



WATER AND SANITATION FOR HEALTH PROJECT

**DRAFT**

**Recommendations to A.I.D.  
for a Water and Sanitation  
Strategy with Profiles of  
Twenty African Countries**

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Operated by CDM and Associates

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## COUNTRY PROFILES

Benin  
Burkina Faso  
Burundi  
Cameroon  
Guinea  
Ivory Coast  
Kenya  
Liberia  
Malawi  
Mali  
Niger  
Nigeria  
Rwanda  
Senegal  
Sudan  
Swaziland  
Tanzania  
Togo  
Uganda  
Zaire

## ACKNOWLEDGMENTS

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The study was written by a team of WASH staff and consultants with various people taking the lead responsibility on different sections. The introduction, revisions of the recommended strategies, some country profiles, and the overall editing was done by Diane Bendahmane. The recommended strategies were drafted by Bob Thomas with revisions by various members of the team. The following country profiles were prepared by WASH consultant Bob Friedman: Kenya, Mali, Senegal, Guinea, and Cameroon. WASH consultant Ron Parlato prepared the profiles for Niger, Ivory Coast and Zaire. David Laredo of Camp Dresser & McKee prepared the profiles for Liberia, Sudan, Nigeria and Uganda. The profiles for Benin, Burkina Faso, Togo, Rwanda and Burundi were prepared by Phil Roark of the WASH staff with assistance from Diane Bendahmane. Edwin Cobb, a WASH consultant, prepared the draft of the Swaziland profile. Craig Hafner was responsible for Malawi and Tanzania but was ably assisted by Diane Bendahmane.

The overall coordination and management of the report preparation was the responsibility of Teresa Sarai, of the WASH staff. The compilation of background documents and reports was organized by Dan Campbell, WASH's documentation center coordinator.

The WASH Project utilized a number of ideas for the notebook and layouts from USAID's Resources for Child Health, REACH Project's Directory "Partners in Immunization in Child Survival Countries" March 1988.

The team wishes to express its appreciation to all of the various agencies and organizations which have opened their doors and files and shared information with the team. In particular we would like to thank the UNICEF office in New York, the UNDP and DTCD offices in New York, and numerous offices and departments within the World Bank's West and East Africa division, and finally the UNDP/World Bank's Regional Water Supply Groups in Nairobi and Abidjan for their cooperation.

Lastly, the team wishes to express its thanks to Gary Merritt and John Thomas of the Africa Bureau's Office of Health for the advice and encouragement which they provided throughout this study.

Craig Hafner  
Study Team Coordinator  
January 1989

## INTRODUCTION

The recommended strategy for Africa and the profiles of 20 sub-Saharan African countries that follow were prepared by the Water and Sanitation for Health (WASH) Project in response to a request from the A.I.D. Africa Bureau. The activity is intended to assist the Africa Bureau and the Office of Housing and Urban Programs in developing a clear strategy for water supply and sanitation and in setting priorities for sector funding in the region.

### Countries Selected

The twenty countries were included in this study based on whether they were a Child Survival emphasis country, a country with a Combating Childhood Communicable Diseases, Project (CCCD), or a country with a sizeable A.I.D. supported water and sanitation project. The country list and chart below designate factors which each country meets. It also includes additional information on countries with guinea worm infection and the Africa Bureau's "Category" listing, both of which were relevant to this study.

|              | CHILD SURVIVAL | CCCD     | WATER PROJECTS | GUINEA WORM* | AFR BUR CATEGORY ** |
|--------------|----------------|----------|----------------|--------------|---------------------|
| Benin        |                |          | X              | X            | 3                   |
| Burkina Faso |                |          | X              | X            | 3                   |
| Burundi      |                | X        |                |              | 2                   |
| Cameroon     |                |          | X              | X            | 1                   |
| Guinea       |                | X        |                | X            | 1                   |
| Ivory Coast  |                | X        |                | X            | 3                   |
| Kenya        | X              |          |                | X            | 1                   |
| Liberia      |                | X        |                |              | 3                   |
| Malawi       | X              | X        |                |              | 1                   |
| Mali         | X              |          |                | X            | 1                   |
| Niger        | X              |          |                | X            | 2                   |
| Nigeria      | X              | X        |                | X            | 3                   |
| Rwanda       |                | X        |                |              | 2                   |
| Senegal      | X              |          |                | X            | 1                   |
| Sudan        | X              |          |                | X            | 2                   |
| Swaziland    |                |          | X              |              | 2                   |
| Tanzania     |                |          |                |              | 2                   |
| Togo         |                |          | X              | X            | 3                   |
| Uganda       |                |          | X              | X            | 1                   |
| Zaire        | X              | X        |                |              | 1                   |
| <b>TOTAL</b> | <b>8</b>       | <b>8</b> | <b>6</b>       | <b>13</b>    |                     |

\* Countries with Guinea worm infection

\*\* Africa Bureau categories are based on the progress of economic policy reform as estimated by AFR/DP, September 1988.

## **Scope of Work**

The main objectives of this activity, as stated in the Scope of Work, are as follows:

- ◆ Obtain and codify information on existing and planned water supply and sanitation coverage for each country.
- ◆ Obtain information on past and current levels of host country and donor investment in water supply and sanitation.
- ◆ Determine which countries have water and sanitation policies, strategies, and plans.
- ◆ Review the plans of WHO/AFRO and the Africa Development Bank to obtain a list of funded and unfunded water and sanitation projects.
- ◆ Develop a set of criteria and propose realistic objectives for water supply and sanitation coverage by the year 2000 and determine whether the objectives can be met by each country given its current policies, technical skills, and proposed levels of funding.
- ◆ Consider how actions in the water and sanitation sector stimulate private enterprise at the local level and what contributions improved water supply and sanitation may make to economic growth.
- ◆ Use the information gathered to prepare a profile of each country.
- ◆ Prepare a draft strategy document based on the profiles and on the deliberations of the consultants who prepared the profiles.

## **Methodology**

The profiles were prepared by a team of eight WASH staff and consultants with broad field experience in all aspects of water and sanitation in sub-Saharan Africa including: project management, community participation, hydrology, operation and maintenance, low-cost sanitation, training and institutional strengthening, and finance.

Travel to the countries was not included in this assignment, although nearly all of the consultants chosen had considerable first-hand experience in one or more of the 20 countries. The profiles were prepared by reviewing available reports and studies on the water supply and sanitation situation in the country. In addition the consultants met periodically over four months while the profiles were being prepared to exchange information and discuss their findings. Preparation time was limited to only three to five days for each country. Requests were sent to all of the USAID missions for assistance in data collection, but replies were, for the most part, quite limited. UNDP, the World Bank,

UNICEF, WHO, and other organizations supplied documents; however, these sources still often lacked up-to-date and reliable total coverage and investment figures.

In most cases, the largest problem faced by the team was the dearth of solid information about water supply and sanitation in the countries. The glaring deficiencies of many documents reveal clearly that one of the difficulties faced by the overwhelming majority of the 20 countries is lack of information on which to base their plans for the future. Preparing the profiles meant trying to piece together a picture of each country's water supply and sanitation status from various sources--sources based on different assumptions, aimed at different audiences, and written by people from various disciplines. Many documents were out of date. Some key documents, such as sector plans, were not available. Apparently, a few countries have yet to develop a sector plan.

Trying to arrive at even moderately reliable coverage statistics and investment levels was an especially daunting task. Coverage figures varied considerably from country to country. Some published data on water and sanitation coverage were doubtlessly inflated above actual operating conditions. In some cases the coverage figures reflected the number of new installations but did not take into account those that had become inoperable. Other figures suggested that entire populations of villages or urban zones were covered when in fact only a part of the population had reasonable access to the installation.

In the case of Water Decade objectives some countries were clearly overly optimistic in setting their goals. Goals which state, for example, 100% coverage for rural water supply are most unlikely to be achieved. Other countries put much more effort in their Decade plans and produced rather detailed and reasonable approaches to their development needs.

Some sources provided conflicting information. Population data in particular was difficult to judge. When such conflicts were encountered a judgment was inevitably made as to the most plausible source.

The U.N. International Water Supply and Sanitation Decade has succeeded in focusing attention on the sector, but, at the same time, its emphasis on measuring success in terms of numbers of people served has resulted in a lack of emphasis on other indicators (and perhaps also on programs that might provide more effective service while not showing much higher coverage figures). Also, it is likely that many countries overcount the number served to meet the implied expectations of the Decade. This is simply to say that the coverage statistics cannot be taken at face value.

## **Outline of the Profiles**

### **One Page Summary**

Each profile begins with a one-page summary that aims to address the salient points about the country's population, water and sanitation coverage, plans (where available) for the Decade and progress in achieving those plans, and the investments that the government and outside donors have made in water and sanitation over the period of the Decade. Also

included is a "data box" with basic demographic and socioeconomic indicators and the names of key sector agencies. The one-page summary ends with Table 1, which shows how much of an investment is estimated to be needed to meet Decade goals by the year 2000 and how much of that investment has been secured to date, (although there was very little available data on the latter).

### Table1: Investment Required

Table 1, in each profile is based on a general estimate of 1988 water and sanitation coverage in terms of population. These figures are compared with coverage targets for the year 2000 that were estimated after comparing projections from various sources about roles of urban versus rural growth. By subtracting the 1988 coverage figures from the estimated year 2000 coverage, the estimated unserved population or shortfall was obtained. To arrive at the amount of investment needed, the number of persons still to be covered to meet Decade goals was multiplied by the unit cost of construction.

The U.S. Bureau of Census figures were used for 1980 and 1988 population. Overall these estimates were higher than many other population estimates identified. The urban growth rates came from the World Bank's World Development Report Table 32. The unit cost of construction figures were taken from specific country sources where those were available and from the WHO Mid-Decade Report. When data on costs specific to an individual country were not available then African averages on construction were utilized. All cost estimates are in 1988 U.S. dollars and no escalation has been included to provide for the year 2000 costs.

Because of the recognized uncertainty surrounding much of the data inputs, the resulting figures must be taken with a degree of caution. The totals necessarily represent orders of magnitude rather than exact values.

### Ten Key Topics

After the one-page summary, the profiles continue with relatively brief discussions of ten topics. Tables or figures are used to illustrate the key findings whenever possible.

- (1) Population (1980, 1988, and 2000) includes the urban/rural breakdown, rate of growth, and any other important point about demography. The figures are summarized in Table 2.
- (2) Coverage Data show the progress made thus far during the Decade for urban and rural areas. Also included are coverage targets and where available the type of coverage (pit latrines, sewerage systems, standpipes, house connections, etc.). Table 3 summarizes percentage coverage information.

- (3) Decade/Sector Action Plan provides as many details as possible about the country's known plans for water and sanitation, to date, whether or not the country has an official Decade plan. The section also covers the evolution of Decade planning, including such events as the formation of an action committee.
- (4) Sector Administration provides information on the agencies involved in water supply and sanitation in the country along with any recent or known planned reorganization.
- (5) Water Sector Studies lists any comprehensive studies of water and sanitation in the country that are available to WASH.
- (6) Past Investments in the Sector covers the 1980-1988 period, listing the bilateral and multilateral donors that have been active and giving the amounts (when possible) that they, and the government of the country, have invested in water supply and sanitation.
- (7) Proposed Investments in the Sector contains corresponding information to that in (6) for the period 1988 onwards, to the extent that such intentions are known.
- (8) Health Indicators includes information about the country's health status as it is impacted by inadequate water supply and sanitation. This supplements information about life expectancy and infant and child mortality covered in the data box.
- (9) Privatization describes the country's stance vis-à-vis the private sector and indicates what opportunities there appears to be for private sector involvement in water and sanitation.
- (10) Recommendations for USAID begins with a brief description of USAID's current programs in the country and then points out the likely opportunities for effective USAID interventions. (This section does not consider whether or not USAID should be involved at all in WS&S in the country. Also, this section is not related to the prioritization of the countries discussed in the strategy section.)

In some cases, there was no information available to WASH on one or two of these topics, in which case the section is left blank.

### **Basic Sources of Information**

Each profile ends with a list of the sources used to compile it. The following reports and publications were used in the preparation of virtually all the profiles.

- ◆ World Development Report 1987. World Bank, 1988.
- ◆ World Population Profiles. U.S. Department of Commerce, Bureau of the Census, 1987.
- ◆ Statistics on Children in UNICEF Assisted Countries. UNICEF, 1988.
- ◆ UNDP/World Bank: Country and Global Work Plan 1988-1990. UNDP/World Bank, 1988.
- ◆ The International Drinking Water Supply and Sanitation Decade: Review of Mid-Decade Progress. WHO, 1987.
- ◆ Country External Support Information (CESI). World Health Organization, September 1988.
- ◆ The International Drinking Water Supply and Sanitation Decade Directory. Volume 1, Thomas Telford Ltd., 1987.

### Use of the Profiles

The sector profiles are meant to provide a snap shot of the water and sanitation situation in each country as of December 1988. Since the amount of time devoted to preparing each profile and the country information and data were quite limited, the profiles should be viewed as starting points for A.I.D., not as complete data bases or program outlines. As more information is accumulated and refined, the profiles could easily be updated on a regular basis.

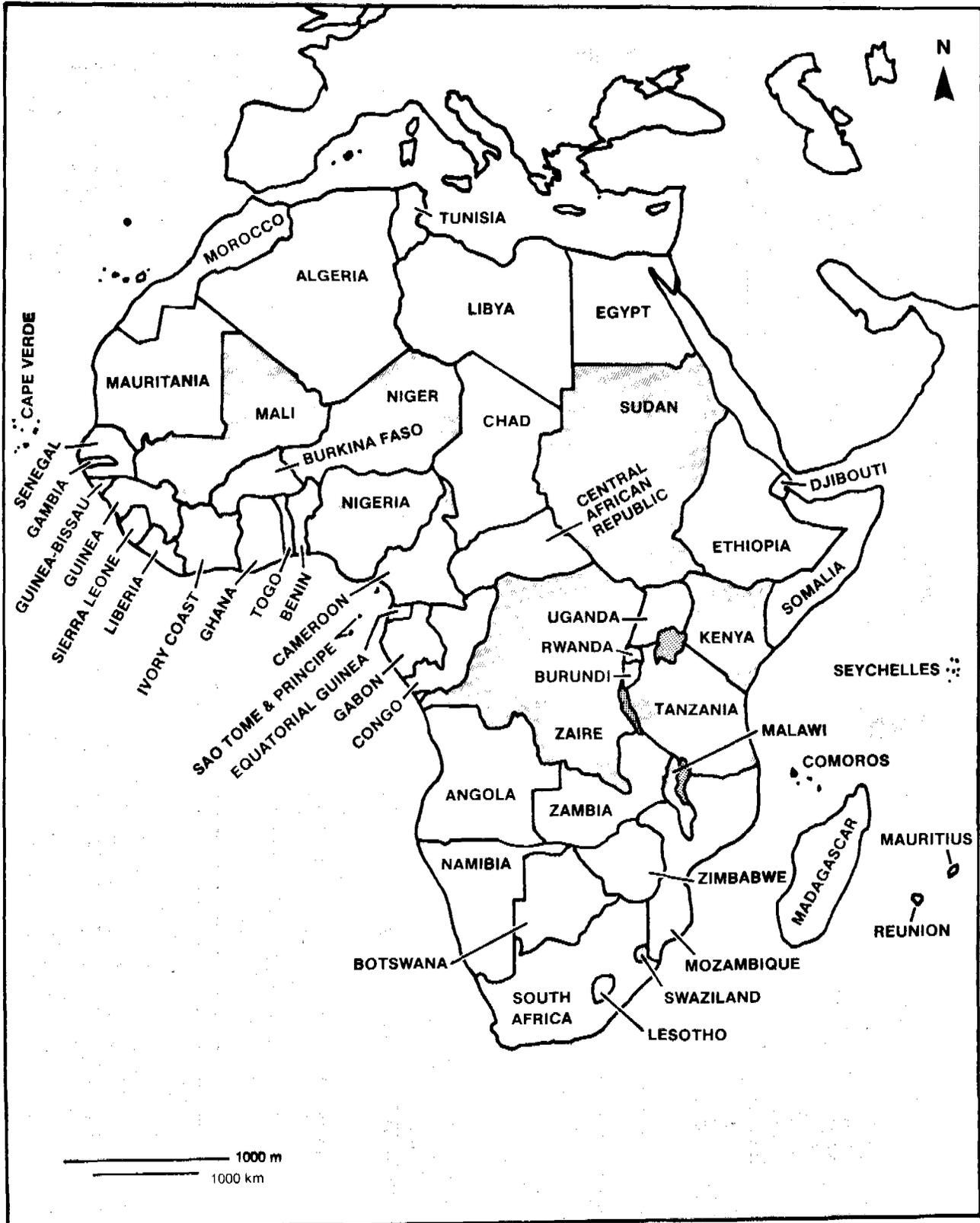
It is likely that other donors and international agencies will be interested in obtaining copies of the profiles. If they are widely accepted within the other external support agencies, the profiles could form the basis for a model for WHO and UNDP to use in planning for the sector into the 1990s. In fact, they could form the basis for expanding the present WHO-developed Country External Support Information, computerized list of water and sanitation projects in each country.

The profiles and the strategy based on them are not intended to be definitive documents. It is also hoped that they will not merely be read and filed away. It is hoped that they will stimulate discussion within the Africa Bureau, the Office of Housing and Urban Programs and in the USAID missions in the 20 countries. While the profiles include much useful information, it is hoped that they will also elicit information from the missions, while stimulating interest in this very important sector.

It is clear that much more information is available on some countries than was accessible during this study. It is expected that the data sheets will need to be periodically updated as improved information becomes available.\* In addition, it is hoped that the profiles may encourage a greater sharing of information among donors and international agencies active in the sector and among governments in the region. The needs are so enormous, the resources so limited, and the data so sparse and variable, that it is clear that greater coordination and information sharing should occur.

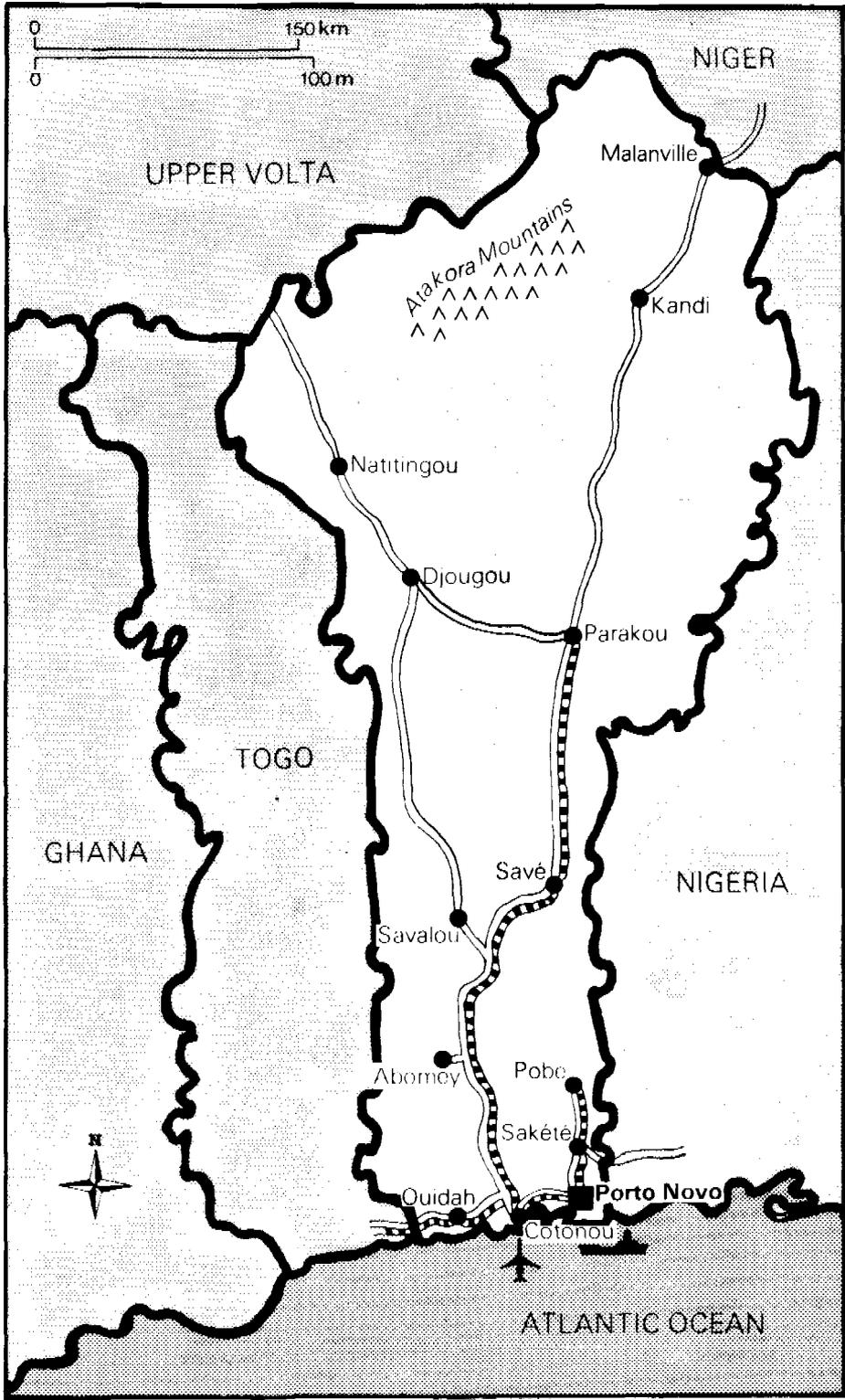
**\* Knowledgeable readers are urged to refer to the blank data sheets inserted at the front of this notebook for updating the information. Please send new data to the Africa Bureau or the WASH Project.**

AFRICA



COUNTRY PROFILES

**BENIN**



# BENIN

**Population:** Total 4.5 M (Urban 38%, Rural 62%)  
**Population Growth Rate:** 3.6% per year (Urban 4.4%)

**GNP Per Capita:** US \$320 (1985)  
**Adult Literacy:** Total 26% (Male 37%, Female 16%)  
**Life Expectancy:** 49 years (Male 47, Female 50)  
**Infant Mortality (under 1 year):** 112 per 1,000 births  
**Child Mortality (under 5 years):** 193 per 1,000 births

**Status of Decade/Sector Plan:**  
 Adopted 1983

**Water and Sanitation Agencies:**

Societe Beninoise d'Eau et d'Electricite

Directorate of Hydraulics

## Decade Progress

Benin is a country with an on-going USAID project that, at its mid-point, is heading towards a very successful completion. The USAID project has built upon lessons learned in Togo and other rural water projects and has integrated community development, health education, and water into a sound program. This is occurring despite Benin's overall precarious financial position.

