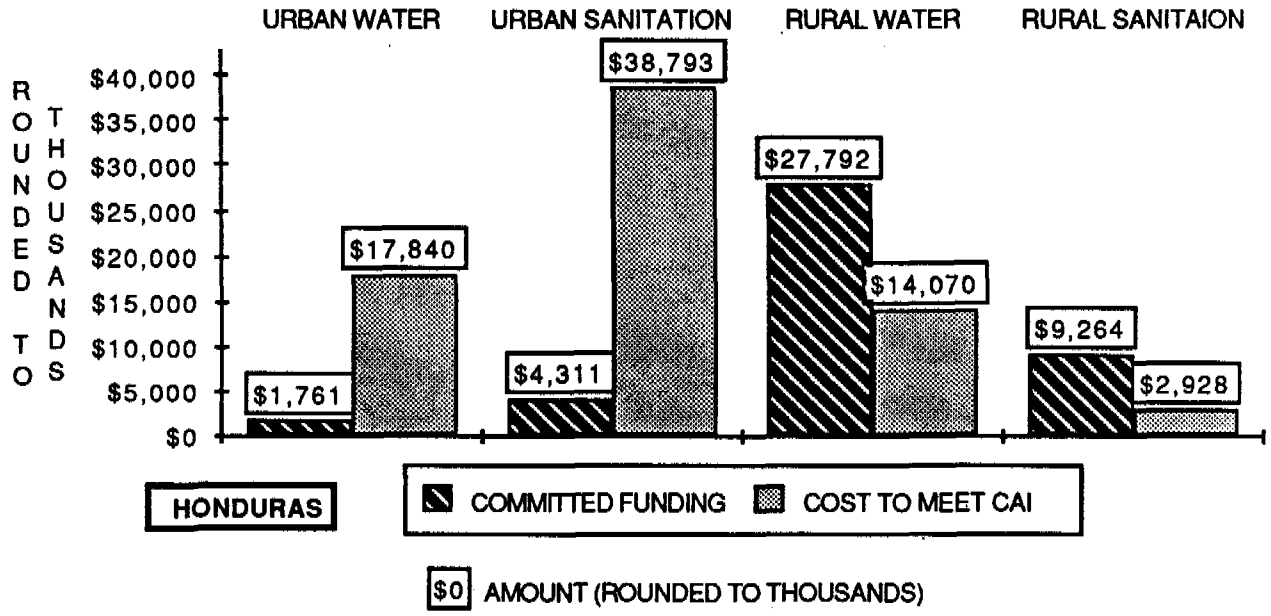
TABLE C - 5
HONDURAS
.....
PROJECTED FUNDING
SHORTFALL TO MEET CAI
(COSTS IN THOUSANDS)

| | WATER SUPPLY | | SANITATION | | UN- | |
|---|---|---|---|---|---|---|
| | URBAN | RURAL | URBAN | RURAL | SPECIFIED | TOTAL |
| ESTIMATED TOTAL COST TO MEET CAI | $17,840 | $14,070 | $38,793 | $2,928 | NONE | $73,631 |
| FIRMLY COMMITED INVESTMENTS (1) | $1,761 | $27,792 | $4,311 | $9,264 | NONE | $43,128 |
| PROJECTED FUNDING SHORTFALL | $16,079 | NONE | $34,482 | NONE | NONE | $50,561 |
| POTENTIAL OTHER FUNDING (1) | $18,565 | $20,425 | $18,565 | $20,425 | NONE | $77,980 |

(1) ONLY THOSE INVESTMENTS WHICH INCREASE COVERAGE

FIGURE C - 2

**ESTIMATED FUNDING NEEDS BY SECTOR TO MEET CAI OBJECTIVE**



# APPENDIX D

## Country Profile: El Salvador

## Country Profile: El Salvador

I. COVERAGE - PAST (1980), BASELINE 1984, CURRENT (1986), AND PROJECTED CAI-1989)

A. Population and Coverage Data (See Tables D-1 and D-2)

Population data provided by USAID/El Salvador, WHO, and the Americas Regional Resource Mobilization (ARRM) Profile, April 1986, are consistent and considerably lower than the population data provided by the Demographic Data for Development (DDD) project. For example, the DDD project estimated the 1986 population at 5.8 million, while the mission and other sources estimate the total population at 4.8 million. Because of these discrepancies the data from the mission and the other sources were used instead of the DDD data.

Coverage data for water supply and sanitation for 1986 were provided by the mission. Coverage data for 1980 and 1984 were obtained from WHO And the ARRM Profile.

Because of the civil turmoil in El Salvador, no reliable estimates of population growth rates for the future are available. For the purpose of this study an assumed growth rate of 3 percent per year was used for the 1986-89 period.

B. Results

El Salvador has made impressive progress in expanding water supply and sanitation coverage to its rapidly growing urban populations. Tables D-1 and D-2 provide data on the number of people covered and the proportion of urban and rural populations these figures represent for 1980, 1984, 1986, and the CAI objective for 1989. Figure D-1 illustrates graphically the levels of coverage in 1984 and 1986 compared to the coverage that will result if the CAI objectives are met.

For water supply, urban coverage has increased from 67.4 percent in 1980 to 75.9 percent in 1986. In sanitation, urban coverage has grown dramatically from 48 percent in 1980 to 75 percent in 1984 and to almost 89 percent in 1986. If these figures are accurate, the municipalities have expanded sufficiently to keep up with overall population growth, have been able to absorb and serve all of the in-migration into urban centers, and, at the same time, expand coverage for their existing populations.

The record for rural water supply coverage, however, is not as impressive. Water supply coverage has been halved in both numbers and percent covered between 1980 and 1986. Estimated rural water supply coverage for 1986 is only 20.1 percent. Sanitation coverage, on the other hand, has been provided to almost 300,000 more persons over the 1980-86 period, with the percent covered increasing from approximately 26 to 35 percent.

Because El Salvador is suffering from more than just high population growth and in-migration, its needs are particularly acute and progress in meeting them is slow. This is discussed further below, but it should be kept in mind when assessing progress in this sector.

Table D-3 compares the CAI 1989 objective with the 1984 baseline and shows how many people in each sub-sector must be reached to achieve the CAI objective. The coverage gain in 1984-86 is then subtracted out to indicate the CAI shortfall.

## II. PAST INVESTMENTS AND PROPOSED PROJECTS

### A. Past Investments

The water sector in El Salvador has received considerable attention from a number of different donors, most notably the Inter-American Development Bank (IDB). The following projects briefly summarize recent investments in the sector:

- The IDB has invested heavily in water supply and sanitation in El Salvador. Between 1969 and 1986, the Bank spent $15.4 million on rural and $72.0 million on urban water supply and sanitation systems.

- USAID spent $19.9 million on water supply and sanitation between 1980 and 1986, mostly to restore damaged systems and finance new urban housing connections. AID earthquake recovery projects included $1.4 million (519-0279) to procure pipe accessories, equipment, tools, vehicles, and water trucks; $1.2 million (519-0321) for pipe and accessories; and $1.5 million (519-0330) for equipment, pipes, and accessories.

- UNICEF spent $227,000 on rural drinking water and latrine projects in the northeastern part of the country in the 1979-82 period. It is estimated that the investment affected 78,000 individuals in those areas.

- UNDP and PAHO are currently funding technical assistance programs for the various agencies in the sector.

It is estimated that approximately $123 million has been invested in water supply and sanitation in recent years. Of that amount AID funded approximately $20 million in projects plus $15 million in Housing Investment Guarantees.

AID recently began a pilot project with ANDA to provide 183 wells and handpumps and 13 water systems. The project provides $1.6 million for rural areas and $4 million for urban areas. To improve the pace of project implementation ANDA is relying extensively on the private sector for design, supervision, and construction. A unit has been created to manage the project, prepare specifications for bids, and award contracts. The work being done by this office is serving as on-the-job training for the proposed AID-funded FY 89 Public Services Restoration and Rehabilitation project (519-0320).

AID is also funding a Save the Children Federation Water Project (519-8300) for rural areas.

B. Projected Projects

The GOES has identified 14 projects as essential to meeting the government's IDWSSD Goals. These projects divide mainly into four separate programs for which the GOES is seeking investments. Those programs are as follows.

1. San Salvador Water Supply - This program has three projects with an estimated cost of approximately $106 million. It includes the development of the Rio Lempa as a source and improvements in the municipal system.

2. Urban Sewerage - There are three projects in this program which is estimated to cost approximately $38 million. They include the expansion of the sewer system in San Salvador, the provision, improvement, and expansion of sewer systems in 24 areas, and wastewater treatment facilities in 12 urban areas.

3. Rural Water Supply and Sanitation - This program consists of five projects, estimated at about $80 million, to add and improve water supply and sanitation in the rural areas.

4. Non-Infrastructure Projects - These projects are for institution building, water quality control hydrology, and well restoration.

Implementation of these programs is estimated at approximately $246 million, of which the GOES projects approximately $210 million, or about 85 percent, to be from external aid.

There are not enough details about these projects to make any estimates about the specific coverage they may provide in the sub-sectors.

The GOES is actively seeking external funds to support these programs. Reported commitments are listed below:

- UNDP is planning to provide $900,000 for one of the non-infrastructure projects.

- IDB has approved $103.5 million for the San Salvador water system, including the Rio Lempa source development project.

- USAID is planning a five-year rural and urban water supply and sanitation project to be implemented by ANDA during FY 89. The project is titled Public Services Restoration and Rehabilitation (519-0320). Total funding is $35 million, with about $24 million for rural areas and $11 million for urban areas. Approximately $17.5 million will be funded through local currency accounts and the remainder through program funds.

In addition, financing for the following programs was taken as firmly committed:

- CABEI is providing $2.9 million for the continuation of a water supply expansion in the North Zone of San Salvador.

- The AID Housing Investment Guarantee Program will provide 8,250 new units and 13,445 new water and sewer connections in the urban sector. It has been estimated that $2.4 million of a $9.5 million investment will go to improve service and add coverage. The level of new coverage which will be provided by these projects is difficult to predict (see previous discussion).

C. Meeting the CAI Objective: Funds Required

Projected shortfalls in meeting the CAI objective, in terms of population coverage, are shown in Table D-3. The estimated costs to provide the required coverage are shown in Table D-4. The required increases in coverage and the estimated costs are summarized below.

| SERVICE | REQUIRED INCREASE IN COVERAGE (NO. OF PERSONS) | ESTIMATED COST ($-1986) |
|---|---|---|
| URBAN | | |
| Water Supply | 288,000 | $46,080,000 |
| Sanitation | 84,000 | 5,880,000 |
| Subtotal | 372,000 | $51,960,000 |
| RURAL | | |
| Water Supply | 457,000 | $36,103,000 |
| Sanitation | 102,000 | 1,326,000 |
| Subtotal | 559,000 | $37,429,000 |
| **TOTAL** | **931,000** | **$89,389,000** |

Accordingly, the estimated costs to meet the CAI objective in El Salvador would be approximately $89 million. Increases in water supply and sanitation coverage would be 745,000 and 186,000 persons, respectively.