By some estimates, half the population lives in urban areas in Benin, an unusual situation for an agrarian based economy.

Urban water supply has been extended to 78 secondary towns -- a large number. Many of these towns are inhabited by only a few thousand people and only 50 or so households are connected to the system at a large per capita investment. Urban water supply is managed by a parastatal that is also responsible for electrical power. Profits from power supply tend to offset losses from the water sector.

The city of Cotonou has poor environmental conditions largely because of poor drainage which causes large areas of the city to be inundated through the rainy season. Pit latrines are the dominant form of sanitation,

with 71% of the population having access. Conditions are similar in many other towns in Benin.

Rural water supplies have been improved in recent years. UNICEF has been particularly successful in past projects, and the aforementioned USAID project includes UNICEF as a partner. The project strongly emphasizes Guinea worm disease eradication, and it appears that a high level of success can be predicted. Benin has one of the world's highest rates of incidence of Guinea worm disease.

Officially, the Government of Benin places little emphasis on the private sector, although in recent years, there has been some interest. The operation and maintenance component of the USAID rural water supply and sanitation project has been entirely privatized. Communities control their water systems and rely on private sector repairmen and local spare parts dealers and manufacturers (in Togo). This system is considered a model for the rest of the country and will become part of a national policy.

Benin requires major investments in all sectors with urban sanitation having the largest deficit. A total investment need of \$360 million is required to achieve targets.

TABLE 1  
 INVESTMENT REQUIREMENTS  
 BENIN

| ESTIMATED COVERAGE<br>COSTS AND POPULATION | URBAN |            | RURAL |            | TOTALS |
|--|-------|------------|-------|------------|--------|
|  | WATER | SANITATION | WATER | SANITATION |        |
| Population Served 1988                     | 1.4   | 1.0        | 1.0   | 0.6        |        |
| Coverage Target 2000                       | 2.9   | 2.3        | 3.3   | 2.1        |        |
| Shortfall/Unserved                         | 1.5   | 1.3        | 2.3   | 1.5        |        |
| Cost (US \$)                               | 90.0  | 159.0      | 55.0  | 56.0       | 360.0  |
| Proposed Investment                        |       |            |       |            |        |
| Net Shortfall                              |       |            |       |            |        |

1 Population and costs in millions.

2 Assume 1988 population 1.7M urban, 2.8M rural; year 2000 2.9M urban, 4.1M rural.

3 Assume urban growth rate of 4.4%.

4 Assume % access to water supply 1988 80% urban, 34% rural; year 2000 100% urban, 80% rural.

5 Assume % access to sanitation 1988 60% urban, 20% rural; year 2000 80% urban, 50% rural.

6 Assume per capita cost urban water supply \$60, sanitation \$122; rural water supply \$24, sanitation \$37.

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## COUNTRY PROFILE: BENIN

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### 1. Population

The most recent census for Benin was conducted in 1979. Populations for 1988 and projected to the year 2000 are shown in Table 2. There is contradictory information regarding the ratio of urban to rural population. By some definitions of "urban", as much as 50% of the present population live in urban zones, as reported by the IDWSSD. It is clear, however, that populations in towns throughout Benin are growing rapidly. It is estimated that the population is growing at 3.6% per year overall, but urban growth rates are up to at least 4.4%.

The growth rate of the approximately 4,000 villages in Benin is only 1.6% per annum. This shows the heavy migration to urban areas.

Table 2  
Past, Present, and Projected Population  
( in millions)

|      | <u>Total</u> | <u>Urban</u> | <u>Rural</u> |
|------|--------------|--------------|--------------|
| 1980 | 3.5          | 1.0 (29%)    | 2.5 (71%)    |
| 1988 | 4.5          | 1.7 (38%)    | 2.8 (62%)    |
| 2000 | 7.1          | 3.1 (44%)    | 4.0 (56%)    |

Source: U.S. Bureau of the Census

### 2. Water and Sanitation Coverage Data

Water supply and sanitation coverage is shown in Table 3. According to WHO, it is estimated that 80% of the urban population has access to public water supply systems although World Bank data suggest lower coverage figures. About 17% of this population is served by house connections with an extremely low average consumption of 14 liters per capita per day (lcd), 13% are served by standpipes with a consumption of 20 lcd, and 30% obtain water from vendors. The remaining 40% of the urban population rely on private wells, most of which are untreated.

Benin has invested heavily in secondary towns. Seventy-eight towns, some of which have less than 5,000 population, are part of the urban network. This is almost four times the number served by Togo. Many of these towns are doubtlessly a drain on profits. Only five of the towns have more than 300 household connections, while in Ivory Coast, 300 is the minimum number allowable per town system to achieve financial solvency.

The rural water sector is relatively underserved. Construction of modern wells (boreholes or concrete lined wells) began only in 1980 with external aid. Recent years have seen an influx of aid in response to drought conditions, and significant progress has been achieved.

Piped sewerage systems do not exist in Benin. In Cotonou, about 7% have flush toilets connected to septic tanks and 71% have pit latrines, while the remaining 22% have no access to sanitation. Garbage collection and septic tank cleaning services are available but limited in practice. Indiscriminate garbage disposal is practiced in many areas and, combined with very poor drainage conditions, produces unsatisfactory environmental conditions throughout much of Cotonou. Large sections of Cotonou become muddy ponds during the rainy season. Similar conditions are observed in other urban centers, although no data are available.

Rural sanitation is minimal. Latrine coverage is estimated at 20%, primarily because of recent projects in this sector, but this figure is probably too high.

TABLE 3

WATER AND SANITATION COVERAGE FOR 1980 AND 1988  
AND TARGETS FOR 2000  
(in percents)

BENIN

| YEAR  | WATER |       | SANITATION |       |
|-------|-------|-------|------------|-------|
|       | URBAN | RURAL | URBAN      | RURAL |
| 1980  | 26    | 8     | 50         | 4     |
| 1988  | 80    | 34    | 60         | 20    |
| 2000* | 100   | 80    | 80         | 50    |

SOURCE: W.H.O. IDWSSD Review of Mid-Decade Progress

\* Decade targets for 1990 assumed for 2000

### **3. Decade/Sector Action Plan**

The Decade plan was adopted in 1983 as a result of a national planning workshop held in 1981. The Decade plan, which was attached to the five-year plan, included strategies for water, sanitation, community participation, and health education and established a financial need of \$181 million to be divided approximately as follows:

54% rural water supply  
21% urban water supply  
24% sewerage

It was anticipated that 95% of the financing for the sector's needs would be obtained from external donors. A cost-recovery plan was endorsed whereby beneficiaries would pay recurrent costs in full.

Updated achievements are estimated as shown in Table 3. It is clear that Benin has benefited from significant donor aid and good progress has been achieved. USAID and UNICEF are currently financing an on-going project which appears to be making excellent progress. However, this project, as well as others, is menaced by Benin's current extremely fragile national financial status.

In the urban water sector, there is no national water-supply master plan. However, feasibility studies are either completed or underway for about 50 secondary centers.

According to the World Bank, responsibilities for sanitation in Benin are divided among three agencies: Direction de la Voirie, which collects and disposes of solid waste and sewage; Direction des Voiries Urbaines, which builds and maintains drains; and Direction du Genie Sanitaire et de l'Assainissement, which supervises latrine construction. In addition, an Urban Management project, under preparation, will address the major issue of municipal services reorganization, including that of sanitation. Responsibility for rural sanitation remains ill-defined, and little attention has been given to this subsector.

### **4. Sector Administration**

The urban water and sewerage sector is the responsibility of the Societe Beninoise d'Eau and de l'Electricite (SBEE). This agency is considered to be one of the few well-managed parastatals in Benin. Water supply functions within the SBEE account for only 10 to 20% of its budget and are therefore treated as marginal activities. The profits from the electrical power portion of the portfolio offset losses from the water supply sector. This structure has been the subject of past studies which have suggested separating water from electricity. However, for the present, no changes are anticipated. While the SBEE has a certain measure of responsibility in managing its operations, water tariff setting and staff salaries are determined by government policies. The SBEE reports to the Ministry of Finance and Economy.

Rural water and sanitation is under the Directorate of Hydraulics within the Ministry of Equipment and Transportation. Both the SBEE and the Directorate of Hydraulics undertake groundwater exploration.

Other water supply and sanitation agencies are listed below:

Ministere du Plan, de la Statistique et de l'Analyse Economique

Ministere des Travaux Publics, de la Construction et de l'Habitat

Ministere de l'Industrie, des Mines et de l'Energie

Ministere des Finances

Direction du Genie Sanitaire et de l'Assainissement

## 5. Water Sector Studies

The principal water sector studies include the following:

Government of Benin, Water Decade Plan, 1983.

WASH, Mid-Term Evaluation of Benin Rural Water and Sanitation Project, 1988.

World Bank, Staff Appraisal Report, Second Water Supply Project Benin, 1985.

It should be noted that in December 1988 UNICEF issued "Situation Analysis for Women and Children in Benin." This work was not available, however, when this profile was prepared.

## 6. Past Investments in the Sector

Bilateral support has come principally from France, Germany, and the United States. Multilateral support has been supplied by UNDP, UNICEF, the Islamic Development Bank, OPEC, WHO, and the African Development Bank.

The World Bank is currently conducting a second water supply project in the amount of \$2.5 million. The objectives of this project are to improve water supply for Cotonou and Porto Novo, through rehabilitation and expansion of the present system, and to assist institutions to improve their financial and management capabilities.

An on-going USAID/UNICEF project in rural water supply and sanitation proposes to construct water supply systems for 225 villages, provide extensive health education and community development assistance, and construct demonstration latrines in many project locations. The project is focused on the Zou region with expected completion in 1990.

## 7. Proposed Investments in the Sector

A UNDP/World Bank program will assist the Government of Benin in the implementation of the GTZ-assisted sanitation project for Cotonou and the UNDP-IPF rural sanitation project designed to help strengthen the Direction du Genie Sanitaire et de l'Assainissement and decentralize its operations in the Borgou Province. Through the GTZ-assisted project, the program will support the government to finalize the proposal for the reorganization of municipal services, including sanitation, and to coordinate sanitation project activities financed by different external support agencies.

UNICEF is planning to continue its efforts in rural water and sanitation through a new program planned for 1990-1994. The program is a continuation of the USAID/UNICEF project in the Zou Province. It will cost \$7.3 million.

Other proposed projects include:

- ♦ African Development Bank - water and electricity supply to twelve chief towns - \$10.8 million.
- ♦ GTZ - water supply for 12 secondary centers and Natitington - \$14.8 million.

## 8. Health Indicators

The World Bank indicates that there are few reliable statistics on specific waterborne and sanitation-associated diseases, although morbidity due to common enteric and parasitic diseases is shown to be high throughout the country, especially in the Zou and Borgou provinces. The more commonly observed diseases are malaria, various diarrheas, dysenteries, and parasitic infections directly attributable to water supply and environmental deficiencies.

Benin has one of the world's highest rates of incidence for Guinea worm disease, which is prevalent throughout most of the country. The UNICEF contribution to the USAID rural water and sanitation project has made significant progress in tracking the incidence, conditions, and locations of this disease. The project is anticipating a high degree of success in eliminating the disease from the project zone. If the approaches developed within this project produce the expected results, the project should serve as a model to neighboring countries in attacking Guinea worm.

Other health indicators of note include estimates by WHO of moderate malnutrition in 24% of Beninese and severe malnutrition in 15% of the population. These figures attest to the overall poverty level of the country.

## **9. Privatization**

The private sector has received little overall support from the Government of Benin. However, the operation and maintenance component in the USAID project has been completely privatized and is expected to serve as a model for the rest of the country. Ownership and responsibility for wells management have been given to the communities. A cadre of rural artisan repairmen has been franchised by the project to provide repairs to the various communities. All communities participating in the project, as a pre-condition, have established a maintenance fund for this purpose. Spare parts are to be assured through local entrepreneurs with supplies furnished by a regional manufacturer in Togo. This privatized operation and maintenance system offers the best choice in assuring the continued operation of pumps and water systems and as such, represents a minor but important change in the attitude of the Government toward the private sector. In Benin it offers the only structure that would allow sustainability for the water systems.

## **10. Recommendations for USAID**

In consideration of the success that the current USAID/UNICEF rural water and sanitation project is enjoying, an extension of the on-going project is recommended. It is one of the few projects that can be carried on with little disruption from the severe financial problems that beset Benin. Assuming the present project to reach fulfillment as planned, a future project in other areas of the country is recommended which would again focus on rural water and sanitation.

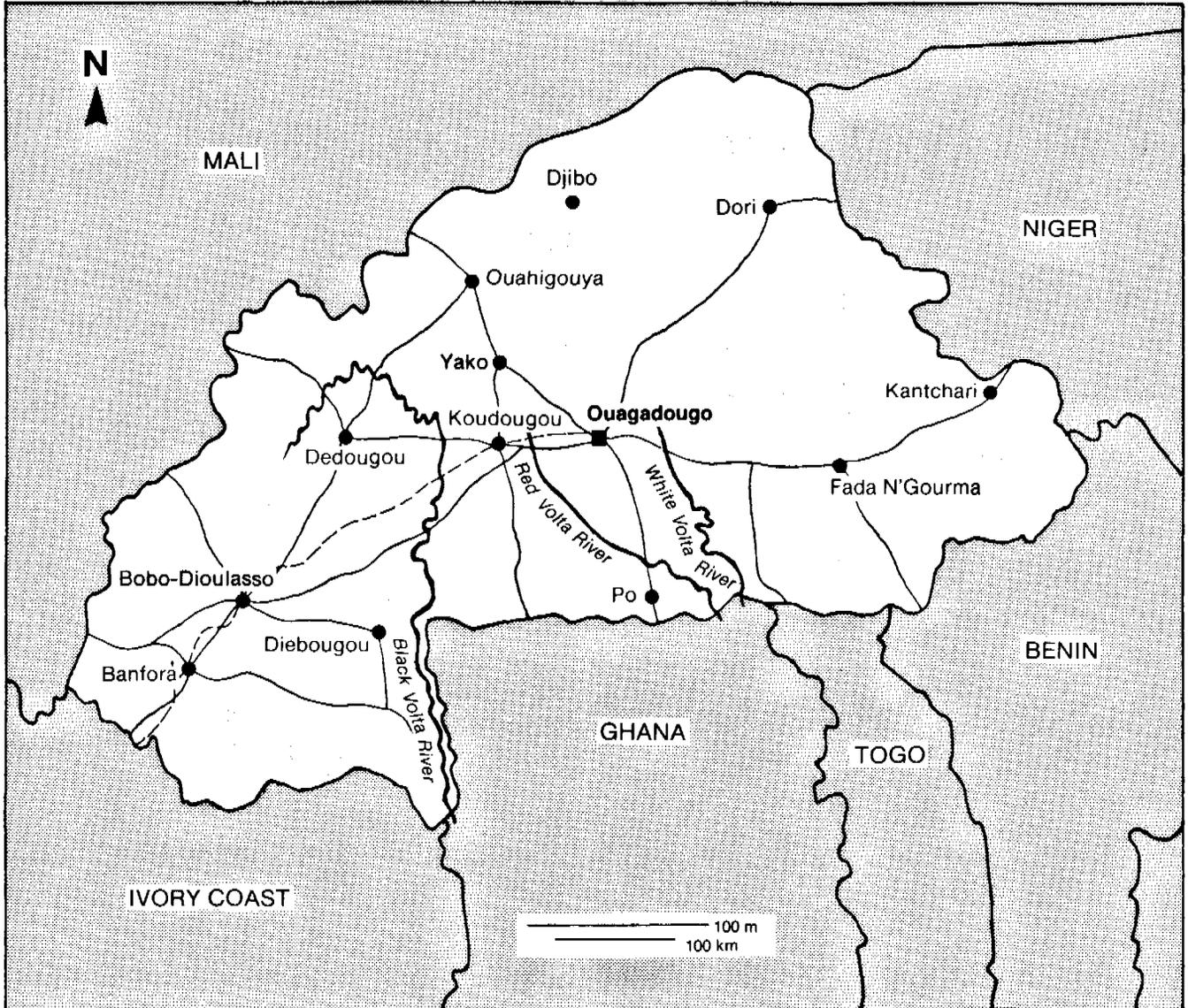
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**BURKINA FASO**



# BURKINA FASO

**Population:** Total 8.4 M (Urban 16%, Rural 84%)  
**Population Growth Rate:** 2.8% per year (Urban 5.3%)

**GNP Per Capita:** US \$150 (1985)  
**Adult Literacy:** Total 13% (Male 21%, Female 6%)

**Life Expectancy:** 47 years (Male 45, Female 48)

**Infant Mortality (under 1 year):** 143 per 1,000 births

**Child Mortality (under 5 years):** 241 per 1,000 births

**Status of Decade/Sector Plan:**  
 Adopted in 1982

**Water and Sanitation Agencies:**

**Ministry of Water (Ministere de l'Eau)**

## Decade Progress

Burkina Faso has made rapid progress since the beginning of the Decade, particularly in rural water supply. A number of projects have been completed and others are on-going in this sector. The country has benefited from large amounts of international aid in response to recurring Sahelian droughts.

Although this aid has more than doubled rural water supply coverage to 70% of rural inhabitants, there is concern that this figure does not represent the present operational status of the wells. Water is not available from many of these installations because of broken pumps or lowered water tables.

Urban water supply has also been expanded. About 42% of the townspeople have access to improved water supplies. Ouagadougou requires an expensive pipeline transmission system from distant surface water (Black Volta River) sources. Costs of water supply in Ouagadougou are therefore high, and the supply is subject to conservation measures.

Sanitation has lagged behind water supply in the GOBF planning objectives until the present. For 1990, new projects are not planned but rather emphasis has been shifted to sanitation. Latrine construction in both rural and urban zones is emphasized. The goal for the rural sector is to achieve 85% coverage, a figure that is highly optimistic. No urban sewerage schemes are planned, but other sanitation measures are planned to bring coverage to 46% by 1990.

The GOBF enjoys a reputation as being particularly competent in the water sector. USAID has previously undertaken a major and successful water project in Burkina Faso. Given the projected needs of continued support in this sector, it is recommended that USAID consider combining water with other child survival initiatives to form a new project.

The largest need for Burkina Faso is in rural sanitation, which requires an investment of \$274 million to achieve targets. Urban water supply is also a major need. Total investment requirements to meet Decade goals are \$501 million.

TABLE 1  
 INVESTMENT REQUIREMENTS  
 BURKINA FASO

| ESTIMATED COVERAGE<br>COSTS AND POPULATION | URBAN |            | RURAL |            | TOTALS |
|--|-------|------------|-------|------------|--------|
|  | WATER | SANITATION | WATER | SANITATION |        |
| Population Served 1988                     | 0.6   | 0.6        | 5.0   | 0.4        |        |
| Coverage Target 2000                       | 2.6   | 1.2        | 6.4   | 7.8        |        |
| Shortfall/Unserviced                       | 2.0   | 0.6        | 1.4   | 7.4        |        |
| Cost (US \$)                               | 120.0 | 73.0       | 34.0  | 274.0      | 501.0  |
| Proposed Investment                        |       |            |       |            |        |
| Net Shortfall                              |       |            |       |            |        |

1 Population and costs in millions.

2 Assume 1988 population 1.4M urban, 7.1M rural; year 2000 2.6M urban, 9.2M rural.

3 Assume urban growth rate of 5.3%.

4 Assume % access to water supply 1988 42% urban, 70% rural; year 2000 100% urban, 70% rural.

5 Assume % access to sanitation 1988 45% urban, 5% rural; year 2000 46% urban, 85% rural.

6 Assume per capita cost urban water supply \$60, sanitation \$122; rural water supply \$24, sanitation \$37.

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## COUNTRY PROFILE: BURKINA FASO

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### 1. Population

The current population of Burkina Faso is 8.5 million, according to the U.S. Bureau of Census, giving it a population density of about 32 people per square kilometer. The relatively low density is a reflection of its Sahelian location, which limits agricultural production in favor of stock raising. The ratio of women is rather high (51.7%) and even higher among the potentially active ages (52.1%). The growth rate is 2.8% per year. The most recent national census was completed in 1975.

Burkina Faso is unusual in that it has a high migratory population. Many Burkinabe take up residence in neighboring countries, particularly Ivory Coast, where their positive work ethic makes them attractive to employers in the service industries. It is estimated that 2.0 million Burkinabe live permanently abroad.

Table 2  
Past, Present, and Projected Population  
(in millions)

|      | <u>Total</u> | <u>Urban</u> | <u>Rural</u> |
|------|--------------|--------------|--------------|
| 1980 | 7.0          | 1.1 (15%)    | 5.9 (85%)    |
| 1988 | 8.4          | 1.4 (16%)    | 7.1 (84%)    |
| 2000 | 11.8         | 2.6 (22%)    | 9.2 (78%)    |

Source: U.S. Bureau of the Census

The economy of Burkina Faso is almost entirely based on agriculture. About 92% of the population live in rural areas which includes 7,400 villages.

### 2. Coverage Data

Water supply and sanitation coverage are summarized in Table 3. According to data tabulated in 1985, Burkina Faso has shown remarkable progress in extending water supplies in rural areas. The country has benefited in recent years from a variety of contribution campaigns which were planned in response to the drought conditions which have afflicted Sahelian countries periodically over the past 20 years. The campaigns, which were financed by several international donors, including USAID, have resulted in a remarkable increase in coverage from about 33% in 1980 to 70% in 1985. During this period, the number of wells increased by 5,700 (from 3,000 to 8,700). This included both boreholes and large-diameter concrete-lined wells.

It should be noted, however, that the indicated coverage figures are probably overly optimistic. The data were based on wells constructed and do not reflect the actual operating conditions of these wells. Many wells have been abandoned because of lowered water tables and broken pumps. The World Bank has indicated that rural water coverage may be closer to 31%, although this is probably too pessimistic.

The Burkina Faso five-year plan proposes to almost double the 1985 number of wells by 1990. This would achieve the objective of 20 liters per capita per day (lcd) for all rural dwellers. However, contradictorily, according to the IDWSSD, no new projects are planned for that period. Again, reality is somewhere in between, as several rural water projects are known to be on-going although certainly not progressing at the rate proposed in the five-year plan.

Urban water coverage has also increased, but less dramatically. Coverage was at 42% in 1985, about equally divided between populations served by household connections and standposts.

Rural sanitation is estimated at only 5% coverage, but an ambitious campaign begun in 1987 is designed to increase the coverage to 85% by 1990. However, it is unlikely that this high figure will be achieved.

About 44% of urban dwellers had access to safe sanitation in the form of latrines or cesspools. Sewer connections do not exist in Burkina Faso and none are planned.

TABLE 3

WATER AND SANITATION COVERAGE FOR 1980 AND 1988  
AND TARGETS FOR 2000  
(in percents)

BURKINA FASO

| YEAR  | WATER |       | SANITATION |       |
|-------|-------|-------|------------|-------|
|       | URBAN | RURAL | URBAN      | RURAL |
| 1980  | 27    | 33    | 37         | 5     |
| 1988  | 42    | 70    | 45         | 5     |
| 2000* | 100   | 70    | 46         | 85    |

SOURCE: W.H.O. IDWSSD Review of Mid-Decade Progress

\* Decade targets for 1990 assumed for 2000

### **3. Decade/Sector Action Plan**

Burkina Faso's Decade plan was conceived at a national workshop in 1980 and adopted in 1982. For rural areas the objective was to supply 10 lcd by 1985 and 25 lcd by 1990. For urban areas, the goal was 120 lcd in Ouagadougou, the capital, and 50 to 70 lcd in smaller towns.

Water supply, sanitation, and health continue to be major priorities of the Government of Burkina Faso (GOBF). The current five-year plan (1986-1990) proposes almost to double the existing number of wells in order to raise per capita consumption from a theoretical 10 lcd to 20 lcd as was outlined in the Decade plan. Through large contributions of international donor aid, the number of wells has risen dramatically during the Decade which attests to the GOBF's support for this sector. From the donors' perspective, governmental water and sanitation institutions are seen as relatively sound and capable and therefore deserving of financial and technical assistance.

The large influx of aid to the sector has had some negative aspects, however. There has been such a proliferation of approaches and equipment to the sector from various donors such that there is no established model of development, although the GOBF has generally assigned donors to specific provinces so that there is some provincial consistency. The approach has emphasized quantity rather than quality in terms of water sector development. Recently, the GOBF has proposed a survey of the water sector to determine the actual working condition of wells. At the time of this writing, it was not known if the survey had been carried out.

A major sanitation initiative has also been proposed and is under way at present. Sanitation has been afforded little priority until recently; therefore, this initiative represents a significant and positive change in emphasis.

In 1985, Burkina Faso adopted a rural water operation and maintenance (O&M) policy which was a significant change over past policies. Realizing that the state could no longer cover the cost of O&M, all recurring costs were shifted to the public. Given the large number of water points and the limited government resources, this was a necessary governmental action. Most projects in Burkina Faso now are designed to include a community participation component which assists villages in collecting funds and establishing an O&M plan.

The shift to total cost recovery for O&M is further evidence of sound policy in the sector. More emphasis will be required in the future, however, of providing education to beneficiaries on how to approach the responsibilities given them. Education is needed in community organization, cost recovery, maintenance plans, and hygiene.

The GOBF has also conducted a campaign to establish a primary health post in every village. The purpose of the posts were to provide basic health care, dispense medicines, and give health advice to the local communities. This campaign was begun in 1985 and achieved notable success during its debut.

Staff shortages in the water supply and sanitation sector are considered to be a constraint to development. While notably competent, only about one third of the 250 personnel have received technical training.

#### **4. Sector Administration**

The Ministry of Water was created in 1983 after a major reorganization. The Ministry has a Department for Wells and Boreholes; a Department of Studies, Planning, and Inspection; and the National Dam and Hydro-Agriculture Office reside within this ministry. The minister of water is also the president of the national water office, which is chiefly responsible for urban supply.

The principal offices concerned with water supply and sanitation are as follows:

Office National des Puits et Forages, Ministere de l'Eau, BP 7025, Ouagadougou, Burkina Faso, Telephone: 30 80 35

Office National des Barrages et Amenagement Hydro-Agricole (ONBAH), Ministere de l'Eau, BP 7030, Ouagadougou, Telephone: 33 48 25.

Fonds de l'Eau et de l'Equipment Rural (FEER), Ministere de l'Eau, BP 7030, Ouagadougou, Telephone: 33 65 95.

Ministere de la Sante Publique, BP 7009, Ouagadougou, Telephone: 33 20 39

Direction de l'Education pour la Sante et l'Assainissement Ministere de la Sante et de l'Action Sociale, BP 2519, Ouagadougou, Telephone: 30 68 22

Ministere de l'Agriculture et de L'Elevage (Amenagement des Vallees des Voltas), BP 7005, Ouagadougou, Telephone: 33 31 44.

Office National de l'Eau et de l'Assainissement, BP 170, Ouagadougou, Telephone: 33 47 23, Telex: 5226.

Two nongovernment organizations located in Ouagadougou deserve mention as important regional institutions in the sector. The Interafrican Committee for Hydraulic Studies and the Interstate School for Rural Engineering both conduct significant research in the sector and provide positive contributions to Burkina Faso.

## 5. Water Sector Studies

The following studies provide recent information on the water sector:

GTZ, Resume et Commentaries Concernant le Plan de Developpement (Decennial) du Secteur Approvisionnement en Eau Potable et Assainissement, Mars 1984.

GOBF, Decade Plan for Water and Sanitation Sector of Burkina Faso, December 1982.

GOBF, Direction des Etudes, Planification et Controle. Situation des Programmes d' Approvisionnement en Eau des Zones Rurales au Burkina Faso. (1986)

UNICEF, Situation Analysis for Women and Children, Dec. 1986.

WASH, Final Evaluation USAID/Burkina Faso Rural Water Supply Project, Field Report No. 191, 1986.

## 6. Past Investments in the Sector

Investments in the sector have come from almost all the international donors. Donors include France, Germany, the Netherlands, Italy, Canada, UNDP, the World Bank, and the European Development Fund as well as several nongovernmental organizations. France has been and continues to be the major overall donor in all sectors, including water supply and sanitation. At present GTZ is providing institutional support to the GOBF, an important area and one in which assistance is needed.

USAID financed a successful project in Southwestern Burkina Faso (Burkina Faso Rural Water Supply Project - 686-0228) which was conducted from 1979 to 1987. The USAID contribution was \$13.5 million and resulted in the completion of 684 wells serving about 171,000 rural people.

The Peace Corps conducted a wells program throughout its 20 year existence in Burkina Faso until its departure in 1987.

During the recent drought emergency of 1986-1987, the OFDA provided financial assistance for the water supply of Ouagadougou and for private voluntary organization rural programs totaling \$2 million.

Overall investments in the water and sanitation sector for Burkina Faso were not available for this report.

## 7. Proposed Investments in the Sector

Proposed investments in the sector, according to WHO Country External Support Information, include the following:

|             |  | <u>\$ (000)</u> |
|-------------|--|-----------------|
| France      | Hydraulique Villageoise Sahel                | \$?             |
| Germany GTZ | Training of ONEA Personnel                   | \$3,732         |
| UNCDF       | Village Water Supply - Ouatigonya            | \$ 235          |
| UNDP        | Studies for Bagre Day                        | \$ 640          |
| UNICEF      | Water/Women Participation in Food Production | \$2,600         |

USAID has no plans at present for water sector programs.

## 8. Health Indicators

Burkina Faso has one of the highest infant mortalities in the world at 143/1,000, although it has been reduced somewhat from the late 1970s. There is a significant difference between rural and urban infant mortality rates. According to "La Lutte Contra la Mort" (edit. J. Vallin, PUF 1985), rural mortality is almost double the urban rate.

Field studies in Burkina Faso have shown that diarrheal diseases are the fifth leading cause of death among the total population after spinal meningitis, malaria, measles, and tetanus. The incidence of diarrheal diseases reported to clinics is second only to malaria.

Epidemiological studies indicated a large increase in diarrheal diseases among infants from 74,970 cases in 1980 to 194,832 cases in 1984. This, according to UNICEF, suggests a general degradation in the environmental quality of life, particularly in hygiene and nutrition in recent years. In poor areas, infants contract diarrhea an average of six times per year. The highest rates are during the rainy season when unimproved water sources are of the poorest quality.

Onchocerciasis (river blindness) is being eradicated in the southern areas of Burkina Faso and migration to these areas is planned. Improved water supplies for the settlers continues to be a health concern.

## 9. Privatization

Although the Government maintains a large capacity in water supply construction (10 drilling rigs and 11 well construction brigades), significant construction work is contracted to the private sector. Burkina Faso generally has maintained strong trade unions which represent a variety of entrepreneurial skills. Private-sector well-drilling firms are represented in Burkina Faso and are often contracted for specific assignments. Larger urban projects are typically conducted by international firms with local partnerships.

The shift in O&M responsibilities to the private sector (communities) has been previously mentioned. A system of private rural artisans has been established as a national policy to provide regional repair services. Spare parts are distributed, however, through government-owned stores.

#### **10. Recommendations for USAID**

Given the continued large water supply and sanitation investment needs and the past successes USAID has achieved in this sector, it is recommended that USAID explore renewed investments. Health education and sanitation, along with water supply, are particularly promising areas of need. Combining these components with on-going child survival initiatives appears to be a natural mix.

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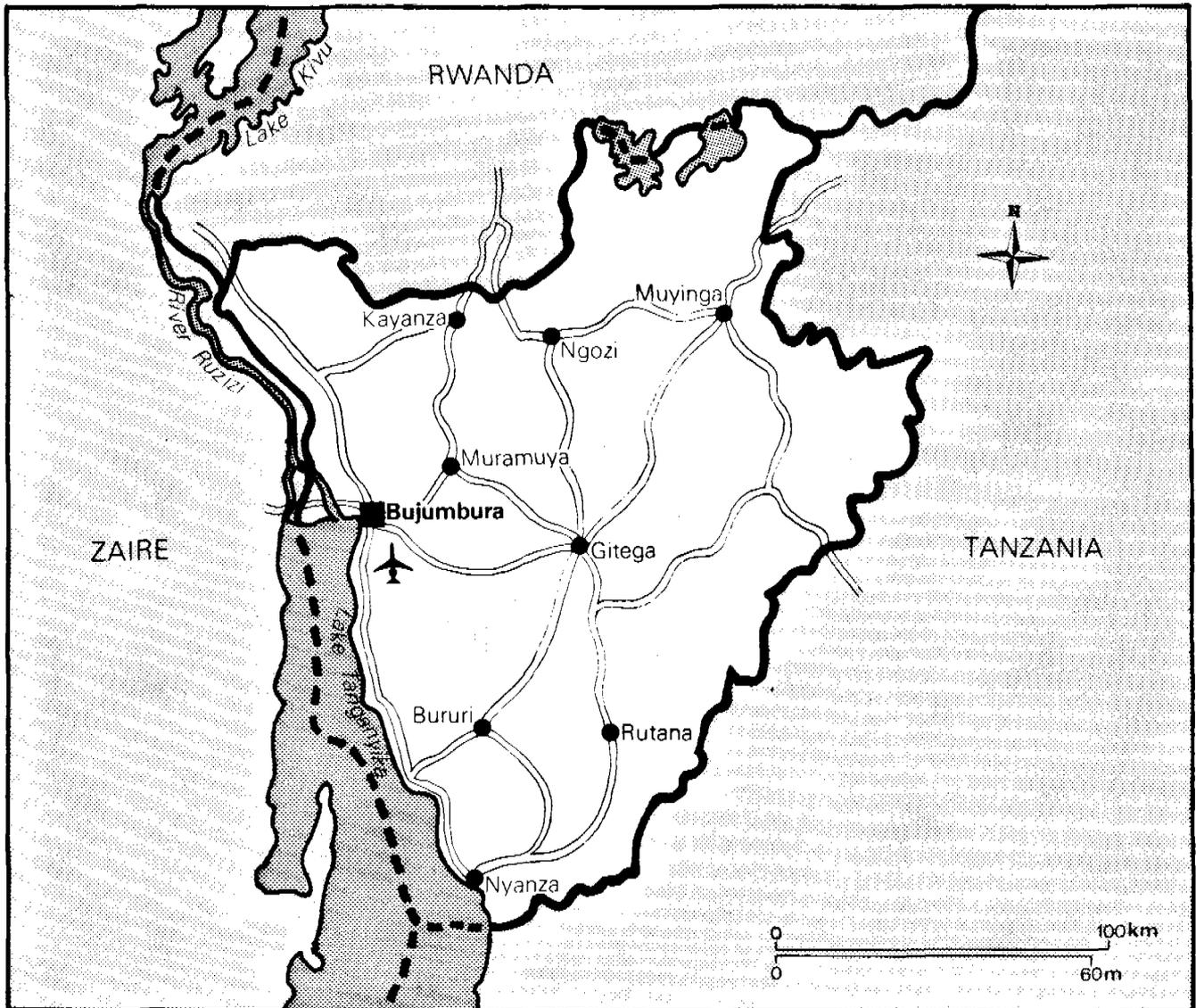
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Roark, Philip, et al., Final Evaluation USAID/Burkina Faso Rural Water Supply Project, WASH Field Report No. 191, 1986.

UNICEF, Situation Analysis for Women and Children, December 1986.

BURUNDI



# BURUNDI

**Population:** 5.2 M (Urban 6%, Rural 94%)

**Population Growth Rate:** 2.9% per year (Urban 2.7%)

**GNP Per Capita:** US \$230

**Adult Literacy:** 25%

**Life Expectancy:** 48 years (Male 46, Female 50)

**Infant Mortality (under 1 year):** 117 per 1,000 births

**Child Mortality (under 5 years):** 200 per 1,000 births

**Status of Decade/Sector Plan:**  
Completed in 1984

## Water and Sanitation Agencies:

REGIDESO (Water Services),  
Ministry of Public Works, Energy,  
and Mines

Departement d'Hydraulique et de  
l'Electrification Rurales (DHER),  
Ministry of Rural Development

Ministere de la Sante Publique

Secretariat Permanent du Comite  
Nationale de l'Eau (SPCNE)

set in the Action Plan were modest. But, according to the mid-Decade data, these modest targets were raised to what seems to be an unrealistically high level, given past yearly investments in the water and sanitation sector.

According to the 1985 Decade update, Burundi had achieved 98% water supply coverage in urban areas and 21% in rural areas. In sanitation, coverage was given as 84% in urban areas and 56% in rural areas. However, the 1984 Action Plan stressed that most statistics on coverage (especially rural coverage) were just rough estimates and pointed out that many rural water supplies were not functioning properly.

In 1985 Burundi reported its Decade targets for 1990 as 96% for urban water and 100% for urban sanitation. Given the large expenditures in urban areas and the progress registered there, these goals seem fairly realistic. However, the rural targets are less realistic. The 90% coverage goal for rural water means that almost 4.5 million more rural people will have to be supplied with water in a five year period. The 70% rural sanitation goal is similarly unrealistic, given the Government's own observation that rural sanitation has not been a high priority matter and that rural sanitation is only rudimentary.

Burundi is favored by nature with an abundance of surface water sources and springs. Per capita costs for water supplies in rural areas are generally low because many projects apparently concentrate on spring capping. However, many capped springs or protected sources are not well maintained and so the quality of water available is poor. In addition, many of the unimproved sources are polluted. This results in a high rate of water-related disease in Burundi. It is estimated that 70% of endemic diseases are water-related.

According to the calculation of Table 1, an investment of \$330 million will be required to meet the Decade goals. That is a huge sum and it is out of proportion to what funds Burundi could reasonably expect to obtain and use effectively. The first task should be to concentrate on institution building and the development of human resources.

It should be noted that WASH has recently received a copy of the Preparatory Document for the Second National Workshop for the Water Decade. This document contains updated information on the WSS sector but was, unfortunately, received too late to incorporate into this profile.

## Decade Progress

Burundi's chief problem seems to be the weakness of its water and sanitation agencies, especially those responsible for rural areas. One symptom of this weakness is the unavailability of any full-fledged sector studies. The closest thing to a comprehensive treatment of the sector is the country's Decade Action Plan.

This plan, completed in 1984, stated that all projections had to be very tentative because reliable basic data were not available. It cautioned that Burundi would have to move slowly and carefully in the sector and avoid straining the institutions with projects for which they lacked the funds, the expertise, the necessary equipment, and trained personnel. The Decade targets

TABLE 1  
INVESTMENT REQUIREMENTS  
BURUNDI

| ESTIMATED COVERAGE<br>COSTS AND POPULATION | URBAN |            | RURAL |            | TOTALS |
|--|-------|------------|-------|------------|--------|
|  | WATER | SANITATION | WATER | SANITATION |        |
| Population Served 1988                     | 0.3   | 0.3        | 1.0   | 2.7        |        |
| Coverage Target 2000                       | 0.4   | 0.4        | 6.2   | 4.8        |        |
| Shortfall/Unservd                          | 0.1   | 0.1        | 5.2   | 2.1        |        |
| Cost (US \$)                               | 6.0   | 10.0       | 104.0 | 210.0      | 330.0  |
| Proposed Investment                        |       |            |       |            |        |
| Net Shortfall                              |       |            |       |            |        |

1 Population and costs in millions.

2 Assume population 1988 .3M urban, 4.9M rural; year 2000 .4M urban, 6.9M rural. Assume urban growth rate of 2.7%.

3 Assume % access to water supply 1988 98% urban, 21% rural; year 2000 98% urban, 90% rural.

4 Assume % access to sanitation 1988 84% urban, 56% rural; year 2000 100% urban, 70% rural.

5 Assume per capita cost urban water supply \$60, sanitation \$175; rural water supply \$20, sanitation \$100.

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## COUNTRY PROFILE: BURUNDI

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### 1. Population

The population of Burundi is still largely rural and will stay that way for the foreseeable future. The capital, Bujumbura, with a population of about 200,000, and Gitega are the only large towns.

Also, the population is growing moderately fast--2.9% per year. Unless the growth rate slows some, Burundi's development problems will probably accentuate. The country has the second highest population density in Africa, 185 persons per square kilometer.

Burundi is largely agricultural; 90% of the population works in that sector. However, advances in agriculture, and the increased resources that they would bring to the Government, are limited by the lack of cultivable land, rapid population growth, and high population density.

Table 2  
Past, Present, and Projected Population  
(in millions)

|      | <u>Total</u> | <u>Urban</u> | <u>Rural</u> |
|------|--------------|--------------|--------------|
| 1980 | 4.2          | .2 (5%)      | 4.0 (95%)    |
| 1988 | 5.2          | .3 (6%)      | 4.9 (94%)    |
| 2000 | 7.3          | .4 (5%)      | 6.9 (95%)    |

Source: U.S. Bureau of the Census.

### 2. Coverage Data

The 1985 mid-Decade report stated that according to Government of Burundi estimates 74% of the people in Burundi were without a convenient source of clean water and 42% were without sanitation. Basic data on coverage is given in Table 3.

The figures in the table are probably based on rough estimates and are likely on the high side for sanitation. According to the report on the WHO-SRHDO Inter-Agency Round Table on Water Supply and Sanitation--Eastern and Southern Africa, November 1988,

water coverage at the end of 1987 was 52-95% in urban areas and 32% in rural areas. For sanitation, precise figures were given only for Bujumbura: 10% covered by sewage systems and 80% by excreta disposal facilities. Coverage in other urban areas is much lower, and in rural areas little has been done, according to this report. The Government of Burundi's 1984 Sector/Decade Plan gives coverage figures for 1983 as follows:

| WATER        |              | SANITATION   |              |
|--------------|--------------|--------------|--------------|
| <u>Urban</u> | <u>Rural</u> | <u>Urban</u> | <u>Rural</u> |
| 80-90%       | 15%          | 20%          | 30-50%       |

The plan points out that the low rate for rural water is due to the large number of supplies that are not functioning. If all supplies were functioning, rural coverage would have been about 30%. Also, urban systems are not being maintained properly, according to a World Bank report.

TABLE 3

WATER AND SANITATION COVERAGE FOR 1980 AND 1988  
AND TARGETS FOR 2000  
(in percents)

BURUNDI

| YEAR | WATER |       | SANITATION |       |
|------|-------|-------|------------|-------|
|      | URBAN | RURAL | URBAN      | RURAL |
| 1980 | 90    | 20    | 40         | 35    |
| 1988 | 98    | 21    | 84         | 56    |
| 2000 | 96    | 90    | 100        | 70    |

SOURCE: W.H.O. IDWSSD Review of Mid-Decade Progress

### 3. Decade/Sector Action Plan

In January 1982, Burundi held its first national workshop for the Water Supply and Sanitation Decade. This led to the formation of a National Action Committee (Le Comite National de l'Eau) composed of representatives from concerned government agencies, and a Permanent Secretariat of Water (Secretariat Permanent du Comite National de l'Eau). The committee is responsible for setting sector strategy, the secretariat for coordinating activities. Apparently neither the committee nor the secretariat has been very active.