Table D-5 shows the projected funding shortfall once committed investments have been subtracted from the estimated cost to meet the CAI objective.

In the urban water sector there is a projected shortfall of $37,167,000 to meet the CAI objective. There is potentially $31 million in projects that are under consideration. If all of those materialize there would still be a shortfall of some $6 million.

For the urban sanitation sector, the committed funding of only $855,000 leaves a shortfall of $5,025,000. Some $37 million may be made available from projects which are under consideration, and this would be more than sufficient to meet the CAI objective and provide much more coverage, but no firm commitments have been made for this funding.

In the rural sector there is a shortfall of $12,299,000 for water supply and $1,130,000 for sanitation. Projects under consideration could provide more than enough funding to meet the CAI objective in the rural sectors by 1989.

There were few data available to allow the team to assess the absorptive capacity of GOES institutions. There have been concerns expressed about the ability to manage new projects, based primarily on the chronic time and cost overruns which have badly hampered past projects. The sudden infusion of large amounts for the rural areas may very well over-tax the ability of the institutions involved. The urban water and sanitation objectives can probably be met if funds are available. To meet the rural sector objectives by 1989 implies investment at a rate of about $5 million per year. Under the circumstances it is doubtful that the CAI objective in the rural areas can be met by 1989. A rate of about $2.5 million per year would allow the objective to be met by 1992. However, it is unlikely that even this rate of investment could be absorbed by government institutions.

Estimated funding needs to meet the CAI objective are illustrated graphically in Figure D-2.

## D. Other Constraints to Achieving the CAI Objective

The financial demands required to extend water supply coverage to an additional 745,000 households and sanitation to 186,000 are high, especially since the marginal households involved tend to be more difficult and costly to reach. In addition to lack of readily available resources, there are a number of other factors inhibiting GOES and donor efforts to achieve the CAI objective: high population growth, high rates of urban migration especially to urban slums, the ongoing internal strife, the effects of the 1986 earthquake, and the absorptive capacity of the institutions involved.

Military activity is one of the most severe problems facing El Salvador in general, and this environment is directly impeding efforts to meet the Water Decade targets of the GOES and the CAI goals. Guerrilla groups have systematically targeted public service infrastructure and have been successful

in destroying large segments of existing water supply and sewerage infrastructure. Although military activity has had some effect on the sustainability of rural water supply systems, the principal reason for negative growth (inoperative systems) in the rural water supply sector is the lack of maintenance by PLANSABAR.

The 1986 earthquake also took its toll in terms of public service infrastructure. As a result the resource levels required to increase coverage have risen. In addition, many of the older systems are deteriorating, and significant rehabilitation is required to provide a sustained water supply, particularly in larger cities.

The population growth rate is sloving but is still between 2.5 and 3 percent per year. Increases in coverage must exceed increases in population to effectively raise coverage levels. The growth in population and the conflict in the rural areas also fuel urban migration, exerting an additional strain on urban infrastructure.

## III. IMPLICATIONS FOR AID

The need for additional financing in the water and sanitation sector is clear if the CAI objective is to be met. Moreover, as discussed, there is a need to finance not only the infrastructure associated with water supply and sanitation systems, but also the ancillary activities such as training, management, and financing that are essential to efficient operation. In addition, current efforts to more actively involve the private sector in design and implementation of projects should be encouraged--to increase overall implementation capacity.

Given the drop in rural water supply coverage, investments in rural systems which increase reasonable access should be a high priority, followed by investments in urban water supplies.

TABLE D - 1
EL SALVADOR
.....
HISTORICAL WATER SUPPLY
COVERAGE VERSUS CAI OBJECTIVE

| 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 | 4,540 | 2,330 | 51.3% | 1,900 | 1,280 | 67.4% | 2,640 | 1,050 | 39.8% |
| BASELINE 1984 | 4,700 | 2,261 | 48.1% | 1,980 | 1,445 | 73.0% | 2,720 | 816 | 30.0% |
| 1986 | 4,800 | 2,081 | 43.4% | 2,000 | 1,518 | 75.9% | 2,800 | 563 | 20.1% |
| CAI OBJECTIVE 1989 | 5,245 | 2,826 | 53.9% | 2,185 | 1,806 | 82.7% | 3,060 | 1,020 | 33.3% |

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

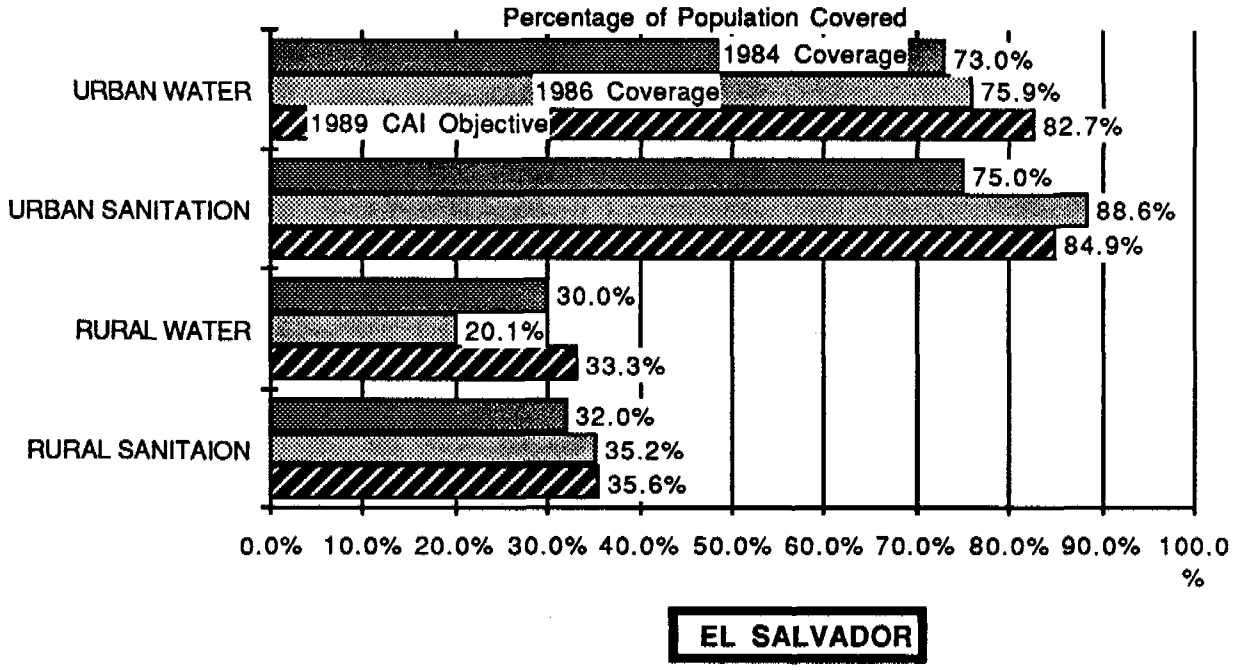
TABLE D - 2
EL SALVADOR
.....
HISTORICAL SANITATION
COVERAGE VERSUS CAI OBJECTIVE

| 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 | 35.2% | 1,900 | 910 | 47.9% | 2,640 | 690 | 26.1% |
| BASELINE 1984 | 4,700 | 2,355 | 50.1% | 1,980 | 1,485 | 75.0% | 2,720 | 870 | 32.0% |
| 1986 | 4,800 | 2,758 | 57.5% | 2,000 | 1,772 | 88.6% | 2,800 | 986 | 35.2% |
| CAI OBJECTIVE 1989 | 5,245 | 2,944 | 56.1% | 2,185 | 1,856 | 84.9% | 3,060 | 1,088 | 35.6% |

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

FIGURE D - 1

**1989 CAI OBJECTIVE VS. 1984 & 1986 COVERAGE**




**EL SALVADOR**

TABLE D - 3
EL SALVADOR
.....
PROJECTED SHORTFALLS
IN MEETING CAI OBJECTIVE

| | WATER SUPPLY COVERAGE (PERSONS) | | | SANITATION COVERAGE (PERSONS) | | |
|---|---|---|---|---|---|---|
| | TOTAL | URBAN | RURAL | TOTAL | URBAN | RURAL |
| CAI OBJECTIVE 1989 | 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 1984-86 GAIN | (180 ) | 73 | (253 ) | 403 | 287 | 116 |
| CAI COVERAGE SHORTFALL | 745 | 288 | 457 | 186 | 84 | 102 |

TABLE D - 4
EL SALVADOR
.....
ESTIMATED COST TO
ACHIEVE CAI OBJECTIVE

| | WATER SUPPLY | | | SANITATION | | |
|---|---|---|---|---|---|---|
| | TOTAL | URBAN | RURAL | TOTAL | URBAN | RURAL |
| SHORTFALL IN POPULATION COVERAGE SHOWN IN THOUSANDS | 745 | 288 | 457 | 186 | 84 | 102 |
| ESTIMATED UNIT COST - $ PER CAPITA | N/A | 160 | 79 | N/A | 70 | 13 |
| ESTIMATED TOTAL COST ($ IN THOUSANDS) | $82,183 | $46,080 | $36,103 | $7,206 | $5,880 | $1,326 |