The coverage objectives set by the workshop are given in Table 4. The investment to reach these goals (1983-1992) was estimated at \$160 million. (It should be noted that 75% of the estimated investment was for urban projects, even though the country is primarily rural. Also, based on past Government investments in the sector, this projected estimate was not realistic. In the 1978-1983 period, according to Government reports, \$30.5 million, or \$6 million per year, was invested.)

The plan devised by the workshop was not adopted, but it did provide basic elements for sectoral planning within the Fourth (1983-1987) and Fifth (1988-1992) Five-Year Plans.

Burundi's Decade Action Plan was completed in 1984. The overall goal was to reduce socioeconomic and regional inequities, to strike an appropriate balance between water and sanitation, and to reduce water-related diseases. (The targets set are given in Table 4.) The investment needed to reach goals through 1990 was estimated as follows:

|                          |                 |
|--------------------------|-----------------|
| urban water              | \$64.4 million  |
| rural water              | 68.0            |
| urban sanitation         | 34.3            |
| training                 | 3.2             |
| hygiene education        | 3.5             |
| water quality monitoring | .3              |
| Total                    | \$173.7 million |

Ninety-five percent of this was to be financed from external sources. In rural areas, community participation was intended to cover up to 10 or 15% of the cost of a project.

Like the 1982 workshop plan, this plan also emphasized urban areas and set levels of expenditure that seem unrealistic. Of the \$173.7 million, \$98.3 or 57% is for urban water supply and sanitation.

The coverage targets given in the 1984 Action Plan are not the same as those given in the 1987 Decade Directory information on Burundi, as shown in Table 4. Apparently, the targets have been revised as planning has gone forward. The 1987 Decade information states that there is no estimate available of the investment required to meet Decade targets; however, sector investments 1981-1985 totaled \$42.32 million.

Table 4

Evolution of Decade Goals

|  |      | WATER        |              | SANITATION   |              |
|--|------|--------------|--------------|--------------|--------------|
|  |      | <u>Urban</u> | <u>Rural</u> | <u>Urban</u> | <u>Rural</u> |
| 1982 Decade workshop                         |      |              |              |              |              |
|  | 1987 | 95           | 40           | 65           | 50           |
|  | 1992 | 98           | 50           | 80           | 85           |
| 1984 Plan                                    |      |              |              |              |              |
|  | 1987 | 94           | 44           | 30           | 40           |
|  | 1990 | 98           | 50           | 65           | 60           |
| 1985 Decade Update and 1987 Decade Directory |      |              |              |              |              |
|  | 1990 | 96           | 90           | 100          | 70           |

Comparing the 1990 targets with the conservative coverage figures from the 1984 Action Plan reveals a very large gap, especially in rural water supply.

|               |  | WATER        |              | SANITATION   |              |
|---------------|--|--------------|--------------|--------------|--------------|
|               |  | <u>Urban</u> | <u>Rural</u> | <u>Urban</u> | <u>Rural</u> |
| 1983 coverage |  | 80-90        | 15           | 20           | 30-50        |
| 1990 targets  |  | 96           | 90           | 100          | 70           |

Burundi faces very serious problems in the sector. Progress is constrained by a lack of funds and by a severe shortage of qualified staff that leads to inadequate planning and project selection, poor supervision, and lack of decision-making capacity on organizational and cost-recovery matters.

The 1984 Action Plan, which is very explicit about these constraints, points out that

- ◆ a great deal of information and statistics on population, water and sanitation coverage and investments, health education, and basic socioeconomic indicators is unreliable and based on estimates,
- ◆ the goals are largely a reflection of the Government's wishes and, given the weakness of sector institutions, can probably be about 70% realized, and
- ◆ sector institutions are so weak, especially those responsible for rural programs, that donors must seriously consider whether or not the institutions can actually carry out given projects.

The following priority projects were given:

- |  |                |
|--|----------------|
| ◆ Gravity water supply and sanitation for 30 villages.   | \$ 3.0 million |
| ◆ Capping 3,000 springs in rural areas   | 2.6 million    |
| ◆ In-depth feasibility study for water supply in the Kirundo and Mosso regions and construction of feasible system | 2.6 million    |
| ◆ Hygiene education in public schools  | 1.1 million    |
| ◆ Sanitation in five Bujumbura districts   | 3.3 million    |
| ◆ Sanitary sewers for Bujumbura  | 14.0 million   |
| ◆ Construction of improved latrines in Bujumbura   | .66 million    |

In 1987, it was proposed that a Second Workshop on Water and Sanitation in Burundi be held to evaluate the situation and set new goals for the year 2000. WASH has recently received a copy of the Preparatory Document for the Second National Workshop for the Water Decade. Unfortunately, the document was received too late to incorporate any of its data into this profile.

#### 4. Sector Administration

Responsibility for urban water supply is in the hands of REGIDESO, a governmental corporation that operates under the Ministry of Public Works, Energy, and Mines. This agency is well established and operates effectively.

Rural water supply is in the hands of the Department d'Hydraulique et de l'Electrification Rurales (DHER) in the Ministry of Rural Development. This department was established in 1979 and is very limited in its capacity by a lack of funds, personnel, and equipment.

Originally REGIDESO was also responsible for sanitation in Bujumbura, but in 1983 an autonomous corporation, Services Techniques Municipaux, was set up to handle urban sanitation and other technical matters. At present this service is active only in Bujumbura, but eventually it is to extend its services to 15 provincial towns.

The Ministry of Health is responsible for hygiene education and for monitoring water quality. So far, however, the ministry lacks the equipment to carry out its water monitoring activities.

As mentioned in Section 3, a National Water Committee and a Water Secretariat were set up at the beginning of the Decade to set strategy for the sector and coordinate activities.

## 5. Water Sector Studies

No studies are available.

## 6. Past Investments in the Sector

Investments from bilateral and multilateral donors in the period of the Decade (approximately 1979 to the present) according to WHO Country External Support Information for September 18, 1988, are given in Table 5.

Table 5

Past and Current Investments  
(in US \$ millions)

|                          |        |
|--------------------------|--------|
| European Community (EEC) | 24.000 |
| German(KFW)              | 16.783 |
| AfricanDevelopmentFund   | 12.198 |
| France                   | 11.175 |
| WorldBank/IDA            | 9.500  |
| German                   | 6.058  |
| OPEC                     | 5.720  |
| UNCDF                    | .691   |
| Total                    | 86.455 |

Other documents consulted named donors not included in the WHO list: UNICEF, WHO, the Arab Development Bank for Africa, Luxembourg, Canada, and Australia. Therefore, this total investment is probably an underestimation.

No up-to-date figures are available on the Government of Burundi investment in water and sanitation during the Decade. However, from 1981 to 1985, a total of \$42.32 million was spent, 83% funded externally. Therefore, the yearly investment in water and sanitation on the part of the Government was approximately \$1.5 million.

## **7. Proposed Investments in the Sector**

Outside of a large World Bank/IDA project (\$13,600,000), few investments are proposed: UNCDF (\$1,250,000), UNDP/FENU (\$635,000), and WHO (\$190,000 biennially). The World Bank project is to rehabilitate or construct about 40 water supply systems in rural areas. The UNCDF project is to construct rural water boreholes in the eastern region to supply water to 30,000 people.

There are no figures available on the investment the Government of Burundi plans to make in water and sanitation. However, indications are that Government resources are very limited. In addition, there is no organized effort to institute a general cost-recovery policy, and there are problems with the cost-recovery systems now in place. A tariff is now charged for urban water, but it is too low at present, 25 Burundi francs per cubic meter, compared with a cost to the Government of 30 francs or more. Water supplied in public standpipes in urban areas is metered and billed to the municipalities, but they lack funds and are unable to pay. Considerable arrearages have accumulated. In rural areas there are no arrangements for cost recovery.

## **8. Health Indicators**

The Government of Burundi reported in 1985 that the waterborne disease rate was 20,000 per 100,000 population. The 1984 Action Plan states that an estimated 70% of all endemic diseases recorded are water-related. While Burundi is blessed with an abundance of springs and surface water sources, the water quality is doubtful for many of these because many sources are unprotected or polluted.

The incidence of major diseases is shown in Table 6.

Table 6

1980 Morbidity and Mortality Rates  
for Water-Related Diseases

| Diseases             | Morbidity | Mortality |
|----------------------|-----------|-----------|
| cholera              | 63        | 3         |
| bacillary dysentery  | -         | -         |
| malaria              | 64,279    | 43        |
| schistosomiasis      | 647       | -         |
| polio                | 29        | 1         |
| amebiasis            | 7,894     | 7         |
| ankylosis            | 47,846    | 1         |
| infectious hepatitis | 3,546     | 13        |
| filariasis           | 202       | -         |
| typhoid              | 18        | 5         |
| gastroenteritis      | 19,975    | 63        |

Sanitary conditions vary in Burundi. In the Imbo region, water and sanitation are not well developed, whereas on the plateau many of the water sources are more or less maintained. (However, there are no sanitary facilities.) Accordingly, on the Imbo plain malaria and schistosomiasis are common along with intestinal parasites and dysentery transmitted by polluted water. The 1978 cholera epidemic, which affected 600,000 and resulted in 250 deaths, was less severe in the plateau region.

Burundi is a very poor country and nutritional disease is a commonplace problem.

### 9. Privatization

In 1986 Burundi became one of the first countries to participate in an IMF/WB program to restore short-term financing stability while addressing structural reforms. In the context of this program, Burundi has adopted policy reforms to limit expenditures for civil service and infrastructure and to rehabilitate or privatize certain parastatals and liquidate others. This program is apparently very successful.

In September 1987 a non-violent military coup brought in a new government which seems to be less repressive from a human rights point of view, more Western, and more open-market oriented.

## 10. Recommendations for USAID

During the Decade, USAID has funded only one small project in Burundi, a \$330,000 spring capping project with UNICEF. In addition there is a continuing child survival project there with some water and sanitation components. This is also a modest effort; \$110,000 is allocated for 1989. No water and sanitation projects are planned, the USAID effort concentrating instead on helping Burundi to develop its agriculture.

Burundi has large needs in the rural areas in both water and sanitation; however, institutional strengthening is a prerequisite. Policy, institutional reform, and training are subsectors that should be considered within the water and sanitation sector as a first priority by USAID.

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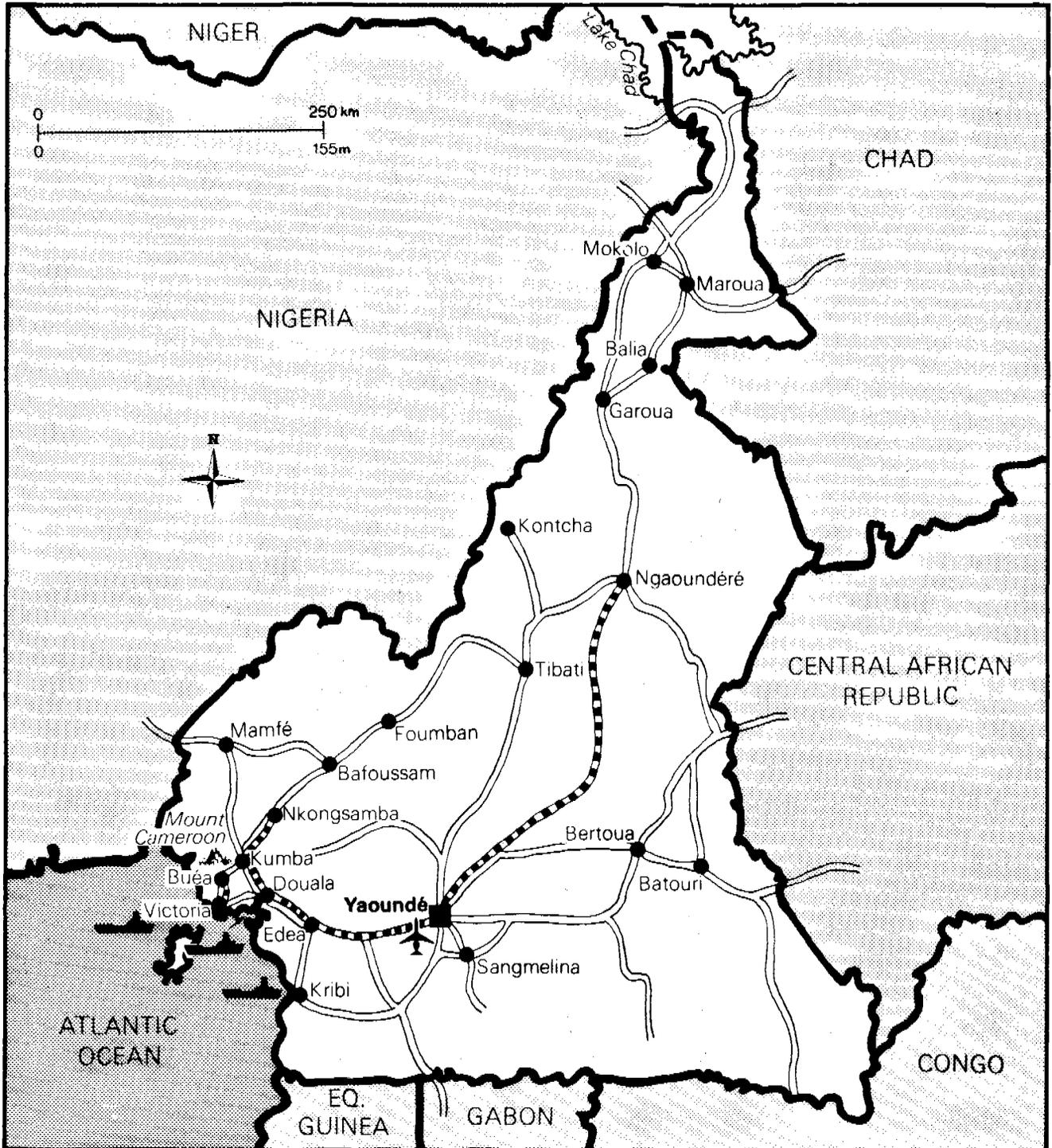
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CAMEROON



# CAMEROON

**Population:** Total 10.5 M (Urban 42%, Rural 58%)

**Population Growth Rate:** 2.6% per year (Urban 7%)

**GNP Per Capita:** US \$910

**Literacy Rate:** Total 47% (Male 59%, Female 36%)

**Life Expectancy:** 49 years (Male 47, Female 51)

**Infant Mortality (under 1 year):** 96 per 1,000 births

**Child Mortality (under 5 years):** 162 per 1,000 births

**Status of Decade/Sector Plan:** No plan

## Water and Sanitation Agencies:

Direction de l'Eau et de l'Energie  
(Ministry of Mines and Power - MINMEM)

National Water Corporation (SNEC)

Mission d'Aménagement et  
Equipement Terrains Urbain et  
Ruraux (MAETUR)

Ministere Urbanisme de l'Habitat  
(MINUH/DU)

Rural Works Department (GR)

Ministry of Agriculture (MINAGR)  
- Department of Community  
Development (DDC)  
- National Rural Development Fund  
(FONADER)

Groundwater Project (PES)  
(MINMEM)

Ministry of Health

Ministry of Planning and Regional  
Development (MINPAT)

supply has come from the World Bank, USAID, UNICEF, UNDP, WHO, Canada, Denmark, EDF, and various nongovernmental organizations.

The WHO Rapid Sector Assessment of 1979 estimated that approximately 35% of the urban population and 22% of the rural population had access to a safe water supply. No figures were given for urban and rural sanitation coverage except to note that no sewer network existed. The IDWSSD Review of Mid-Decade Progress 1987 indicated that in 1985, 43% of the urban population had access to water and 100% to sanitation while 24% of the rural population had access to water supply and less than 2% had access to sanitation. UNICEF, in its Rural Water Supply and Sanitation Program 1986-1991, and the Government of Cameroon in a 1986 seminar on rural water supply in Abidjan both indicated that by mid-1986 over 50% of the rural water supply requirements had been met as some 7,000 water points had been constructed. IDWSSD targets initially set for 1990 were water supply coverage for 69% of the urban population and 100% of the rural population and sanitation coverage for 100% of both urban and rural populations. It appears that the year 2000 may be a more realistic target date, although the targets are probably too ambitious even for then.

A number of issues face the rural water sector. Institutional responsibilities are split among several ministries. In addition a comprehensive sector development strategy is needed,

along with policies on cost recovery and involving local communities financially and otherwise in sector activities.

Although no formal Decade plan exists, the Government seems to have accepted the goals and objectives of the Decade and has set forth its own targets. Beyond the coverage targets already mentioned, the Government has established a National Water Committee which will help plan, coordinate, and supervise all future water supply interventions.

In 1980, it was estimated that \$1.0 billion would be required to meet the ambitious targets set for the IDWSSD in Cameroon. Few conclusive figures are available for sector investment to date, compared with the original estimates. The WHO Rapid Sector Assessment 1979 estimates an investment of \$107.7 million for urban water supply in 64 urban centers plus the two major cities, Douala and Yaounde. The IDWSSD Review of Mid-Decade Progress gives a unit construction cost per capita for urban water supply of \$150 and \$80 for rural water supply in 1985. Given the different technical solutions being implemented in the various regions, per capita unit construction costs for rural water supply are difficult to determine.

The rapid rate of utilization will present difficulties for Cameroon in the years ahead as it tries to meet its ambitious Decade goals. Between 1988 and the end of the century the urban population is likely to double.

TABLE 1  
INVESTMENT REQUIREMENTS  
CAMEROON

| ESTIMATED COVERAGE<br>COSTS AND POPULATION | URBAN |            | RURAL |            | TOTALS |
|--|-------|------------|-------|------------|--------|
|  | WATER | SANITATION | WATER | SANITATION |        |
| Population Served 1988 *                   | 1.9   | 4.4        | 3.1   | 0.1        |        |
| Coverage Target 2000                       | 6.8   | 9.9        | 4.6   | 4.6        |        |
| Shortfall/Unserved                         | 4.9   | 5.5        | 1.5   | 4.5        |        |
| Cost (US \$)                               | 741.0 | 671.0      | 120.0 | 167.0      | 1699.0 |
| Proposed Investment                        |       |            |       |            |        |
| Net Shortfall                              |       |            |       |            |        |

1 Population and costs in millions.

2 Assume 1988 population 4.4M urban, 6.1M rural; year 2000 9.9M urban, 4.6M rural.

3 Assume urban growth rate of 7%.

4 Assume % access to water supply 1988 43% urban, 50% rural; 2000 69% urban, 100% rural.

5 Assume % access to sanitation 1988 100% urban, 2% rural; 2000 100% urban, 100% rural.

6 Assume per capita cost urban water supply \$150, sanitation \$122; rural water supply \$80, sanitation \$37. (Based on IDWSSD figures for water supply and country averages for sanitation.)

## Decade Progress

Donor support to the urban water supply and sanitation sector has come largely through the World Bank, Italy, France, Belgium, the Federal Republic of Germany, and the African Development Bank, as well as from the national budget. Support to rural water

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## COUNTRY PROFILE: CAMEROON

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### 1. Population

Population data were taken primarily from the U.S. Bureau of the Census, World Population Profile 1987. Complementary data were taken from the World Development Report 1988.

The U.S. Bureau of the Census indicates that the population of Cameroon was 8.6 million in 1980 and 10.5 million in 1988. It projects a population of 11.1 million in 1990 and 14.5 million by the year 2000. The overall population growth rate in 1987 was estimated to be 2.6%, but the annual growth rate in urban areas is 7%, according to a 1985 estimate. Both the Bureau of the Census and the World Development Report 1988 agree that currently 42% of the population is urban. The World Development Report indicates that this is up from 16% in 1965. Population data 1980-2000 is shown in Table 2.

Table 2

Past, Present, and Projected Population  
(in millions)

|      | Total | Urban      | Rural     |
|------|-------|------------|-----------|
| 1980 | 8.6   | ?          | ?         |
| 1988 | 10.5  | 4.4 (42%)  | 6.1 (58%) |
| 2000 | 14.5  | 9.9% (68%) | 4.6 (32%) |

\* Based on a 7% growth rate in urban areas.  
Source: U.S. Bureau of the Census

### 2. Coverage Data

The WHO Rapid Sector Assessment 1989 indicated that in 1980 35% of the urban population and 22% of the rural population had access to water supply. No figures were given for urban and rural sanitation.

The IDWSSD Review of Mid-Decade Progress 1987 indicated that by 1985, about 43% of the urban population had access to water supply. Sewer connections went from none in 1980 to serving 100,000 people in 1985. It is estimated that 200,000 will be served by 1990. Taking into consideration all excreta disposal units, it was estimated that 100% of the urban population had access to sanitation facilities. Rural water supply coverage was estimated at 24% and rural sanitation coverage at less than 2%.

The "UNICEF Rural Water Supply Program 1986-1991, Plan of Operations" and the government of Cameroon "Systems D'Approvisionnement en Eau Potable en Milieu Rural October 1986" indicate that through 1986, approximately 7,000 water points in the rural areas had been constructed in villages of over 300 population. This represents over 50% coverage of the target rural population.

Decade coverage goals set for 1990 are to provide water supplies to 69% of the urban population and 100% of the rural population while providing sanitation facilities to 100% of both urban and rural populations.

The current program for the rural water supply sector calls for the construction of 17,000 water points by the year 2000. Given that 7,000 have been constructed, 10,000 additional units remain to be provided. This will not cover villages with fewer than 300 people or the rehabilitation of old wells. It also appears unlikely that sanitation targets will be met by 1990.

Urban sanitation needs are being addressed in secondary towns with assistance from Germany, the national budget, World Bank Urban Development Projects, and other donors. A new sanitation development program will incorporate sanitation activities into past, on-going, and future urban development projects supported primarily by the World Bank, UNDP, Germany, and Switzerland.

TABLE 3

WATER AND SANITATION COVERAGE FOR 1980 AND 1988  
AND TARGETS FOR 2000  
(in percents)

CAMEROON

| YEAR | WATER |       | SANITATION |       |
|------|-------|-------|------------|-------|
|      | URBAN | RURAL | URBAN      | RURAL |
| 1980 | 35    | 22    | N/A        | N/A   |
| 1988 | 43    | 50    | 100        | 2     |
| 2000 | 69    | 100   | 100        | 100   |

SOURCE: W.H.O. IDWSSD Review of Mid-Decade Progress

### 3. Decade/Sector Action Plan

The IDWSSD Review of Mid-Decade Progress indicates that no Decade action plan has officially been prepared. However, indications are that the Government of Cameroon accepts the goals and objectives of the Decade. According to the UNDP/World Bank Country and Global Work Plan 1988-1990, the Government has set Decade coverage targets for 1990, including the following:

"(a) urban water supply: piped water systems in all administrative centers; (b) rural water supply: at least one well or other potable water source per 500 people; (c) urban sanitation: a mix of technologies with an optimum level of service for permanent structures and other households in peri-urban areas; (d) sanitary latrines for rural households."

The National Water Committee was established in 1975 by a presidential decree. It is an interministerial body which includes the relevant government agencies involved in the sector. Its objectives are to prepare a national plan for water resources development; develop water policies, codes, standards, etc.; consider taxation, user fees, cost recovery issues, etc.; and coordinate all new programs planned in the sector. Its initial tasks include developing a master plan for water supply in towns and villages as well as developing a comprehensive work program.

Sectoral issues that were to be addressed during the period 1976-1986 included defining sector objectives, providing adequate institutional arrangements, carrying out relevant pre-investment studies, revising tariffs, and improving conditions of service for staff.

In rural areas, the Government's program gives priority to the most severely affected northern areas and settlement areas of the west. The policy is to provide one water point for every 300-500 people in the rural sector. In addition the Government has agreed to the principle that beneficiaries should participate in rural water supply and oversee implementation of operation and maintenance.

Rural water supply, although enjoying a relatively high level of coverage, faces a number of constraints. As will be explained in Section 4, institutional responsibilities have been split among a number of ministries and agencies. This increases duplication of efforts and makes standardization and national sector policies difficult to establish and implement. The Ministry of Agriculture, through its Rural Works Department (GR), Department of Community Development (DDC), and the National Rural Development Fund (FONADER) and the Ministry of Mines and Power through its Groundwater Project (PES) are implementing rural water supply projects in the same regions, but they are not coordinated. Other issues facing this sub-sector are to establish and implement policies aimed at gaining community participation in cost recovery elements of the program, specifically, initial sharing of operation and maintenance costs with government. Additionally, a comprehensive sector development strategy needs to be prepared. Renewed emphasis and resources will have to be placed on water quality and sanitation issues if the ambitious target of 100% coverage is to be achieved.

The Government of Cameroon defines as "urban" towns larger than 3,000, administrative centers, and areas designated for agro-industrial development. Priority for water supply development in urban areas has been given first to provincial headquarters towns, then to divisional headquarters towns, then to cities at the district level, and finally to industry. Sixty-nine percent coverage of urban areas has been set as a goal for 1990.

Urban water supply is institutionally less encumbered than rural water supply. The Ministry of Mines and Power is responsible for construction and the National Water Corporation (SNEC) manages the completed systems. Urban water supply is paid for by the urban population, although as costs to the consumer are generally high, the Government subsidizes a portion of the cost.

#### **4. Sector Administration**

Institutional responsibilities in the water supply and sanitation sector are shared by several ministries and governmental organizations. The Direction de l'Eau et de l'Energie under the Ministry of Mines and Power (MINMEM) has primary responsibility for urban water supply. Once a scheme is constructed, the management and operation becomes the responsibility of the National Water Corporation (SNEC). MINMEM, MAETUR, and MINUH/DU have responsibility for urban sanitation and storm drainage, along with some municipalities. The Rural Works Department (GR), the Department of Community Development (DDC), and the National Rural Development Fund (FONADER) of the Ministry of Agriculture (MINAGR) and the Groundwater Project (PES) of the MINMEM split rural water supply responsibilities. The Ministry of Health has responsibility for rural sanitation and monitoring water quality. The Ministry of Planning and Regional Development (MINPAT) has the responsibility of coordinating the activities and agencies active in the sector.

#### **5. Water Sector Studies**

#### **6. Past Investments in the Sector**

Past sector investment information is incomplete. However, as indicated in Table 4, urban water supply in 64 urban centers plus Douala and Yaounde was estimated in 1979 at 32.3 billion FCFA (\$107.7 million) with a per capita cost of 17,200 FCFA (\$57) in secondary towns and 13,500 FCFA (\$45) in the two major towns. The IDWSSD Review of Mid-Decade Progress 1987 indicates that in 1980 it was estimated that approximately \$1.0 billion would be required to meet Decade targets. No comprehensive figures for the rural sector are available beyond a few totals for specific projects, i.e., World Bank ZAPI \$1.0 million, FSAR I 2 billion FCFA, USAID \$6.7 million, UNICEF \$700,000, etc.

Table 4

## URBAN WATER SUPPLY AND SANITATION DEVELOPMENT

| Projet  | Coopération extérieure | Travail effectué               | Date de mise en service | Population desservie | Coût estimatif FCFA | Coût unitaire FCFA/hab desservi |
|---|------------------------|--------------------------------|-------------------------|----------------------|---------------------|---------------------------------|
| 5 centres   | Italie                 | Construction complétée         | 1977                    | 150 000              | 2 000 000 000       | 13 300                          |
| 8 centres   | RFA                    | Construction en cours          | 1979                    | 195 000              | 6 000 000 000       | 30 800                          |
| 9 centres   | Néant                  | Construction en cours          | 1979                    | 600 000              | 3 500 000 000       | 5 800                           |
| Nokolo*   | FAC                    | Construction en cours          | 1979                    | 30 000               | 2 000 000 000       | (66 700)                        |
| 16 centres  | RFA                    | Etudes de viabilité complétées | 1984                    | 238 000              | 6 000 000 000       | 25 200                          |
| 8 centres   | Belgique               | Projet d'exécution commencé    | 1982                    | 42 000               | 3 000 000 000       | 71 400                          |
| 4 centres   | Néant                  | Etudes de viabilité commencées | 1984                    | 28 000               | 800 000 000         | 28 600                          |
| 13 centres  | Banque mondiale        | Rapport technique complété     | 1984                    | 346 000              | 5 000 000 000       | 14 500                          |
| Sous-total :<br>64 centres                                |                        |                                |                         | 1 629 000            | 28 000 000 000      | 17 200                          |
| Douala + Yaoundé<br>Amélioration des sources et extension | Banque mondiale        | Etudes commencées              | 1982                    | 772 000              | 4 000 000 000       |                                 |
| TOTAL GENERAL   |                        |                                |                         | 2 401 000            | 32 300 000 000      | 13 500                          |

\* Projet à fins multiples

SOURCE: WHO Rapid Sector Assessment 1979.

## **7. Proposed Investments in the Sector**

No comprehensive data were available on proposed investments other than the mention of a couple of specific projects: Second Rural Development Fund Project of the World Bank to invest \$17.0 million for 1,000 boreholes and water supply to the rural areas and the UNICEF Rural Water Supply and Sanitation Program 1986-91 which will invest \$2.1 million.

## **8. Health Indicators**

Tom Franklin, in his 1979 study of rural water supply, cites a 1972 evaluation of a Swiss/SATA rural water supply project which states that "in Cameroon most doctors spend 50% of their time combatting water related diseases." Table 5 shows results of a 1975 World Bank/WHO sector study of water-related disease morbidity 1970-1973. Table 6, taken from the 1978 National Nutritional Survey indicates that 17 to 32% of the surveyed children 3-23 months had been ill with diarrhea or fever the previous week. Dracunculiasis is endemic in parts of Cameroon. In 1986 it was estimated that 13.3% of the rural population lived in areas with known or suspected dracunculiasis transmission. The surveillance and control of this disease is a focus of the Decade. USAID has provided consultants to evaluate the situation and help prepare a national action plan.

Studies are currently under way in Cameroon on schistosomiasis. Results of these and other similar studies and any noted decline in Guinea worm disease in villages where modern rural water supply units have been constructed would be of interest and relevance to the national rural water supply program.

## **9. Privatization**

## **10. Recommendations for USAID**

USAID should consider continued support to the water and sanitation sector in the following areas:

- ◆ Sector studies that would provide critical missing data and that will permit the Government to develop a comprehensive sector development strategy.
- ◆ Support for the National Water Committee to enable it to establish and implement national sector policies.
- ◆ Collaboration with other donors to support rural sanitation and water quality issues, including continued efforts to monitor and control schistosomiasis and dracunculiasis.

- ◆ Assistance to the Government in developing policies and programs to promote greater participation and cost sharing by local communities.
- ◆ Assistance to the Government to develop and promote appropriate low cost technical solutions for water supply and sanitation for urban fringe populations given the large urban population in Cameroon.

**TABLE 5**  
**CAMEROON**

**Water Related Disease Morbidity**

| Disease                | 1970    | 1971   | 1972     | 1973    |
|------------------------|---------|--------|----------|---------|
| Cholera                |         | 2,411  | 362      | 195     |
| Typhoid                | 149     | 81     | 90 *     | 46      |
| Paratyphoid            | 2       | 13     | *        | -       |
| Poliomyelitis          | 51      | 5      | 65 *     | 33      |
| Amoebiasis             | 10,607  | 1,223  | 2,811 *  | 3,302   |
| Bacillary<br>Dysentery | 772     | 321    | 1,441 *  | 2,407   |
| Malaria                | 221,988 | 61,124 | 82,927 * | 111,816 |

\* 10 months

The reliability of the above statistics in giving a true picture of the water related disease morbidity can be assessed by a comparison with figures from the 1978 National Nutrition Survey, which showed that between 17% and 32% of the 3 - 23 month old children surveyed had been ill the previous week and that significant proportions of these had had diarrhea or fever.

**TABLE 6**

**Children 3 - 23 Months Old: Symptoms of the Previous Week**

| Province       | % Sick | % With<br>Diarrhea | % With<br>Fever |
|----------------|--------|--------------------|-----------------|
| Centre South   | 20.1   | 13.0               | 21.9            |
| East           | 17.1   | 16.8               | 16.0            |
| North          | 17.3   | 14.4               | 19.0            |
| North West     | 22.4   | 18.1               | 24.7            |
| West           | 22.8   | 24.0               | 25.1            |
| South West     | 31.8   | 22.4               | 34.4            |
| Littoral       | 17.1   | 11.4               | 10.0            |
| Yaounde/Douala | 22.0   | 16.4               | 24.5            |

**SOURCE:** Cameroon: Rural Water Sector Study, May 1979. Tom Franklin.

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GUINEA



# GUINEA

**Population:** 6.9 M (Urban 22%, Rural 78%)  
**Population Growth Rate:** 2.5% per year (Urban 4.3%)

**GNP Per Capita:** US \$320  
**Adult Literacy:** Total 28% (Male 40%, Female 17%)  
**Life Expectancy:** 41 years (Male 39, Female 43)  
**Infant Mortality (under 1 year):** 154 per 1,000 births  
**Child Mortality (under 5 years):** 259 per 1,000 births

**Status of Decade/Sector Plan:**  
 Proposed in 1980

## Water and Sanitation Agencies:

Direction Generale des Sources d'Energie (DGSE) (State Secretariat for Energy and the Ministry of Natural Resources and the Environment)  
 Entreprise Nationale de Distribution des Eaux de Guinca (DEG)  
 Service Nationale d'Aménagement des Points d'Eau (SNAPE) (Ministry of Agriculture)  
 Directorate of Urban Works (DUC)

## Decade Progress

Decade goals that Guinea set in its 1980 action plan called for an urban coverage of 77% for water and 55% for sanitation and rural coverage of 22% for water. According to estimates, in 1985 urban coverage was 41% for water and 54% for sanitation, while rural coverage was at a level of 12% for water and 1% for sanitation.

By the end of 1987, it is estimated that urban water supply coverage was still about 40%, while rural water supply coverage had attained 20%. Urban sanitation coverage, although data are missing, is estimated to be between 54 to 70% coverage, with 10% having septic tanks/sewer connections and the remainder having pit latrines.

In the urban sector, considerable restructuring appears likely to take place over the next few years with the formation of a National Water Authority to replace the DGSE and a

Water Management Company to replace the DEG. Urban sanitation is being addressed to some extent in the Conakry Urban Development Project and should also be covered in the proposed World Bank Second Water Supply Project.

In the rural sector, SNAPE is to be strengthened. Technical assistance is to be provided to help resolve issues facing the sector, such as sector planning, aid coordination, cost recovery, management and information systems, etc. Well drilling will be accomplished increasingly on a contract basis and financial participation by communities will be incorporated in project designs.

Since 1985, the Government of Guinea has adopted policies aimed at economic and administrative reforms, producer incentives, encouragement of private sector expansion and investment, a decentralized approach to development, and support to the small holder. Parastatals, to a large extent, are being sold and are becoming private or public companies.

There is a significant donor commitment to continuing to assist Guinea with restructuring and proposed economic and administrative reforms. Approximately \$700 million has been committed for the next several years. Beyond the economic and administrative reforms, great emphasis is being placed on rehabilitating the infrastructure and providing basic services. The Ministry of Plan and International Cooperation is working

closely with line ministries and donors to coordinate and maximize the considerable external aid that has been committed.

The urban water and sanitation sector has been supported primarily by France, Denmark, the World Bank, the African Development Bank, and the European Development Fund. Rural water supply and sanitation has largely been supported by UNICEF, the European Development Fund, France, the Islamic Development Bank, the Federal Republic of Germany, and nongovernmental organizations. Investment to the urban water supply sector between 1978 and 1987 is estimated at \$32 million. Rural water supply and sanitation investment between 1979 and 1987 is estimated at \$15 million.

It is estimated that the urban water supply sector investment required, given restructuring and absorption capacity, should be \$100 to \$125 million through the year 2000. Urban sanitation has received about \$2.5 million with an additional \$8 million available through the Conakry Urban Development Project. Further investment is expected. Guinea hopes to construct 6,500 water points in rural areas by 1995. At the end of 1987, 1,781 water points had been constructed. Funding for an additional 1,700-1,800 water points amounting to \$30 million has been secured, and an additional \$40 million to construct 2,200-2,300 water points is at present under negotiation.

TABLE 1  
 INVESTMENT REQUIREMENTS  
 GUINEA

| ESTIMATED COVERAGE<br>COSTS AND POPULATION | URBAN |            | RURAL |            | TOTALS |
|--|-------|------------|-------|------------|--------|
|  | WATER | SANITATION | WATER | SANITATION |        |
| Population Served 1988                     | 0.6   | 0.8        | 1.1   | 0.1        |        |
| Coverage Target 2000                       | 1.9   | 1.4        | 1.5   | 0.7        |        |
| Shortfall/Unserved                         | 1.3   | 0.6        | 0.4   | 0.6        |        |
| Cost (US \$)                               | 78.0  | 73.0       | 15.0  | 22.0       | 188.0  |
| Proposed Investment                        |       |            |       |            |        |
| Net Shortfall                              |       |            |       |            |        |

1 Population and costs in millions.

2 Assume 1988 population 1.5M urban, 5.4M rural; year 2000 2.5M urban, 6.7M rural.

3 Assume urban growth rate of 5%.

4 Assume % access to water supply 1988 41% urban, 20% rural; year 2000 77% urban, 22% rural.

5 Assume % access to sanitation 1988 54% urban, 1% rural; year 2000 55% urban, 10% rural. (No data available, however, 10% arbitrarily used since 1988 coverage is so low.)

6 Assume per capita cost urban water supply \$60, sanitation \$122; rural water supply \$38, sanitation \$37. Costs are based on averages for Africa.

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## COUNTRY PROFILE: GUINEA

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### 1. Population

Population figures for Guinea were taken primarily from the U.S. Bureau of the Census, World Population Profile 1987. Complementary demographic data come from Statistics on Children in UNICEF-Assisted Countries 1988 and the World Development Report 1988.

Table 2  
Past, Present, and Projected Population  
(in millions)

|      | <u>Total</u> | <u>Urban</u> | <u>Rural</u> |
|------|--------------|--------------|--------------|
| 1980 | 5.5          | 0.7 (12%)    | 4.8 (88%)    |
| 1988 | 6.9          | 1.5 (22%)    | 5.4 (78%)    |
| 1990 | 7.3          | 1.7 (23%)*   | 5.6 (77%)    |
| 2000 | 9.2          | 2.5 (27%)*   | 6.7 (73%)    |

\* Based on a 4.3% per year urban growth rate.

Source: U.S. Bureau of the Census

The present annual growth rate is estimated at 2.5% for the total population. The World Development Report 1988 estimates that this is up from 1.9% for the period 1965-1980 and 2.4% for the period 1980-1986.

As shown in Table 2 the percentage of urban population in Guinea is increasing rapidly. It is estimated that about 50% of the urban population resides in Conakry and the rest in 33 towns fairly evenly distributed around the country. (Ten of these towns have some form of piped water system.) The urban growth rate for Conakry is estimated at 5 to 6% while the rate for other urban centers is put at 4 to 5%.

The first regular census in Guinea was held in 1983. Demographic data up to then had been based on a demographic survey carried out in 1954-1955. The 1983 census put the total population at 5.8 million.

### 2. Coverage Data

Past coverage figures were taken from IDWSSD National Baseline Data 1980. This report indicates that in 1980, 69% of the urban population had a clean water supply and 54% had sanitation facilities, while rural coverage was just 2% for water and 1% for sanitation.

Current coverage figures were taken from the 1987 IDWSSD Directory (1985 data); the World Bank Draft Appraisal Report Second Water Supply Project 1988 (1987 data); and "Service Nationale d'Aménagement des Points d'Eau (SNAPE) Hydraulique Villageoise February 1988" (sector analysis).

The first two reports agree that about 40% of the urban population currently has access to a clean water supply. The IDWSSD report states that 54% of the urban population has some kind of sanitation facilities; this figure has not changed since 1980. However, the World Bank would put the figure higher. While admitting that the information is incomplete, the Bank estimates that about 10% of the urban population has septic tanks/sewer connections, and 60% pit latrines, thus bringing total coverage up to 70% for urban sanitation.

Rural water supply coverage was estimated at 12% in 1985 and 20% in 1988 according to the World Bank and SNAPE data. None of the reports has new data concerning rural sanitation; thus, it is assumed that the 1% figure from 1980 is unchanged.

Coverage targets outlined in the IDWSSD Baseline Data 1980 have been revised only as far as rural water supply is concerned. Initial projections were to provide 77% of the urban population with a water supply and 55% with sanitation by 1990, while providing the rural population with 22% coverage for water. (No estimate was given for rural sanitation.) A program is currently being prepared for urban water supply which will concentrate 50% of its investment on Conakry and 50% to the 33 secondary urban centers. No coverage target is given, but the year 2000, rather than 1990, seems like a more realistic target date. The rural water supply target for 1990 should be achieved. SNAPE has set a new target of 55% of the rural water supply coverage by 1995. Coverage data are shown in Table 3.

TABLE 3  
WATER AND SANITATION COVERAGE FOR 1980 AND 1988  
AND TARGETS FOR 2000  
(in percents)

GUINEA

| YEAR | WATER |       | SANITATION |       |
|------|-------|-------|------------|-------|
|      | URBAN | RURAL | URBAN      | RURAL |
| 1980 | 69    | 2     | 54         | 1     |
| 1988 | 41    | 20    | 54         | 1     |
| 2000 | 77    | 22    | 55         | 10*   |

SOURCE: W.H.O. IDWSSD Review of Mid-Decade Progress

\* No data available, however 10% arbitrarily used since coverage for 1988 is so low.

### 3. Decade/Sector Action Plan

A Decade plan was prepared in 1980. The urban water supply sector is currently being reviewed and an appraisal report is being prepared by the World Bank. It appears likely that the sector will be restructured with a National Water Authority in charge of the urban water supply sector development, including identification, implementation, and financing of new projects. A Water Management Company, part private, part national in composition, will be formed. Operating under contract to the national Water Authority, the management company will be responsible for operation, maintenance, billing, and collection. The aim is to establish a financially self-supporting urban water supply sector. Low tariffs, unsatisfactory cost-recovery procedures, and interrupted supplies in some systems are problems to be addressed. Urban sanitation will be addressed in the short-term through the Conakry Water and Sanitation Project and the Conakry Urban Development Project. The urban water supply sector program for the rest of the century will concentrate 50% of its efforts in Conakry and 50% in the secondary towns.

A three-phased program has been established in Guinea to meet rural water supply coverage requirements.

- ◆ Phase I will provide 10 liters per person per day to 55% of the rural population by 1995. This will require approximately 6,500 water points. Phase I activities will be carried out in villages with populations over 100.
- ◆ Phase II will provide 10 liters of water per person per day in villages with populations under 100. This will require an additional 5,700 water points. The target date is the year 2000.
- ◆ Phase III will provide 20 liters per person per day to the rural population.

Phase I estimates are only for drinking water and do not include boreholes specifically for livestock.

Local communities are beginning to contribute about \$28 for construction and \$115 towards creating revolving funds to cover operation and maintenance costs.

A review of the rural water sector was prepared by SNAPE in February 1988. This report includes an analysis of the sector, a review of work completed since 1979 with an inventory of water points by region and prefecture, and a program analysis including on-going and proposed investments. SNAPE has begun to subcontract drilling activities as a way to expand its activities without overburdening its capacity. One or two drilling units are maintained by SNAPE for training and some project implementation. Financial participation by communities is being initiated, particularly for the purchase of handpumps and to cover operation and maintenance costs. Rural sanitation and village animation (environmental education) are important aspects which have not received sufficient attention or funding. UNICEF plans to assist SNAPE to address these areas more effectively.