TOTAL ESTIMATED COST: $89,389,000

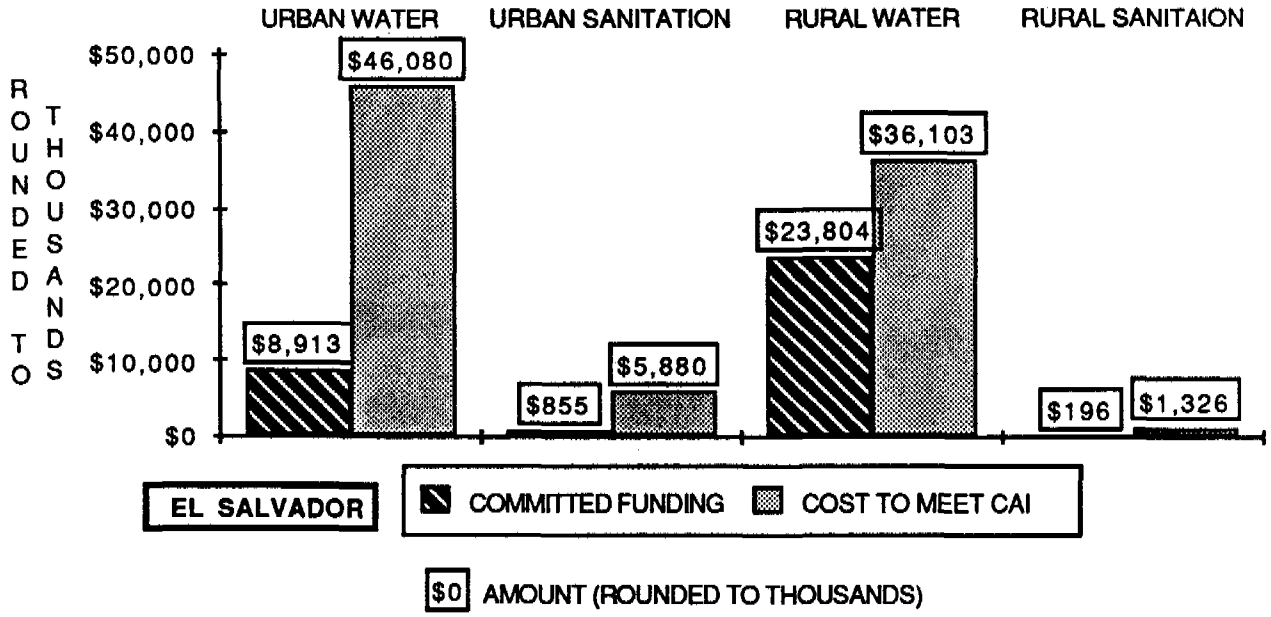
TABLE D - 5
EL SALVADOR
.....
PROJECTED FUNDING
SHORTFALL TO MEET CAI
(COSTS IN THOUSANDS)

| | WATER SUPPLY | | SANITATION | | UN- | |
|---|---|---|---|---|---|---|
| | URBAN | RURAL | URBAN | RURAL | SPECIFIED | TOTAL |
| ESTIMATED TOTAL COST TO MEET CAI | $46,080 | $36,103 | $5,880 | $1,326 | NONE | $89,389 |
| FIRMLY COMMITED INVESTMENTS (1) | $8,913 | $23,804 | $855 | $196 | NONE | $33,768 |
| PROJECTED FUNDING SHORTFALL | $37,167 | $12,299 | $5,025 | $1,130 | NONE | $55,621 |
| POTENTIAL OTHER FUNDING (1) | $31,000 | $36,600 | $36,800 | $14,400 | NONE | $118,800 |

(1) ONLY THOSE INVESTMENTS WHICH INCREASE COVERAGE

FIGURE D - 2

**ESTIMATED FUNDING NEEDS BY SECTOR TO MEET CAI OBJECTIVE**



# APPENDIX E

## Country Profile: Costa Rica

## Country Profile: Costa Rica

### I. COVERAGE - PAST (1980), BASELINE (1984), CURRENT (1986), AND PROJECTED (CAI 1989)

#### A. Population and Coverage Data (See Tables E-1 and E-2)

Population data and projections for Costa Rica were obtained from USAID/Costa Rica and from the WHO, the Americas Regional Resources Mobilization (ARRM) Profile, April 1986, and PAHO. Data on the distribution of the population between urban and rural areas was also obtained from USAID. The population figures from these sources are reasonably consistent and represent growth rates that are more realistic than those of the Demographic Data for Development (DDD) project.

Coverage data (persons served) for 1984 and 1986 were obtained from the mission. For reference, population and coverage data are also shown for 1980. These data were obtained from WHO and the ARRM Profile.

#### B. Results

The level of coverage by sector in Costa Rica is shown in Tables E-1 and E-2. The levels for percent served make the coverage in Costa Rica the highest for any country in Central America.

In the urban sector from 1980 to 1986 water supply was maintained at nearly 100 percent coverage with approximately 90,000 persons receiving new coverage. Urban sanitation coverage stayed constant at about 99 percent, representing an increase in coverage of approximately 99,000 persons over the 1980-86 period.

In the rural sector over the same period, water supply coverage increased from approximately 79 percent to 83 percent and sanitation coverage increased from approximately 87 percent to just over 94 percent (representing an increase in coverage of 231,000 and 299,000 persons in water supply and sanitation, respectively).

Tables E-1 and E-2 also show the CAI objective for 1989, the 1984 baseline, and estimated 1986 coverage. A comparison of the 1986 coverage and the CAI objective for 1989 indicates the increased coverage (in number of persons served) that is required to meet the objective. Figure E-1 illustrates graphically the levels of coverage in 1984 and 1986 compared to the coverage that will result if the CAI objective is met.

## II. PAST INVESTMENTS AND PROPOSED PROJECTS

### A. Past Investments

Investments in Costa Rica for the 1982-86 period by donor and the GOCR are summarized below:

| SOURCE OF FUNDS | APPROXIMATE AMOUNT ($1986-million) |
|---|---|
| • GOCR | $ 45 |
| • USAID (Incl. RHUDO) | 24 |
| • IDB | 24 |
| • World Bank | 21 |
| • CDC | 6 |
| **TOTAL** | **$120 million** |

Most of these funds ($105 million) were for water supply projects; however, no definitive information was available on the breakdown of these investments between the urban and rural sectors.

### B. Proposed Projects

Costa Rica's proposed programs, as described in the PAHO Central American Plan update of January 1987, consist of an urban water supply component--four projects which will, in effect, complete the water supply projects in the capital, San Jose, and all intermediate cities and a rural water supply and sanitation program for all municipalities not receiving such service or for those systems requiring major rehabilitation. (An institutional development project to improve all sector institutions is also included.) Relatively little new coverage will be provided by the urban projects (roughly estimated at 50,000) as the investments appear to be directed toward system improvements, leak detection, meter installation, provision of storage facilities and purchase of equipment and vehicles. The rural projects are roughly estimated to extend water supply coverage to approximately 100,000 and sanitation to 50,000 persons. The total cost of the projects as listed in the planning documents reviewed was approximately $78 million with 25 percent (about $20 million) being the local share.

AID/Costa Rica reports that planned expenditures in Costa Rica's Water and Sanitation sector to 1990 are expected to reach $152 million as follows:

| | |
|---|---|
| GOCR | $126 million |
| USAID (incl. RHUDO) | 16 million |
| IDB | 9 million |
| CDC | 1 million |
| **TOTAL** | **$152 million** |

The GOCR's share of $126 million, as indicated by GOCR, represents almost three times the total reported investment by the GOCR in the 1982-86 period. (The GOCR investment level of $126 for the next several years may include all or part of the external funds shown above and thus the level may be slightly overstated due to some double-counting.) It is also probable that a large portion of GOCR planned water supply and sanitation investments are not part of Costa Rica's Drinking Water and Sanitation Decade plan (present coverage exceeds Decade targets) and thus are not listed as part of the investments in the planning documents related to the Central American Plan.

Discussions with World Bank and IDB officials indicated that the high levels of coverage in all sectors were expected to continue, notwithstanding the apparent omission of specific projects directed at keeping the existing percent served values constant. It was concluded that the GOCR would fund the required investments as part of its annual expenditures, and the actual investment levels by the GOCR would be between the $20 million and $126 million levels indicated.

C. Meeting the CAI Objective: Funds Required

Projected shortfalls in meeting the CAI objective, in terms of population coverage, are shown in Table E-3. The estimated costs to provide the required coverage are shown in Table E-4. The required increases in coverage and the estimated costs are summarized below.

| SERVICE | REQUIRED INCREASE IN COVERAGE (No. of Persons) | ESTIMATED COST ($-1986) |
|---|---|---|
| URBAN | | |
| Water Supply | 209,000 | $25,080,000 |
| Sanitation | 209,000 | 25,916,000 |
| Subtotal | 418,000 | $50,996,000 |
| RURAL | | |
| Water Supply | 150,000 | 11,100,000 |
| Sanitation | 0 | 0 |
| Subtotal | 150,000 | 11,100,000 |
| **TOTAL** | **568,000** | **$62,096,000** |

Thus, the estimated cost to meet the CAI objective would be approximately $62.1 million, and water supply and sanitation coverage would be extended by 359,000 and 209,000 persons, respectively.

Table E-5 shows the level of funding which is presently committed to each of the sectors. In the urban sector, $25,080,000 is needed for water supply, of which $27,600,000 is committed, leaving no shortfall. For urban sanitation the estimated funding to meet the CAI objective is $25,916,000, for which there are no commitments, leaving a funding shortfall for urban sanitation estimated at $25,916,000. It has been assumed that the project funding to cover this shortfall will be covered by annual GOCR expenditures. The CAI objective in both urban sectors should be achieved.

As further shown in Table E-5, the estimated cost to meet the CAI objective for rural water supply is $11,100,000, of which only $2,050,000 is committed. Therefore, the shortfall is $9,050,000 and the CAI objective will probably not be met. No investments are needed to meet the CAI objective for rural sanitation.

Estimated funding needs to meet the CAI objective are illustrated graphically in Figure E-2.

### D. Other Constraints to Achieving the CAI Objective

There should be no constraints in meeting the CAI objective for both the urban water supply sector and the rural sanitation sector. The urban sanitation sector objectives should be met by 1992 assuming the GOCR funds the shortfall from its own funds. This should be no problem if the GOCR investment level is at even approximately half the level indicated by AID/Costa Rica. The rural water supply sector would have to move from about 83 percent coverage now to about 100 percent coverage by 1992 to meet the objective. This is unlikely. However, because the level of rural water supply coverage is so high, AID may want to consider funding other areas to increase coverage.

## III. IMPLICATIONS FOR AID

Based upon the above discussion, Costa Rica will probably not meet the CAI objectives in some areas (urban sanitation and rural water supply) until 1992 or beyond. However, because of the high levels of coverage that are projected, AID may want to consider the CAI objective for Costa Rica to be met and concentrate AID resources in other countries. Prior to finalizing this conclusion, the GOCR planned levels of investment in rural water supply and the urban sanitation sector for the next several years should be checked. Further, a more precise estimate of coverage to be provided by the AID/RHUDO intervention should be determined.

TABLE E - 1
COSTA RICA
.....
HISTORICAL WATER SUPPLY
COVERAGE VERSUS CAI OBJECTIVE

| 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 | 88.7% | 1,025 | 1,025 | 100.0% | 1,185 | 935 | 78.9% |
| BASELINE 1984 | 2,405 | 2,154 | 89.6% | 1,070 | 1,059 | 99.0% | 1,335 | 1,095 | 82.0% |
| 1986 | 2,531 | 2,281 | 90.1% | 1,126 | 1,115 | 99.0% | 1,405 | 1,166 | 83.0% |
| CAI OBJECTIVE 1989 | 2,800 | 2,640 | 94.3% | 1,484 | 1,324 | 89.2% | 1,316 | 1,316 | 100.0% |

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

TABLE E - 2
COSTA RICA
.....
HISTORICAL SANITATION
COVERAGE VERSUS CAI OBJECTIVE

| 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 | 2,210 | 2,044 | 92.5% | 1,025 | 1,016 | 99.1% | 1,185 | 1,028 | 86.8% |
| BASELINE 1984 | 2,405 | 2,319 | 96.4% | 1,070 | 1,059 | 99.0% | 1,335 | 1,260 | 94.4% |
| 1986 | 2,531 | 2,442 | 96.5% | 1,126 | 1,115 | 99.0% | 1,405 | 1,327 | 94.4% |
| CAI OBJECTIVE 1989 | 2,800 | 2,640 | 94.3% | 1,484 | 1,324 | 89.2% | 1,316 | 1,316 | 100.0% |

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

FIGURE E - 1

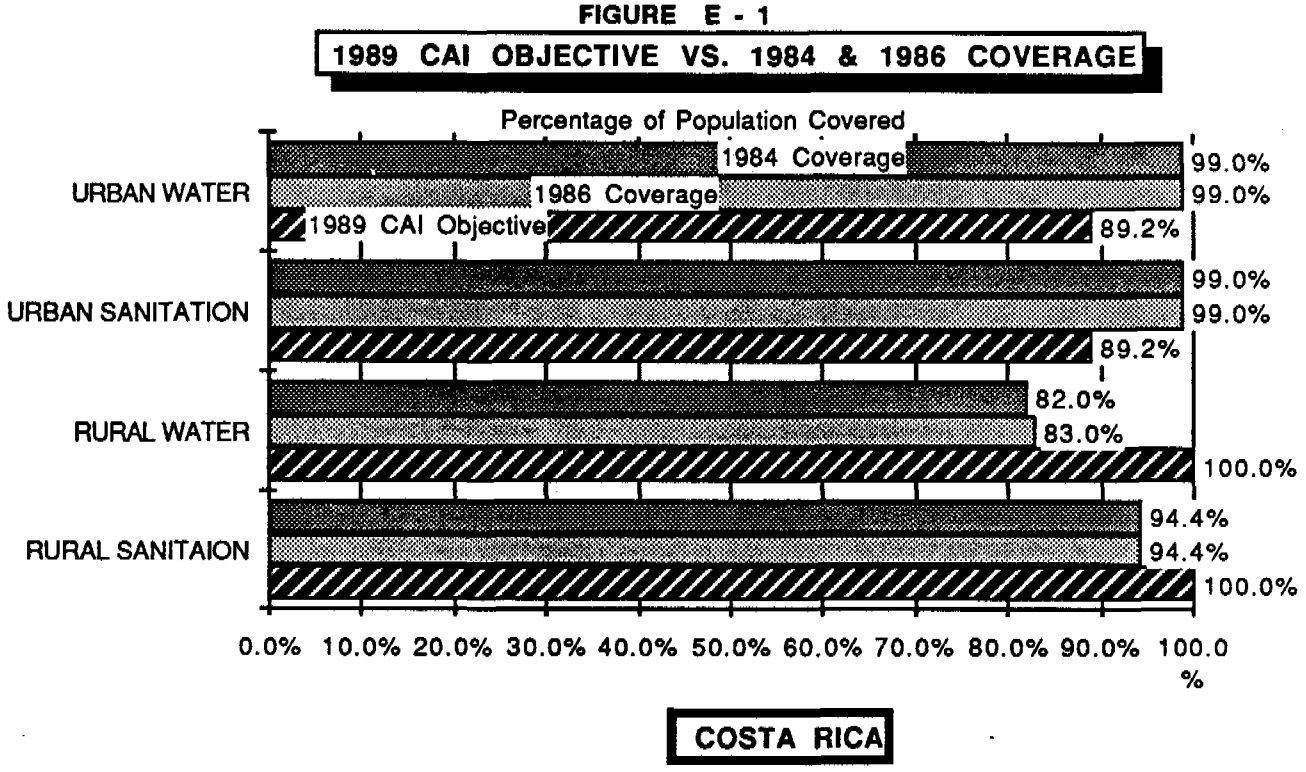

1989 CAI OBJECTIVE VS. 1984 & 1986 COVERAGE
Percentage of Population Covered
1984 Coverage
1986 Coverage
1989 CAI Objective
URBAN WATER
URBAN SANITATION
RURAL WATER
RURAL SANITAION
99.0%
99.0%
89.2%
99.0%
99.0%
89.2%
82.0%
83.0%
100.0%
94.4%
94.4%
100.0%
0.0% 10.0% 20.0% 30.0% 40.0% 50.0% 60.0% 70.0% 80.0% 90.0% 100.0 %
COSTA RICA

TABLE E - 3
COSTA RICA
.....
PROJECTED SHORTFALLS
IN MEETING CAI OBJECTIVE

| | WATER SUPPLY COVERAGE (PERSONS) | | | SANITATION COVERAGE (PERSONS) | | |
|---|---|---|---|---|---|---|
| | TOTAL | URBAN | RURAL | TOTAL | URBAN | RURAL |
| CAI OBJECTIVE 1989 | 2,640 | 1,324 | 1,316 | 2,640 | 1,324 | 1,316 |
| BASELINE 1984 | 2,154 | 1,059 | 1,095 | 2,319 | 1,059 | 1,260 |
| REQUIRED INCREASE | 486 | 265 | 221 | 321 | 265 | 56 |
| ESTIMATED 1984-86 GAIN | 127 | 56 | 71 | 123 | 56 | 67 |
| CAI COVERAGE SHORTFALL | 359 | 209 | 150 | 209 | 209 | NONE |

TABLE E - 4
COSTA RICA
.....
ESTIMATED COST TO
ACHIEVE CAI OBJECTIVE

| | WATER SUPPLY | | | SANITATION | | |
|---|---|---|---|---|---|---|
| | TOTAL | URBAN | RURAL | TOTAL | URBAN | RURAL |
| SHORTFALL IN POPULATION COVERAGE SHOWN IN THOUSANDS | 359 | 209 | 150 | 209 | 209 | NONE |
| ESTIMATED UNIT COST - $ PER CAPITA | N/A | 120 | 74 | N/A | 124 | 26 |
| ESTIMATED TOTAL COST ($ IN THOUSANDS) | $36,180 | $25,080 | $11,100 | $25,916 | $25,916 | NONE |

TOTAL ESTIMATED COST: $62,096,000

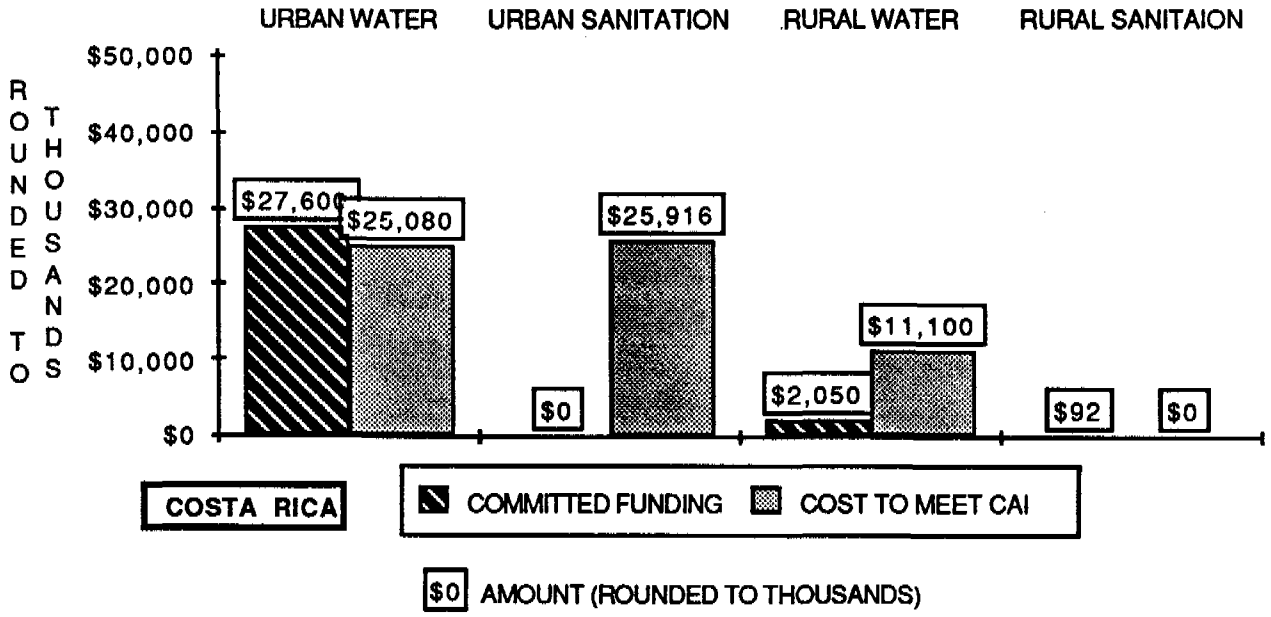
TABLE E - 5
COSTA RICA
.....
PROJECTED FUNDING
SHORTFALL TO MEET CAI
(COSTS IN THOUSANDS)

| | WATER SUPPLY | | SANITATION | | UN- | |
|---|---|---|---|---|---|---|
| | URBAN | RURAL | URBAN | RURAL | SPECIFIED | TOTAL |
| ESTIMATED TOTAL COST TO MEET CAI | $25,080 | $11,100 | $25,916 | NONE | NONE | $62,096 |
| FIRMLY COMMITED INVESTMENTS (1) | $27,600 | $2,050 | $0 | $92 | NONE | $29,742 |
| PROJECTED FUNDING SHORTFALL | NONE | $9,050 | $25,916 | NONE | NONE | $34,966 |
| POTENTIAL OTHER FUNDING (1) | $29,900 | NONE | NONE | NONE | NONE | $29,900 |

(1) ONLY THOSE INVESTMENTS WHICH INCREASE COVERAGE

**FIGURE E - 2**

**ESTIMATED FUNDING NEEDS BY SECTOR TO MEET CAI OBJECTIVE**



# APPENDIX F

## Country Profile: Panama

## Country Profile: Panama

### I. COVERAGE - PAST (1980), BASELINE (1984), CURRENT (1986), AND PROJECTED (CAI 1989)

#### A. Population and Coverage Data (See Tables F-1 and F-2)

Population data and projections for Panama were obtained from the Demographic Data for Development (DDD) project (IRD/Westinghouse) and converted from mid-year to year-end figures.