#### **4. Sector Administration**

Several Government agencies have responsibilities in the water and sanitation sector. The Direction Generale des Sources d'Energie (DGSE) under the State Secretariat for Energy and the Ministry of Natural Resources and the Environment is responsible for the programming, financing, and execution of urban water supply. The Entreprise Nationale de Distribution des Eaux de Guinea (DEG) is responsible for operation, maintenance, billing, collection, etc. The Service Nationale d'Amenagement des Points d'Eau (SNAPE) under the Ministry of Agriculture is responsible for rural water supply. Urban sanitation is handled by several agencies, including the DEG (responsible for maintenance of piped sewerage), local government (responsible for solid waste collection and disposal), and the Directorate of Urban Works (DUC) (responsible for construction of drainage facilities).

#### **5. Water Sector Studies**

#### **6. Past Investments in the Sector**

Approximately \$32 million was invested in urban water supply between 1978 and 1988. An additional \$2.5 million was invested in urban sanitation during the same period. Rural water supply has received about \$15 million since SNAPE was established in 1979. Thus, a total of approximately \$49.5 million has been invested in the water and sanitation sector since 1978. (See Tables 4-7 and Figures 1 and 2.)

#### **7. Proposed Investments in the Sector**

Proposed investment for urban water supply development through the year 2000 is estimated between \$100-125 million, although funds have not yet been entirely committed. Those who have expressed interest include the World Bank, the Governments of Denmark, France, and the Federal Republic of Germany, and the Islamic Development Bank. They are considering schemes in a number of the 33 urban centers. Urban sanitation should receive about \$8 million from the Conakry Urban Development Project, and additional financing can be anticipated from other sources. A \$30 million commitment to rural water supply development has already been secured and an additional \$40 million is being negotiated at present.

## **8. Health Indicators**

Guinea's infant and child mortality rates are among the highest in Africa according to the 1988 Statistics on Children in UNICEF-Assisted Countries. In the UNICEF/GOG situation analysis report on women and children in Guinea 1986, it was noted that of the principal causes of death to children 0-1 and 1-4 years of age, malaria and diarrheal illness accounted for over 42%. It was further noted that of 242,944 recorded medical visits, 16% were for diarrheal-related illnesses. Intestinal disorders caused by poor hygiene were also noted as very high in Guinea.

## **9. Privatization**

The Government of Guinea has moved in the last few years from a highly centralized system with large numbers of parastatals and collective forms to a philosophy of decentralization, privatization, and promotion of smallholder activities.

Proposals for urban water supply development will involve partial privatization of Government operations. In rural water supply development, an increasing amount of well drilling is being done under contract by private companies. Operation and maintenance is to be the responsibility of the beneficiaries, with spare parts and perhaps labor coming from the private sector and local artisans. Local handpump manufacture is being explored and financing and support sought. There is a strong entrepreneurial spirit in Guinea, and the Government is trying to create a positive atmosphere for private sector expansion and development.

## **10. Recommendations for USAID**

Several potential areas of collaboration exist for USAID. UNICEF has long supported rural water supply and child survival activities in Guinea. UNICEF will give increased emphasis to environmental education, sanitation, and animation activities within the context of its assistance to SNAPE. USAID is collaborating already with UNICEF and the Ministry of Health through its Combatting Childhood Communicable Diseases Program. Given its interest in child survival, USAID should envisage closer links with UNICEF and the Ministry of Health, especially in support of rural sanitation and environmental education activities.

As mentioned, the Guinean Government would like to turn operation and maintenance of rural water supply gradually over to local communities. USAID could support the training of local artisans, creation of revolving funds, and the development of local mechanisms for the private sector to assure spare parts, etc.

UNIDO is supporting a maintenance and repair center in Conakry which is seeking support to manufacture a handpump locally. UNICEF and SNAPE have been approached. USAID could play a possible role in this type of activity.

USAID currently is providing a large amount of counterpart funds which should be considered as a possible funding mechanism to support the above-mentioned activities as well as micro-projects in the water and sanitation sector with women's groups, local non-governmental organizations, etc., in support of the Government's promotion of decentralization and smallholder support.

Given the expanding urban sector, USAID should consider assistance to agencies in the water and sanitation sector to develop appropriate technologies and programs for semi-urban and urban fringe populations.

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World Bank, Guinea Population, Health and Nutrition Sector Review (Draft), February 1985.

Table 4

## PROJECTS FOR WHICH FUNDING HAS BEEN OBTAINED

| INTITULE                                      | PREPECTURES   | FINANCEMENT       | OBSERVATIONS                  |
|---|---|-------------------|-------------------------------|
| 350 FORAGES GUINEE MARITIME                   | KINDIA-PITA-<br>TELIMELE                                  | CCCE              | Entr prise<br>Démarrage 02.88 |
| 420 FORAGES HAUTE GUINEE                      | PARANAH-DABOLA-<br>DINGUIRAYE                             | BID               | Entreprise<br>Démarrage 02.88 |
| 50 FORAGES GUINEE FORESTIERE                  | BEYLA-KEROUANE  | KFW               | Entreprise<br>En cours        |
| 110 SOURCES ET 10 PUIITS EN<br>MOYENNE GUINEE | LABE-MALI-TOUGUE-<br>PITA-DALABA                          | 5: FED            | Régie SNAPE<br>En cours       |
| DEVELOPPEMENT RURAL INTEGRE<br>LABE           | LABE-PITA   | ITALIE            | ONG/SNAPE<br>En cours         |
| 100 FORAGES MOYENNE GUINEE                    | MAMOU   | KFW               | Entreprise<br>Démarrage 88-89 |
| 75 FORAGES MOYENNE GUINEE                     | LABE-DALABA-<br>TOUGUE                                    | FONDS<br>SAOUDIEN | Entreprise<br>Démarrage 88-89 |
| 60 FORAGES HAUTE GUINEE                       | DINGUIRAYE-<br>KOUROUSSA-KANKAN                           | 6: FED            | SNAPE<br>En cours             |
| 42 PUIITS ILE DE KAKOSSA                      | FORECARIAH  | Microéal.<br>FED  | SNAPE/ONG<br>Démarrage 03.88  |
| PDR BASSE GUINEE<br>(+/- 200 FORAGES)         | FORECARIAH-BOPPA-<br>KINDIA                               | 6: FED            |                               |
| PDR HAUTE GUINEE<br>(+/- 300 FORAGES)         | KANKAN-KOUROUSSA-<br>MANDIANA-SIGUIRI-<br>KEROUANE-DABOLA | 6: FED            | SNAPE<br>Démarrage 89         |

SOURCE: SNAPE Hydraulique Villageoise Analyse de Secteur 1988.

Le nombre d'ouvrages qui devraient être réalisés dans le cadre de ces projets est compris entre 1700 et 1800, ce qui représente entre 26 et 28% du programme de la phase 1. Les délais de réalisation sont estimés à 5 ans (1988-1992). Le montant global de l'investissement sera d'environ 170 millions de Francs Français.

Table 5

## PROJECTS NOT YET FUNDED

| INTITULE                               | PREFECTURES                  | FINANCEMENT      | OBSERVATIONS                  |
|--|------------------------------|------------------|-------------------------------|
| 400 FORAGES GUINEE MARITIME            | TELIMELE-BOPPA-<br>BOKE-PRIA | CCCE             | Négociations<br>Très avancées |
| 250 FORAGES HAUTE GUINEE               | KOUROUSSA-<br>KEROUANE       | ITALIE           | Négociation                   |
| 450 FORAGES MOYENNE GUINEE             | LABE-PITA-<br>DALABA         | BID OU<br>DANIDA |                               |
| MICROREALISATIONS PUIITS ET<br>SOURCES | A DETERMINER                 | FED              |                               |
| MICROREALISATIONS PUIITS ET<br>SOURCES | A DETERMINER                 | UNICEF           |                               |
| 600 POINTS D'EAU MOYENNE<br>GUINEE     | LELOUMA-MALI-<br>LABE-KOUBIA |                  | Projet identifi-              |
| 350 POINTS D'EAU GUINEE<br>FORESTIERE  | KISSIDOUGOU-<br>GUECKEDOU    |                  | Projet identifi-              |

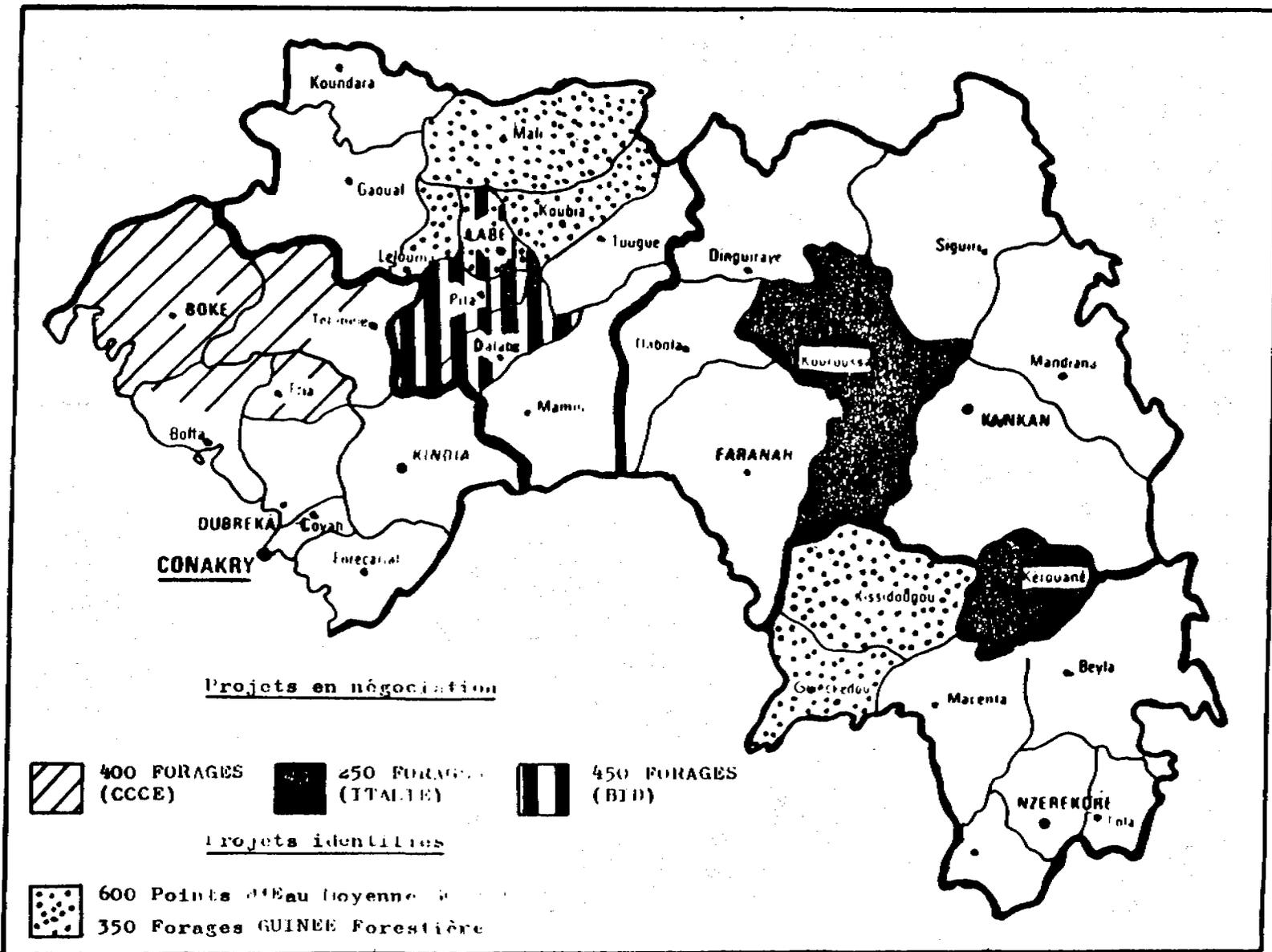
SOURCE: SNAPE Hydraulique Villageoise Analyse de Secteur 1988.

Le nombre d'ouvrages qui devraient être réalisés dans le cadre de ce projet est compris entre 2200 et 2300, ce qui représente entre 33 et 35% du programme de la phase 1. Les délais de réalisation sont estimés à 6 ans (1990 - 1995). Le montant global de l'investissement sera d'environ 230 millions de Francs Français.



Figure 2

LOCATION OF PROJECTS NOT YET FUNDED



SOURCE: SNAPE Hydraulique Villageoise Analyse de Secteur 1988.

Table 6

REPUBLIC OF GUINEA  
SECOND WATER SUPPLY PROJECT  
Situation of the Water Supply in Urban Centers

| City            | Estimated Population and 1985<br>'000 Inhabitants | Production Capacity<br>m <sup>3</sup> /d<br>(led) | Distribution Network<br>km | Total Connections<br>(billed) | Description and Comments   | Year of Construction                                   |
|-----------------|---|---|----------------------------|-------------------------------|--|--|
| <u>Conakry</u>  | 1,000   | 54 000<br>(54)                                    | 207                        | 13 300<br>(10 200)            | -- Kakoulima Springs -- 2000 m <sup>3</sup> /d<br>-- Grandes Chutes -- Yessoulou -- Conakry Scheme<br>(Raw water line -- 43 km $\phi$ 800 mm. Treatment plant --<br>45000 m <sup>3</sup> /d. Treated water line -- 35 km $\phi$ 700 mm)<br>-- Kakimbon well field -- 7000 m <sup>3</sup> /d<br>-- Four reservoirs -- 19250 m <sup>3</sup><br>-- Distribution network -- 207 km $\phi$ 700 mm/d 60 mm<br>-- Treatment plant and distribution network being rehabilitated under CCCE financing | 1903<br><br>1964<br>1982<br>1964 -- 198<br>1903 -- 198 |
| <u>Kindia</u>   | 60  | 2 400<br>(40)                                     | 20                         | 1 040<br>(NA)                 | -- Kilissi River treatment plant -- 2400 m <sup>3</sup> /d<br>-- Koukou catchment -- 1350 m <sup>3</sup> /d<br>-- Transmission line -- 10.7 km $\phi$ 350 mm<br>-- Two reservoirs -- 1280 m <sup>3</sup><br>-- Distribution Network -- 20 km $\phi$ 350 mm/d 80 mm<br>-- Treatment plant and distribution network being rehabilitated under CCCE financing   | 1975<br><br>1975<br>1955/1985                          |
| <u>Namou</u>    | 25  | NA  | 4                          | 290<br>(NA)                   | -- Facilities out of order presenting a threat to public health<br>-- Emergency program financed by EDF<br>(boreholes and chlorination)  | 1954   |
| <u>Faranah</u>  | 35  | 4 200<br>(120)                                    | 24                         | 520<br>(NA)                   | -- Niger River treatment plant -- 4200 m <sup>3</sup> /d<br>-- One reservoir -- 800 m <sup>3</sup><br>-- Distribution network -- 24 km $\phi$ 300 mm/d 50 mm<br>-- Facilities in working order<br>-- Degremont financing   | 1981   |
| <u>Guékédou</u> | 20  | 2 850<br>(142)                                    | 10                         | 230<br>(NA)                   | -- Ousou River treatment plant -- 2850 m <sup>3</sup> /d<br>-- One reservoir -- 750 m <sup>3</sup><br>-- Distribution network -- 10 km $\phi$ 250 mm/d 50 mm<br>-- Facilities in working order<br>-- Degremont financing   | 1982   |
| <u>Kankan</u>   | 90  | 3 400<br>(38)                                     | 31                         | 1 300<br>(NA)                 | -- Milo River treatment plant -- 3400 m <sup>3</sup> /d<br>-- Transmission line -- 1.15 km $\phi$ 300 mm<br>-- Two reservoirs -- 1500 m <sup>3</sup><br>-- Distribution network -- 31 km $\phi$ 300 mm/d 60 mm<br>-- Facilities need rehabilitation  | 1975   |

12/88

REPUBLIC OF GUINEA  
SECOND WATER SUPPLY PROJECT  
Situation of the Water Supply in Urban Centers (con't)

| City               | Estimated<br>Population<br>and 1985<br>'000 Inhabitants | Production<br>Capacity<br>m <sup>3</sup> /d<br>(lcd) | Distribution<br>Network<br>km | Total<br>Connections<br>(billed) | Description and Comments   | Year of<br>Constructi |
|--------------------|---|--|-------------------------------|----------------------------------|--|-----------------------|
| <u>Nzérekohé</u>   | 60  | 4 800<br>(80)  | 15                            | 325<br>(NA)                      | -- Yalenso River treatment plant -- 4800 m <sup>3</sup> /d<br>-- Transmission line 17.8 km $\phi$ 300 mm steel<br>-- Two reservoirs -- 2000 m <sup>3</sup><br>-- Distribution network -- 15 km<br>-- Facilities rehabilitated in 1985 under Danish financing | 1975/<br>1985         |
| <u>Macenta</u>     | 30  | 2 150<br>(76)  | 6                             | Not yet<br>in service            | -- River treatment plant -- 2150 m <sup>3</sup> /d<br>-- Two reservoirs -- 925 m <sup>3</sup><br>-- Distribution network -- 6 km $\phi$ 200 mm $\phi$ 80 mm<br>-- Danish financing   | 1986                  |
| <u>Forcariah</u>   | 13  | 2 600<br>(173)                                       | 16                            | Not yet<br>in service            | -- Four boreholes<br>-- Full treatment plant -- 2600 m <sup>3</sup> /d<br>-- Two reservoirs -- 435 m <sup>3</sup><br>-- Distribution network -- 16 km $\phi$ 200 mm $\phi$ 50 mm<br>-- Degrémont financing   | 1987                  |
| <u>Kissidougou</u> | 45  | 2 750<br>(61)  | NA                            | 0                                | -- Boreholes and chlorination<br>-- One reservoir -- 800 m <sup>3</sup><br>-- Danish financing   | 1987                  |

AFIN  
August 11, 1988

SOURCE: World Bank Draft Appraisal Report - Second Water Project 1988

Table 7

REPUBLIC OF GUINEA  
SECOND WATER SUPPLY PROJECT  
Situation of the Water Supply in Rural Centers

1. SNAPE Activities since 1979 (Productive Water Points)

| Year         | Springs    | Wells      | ----- Boreholes ----- |            |            | Total Water Points |
|--------------|------------|------------|-----------------------|------------|------------|--------------------|
|              |            |            | Force Account         | Enterprise | Total      |                    |
| 1979         | 15         | 18         | --                    | --         | --         | 33                 |
| 1979 -- 1980 | 75         | 42         | --                    | --         | --         | 117                |
| 1980 -- 1981 | 55         | 46         | --                    | --         | --         | 101                |
| 1981 -- 1982 | 71         | 46         | --                    | --         | --         | 117                |
| 1982 -- 1983 | 61         | 45         | 34                    | 44         | 78         | 184                |
| 1983 -- 1984 | 58         | 50         | 66                    | --         | 66         | 173                |
| 1984 -- 1985 | 81         | 43         | 64                    | --         | 64         | 188                |
| 1985 -- 1986 | 87         | 45         | 64                    | 176        | 240        | 372                |
| 1986 -- 1987 | <u>150</u> | <u>44</u>  | <u>28</u>             | <u>273</u> | <u>301</u> | <u>495</u>         |
| Total        | <u>653</u> | <u>379</u> | <u>256</u>            | <u>493</u> | <u>749</u> | <u>1781</u> /s     |
| Percent      | 37%        | 21%        | 14%                   | 28%        | 42%        |                    |

/s Of which 17 are not for RWS.

2. Geographic Repartition of the Existing Water Points

| Natural Region    | Objectives Phase 1 | --Existing Water Points as of End 1987-- |            |            |             | Achievement of Objectives (Percent) |
|-------------------|--------------------|--|------------|------------|-------------|-------------------------------------|
|                   |                    | Wells                                    | Boreholes  | Springs    | Total       |                                     |
| Guinée Maritime   | 1075               | ---                                      | 27         | ---        | 27          | 2.5 %                               |
| Moyenne Guinée    | 2830               | 379                                      | 138        | 652        | 1169        | 41.0 %                              |
| Haute Guinée      | 1585               | ---                                      | 432        | ---        | 432         | 27.0 %                              |
| Guinée Forestière | <u>1010</u>        | ---                                      | <u>135</u> | <u>1</u>   | <u>136</u>  | <u>13.5 %</u>                       |
| Total             | <u>6500</u>        | <u>379</u>                               | <u>749</u> | <u>653</u> | <u>1764</u> | <u>27.0 %</u>                       |

SOURCE: World Bank Draft Appraisal Report Second Water Project 1988.