Coverage data for 1980, 1984, and 1986 were obtained from WHO, the Americas Regional Resources Mobilization (ARRM) Profile, April 1986, and PAHO.

#### B. Results

Coverage data for Panama are shown in Tables F-1 and F-2. Panama has long enjoyed the reputation of being a country which provides total urban water supply coverage. The analysis conducted for this report indicates that in the 1980-86 period, levels of coverage for urban water supply have remained close to 100 percent. Urban sanitation coverage levels for 1986 indicated an increase of 79,000 persons served in the 1980-86 period but showed a decrease in coverage to 61 percent, down from the 1980 level of approximately 65 percent.

Increases in the rural sector coverage were modest in this period, with approximately 34,000 additional persons provided with water supply and some 121,000 with sanitation coverage. These figures represent a decrease in rural water supply coverage (from 63 percent to 61.5 percent) and only a moderate increase in rural sanitation coverage (from 59.0 percent to 66.0 percent) from 1980 levels.

Tables F-1 and F-2 shows the CAI objective for 1989, in addition to the 1984 baseline and the estimated 1986 coverage. A comparison of the 1986 coverages and the CAI objective for 1989 shows the increased coverage that is required to meet the objective.

Figure F-1 illustrates graphically the levels of coverage in 1984 and 1986 compared to the coverage that will result if the CAI objective is met.

### II. PAST INVESTMENTS AND PROPOSED PROJECTS

#### A. Past Investments

Panama's water supply and sanitation sector has two significant institutions. IDAAN is responsible for providing water supply and sanitation services for all communities with populations over 500; and the Ministry of Health is responsible for providing similar services for communities of fewer than 500 persons.

Sector investments for the 1982-86 period by the GOP and donors are summarized below:

| Source of Funds | Approximate Amount ($million-1986) |
|---|---|
| GOP | $37 |
| IDB | 40 |
| World Bank | 22 |
| AID (incl RHUDO) | 17 |
| **TOTAL** | **$116 million** |

There was no available information on the absorptive capacity for the institutions involved in the sector.

B. Proposed Projects

The planned investments of the GOP in the water supply and sanitation sectors stem from its plan to meet its long-term objectives for the International Drinking Water and Sanitation Decade. The Decade objectives were adapted by the GOP for use in the PAHO 1985 Central American Plan. For purposes of this profile, these investments have been combined into programs, and from the available, but very sketchy documentation, the following programs appear to be those to which the GOP wishes to direct investments:

1. Panama City and Environs Water Supply - This program consists of two projects with an estimated cost of $34 million. Specific project characteristics include the development of increased water supply sources and water production for Panama City and its environs, and institutional development for IDAAN. The projects will probably improve the sustainability of existing and future coverage, but additional coverage either would not be provided or would be provided to a very small number of people.

2. Other Urban Water Supply and Sewerage - This program consists of one project estimated at a cost of $16 million. Project elements include providing basic water supply and sanitation services for approximately 55,000 persons in the marginal communities of the urban fringe areas of Panama City. The program elements include training of community based workers and institutional development.

3. Panama City Sewerage - This program consists of one project to provide sewerage service to approximately 40,000 persons in Panama City, at an estimated cost of approximately $6 million.

4. Rural Water Supply and Sanitation - This program consists of seven projects estimated to cost approximately $39 million. Water supply coverage would be extended to approximately 270,000 persons, and additional sanitation coverage to approximately 220,000 persons. Other program elements include institutional development for the Ministry of Health, the establishment of regional laboratories, disinfection of water supply sources, training in operations and system monitoring and control, health education, and community development for sustaining water supply and sanitation services.

Programs 1 through 4 are summarized below:

| Program | Name | Estimated Cost (1986-$millions) | Added Coverage |
|---|---|---|---|
| 1 | Panama City and Environs Water Supply | $34 | N/A |
| 2 | Other Urban Water Supply and Sewerage | 16 | 55,000 (WS & Sewerage) |
| 3 | Panama City Sewerage | 6 | 40,000 (Sewerage) |
| 4 | Rural WS & Sanitation | 39 | 270,000 (WS)<br>220,000 (Sanitation) |
| | **TOTAL** | **$95 Million** | |

From the above tabulation, GOP planning calls for an investment of approximately $95 million. (The specific implementation time span was not indicated in the documentation but appears to be over a ten year period.) New water supply and sewerage coverage would be provided to approximately 55,000 and 95,000 urban dwellers, respectively. New rural water supply coverage would be provided to approximately 270,000 persons, and sanitation coverage would be provided to an additional 220,000 rural dwellers. Based upon the planning documents reviewed, the GOP expects to finance the programs by obtaining approximately 72 percent of the costs from external aid. This would require approximately $67 million of external aid from various sources.

It should be noted that AID/Panama has indicated that IDAAN's investment plan for 1987 to 1991 is budgeted at approximately $295 million, with 45 percent (approximately $135 million) being supplied by the GOP, $119 million (approximately 40 percent) from IDB, and the remainder from the World Bank. No details were included to describe this IDAAN program. However, the World Bank indicated that they had no projects for Panama under consideration.

IDB, on the other hand, is negotiating with IDAAN to provide $64 million of a $98 million water treatment/distribution system project for Panama City and $4.6 million of a $7 million water treatment/distribution system project for Puerto Armuelles. There is no information available, however, on the degree to which these programs would increase coverage.

If the mission data is correct, IDAAN's 1987-91 program would be over three times the size of the investments program described above (estimated at $95 million) for proposed projects. This discrepancy should be resolved prior to making a firm decision on the CAI objective in Panama.

Commitments of external aid are described below. Note that the documents reviewed indicated that several elements of the Rural Water Supply and Sanitation Program (described as item 4 above) are being implemented, but no details on the methods being utilized to finance those projects were provided.

- The GOP is negotiating with the IDB for financing for portions of the facilities required for the "Other Urban Water Supply and Sanitation Program." Further, the planning documents indicate that these negotiations include the preparation of a project package which would include portions of this urban water supply project combined with various components of the Rural Water Supply and Sanitation Program. However, the dollar level breakdown involved, either under negotiation or for the combined urban/rural project, was not indicated.

- Two AID/RHUDO programs commenced in late 1986 and are scheduled for completion in 1989. The total investment level will be approximately $72 million, and 13,200 housing solutions are programmed. RHUDO will provide $50 million with the remaining $22 million provided by the GOP or private banks.

## C. Meeting the CAI Objective: Funds Required

Based upon the commitments of aid discussed above, increased coverage could come through IDB and RHUDO interventions. However, any increases in new coverage are difficult to estimate, due to the lack of specificity on the GOP-IDB negotiation and ordinary difficulties involved with estimating new coverage from RHUDO projects.

Projected shortfalls in meeting the CAI objective, in terms of population coverage are shown in Table F-3. The estimated costs to provide the required coverage are shown in Table F-4. The required increases in coverage and the estimated costs are summarized below:

| SERVICE | REQUIRED INCREASE IN COVERAGE (No. of Persons) | ESTIMATED COST ($-1986) |
|---|---|---|
| URBAN | | |
| Water Supply | 122,000 | $15,250,000 |
| Sanitation | 130,000 | 19,500,000 |
| Subtotal | 252,000 | $34,750,000 |
| RURAL | | |
| Water Supply | 10,000 | $ 800,000 |
| Sanitation | 154,000 | 2,310,000 |
| Subtotal | 164,000 | $ 3,110,000 |
| **TOTAL** | **416,000** | **$37,860,000** |

Thus, the estimated cost to meet the CAI objective in Panama would be approximately $47 million. Water supply and sanitation coverage would be increased by approximately 132,000 and 284,000 persons respectively, combining the urban and rural areas.

Table F-5 shows the level of funding which is presently committed to each of the sectors. In the urban water supply sector, of the $15,250,000 needed to meet the CAI objective, only $2,141,000 is committed, leaving a shortfall of $13,109,000. All of this shortfall may be available from the approximately $105 million from projects under consideration. However, this total and the impact on coverage are tentative. For sanitation $19,500,000 is required but only $2,619,000 is committed. The projected funding shortfall for urban sanitation is $16,881,000.

In the rural sector, only $800,000 is required for water supply and $2,310,000 for sanitation. The funding commitments are for $1,426,000 in the water supply sector. Therefore, there is no shortfall in rural water but there is a shortfall of $2,310,000 in rural sanitation. At the present time, no potential water supply or sanitation projects are being considered for the rural sector. Lack of committed funds in all sectors and the fact that Panama appears to have no rural sanitation sector projects for the next several years led the team to conclude that the CAI objective will not be met by 1992 except in rural water supply. However, even if the CAI objective is not met, the urban water sector coverage will still be extremely high (99 percent). The urban and rural sanitation sectors, on the other hand, will have levels of coverage less than 70 percent if the objectives are not met.

Estimated funding needs to meet the CAI objective are illustrated graphically in Figure F-2.

D. Other Constraints to Achieving the CAI Objective

As per the above discussion, constraints to meeting the CAI objective are represented by the apparent lack of committed funds. However, the required funding levels may be reached by 1992, if IDAAN's investment plan for 1987-91 is as high as indicated by AID/Panama. The rural sector's total requirements to meet the CAI objective is approximately $11 million. Investments in this sector may offer AID an opportunity to effect substantial increases in coverage with moderate investments.

III. IMPLICATIONS FOR AID

More definitive data must be obtained prior to making a firm decision on meeting the CAI objective in Panama. Special attention should be given to obtaining additional information regarding IDAAN's investment plans, committed funds, and possible additional coverage provided by RHUDO projects.

TABLE F - 1
PANAMA
.....
HISTORICAL WATER SUPPLY
COVERAGE VERSUS CAI OBJECTIVE

| 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 | 1,977 | 1,527 | 77.2% | 1,003 | 913 | 91.0% | 974 | 614 | 63.0% |
| BASELINE 1984 | 2,157 | 1,643 | 76.2% | 1,127 | 1,116 | 99.0% | 1,030 | 527 | 51.2% |
| 1986 | 2,249 | 1,831 | 81.4% | 1,195 | 1,183 | 99.0% | 1,054 | 648 | 61.5% |
| CAI OBJECTIVE 1989 | 2,393 | 1,963 | 82.0% | 1,305 | 1,305 | 100.0% | 1,088 | 658 | 60.5% |

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

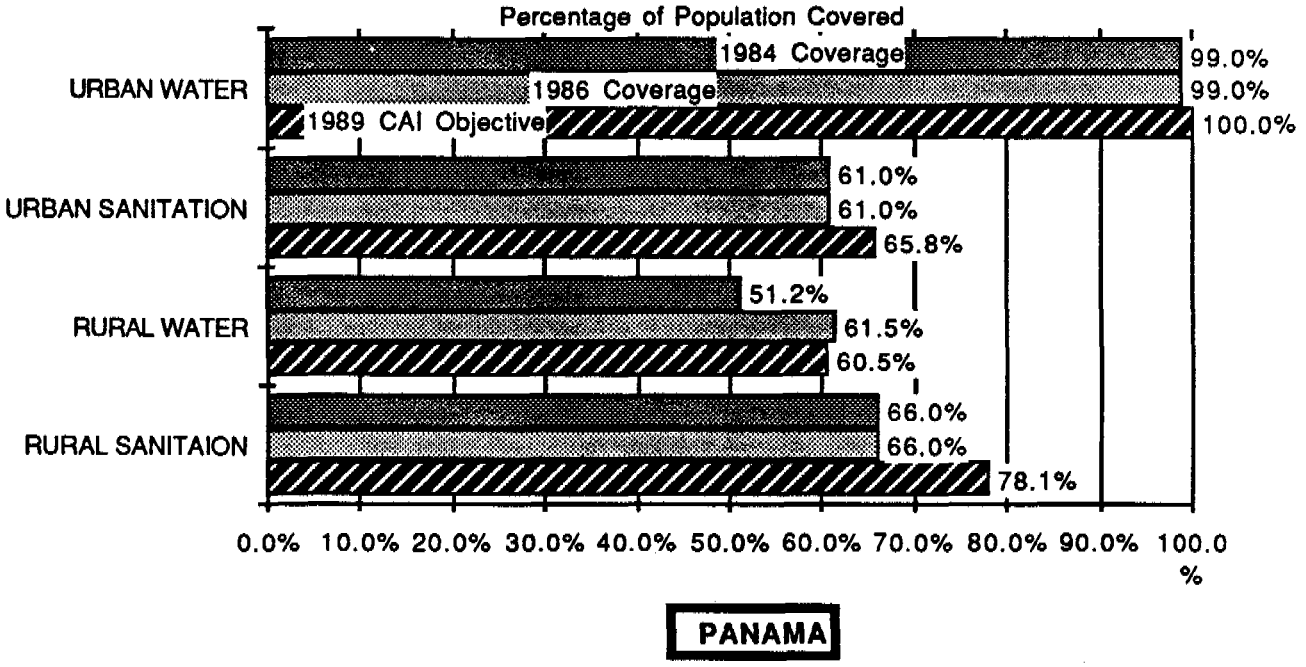
TABLE F - 2
PANAMA
.....
HISTORICAL SANITATION
COVERAGE VERSUS CAI OBJECTIVE

| 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 | 1,977 | 1,225 | 62.0% | 1,003 | 650 | 64.8% | 974 | 575 | 59.0% |
| BASELINE 1984 | 2,157 | 1,367 | 63.4% | 1,127 | 687 | 61.0% | 1,030 | 680 | 66.0% |
| 1986 | 2,249 | 1,425 | 63.4% | 1,195 | 729 | 61.0% | 1,054 | 696 | 66.0% |
| CAI OBJECTIVE 1989 | 2,393 | 1,709 | 71.4% | 1,305 | 859 | 65.8% | 1,088 | 850 | 78.1% |

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

FIGURE F - 1

1989 CAI OBJECTIVE VS. 1984 & 1986 COVERAGE




PANAMA

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 |
| BASELINE 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 |
| CAI COVERAGE SHORTFALL | 132 | 122 | 10 | 284 | 130 | 154 |

TABLE F - 4
PANAMA
.....
ESTIMATED COST TO
ACHIEVE CAI OBJECTIVE

| | WATER SUPPLY | | | SANITATION | | |
|---|---|---|---|---|---|---|
| | TOTAL | URBAN | RURAL | TOTAL | URBAN | RURAL |
| SHORTFALL IN POPULATION COVERAGE SHOWN IN THOUSANDS | 132 | 122 | 10 | 284 | 130 | 154 |
| ESTIMATED UNIT COST - $ PER CAPITA | N/A | 125 | 80 | N/A | 150 | 15 |
| ESTIMATED TOTAL COST ($ IN THOUSANDS) | $16,050 | $15,250 | $800 | $21,810 | $19,500 | $2,310 |

TOTAL ESTIMATED COST: $37,860,000

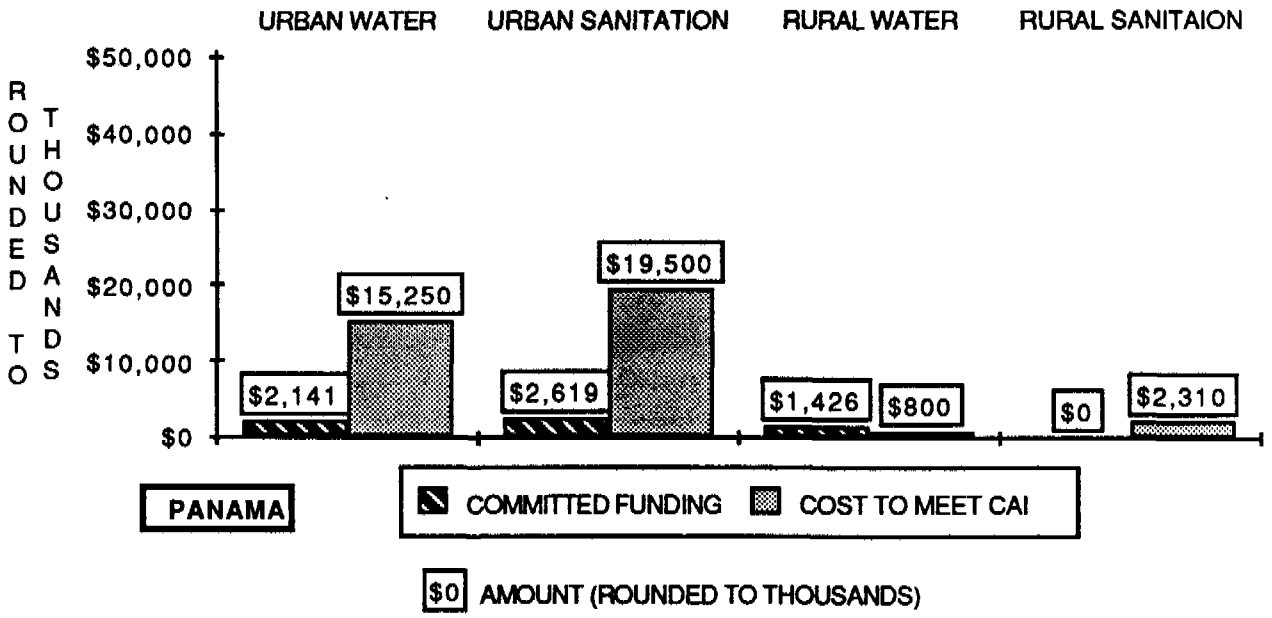
TABLE F - 5
PANAMA
.....
PROJECTED FUNDING
SHORTFALL TO MEET CAI
(COSTS IN THOUSANDS)

| | WATER SUPPLY | | SANITATION | | UN-SPECIFIED | TOTAL |
|---|---|---|---|---|---|---|
| | URBAN | RURAL | URBAN | RURAL | | |
| ESTIMATED TOTAL COST TO MEET CAI | $15,250 | $800 | $19,500 | $2,310 | NONE | $37,860 |
| FIRMLY COMMITED INVESTMENTS (1) | $2,141 | $1,426 | $2,619 | $0 | NONE | $6,186 |
| PROJECTED FUNDING SHORTFALL | $13,109 | NONE | $16,881 | $2,310 | NONE | $32,300 |
| POTENTIAL OTHER FUNDING (1) | $105,000 | NONE | NONE | NONE | NONE | $105,000 |

(1) ONLY THOSE INVESTMENTS WHICH INCREASE COVERAGE

FIGURE F - 2

**ESTIMATED FUNDING NEEDS BY SECTOR TO MEET CAI OBJECTIVE**



# APPENDIX G

## Country Profile: Nicaragua

## Country Profile: Nicaragua

I. COVERAGE - PAST (1980), BASELINE (1984), CURRENT (1986), AND PROJECTED (CAI 1989)

A. Population Coverage and Demographic Data (See Tables G-1 and G-2)

Population data and projections for Nicaragua were obtained from the Demographic Data for Development (DDD) project (IRD/Westinghouse) and converted from mid-year to year-end figures.

B. Results

Nicaragua reports good coverage in the urban water sub-sector, but the other three sub-sectors show lesser levels of coverage. The relevant data on coverage are shown in Table N-1.

In Table G-2, the net CAI gap in coverage in each sub-sector is arrived at by obtaining the difference between the CAI-1989 objective and the 1984 baseline and subtracting from the difference the gain in coverage between 1984 and 1986. Detailed data by sub-sector are shown in Table G-2.

II. PAST INVESTMENTS AND PROPOSED PROJECTS

A. Past Investments

1. The only investments reported in Nicaragua are

- CIDA

| | | | |
|---|---|---|---|
| -- | Rural Water and Health | 1984-85 | $1.066 million |
| -- | Potable Water | 1984-85 | 5.208 million |
| -- | Potable Water | 1985-86 | 0.033 million |

- CARE

| | | | |
|---|---|---|---|
| -- | Water Supply | 1985-86 | 0.597 million |
| | **TOTAL** | | **$6.904 million** |

There is no breakdown of these investments between urban and rural; nor are there corresponding coverage figures.

B. Proposed Projects

1. CARE is projecting future investments of $0.822 million for water supply in Nicaragua in 1987.

C. Estimated Investment Impact on Coverage and Meeting the CAI Objective

1. Increased Coverage and the CAI Objective

No increases can be projected.

2. Impact on the CAI Objective

Given the high rate of inflation (777% in 1986), it is impossible to predict what the cost will be to meet the CAI objective.

D. Other Constraints to Achieving the CAI Objective

There is not enough information on Nicaragua to identify the constraints to achieving the CAI objective.

III. IMPLICATIONS FOR AID

The scarce information available on Nicaragua and the high inflation rate make any reasonable effort to estimate funding needed to meet CAI objective impossible.