REPUBLIC OF GUINEA  
SECOND WATER SUPPLY PROJECT  
Situation of the Water Supply in Rural Centers (con't)

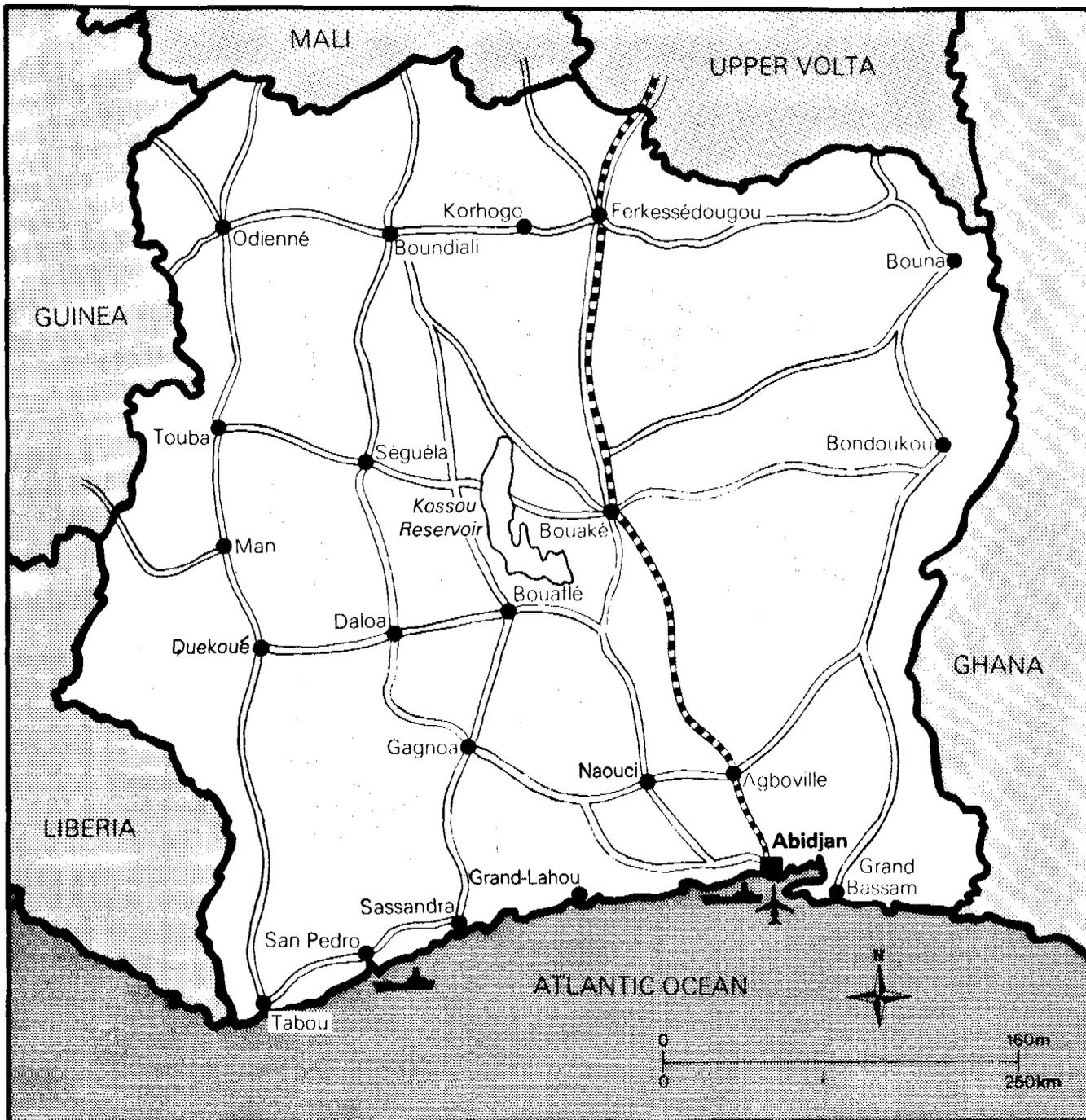
3. Projects Ongoing and Under Negotiations

| Natural Region           | Financing Agency | Wells | Boreholes | Springs | Total         | Comments           |
|--------------------------|------------------|-------|-----------|---------|---------------|--------------------|
| <u>Guinée Maritime</u>   | CCCE             | --    | 350       | ---     | 350           | Ongoing            |
|                          | EDF              | --    | 200       | ---     | 200           |                    |
|                          | EDF              | 42    | ---       | ---     | 42            | Ongoing            |
|                          | CCCE             | --    | 400       | ---     | (400)         | Under Negotiations |
|                          |                  |       |           |         | 592 + (400)   |                    |
| <u>Moyenne Guinée</u>    | EDF              | 10    | ---       | 110     | 120           | Ongoing            |
|                          | KfW              | --    | 150       | ---     | 100           | Ongoing            |
|                          | Saudi Fund       | --    | 75        | ---     | 75            | Ongoing            |
|                          | IsDB or Danida   | --    | 450       | ---     | (450)         | Under Negotiations |
|                          | -----            | --    | 600       | ---     | (602)         | Financing Sought   |
|                          |                  |       |           |         | 295 + (1050)  |                    |
| <u>Haute Guinée</u>      | IsDB             | --    | 420       | ---     | 420           | Ongoing            |
|                          | EDF              | --    | 60        | ---     | 60            | Ongoing            |
|                          | EDF              | --    | 300       | ---     | 300           |                    |
|                          | Italy            | --    | 250       | ---     | (250)         | Under Negotiations |
|                          |                  |       |           |         | 780 + (250)   |                    |
| <u>Guinée Forestière</u> | KfW              | --    | 50        | ---     | 50            | Ongoing            |
|                          | ---              | --    | 350       | ---     | (350)         | Financing Sought   |
|                          |                  |       |           |         | 50 + (350)    |                    |
|                          |                  |       |           |         | 1717 + (2050) |                    |

NOTE: CCCE -- Caisse Centrale de Coopération Economique. (France)  
EDF -- European Development Fund  
KfW -- Kredit Anstalt für Wiederaufbau (FR. Germany)  
IsDB -- Islamic Development Bank

AFLIN  
August 11, 1988

IVORY COAST



# IVORY COAST

**Population:** Total 11.9 M (Urban 48%, Rural 52%)

**Population Growth Rate:** 4.2% per year (the national rate of increase is 3.3%; immigration accounts for the rest) (Urban 6.9%)

**GNP Per Capita:** US \$730

**Adult Literacy:** Total 42%

**Life Expectancy:** 52 years (Male 51, Female 54)

**Infant Mortality (under 1 year):** 107 per 1,000 births

**Child Mortality (under 5 years):** 157 per 1,000 births

**Status of Decade/Sector Plan:** No information available

**Water and Sanitation Agencies:**

Societe de Distribution d'Eau de la Cote d'Ivoire (SODECI)  
 Direction et Controle des Grands Travaux (DCGTX)  
 Direction de l'Eau (DE) (Ministry of Public Works)  
 Fonds Nationale de l'Eau (FNE)

## Decade Progress

The Ivory Coast is a middle-income country which experienced a period of rapid economic growth from 1965-1980 when the economy expanded at a rate of 6.8% per year (GDP). During this time, water supply and sanitation institutions and programs were consolidated and the country became renowned for its strong sector performance.

Since 1980, however, the economy has slowed dramatically. Economic growth was negative (-0.3% GDP) over the period 1980-1985. At the same time, largely because of worsening economic conditions in surrounding countries and the Ivory Coast's relative strength, immigration into the country increased greatly. The country continues to have a high annual population growth rate.

The Ivory Coast is one of the most urbanized countries in the region. During the 1970s, the urban growth rate was nearly double that of the overall

population growth rate, and, although urbanization has slowed, urban populations account for 48% of the total population in 1988 with a projected 60% for the year 2000.

Despite the economic slowdown, the water supply and sanitation sector has continued to perform, largely due to significant foreign investment. The total investment in the rural water supply sector from 1975 to 1986 was \$235 million. Annual borrowing from foreign lenders was approximately \$20 million. The average yearly overseas development assistance for the period 1980-1986 was \$152 million. Thus, rural water supply borrowing represented 13%. If this high level of investment can be sustained over the next 10 years, 100% of the rural population will be covered. (Rural coverage is currently estimated at 50% for water supply and 10% for sanitation.)

Urban water supply coverage is currently estimated at 75%. If financing can be secured (no investment figures are currently available), given the institutional strength of the sector, 100% coverage is likely before the end of the century.

Although Abidjan has been the beneficiary of a series of investments, largely from the World Bank, to construct a sewer system, investment in urban sanitation in the secondary towns is just beginning. In Abidjan, the sewer system is expected to cover only 35% of the population, and the rest will have to be served with some form of individualized sanitation, concerted programs for which have not yet been

begun on any scale. Information on rural sanitation is not currently available.

In December 1987, a sector restructuring was completed. One of the most salient elements was a decision to require all operation and maintenance for rural water supply to be undertaken by local communities. Borehole construction has been frozen since 1986 and will remain so until the O&M responsibilities have been transferred to these communities. Sector institutions, already considered strong by the international community, are now thought to be even more so, with planning, investment, and implementation activities more concentrated in individual agencies, thus lessening the fragmentation which occurred before the restructuring.

Although no information is currently available on the status of the country's Decade action plan, a considerable amount of planning has taken place. The World Bank is finalizing a Rural Water Supply Sector Memorandum. SODECI will complete a major urban water supply investment program by the end of 1988, and DCGTX is in the process of updating the Abidjan Sewerage Master Plan.

The potential for private sector involvement in Ivory Coast continues to be significant, as government policy has favored the use of private agencies to carry out water supply activities, and has now turned over all O&M of rural water supply to local communities, necessitating the intervention of private contractors.

TABLE 1  
 INVESTMENT REQUIREMENTS  
 IVORY COAST

| ESTIMATED COVERAGE<br>COSTS AND POPULATION | URBAN |            | RURAL |            | TOTALS |
|--|-------|------------|-------|------------|--------|
|  | WATER | SANITATION | WATER | SANITATION |        |
| Population Served 1988                     | 4.3   | 2.0        | 3.2   | 0.6        |        |
| Coverage Target 2000                       | 10.1  | 3.5        | 6.9   | 0.7        |        |
| Shortfall/Unserved                         | 5.8   | 1.5        | 3.7   | 0.1        |        |
| Cost (US \$)                               | 348.0 | 183.0      | 155.0 | 4.0        | 690.0  |
| Proposed Investment                        |       |            |       |            |        |
| Net Shortfall                              |       |            |       |            |        |

- 1 Population and costs in millions.
- 2 Assume 1988 population 5.7M urban, 6.2M rural; year 2000 10.1M urban, 6.9M rural.
- 3 Assume urban growth rate of 6.9%.
- 4 Assume % access to water supply 1988 75% urban, 51% rural; year 2000 100% urban, 100% rural.
- 5 Assume % access to sanitation 1988 35% urban, 10% rural; year 2000 35% urban, 10% rural. (Maintain 1988 coverage for urban and rural sanitation since no targets set by Ivory Coast.)
- 6 Assume per capita cost urban water supply \$60, sanitation \$122; rural water supply \$42, sanitation \$37. (Rural water supply cost is based on past performance; other costs are based on country averages.)

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## COUNTRY PROFILE: IVORY COAST

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### 1. Population

Data on overall population are consistent among three sources considered reliable for demographic statistics, the U.S. Bureau of the Census, the World Bank World Development Report, and the Population Reference Bureau. Since the World Development Report gives estimates of urban percentages and growth rates, WDR total population statistics are used in this profile.

Table 2

Past, Present, and Projected Population  
(in millions)

|      | <u>Total</u> | <u>Urban</u> | <u>Rural</u> |
|------|--------------|--------------|--------------|
| 1980 | 8.2          | 3.1 (38%)    | 5.1 (62%)    |
| 1988 | 11.9         | 5.7 (48%)    | 6.2 (52%)    |
| 2000 | 17.0         | 10.1 (59%)   | 6.9 (41%)    |

Note: This table is based on the World Development Report 1988. The U.S. Bureau of the Census population figures are as follows: 1980 - 8.2 M; 1988 - 11.2; 2000 - 17.3.

The urban-rural breakdowns are based entirely on the WDR estimates of urban percentages and growth. The urban growth rate was 6.9% per annum for the 1980-1985 period. The Staff Appraisal Report of the World Bank's Third Urban Project, however, suggests that the rate should slow to 6.2% by the end of the decade. Given no corroboration of this figure, however, it was decided to use the higher figure for the purpose of calculating coverage and investment needs.

The Ivory Coast is one of the region's most urbanized countries, with the urban growth rate nearly double the national rate of population increase for the period 1970-1980. This increase was due, in part, to the strong economic performance of the country and the immigration it engendered. The rate of urban growth has gradually declined (from 8.4% in the 1970s to 6.9% in the 1980-1985 period), due largely to an economic slowdown.

Given this high estimated urban growth rate, almost 60% of the population of the Ivory Coast will be urban by the end of the century. More and more of this population will be concentrated in Abidjan, which in 1984 was home to 34% of the country's total urban population and which grew at an annual rate of 7.4% during the period 1980-1985.

## 2. Coverage Data

Because of Ivory Coast's positive economic performance until 1980, its political stability, and the strength of its public sector institutions it has benefited from substantial loans in the water sector. Performance has been good, with an estimated urban water supply coverage of 55% in 1980, rising to an estimated 75% in 1988. The rural sector has been equally promising, with an estimated 33% coverage in 1980 and an estimated 51 to 57% coverage in 1986-1988.

Reliable figures for both urban and rural sanitation are not available. However, rough estimates put the number at 35% of the urban population and 10% of the rural.

Table 3 summarizes coverage data.

TABLE 3

WATER AND SANITATION COVERAGE FOR 1980 AND 1988  
AND TARGETS FOR 2000  
(in percents)

### IVORY COAST

| YEAR   | WATER |       | SANITATION |       |
|--------|-------|-------|------------|-------|
|        | URBAN | RURAL | URBAN      | RURAL |
| 1980   | 55    | 33    | N/A        | N/A   |
| 1988   | 75*   | 51    | 35*        | 10*   |
| 2000** | 100   | 100   | 35         | 10    |

SOURCE: World Bank.

\* Estimated by the author.

\*\* Projections based on expected level of investment.

The 1980 figures for urban water supply are considered to be accurate, for they were calculated during preparation of the World Bank's Second Water Supply Project. Those for 1988 are considered to be approximations, based on a general estimate of 75% coverage.

The figures for rural water supply are problematic. The Second Urban Water Supply Staff Appraisal Report based its figures on 13,000 water points constructed with an estimated 550 people per point served. If the 550 figure is used, total coverage, based on the number of water points actually completed by 1986, exceeds 100%. Because this is unlikely and because for 1988 the World Bank Infrastructure Department estimates only 51% coverage, it is felt that the 550 figure may be too high and that a more modest 250 people per water source (used in Niger, for example) may be more realistic.

### 3. Decade/Sector Action Plan

No information is available concerning the Decade plan per se, but sector work has been carried out. In 1988 the Societe de Distribution d'Eau de la Cote d'Ivoire (SODECI) undertook a review of the investment program of the urban water supply sector. (This profile would have been more detailed had this review been available at the time of writing.) The Direction et Controle des Grands Travaux (DCGTX) is currently updating the Sewerage Master Plan for Abidjan.

Prior to a reorganization of sector administration in 1987, SODECI managed the rural water supply program. At that time only an estimated 40 to 60% of the water points were functioning. This poor performance was due, it is thought, to a lack of community participation and high operation and maintenance costs paid to SODECI.

Along with sector restructuring, government policy has also changed, and individual communities are now entirely responsible for operation and maintenance. The current World Bank Second Water Supply Project has helped to implement this policy through training of trainers and community development agents, and by extension of the training to over 600 area mechanics in 8,000 villages. Under this system, the government will finance the construction of boreholes and install pumps, and the distribution of spare parts will be contracted to private companies. However, the government instituted a freeze in 1986 on new borehole construction until the new operation and maintenance policy has been put into effect, and only 400 new boreholes have been constructed since then.

Urban sanitation in secondary towns has received increased attention over the past five years, with modest investments made by KfW and technical assistance provided by the World Bank/UNDP Decade programs. Latrine construction programs in Abidjan, however, have not been undertaken to any significant degree, and there are many areas of the city, particularly in the northwest portions, which will not be provided with sewer lines and which currently have no sanitation.

In 1987 the World Bank/UNDP set up a West Africa Regional Water Supply Group (RWSG) in Abidjan made up of sector professionals funded from a number of international and bilateral sources. One of the prime mandates of the RWSG is the promotion of low-cost water supply and sanitation technology, such as the handpump and the household latrine. In addition, a major responsibility is the promotion of village-level operations and maintenance (VLOM). Although the RWSG is regional, because of its location in Abidjan, it has had and will maintain a close link with Ivory Coast programs.

#### **4. Sector Administration**

The structure of the water supply and sanitation sector in the Ivory Coast is unusual in that operation and maintenance, capital works, and capital finance are each the responsibility of different agencies. Despite the potential for fragmentation, the system has worked well, and sector performance is considered one of the successes of the region. The water sector in the Ivory Coast has been characterized by private sector initiative (one of the two major agencies in the sector is a private company) and by institutional autonomy.

A restructuring of the water sector was recently completed in December 1987. The following are the major agencies involved.

- ◆ SODECI (Societe de Distribution d'Eau de la Cote d'Ivoire), a private company, is responsible for urban water supply investments and capital works; urban water supply operations and maintenance, including billing and bill collection; and Abidjan sewerage -- operations and maintenance.
- ◆ DCGTX (Direction et Controle des Grands Travaux), a governmental organization attached to the presidency, is responsible for rural water supply investments and construction; investment in urban sanitation other than Abidjan; and all studies pertaining to sector investment.
- ◆ DE (Direction de l'Eau), a government agency of the Ministry of Public Works, is responsible for policy formulation.
- ◆ FNE (Fonds National de l'Eau), an autonomous government agency linked to the Ministry of Finance, is responsible for accounting.

Before the restructuring the Direction de l'Eau had much more authority and was responsible for all investment planning and implementation, SODECI was responsible for only operation and maintenance of water and sewerage systems, the DCGTX had a limited planning and implementation role, and the FNE was responsible for the management of debt and capital finance.

#### **5. Water Sector Studies**

No Sector Studies were located for this study

## 6. Past Investment in the Sector

For the period 1975-1986, total investment in the rural water supply sector amounted to \$235 million, with an annual yearly average of \$21.4 million. Table 4 indicates the lending institutions providing assistance to the sector over the 1975-1986 period. In addition, bilateral donors, most notably Germany and Canada, have provided grant financing to the country.

No detailed information is available on sector investment in urban water supply, urban sanitation, or rural sanitation. It is known, however, that World Bank loans financed the construction of a sewer system in Abidjan, one of the most extensive in Africa. Also, Germany financed the construction of household latrines in secondary towns.

Table 4

Past and Current Investments in the Sector (1980-1988)  
(in US \$1,000)

|            |                 |
|------------|-----------------|
| World Bank | \$ 43,000.0     |
| Germany    | 15,117.0        |
| Canada     | 2,453.3         |
| France     | <u>12,400.0</u> |
| TOTAL      | \$ 72,970.3     |

## 7. Proposed Investment in the Sector

According to the WHO Country External Support Information list, KfW has received three requests from the Government of the Ivory Coast, two for urban water supply in secondary towns and one for urban sanitation in secondary towns. No budget amounts have been listed for these projects. Also the government has developed a proposal for a rural water supply project for \$2 million to an undesignated donor.

The World Bank has proposed two major investment projects for Ivory Coast: the Abidjan Environmental Protection Project, which has, as a primary objective, the extension of the Abidjan sewer system (\$40 million, of which \$20 million will be co-funded by the European Investment Bank); and the Water Supply and Sanitation Sector Loan (\$85 million). The two projects are still under consideration, pending discussions with the government; and a Rural Water Supply Project is still in planning.

## **8. Health Indicators**

## **9. Privatization**

As mentioned above in Section 4, the private sector has played a major role in water supply and sanitation in the Ivory Coast through SODECI. The Ivory Coast has been a model for the concession system of contracting private agencies for sector activities.

Turning over all operation and maintenance activities to the community implies the direct involvement of the private sector, which will provide operation and maintenance services for communities.

## **10. Recommendations for USAID**

Currently USAID is supporting no water supply and sanitation projects in the Ivory Coast. However, there is room for USAID involvement. In addition to the major investments required in urban and rural water supply and sanitation, technical assistance is required in refining the village-level operations and maintenance system and in training trainers and artisans; in developing a range of low-cost sanitation technology options suitable for a variety of socioeconomic groups of the population; in developing an appropriate marketing strategy to promote these low-cost technologies; and in assessing the needs of rural low-cost sanitation and the degree to which government support is required or possible.

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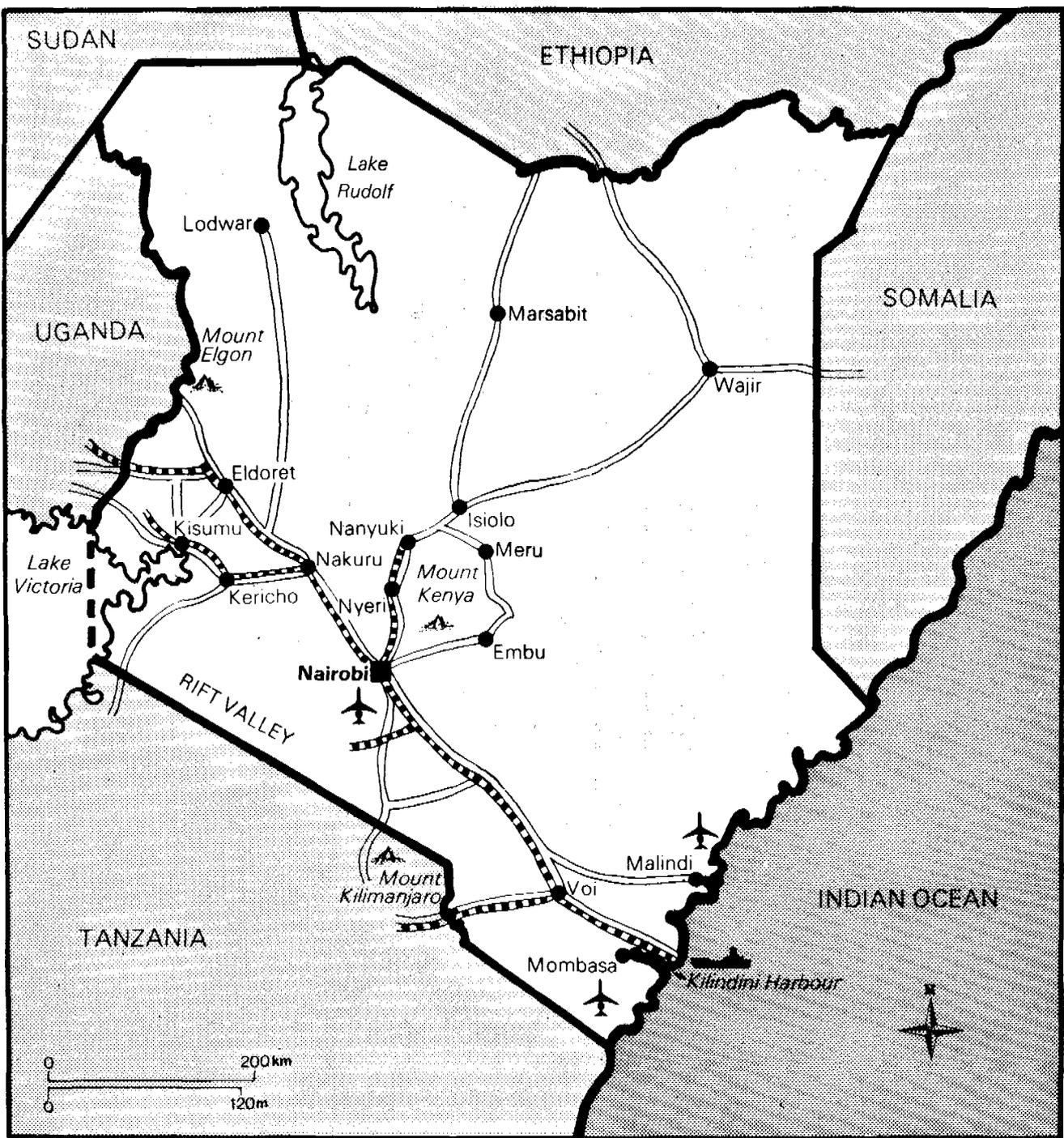
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**KENYA**



# KENYA

**Population:** Total 23.3 M (Urban 20%, Rural 80%)  
**Population Growth Rate:** 4.2% per year (Urban 6.3%)

**GNP Per Capita:** US \$300  
**Adult Literacy:** Total 59% (Male 70%, Female 49%)  
**Life expectancy:** 60 years (Male 58, Female 62)  
**Infant Mortality (under 1 year):** 74 per 1,000 births  
**Child Mortality (under 5 years):** 121 per 1,000 births

**Status of Decade/Sector Plan:** In preparation

## Water and Sanitation Agencies:

Ministry of Water Development (MOWD)

Ministry of Health

expensive piped schemes which operate at low efficiency or are out of order because of limited financial, technical, and institutional resources. Although a higher level of service is enjoyed by the urban core population, urban fringe groups have limited access to water connections.