TABLE G - 1
NICARAGUA
.....
HISTORICAL WATER SUPPLY
COVERAGE VERSUS CAI OBJECTIVE

| 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 | 2,818 | 1,374 | 48.8% | 1,514 | 1,257 | 83.0% | 1,304 | 117 | 9.0% |
| BASELINE 1984 | 3,219 | 1,666 | 51.8% | 1,811 | 1,539 | 85.0% | 1,408 | 127 | 9.0% |
| 1986 | 3,442 | 1,815 | 52.7% | 1,980 | 1,683 | 85.0% | 1,462 | 132 | 9.0% |
| CAI OBJECTIVE 1989 | 3,807 | 2,083 | 54.7% | 2,263 | 1,924 | 85.0% | 1,544 | 159 | 10.3% |

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

TABLE G - 2
NICARAGUA
.....
HISTORICAL SANITATION
COVERAGE VERSUS CAI OBJECTIVE

| 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 | 2,818 | 661 | 23.5% | 1,514 | 427 | 28.2% | 1,304 | 234 | 17.9% |
| BASELINE 1984 | 3,219 | 779 | 24.2% | 1,811 | 554 | 30.6% | 1,408 | 225 | 16.0% |
| 1986 | 3,442 | 947 | 27.5% | 1,980 | 713 | 36.0% | 1,462 | 234 | 16.0% |
| CAI OBJECTIVE 1989 | 3,807 | 973 | 25.6% | 2,263 | 692 | 30.6% | 1,544 | 281 | 18.2% |

POPULATION FIGURES ARE ROUNDED TO NEAREST THOUSAND

FIGURE G - 1

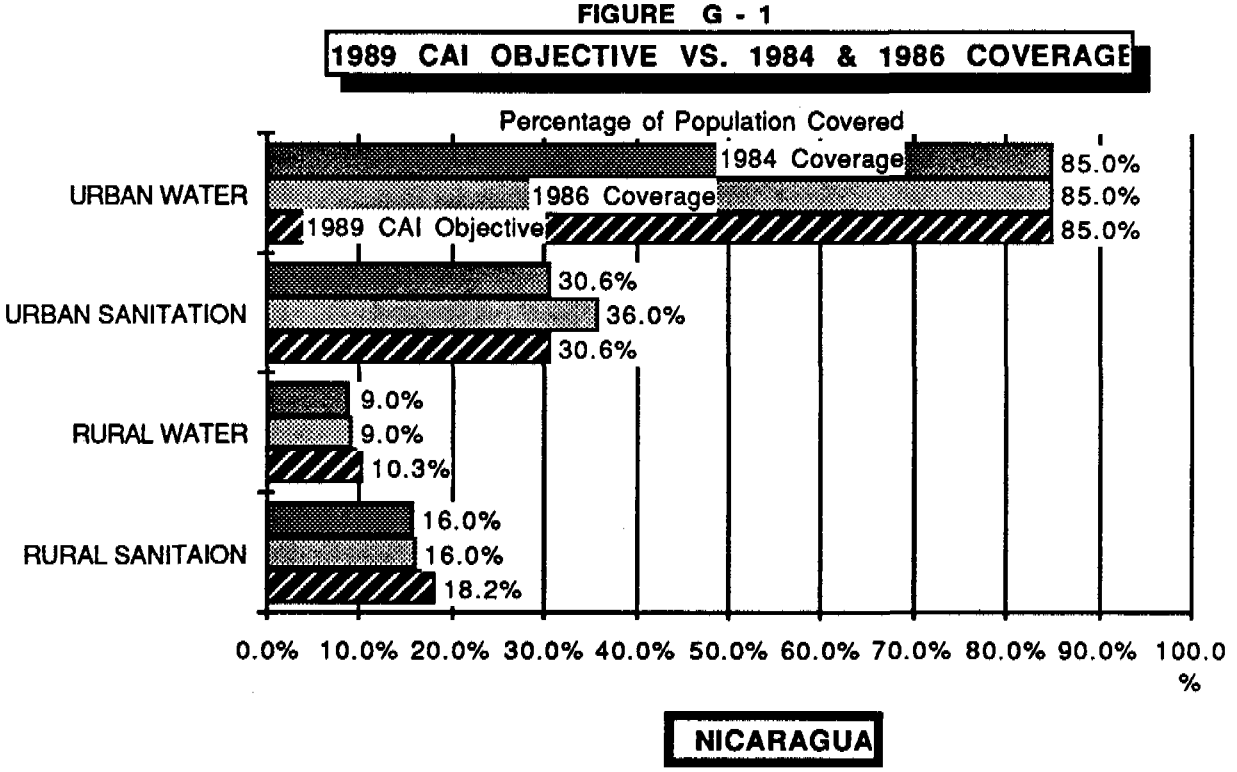

1989 CAI OBJECTIVE VS. 1984 & 1986 COVERAGE
Percentage of Population Covered
URBAN WATER
1984 Coverage
1986 Coverage
1989 CAI Objective
85.0%
85.0%
85.0%
URBAN SANITATION
30.6%
36.0%
30.6%
RURAL WATER
9.0%
9.0%
10.3%
RURAL SANITAION
16.0%
16.0%
18.2%
0.0% 10.0% 20.0% 30.0% 40.0% 50.0% 60.0% 70.0% 80.0% 90.0% 100.0
%
NICARAGUA

TABLE G - 3
NICARAGUA
.....
PROJECTED SHORTFALLS
IN MEETING CAI OBJECTIVE

| | WATER SUPPLY COVERAGE (PERSONS) | | | SANITATION COVERAGE (PERSONS) | | |
|---|---|---|---|---|---|---|
| | TOTAL | URBAN | RURAL | TOTAL | URBAN | RURAL |
| CAI OBJECTIVE 1989 | 2,083 | 1,924 | 159 | 973 | 692 | 281 |
| BASELINE 1984 | 1,666 | 1,539 | 127 | 779 | 554 | 225 |
| REQUIRED INCREASE | 417 | 385 | 32 | 194 | 138 | 56 |
| ESTIMATED 1984-86 GAIN | 149 | 144 | 5 | 168 | 159 | 9 |
| CAI COVERAGE SHORTFALL | 268 | 241 | 27 | 47 | NONE | 47 |

# APPENDIX H

Committed Water Supply, Sanitation, and Housing Projects

APPENDIX H

## Committed Water Supply, Sanitation, and Housing Projects

### INTRODUCTION

Table H-1 of this appendix is the list, developed by the WASH team, of committed funding. It includes approved projects or projects which can be considered as approved. The information used to compile this list was taken from the project list of the Priority Health Needs in Central America and Panama, the PAHO Progress Report of January 1987, AID project papers, mission cables, conversations, Action Plans, and information supplied by prospective donors.

Possible funding for projects which are conceptual or are being negotiated is not included.

Not all sector investments will serve to increase coverage. Committed investments which do not increase coverage have been identified and excluded from the total amount. In the case of RHUDO investments, a "credit" toward coverage was applied (see Section 2.3.3 of the main text) and pro-rated to water supply and sanitation by the ratio of the unit costs to the total costs to provide one person both water supply and sanitation (i.e., if the unit costs for urban water supply and sanitation were $100 and $50, respectively, and RHUDO-projected costs for connections were $12 million, $8 million would be allocated to water supply and $4 million to sanitation). Similarly, for other projects where the allocation between water supply and sanitation was not known, the total project cost was pro-rated based on the use of unit costs (as described above).

TABLE H-1

| COUNTRY | PROJECT TITLE AND/OR PRINCIPAL SOURCE(S) OF FUNDS | DESCRIPTION | COMMITTED FUNDING - $THOUSAND | | |
|---|---|---|---|---|---|
| | | | PROJECTS THAT INCREASE COVERAGE | OTHER (NO INCREASE IN COVERAGE) | TOTAL |
| BELIZE | Village Level Water Supply (USAID, CARE) | Rural Water Supply (6,300 people) | 713[a] | | 713 |
| | Improved Productivity Through Better Health (USAID) | Rural Water Supply and Sanitation:<br>- Water Supply (31,000 people)<br>- Sanitation (16,800 people) | 3,558[a] | | 3,558 |
| | Toledo District Water and Sanitation (UNICEF) | Rural Water Supply and Sanitation (5-6000 people) | 336[a] | | 336 |
| | Belize City Water & Sewerage (CIDA) | Urban Water Supply and Sewerage (40,000 people) | 970[a] | | 970 |
| | | | 5,577 | | 5,577 |
| COSTA RICA | Rural Sanitation | Rural Sanitation in 3 Health Districts | 92[b] | | 92 |
| | Stage III Urban Projects and Stage IV Rural Water Supply | Urban Water in Cartago & Puntarenas (230,000 people); plus unspecified rural water supply | 28,300[b] | | 28,300 |

TABLE H-1 (continued)

| COUNTRY | PROJECT TITLE AND/OR PRINCIPAL SOURCE(S) OF FUNDS | DESCRIPTION | COMMITTED FUNDING - $THOUSAND | | |
|---|---|---|---|---|---|
| | | | PROJECTS THAT INCREASE COVERAGE | OTHER (NO INCREASE IN COVERAGE) | TOTAL |
| COSTA RICA (continued) | USAID/CR | Rural Water Supply | 1,320[i] | | 1,320 |
| | USAID/RHUDO | Urban Housing | --- | 15,000[c] | 15,000 |
| | CRS | Rural Water Supply | 30[d] | | 30 |
| | | | 29,742 | 15,000 | 44,742 |
| EL SALVADOR | Rural Potable Water and Sanitation (UNDP) | Hydrology and Well Rehabilitation | | 900[b] | 900 |
| | Rural Aqueducts (IDB) | Rural Water Supply - Stage III | 21,000[b,k] | --- | 21,000 |
| | Project Rio Lempa (IDB) | Source Development for San Salvador | | 82,500[b] | 82,500 |
| | ANDA Pilot Water Supply Project (AID) | Rural and Urban Water Supply | 5,600[l] | | 5,600 |
| | USAID/RHUDO | Urban Housing | 2,850[c] | 6,650 | 9,500 |
| | Water Supply For North Zone (CABEI) | Urban Water San Salvador | 2,918 | --- | 2,918 |
| | Save the Children Federation (AID) | Rural Water Supply and Sanitation | 1,400[l] | --- | 1,400 |
| | | | 33,768 | 90,050 | 123,818 |

TABLE H-1 (continued)

| COUNTRY | PROJECT TITLE AND/OR PRINCIPAL SOURCE(S) OF FUNDS | DESCRIPTION | COMMITTED FUNDING - $THOUSAND | | |
|---|---|---|---|---|---|
| | | | PROJECTS THAT INCREASE COVERAGE | OTHER (NO INCREASE IN COVERAGE) | TOTAL |
| GUATEMALA | Groundwater Source Development Guatemala City (JICA, GOG) | Emergency Water Source Development Project | --- | 16,000[b] | 16,000 |
| | Strengthening WS&S Institutions (UNDP,GOG) | Human Resource Dev | --- | 398[b] | 398 |
| | USAID/RHUDO | Urban Housing | 2,160[c] | 6,840 | 9,000 |
| | CRS Rural WS&S | Rural Water and Sanitation Projects | 200[d] | --- | 200 |
| | Rural Potable Water and Sanitation (AID/Agua del Pueblo 520-0335) | Rural Water and Sanitation | 788 | --- | 788 |
| | Water, Women, & Health (AID/CARE, 520-0336) | Rural Water and Sanitation | 1,000 | --- | 1,000 |
| | Community Based Health and Nutrition (GOG & AID, 520-0251) | Rural Water and Sanitation | 6,409 | --- | 6,409 |
| | | | 10,557 | 23,238 | 33,795 |

TABLE H-1 (continued)

| COUNTRY | PROJECT TITLE AND/OR PRINCIPAL SOURCE(S) OF FUNDS | DESCRIPTION | COMMITTED FUNDING - $THOUSAND | | |
|---|---|---|---|---|---|
| | | | PROJECTS THAT INCREASE COVERAGE | OTHER (NO INCREASE IN COVERAGE) | TOTAL |
| HONDURAS | Surface Water Source Development (Italy) | Source Development | --- | 1,701[b] | 1,701 |
| | Urban Water & Sewerage (FIDA) | Design of 27 Water and 3 Urban Sewer Systems | --- | 290[b] | 290 |
| | USAID/H (USAID, GOH) | Rural Water and Sanitation | 10,500[g] | --- | 10,500 |
| | USAID/RHUDO | Urban Housing | 6,072[c] | 3,128 | 9,200 |
| | CARE | Community Water and Sanitation | 2,256[g] | --- | 2,256 |
| | CRS Rural WS&S | Rural Water and Sanitation Projects | 300[d] | --- | 300 |
| | IBRD | Municipal Water and Sanitation | | 20,000[e] | 20,000 |
| | CDC | Municipal Water and Sanitation | | 11,000[e] | 11,000 |
| | IDB | Rural Water and Sanitation | 24,000[g] | | 24,000 |
| | | | 43,128 | 36,119 | 79,247 |

TABLE H-1 (continued)

| COUNTRY | PROJECT TITLE AND/OR PRINCIPAL SOURCE(S) OF FUNDS | DESCRIPTION | COMMITTED FUNDING - $THOUSAND | | |
|---|---|---|---|---|---|
| | | | PROJECTS THAT INCREASE COVERAGE | OTHER (NO INCREASE IN COVERAGE) | TOTAL |
| PANAMA | Rural Aqueducts (GOP, IDB) | Rural Water Supply Projects in 75 Communities | 988[b] | --- | 988 |
| | Other Rural Aqueducts (GOP, IDB) | Rural Water Supply | 438[b] | --- | 438 |
| | USAID/RHUDO | Urban Housing | 3,468[j] | 27,657 | 31,125 |
| | USAID/RHUDO | Urban Housing | 1,292[j] | 39,708 | 41,000 |
| | | | 6,186 | 67,365 | 73,551 |

## NOTES TO TABLE H-1

SOURCES

a J. Ellis Turner Memo 23 April 87
(based on recent trip to Belize)

b Priority Health Needs in Central America and Panama Progress Report January 87

c RHUDO Projects HG 596-HG-006 and 596-W-025

d CRS Letter of 13 April 87

e Information from World Bank Report, 1984

f Guatemala (CABEI) Cable 04384

g Tegucigalpa Cable 06289

h CARE Letter of 27 April 87

i Personal Communication - Oscar Delgado (AID/Costa Rica) 24 April 87

j Panama Cable 05168

k El Salvador Cable 04681

l El Salvador Cable 11203

# APPENDIX I

## Potential Water Supply, Sanitation, and Housing Projects

# APPENDIX I

## Potential Water Supply, Sanitation, and Housing Projects

### INTRODUCTION

Table I-1 of this appendix shows the estimate of potential funding developed by the team. The potential funding shown here is only that which is being sought but is not yet committed. The information for the compilation of this list was taken from the project list of the Priority Health Needs in Central America and Panama Progress Report of January 1987, supplemented by information from mission cables.

Where project descriptions were insufficient to determine sub-sector allocations between water supply and sanitation, the total project cost was pro-rated using unit costs for water supply and sanitation (see description in Appendix H).

Table I-1

| COUNTRY | PROJECT TITLE (PRINCIPAL SOURCE) | DESCRIPTION | POTENTIAL FUNDING $THOUSANDS | |
|---|---|---|---|---|
| | | | PROJECTS WHICH MAY INCREASE COVERAGE | OTHER |
| **BELIZE** | None | -- | -- | -- |
| **COSTA RICA** | Stage III - San Jose Aqueduct (CABEI) | Urban Water Supply | $ 3,400[b] | -- |
| | Urban Aqueduct Project (CABEI) | Urban Water Supply | 15,000[b] | -- |
| | San Jose Tanks and Nets (CABEI) | Urban Water Supply | 11,500[b] | -- |
| | | | **$ 29,900** | -- |
| **EL SALVADOR** | (Unknown) | Rural Sanitation | 11,000[a] | -- |
| | (GOES & IDB) | Urban Water Supply | 23,300[a] | -- |
| | Public Services Restoration and Rehabilitation (519-0320)(GOES & AID) | Urban and Rural Water Supply and Sanitation | 35,000[a] | -- |

Table I-1

| COUNTRY | PROJECT TITLE (PRINCIPAL SOURCE) | DESCRIPTION | POTENTIAL FUNDING $THOUSANDS | |
|---|---|---|---|---|
| | | | PROJECTS WHICH MAY INCREASE COVERAGE | OTHER |
| HONDURAS (continued) | (Britain) | Urban W&S | 3,330[d] | -- |
| | (CABEI) | Urban W&S | 9,200[d] | -- |
| | | | $ 77,980 | $ 1,500 |
| PANAMA | Chilibre Water Expansion (GOP & IDB) | Urban Water Supply | 98,000[f] | -- |
| | Puerto Armuellas (GOP & IDB) | Urban Water Supply | 7,000[f] | |
| | | | $105,000 | |

**SOURCES:**

[a] Priority Health Needs in Central America and Panama Progress Report - January 1987

[b] Guatemala Cable 04384

[c] San Salvador Cable 04681

[d] Tegucigalpa Cable 06289

[e] San Salvador Cable 11203

[f] TELECON 27 Oct. 1987

Table I-1

| COUNTRY | PROJECT TITLE (PRINCIPAL SOURCE) | DESCRIPTION | POTENTIAL FUNDING $THOUSANDS | |
|---|---|---|---|---|
| | | | PROJECTS WHICH MAY INCREASE COVERAGE | OTHER |
| **BELIZE** | None | -- | -- | -- |
| **COSTA RICA** | Stage III - San Jose Aqueduct (CABEI) | Urban Water Supply | $ 3,400[b] | -- |
| | Urban Aqueduct Project (CABEI) | Urban Water Supply | 15,000[b] | -- |
| | San Jose Tanks and Nets (CABEI) | Urban Water Supply | 11,500[b] | -- |
| | | | **$ 29,900** | -- |
| **EL SALVADOR** | (Unknown) | Rural Sanitation | 11,000[a] | -- |
| | (GOES & IDB) | Urban Water Supply | 23,300[a] | -- |
| | Public Services Restoration and Rehabilitation (519-0320)(GOES & AID) | Urban and Rural Water Supply and Sanitation | 35,000[a] | -- |

Table I-1

| COUNTRY | PROJECT TITLE (PRINCIPAL SOURCE) | DESCRIPTION | POTENTIAL FUNDING $THOUSANDS | |
|---|---|---|---|---|
| | | | PROJECTS WHICH MAY INCREASE COVERAGE | OTHER |
| EL SALVADOR (continued) | (GOES & West Germany) | Rural Water Supply | 16,000[a] | -- |
| | (GOES & UNDP) | Water Quality Control | -- | $ 1,500 |
| | (GOES & IDB) | Urban Sanitation | 33,500[a] | -- |
| | | | $118,800 | $ 1,500 |
| GUATEMALA | Rural Water Supply (GOG & UNICEF) | 450 Small Systems | 10,900[a] | -- |
| | Municipal Water Supply (GOG & IBRD) | Improve Operations | -- | $ 1,759[a] |
| | Secondary Cities Water & Sewerage (GOG & IDB) | 138 Urban W&S Projects (including solid waste) | 66,030[a] | -- |
| | (GOG & IBRD) | Strengthening Operations and Maintenance | -- | $ 562[a] |
| | (GOG & UNDP) | Strengthening Water and Sanitation Sectors | -- | 1,100[a] |

Table I-1

| COUNTRY | PROJECT TITLE (PRINCIPAL SOURCE) | DESCRIPTION | POTENTIAL FUNDING $THOUSANDS | |
|---|---|---|---|---|
| | | | PROJECTS WHICH MAY INCREASE COVERAGE | OTHER |
| **GUATEMALA** (continued) | (CABEI) | Water Treatment and Transmission | -- | 7,900[b] |
| | | | **$ 76,930** | **$11,321** |
| **HONDURAS** | (GOH & IDB) | Groundwater Investigation | -- | $ 1,500[a] |
| | (AID) | Urban Water Supply and Sanitation | 20,000[d] | -- |
| | (KFW) | Rural Water Supply and Sanitation | 7,500[d] | -- |
| | (GOH & Japan) | Rural Water Supply and Sanitation | 21,000[d] | -- |
| | (EEC) | Rural Water Supply and Sanitation | 12,350[d] | -- |
| | (Italy) | Urban W&S | $ 3,200[d] | -- |
| | (France) | Urban W&S | 1,400[d] | -- |

Table I-1

| COUNTRY | PROJECT TITLE (PRINCIPAL SOURCE) | DESCRIPTION | POTENTIAL FUNDING $THOUSANDS | |
|---|---|---|---|---|
| | | | PROJECTS WHICH MAY INCREASE COVERAGE | OTHER |
| **HONDURAS** (continued) | (Britain) | Urban W&S | 3,330[d] | -- |
| | (CABEI) | Urban W&S | 9,200[d] | -- |
| | | | $ 77,980 | $ 1,500 |
| **PANAMA** | Chilibre Water Expansion (GOP & IDB) | Urban Water Supply | 98,000[f] | -- |
| | Puerto Armuellas (GOP & IDB) | Urban Water Supply | 7,000[f] | |
| | | | $105,000 | -- |

**SOURCES:**

[a] Priority Health Needs in Central America and Panama Progress Report - January 1987

[b] Guatemala Cable 04384

[c] San Salvador Cable 04681

[d] Tegucigalpa Cable 06289

[e] San Salvador Cable 11203

[f] TELECON 27 Oct. 1987