Rural water tariffs have been in effect since 1979 and are based on ability to pay and economic cost of supply, although for communal water points tariffs may not as yet be operational. Cost recovery/revenue collection is becoming an essential element of water supply projects. In rural areas water rates are supposed to cover at least direct operation and maintenance costs of water supplies. GOK general policy aims at full cost recovery for urban schemes. To date neither goal has been fully achieved. New water tariffs are expected soon.

Major investments have been made for both urban and rural water supply

and sanitation by a large number of bilaterals (Sweden, Finland, the Netherlands, Denmark, Norway, West Germany, the United Kingdom, Switzerland, and Canada), multilaterals (UNICEF, World Bank, UNDP, WHO), and non-governmental organizations. The active participation of such organizations is expected to continue.

Present financial constraints dictate a development strategy which will reduce duplication in the use of limited resources and increase cooperation and coordination among various donors, agencies, and institutions active in the water sector and related fields. Given the relatively high level of investment in the water sector and the significant number of non-governmental organizations involved, greater coordination of these resources through collaborative efforts will help Kenya meet its water and sanitation targets by the year 2000.

## Decade Progress

In 1981 at the beginning of the Decade, the Government of Kenya (GOK) declared its water supply coverage goals for 1990 to be 100% of the urban population and 75% of the rural population. Sanitation coverage was to be 90% of the urban population and 50% of the rural population. To date, approximately 61% of the urban and 10 to 21% of the rural population have access to safe water supply while about 40% of the urban and 25 to 35% of the rural population have access to sanitation.

As may be seen from these figures, despite a relatively high level of investment in the water sector by donor agencies, only limited success has been achieved, particularly in the rural sector. This seems due in part to the tendency to construct urban-type schemes in the rural areas. These schemes use high technology solutions resulting in high operation and maintenance costs. This policy has resulted in a large number of

TABLE 1  
 INVESTMENT REQUIREMENTS  
 KENYA

| ESTIMATED COVERAGE COSTS AND POPULATION | URBAN   |            | RURAL |            | TOTALS  |
|---|---------|------------|-------|------------|---------|
|   | WATER   | SANITATION | WATER | SANITATION |         |
| Population Served 1988                  | 2.9     | 1.9        | 3.9   | 4.7        |         |
| Coverage Target 2000                    | 9.8     | 8.8        | 21.4  | 14.3       |         |
| Shortfall/Unserved                      | 6.9     | 6.9        | 17.5  | 9.6        |         |
| Cost (US \$)                            | 1,035.0 | 1,139.0    | 438.0 | 480.0      | 3,092.0 |
| Proposed Investment                     |         |            |       |            |         |
| Net Shortfall                           |         |            |       |            |         |

1 Population and costs in millions.

2 Assume 1988 population 4.7M urban, 18.6M rural; year 2000 9.8M urban, 28.5M rural.

3 Assume urban growth rate of 6.3%.

3 Assume % access to water supply 1988 61% urban, 21% rural; year 2000 100% urban, 75% rural.

4 Assume % access to sanitation 1988 40% urban, 25% rural; year 2000 90% urban, 50% rural.

5 Assume per capita cost urban water supply \$150, sanitation \$165;

Rural water supply \$25, sanitation \$50 (Costs are based on IDWSSD, FINNIDA, MOWD, and the Netherlands Lake Basin Development Authority Rural Domestic Water Supply and Sanitation Program, Nyanza Province).

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## COUNTRY PROFILE: KENYA

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### 1. Population

Past and current population figures were taken from four sources: Statistics on Children in UNICEF-Assisted Countries April 1988 (1986 data taken from UNICEF field office and UN Population Division Projections), UNDP/World Bank Country and Global Work Plan 1988-90 (1986 data), World Bank Development Report 1987, Situation Analysis of Children and Women in Kenya 1984, and the U.S. Bureau of the Census, World Population Profile 1987.

UNICEF, Government of Kenya (GOK), and U.S. Census Bureau sources put the 1980 population at between 16.7 and 17 million, of which 15 or 16% was urban. All the above sources agree that the current population is between 22.7 and 23.3 million, of which about 20% is urban. The official rate of growth based on the last census is 3.8% while the UN and World Bank estimate a real growth rate at 4% and the U.S. Census Bureau estimates growth at 4.2%. This accounts for differences in population projections. A 6.3% urban growth rate was used for the year 2000 estimates.

Table 2

Past, Present, and Projected Population  
(in millions)

|      | <u>Total</u> | <u>Urban</u> | <u>Rural</u> |
|------|--------------|--------------|--------------|
| 1980 | 17.0         | 2.6 (15%)    | 14.4 (85%)   |
| 1988 | 23.3         | 4.7 (20%)    | 18.6 (80%)   |
| 2000 | 38.3         | 9.8 (26%)    | 28.5 (74%)   |

Source: U.S. Bureau of the Census

The Situation Analysis of Children and Women in Kenya 1984 indicates that Kenya is becoming increasingly urban, the urban population having grown from 5.1% in 1948 to 20% at present. In this period, urban centers have increased from 17 to 90. Since independence, urban growth has been approximately twice the national average.

Table 3 summarizes these data.

**TABLE 3**

**WATER AND SANITATION COVERAGE FOR 1980 AND 1988  
AND TARGETS FOR 2000  
(in percents)**

**KENYA**

| YEAR | WATER |       | SANITATION |       |
|------|-------|-------|------------|-------|
|      | URBAN | RURAL | URBAN      | RURAL |
| 1980 | 85    | 15    | 89*        | 19    |
| 1988 | 61    | 21    | 40         | 25    |
| 2000 | 100   | 75    | 90         | 50    |

\* World Bank/Finland Appraisal Mission Report 1983 Estimated Urban Sanitation Coverage at 40% in 1980 and not 89%. It also had urban water supply coverage at closer to 100%

**SOURCES:**

- 1980 - IDWSSD Review of National Baseline Data 1980
- 1988 - GOK/UNICEF Plan of Operations Community-Based WS&S 1988  
- UNDP/World Bank Country and Global Work Plan 1988-90
- 2000 - GOK Decade Plan, 1981

**2. Coverage Data**

Coverage figures were obtained from the following sources: IDWSSD Review of National Baseline Data 1980, Statistics on Children in UNICEF-Assisted Countries 1988; World Bank/Finland Appraisal Mission 1983, Rural Water Supply Development Western Province 1979; World Bank, World Development Report 1987; UNDP/World Bank Country and Global Work Plan 1988-1990; and GOK/UNICEF, "Plan of Operations for Community-Based Water and Sanitation Projects 1988."

The IDWSSD and UNICEF reports agree that in 1980 approximately 85% of the urban population had access to safe drinking water while 15% of the rural population was served. The Bank/Finland Appraisal Report indicates that almost all core urban areas were served while approximately 11% of the rural areas were covered in 1980.

The IDWSSD report indicated that 19% of the rural population and 89% of the urban population had access to adequate sanitation facilities in 1980, while the Bank/Finland Appraisal Mission estimated that 20-30% of the rural population and only 40% of the urban population had access to sanitation facilities.

The UNDP/Bank report puts present urban/rural water supply coverage at 61% urban and 21% rural and sanitation coverage at 40% urban and 20% rural. The UNICEF statistics on children agree with these water supply figures while not giving any sanitation figures. The GOK/UNICEF "Plan of Operations" puts rural water coverage at 15% with a range of between 10 and 21%. Rural sanitation coverage is estimated at 25-35%. The World Development Report differs somewhat from the other reports indicating 100% urban and 15% rural water supply coverage and 45% urban and 25% rural sanitation coverage.

Decade targets set by the GOK for 1990 are 100% urban coverage and 75% rural coverage for water supply and 90% urban coverage and 50% rural coverage for sanitation. The Government has extended the period for the stated targets to the year 2000.

Although water supply and sanitation coverage has increased during the decade, relative coverage may be on the decline. The major factor causing this decline is the rate of population growth. One of the most urgent issues facing Kenya and its water sector is how to keep up with this growth. Water supply and sanitation coverage data are shown in Table 3.

### 3. Decade/Sector Action Plan

At the beginning of the IDWSSD in 1981, the GOK issued a statement outlining targets for the decade. The initial Decade strategy was comprised of the following:

1. The Immediate Program (1981-1983) aimed at rehabilitating and completing all schemes included in the Ministry of Water Development Fourth Development Plan, 1979-83.
2. The Intermediate Program (up to 1986) was to expand existing schemes and construct new ones to attain the following coverage:

|              |   |           |
|--------------|---|-----------|
| Water Supply | - | urban 70% |
|              |   | rural 50% |
| Sanitation   | - | urban 60% |
|              |   | rural 30% |

3. The Long-range Program (to 1990 now extended to 2000) is to complete Decade programs and meet the following Government targets:

|              |   |            |
|--------------|---|------------|
| Water Supply | - | urban 100% |
|              |   | rural 75%  |
| Sanitation   | - | urban 90%  |
|              |   | rural 50%  |

The Ministry of Water Development has developed a system of water supply service in relation to the agricultural potential of an area as follows:

1. **High Potential Areas**      Water supply through individual connections and/or kiosks with less than 1 kilometer walking distance recommended
2. **Medium Potential Areas**      Water supply through kiosks and communal water points with walking distance not to exceed two kilometers
3. **Low Potential Areas**      Water distribution through communal water points with walking distance not to exceed five kilometers

Considerable investment has been made in the water sector during the Decade. Nevertheless, there has been a shortfall in reaching Decade targets -- particularly in rural areas. This is apparently due to several factors. In the early 1980s, high oil prices and a reduction in revenues from Kenya's main export commodities reduced the funding available to the sector. Additionally, there has been a tendency to construct urban-type schemes in rural areas, but these schemes are often unsustainable in terms both of available staff and cost. Finally, there are a substantial number of non-governmental organizations working at the village level in Kenya in the water sector, but to date there has been little coordination among them, the Government, and other donor agencies.

As mentioned, there has been a decline in coverage of the urban population from approximately 85% in 1980 to 61% today. This is due in part to the significant increase in the urban population. Where previously urban core populations were adequately served, now urban fringe populations have grown to put pressure on existing systems. In many cases these urban fringe populations are not adequately served or have no access to potable water and adequate sanitation.

The three major urban areas in Kenya, Nairobi, Mombasa, and Kisumu, account for more than half of the urban population. The other half or about 1.8 million live in smaller towns. A variety of low cost technological solutions seems possible for both these areas and the urban fringe areas.

The theme of the present development plan (1984-1988) is "mobilizing domestic resources for equitable development." The plan proposes that essential services provided by the Government should be supplemented by the individual and collective actions of the people. A significant role is to be played by nongovernmental organizations. The costs of some Government services are to be shifted to the direct beneficiaries through user fees. Kenya is divided into seven provinces which are subdivided into 43 districts and then into sub-district units: divisions, locations, and sub-locations. Since 1983, the Government has implemented a district focus for rural development, giving more responsibility to the districts for implementation of their projects. Through its District Development Committee, each district is responsible for planning and coordinating district-specific projects sponsored by the Government, including those sponsored by foreign donors as well as local self-help efforts. The district also reviews and endorses projects in the district sponsored by parastatal organizations and nongovernmental organizations.

The Government will place renewed emphasis on the water sector in the next five year development plan (1988-1993). Donors and the Government seem to be rethinking their strategies to better cover both rural and peri-urban areas. A more integrated approach should encompass more low-cost water and sanitation technologies, community participation, revenue collection, and child survival activities.

At present the GOK is preparing an up-to-date position paper which will outline the present water sector situation and provide a framework for a sector strategy and action plan.

#### **4. Sector Administration**

Several government agencies are actively involved in the development, operation, and maintenance of water supplies in Kenya. The Ministry of Water Development (MOWD) is the sole agency with technical expertise in water supplies as well as the largest water supply institution. The Ministry of Local Government provides funding for water supplies and sewerage development in the capital city, eight municipalities, and several city councils. The Ministry of Culture and Social Affairs administers grants to many self-help schemes in the rural areas including water supply schemes. The Department of Settlements plans and budgets water supplies for new settlement areas. The Ministry of Health is responsible for rural sanitation and has been engaged in a demonstration program for small rural water supply schemes.

#### **5. Water Sector Studies**

No recent comprehensive water sector study on Kenya is available. There is a significant lack of basic sector-specific information. The Government has been working for over a year on a position paper outlining the present sector situation. The World Bank is prepared to assist the Government with a sector strategy and action plan once this information and water sector policies are available. UNICEF and other donors are beginning to collect relevant baseline data and within a year much more sector information should be available.

#### **6. Past Investments in the Sector**

There does not appear to be a comprehensive analysis of past sector investment. However, the list of projects and costs compiled by WHO in its Country External Support Information as well as a review of World Bank and United Nations activities in the sector give an indication of past levels of investment, although this is probably an underestimate.

Table 4

**PAST SECTOR INVESTMENT**  
(in millions of US \$)

|                             | <u>Total</u>  | <u>Urban</u> | <u>Rural</u> |
|-----------------------------|---------------|--------------|--------------|
| World Bank*                 | 151.0         | 131.0        | 20.0         |
| Federal Republic of Germany | 95.0          | 95.0         | -            |
| Sweden (SIDA)               | 88.0          | -            | 88.0         |
| Saudi Fund                  | 38.7          | 38.7         | -            |
| Norway (NORAD)              | 32.6          | 32.6         | -            |
| African Dev. Bank           | 31.7          | 31.7         | -            |
| Finland                     | 23.0          | -            | 23.0         |
| Canada (CIDA)               | 6.6           | -            | 6.6          |
| WFP                         | 5.0           | -            | 5.0          |
| UNDP                        | 3.3           | 0.3          | 3.0          |
| OPEC Fund                   | 3.0           | 3.0          | -            |
| Japan                       | 2.3           | 2.3          | -            |
| UNICEF                      | 2.0           | -            | 2.0          |
| IFAD                        | <u>1.3</u>    | <u>-</u>     | <u>1.3</u>   |
| <b>TOTAL</b>                | <b>483.50</b> | <b>334.6</b> | <b>148.9</b> |

Note: Netherlands, United Kingdom, and NGOs are not listed.

\*World Bank totals may include funds for projects not solely devoted to water supply.

## 7. Proposed Investments in the Sector

As with past investments, there is little information on proposed investment outside of that provided by UNICEF, the World Bank, and WHO. However, it seems likely that Sweden, Finland, the Netherlands, Germany, Norway, and many of the multilaterals will continue to be active in the sector.

A number of proposals are being considered:

- ◆ The World Bank has been asked to provide approximately \$90 million to the rural sector and about \$120 million to the urban sector over the period 1988-1992.
- ◆ UNICEF will work in six districts in the rural sector and in urban fringe areas of the three largest towns over the next five years. Initial funding will be about \$3 million over two years. The project proposal calls for a long-term investment of \$20 million which will be sought from several sources. UNICEF funding levels will depend on initial success and available resources.

- ◆ Germany and the African Development Bank have been asked to provide \$17.5 million and \$9 million respectively for urban schemes.
- ◆ Sweden (SIDA) has been asked to contribute \$2 million to continue some of its rural sector activities.

## 8. Health Indicators

Tables 5 through 7 show major out-patient and in-patient morbidity patterns, the ten most common infant and child diseases, and causes of morbidity by disease. Parasitic and infectious diseases are responsible for high morbidity and mortality rates in Kenya, accounting for 18% of all deaths reported in 1980. This includes malaria, schistosomiasis, and other vector-borne diseases such as sleeping sickness, filariasis, etc. Intestinal and diarrheal diseases accounted for 10.9% of out-patient morbidity in 1980. These, combined with diseases of the respiratory system, accounted for 60% of total reported morbidity.

TABLE 5

### MAJOR OUT-PATIENT MORBIDITY PATTERNS IN KENYA, 1980

|   | <u>Total Cases<br/>Treated (%)</u> |
|---|------------------------------------|
| Acute respiratory infections<br>(including pneumonia) | 20.0                               |
| Malaria   | 18.0                               |
| Skin diseases   | 9.8                                |
| Diarrheal diseases                                    | 6.3                                |
| Intestinal worms                                      | 4.6                                |
| Accidents (all forms)                                 | 2.9                                |
| Measles   | 2.6                                |
| Acute eye infections                                  | 2.4                                |
| Gonorrhoea  | 1.7                                |
| Acute ear infections                                  | 1.7                                |
| All others  | 30.0                               |

TABLE 5 (continued)

MAJOR IN-PATIENT MORTALITY PATTERNS IN KENYA, 1980

|  | <b>Total Deaths<br/>Reported (%)</b> |
|--|--------------------------------------|
| Infections and parasitic diseases          | 18.0                                 |
| Respiratory diseases (including pneumonia) | 17.1                                 |
| Circulatory system diseases                | 13.6                                 |
| Diseases of the new-born and child bearing | 5.5                                  |
| Enteritis and other diarrheal diseases     | 4.9                                  |
| Tuberculosis (all forms)                   | 3.7                                  |
| Digestive system diseases                  | 3.0                                  |
| Metabolic and nutritional disorders        | 2.6                                  |
| Cerebral vascular diseases                 | 2.5                                  |
| All others                                 | 29.0                                 |

SOURCE: Health Information System, 1980 (based on Government facilities only)

**9. Privatization**

"Sessional Paper No. 1 of 1986, Economic Management for Renewed Growth," provides policy guidelines for Kenya's development for the remainder of this century. It emphasizes the need to accelerate growth in order to provide productive employment for a labor force which is expected to increase by 86% between 1985 and 2000, and the target is a growth of 5.6% annually in GDP. The paper assigns to the private sector the dominant role in revitalizing Kenya's economy and asserts that the Government will establish market-based incentives for private sector investment, while relying less on instruments of direct control.

The Ministry of Industry has requested that a strategy for small enterprise development be included in the next five-year development plan. The Ministry of Planning and National Development and UNDP/ILO have contributed their expertise and resources to this project. The draft strategy paper endeavors to provide both the Government and the private sector in Kenya with information on how small enterprises can be encouraged to grow and fulfill expectations outlined in the sessional paper mentioned above. The draft strategy paper examines three broad areas in which changes will need to be made to induce an acceleration of small enterprise growth: the enabling environment, investment and finance, and non-financial promotion programs. These will be presented as specific proposals for donor funding at a scheduled donors meeting in January 1989. The Ministry of Planning and National Development has recently established a Small Scale Enterprise Division which will coordinate activities in the sector throughout the country.

**TABLE 6**  
**THE TEN MOST COMMON INFANT AND CHILD DISEASES 1978**  
**KENYA**

| DISEASE                                | INFANTS    | (< 1 YEAR) | CHILDREN   | (1-4 YEARS) |
|--|------------|------------|------------|-------------|
|  | %          | RANKING    | %          | RANKING     |
| Pneumonia                              | 26         | 1          | 21         | 2           |
| Enteritis and other diarrheal diseases | 21         | 2          | 10         | 3           |
| Measles                                | 10         | 3          | 23         | 1           |
| Malaria                                | 6          | 4          | 8          | 4           |
| Acute respiratory infections           | 5          | 5          | 4          | 6           |
| Bronchitis, emphysema, and asthma      | 4          | 6          | 5          | 5           |
| Tetanus                                | 3          | 7          | -          | -           |
| Symptoms and ill defined conditions    | 2          | 8          | 2          | 10          |
| Anaemias                               | 2          | 9          | 3          | 7           |
| Meningitis                             | 1          | 10         | -          | -           |
| Burns                                  | -          | -          | 3          | 8           |
| Avitaminoses                           | -          | -          | 3          | 9           |
| Others                                 | 20         |            | 18         |             |
| <b>TOTAL ALL CASES</b>                 | <b>100</b> |            | <b>100</b> |             |

SOURCE: ROK, Ministry of Health, Health Information Bulletin, Vol. 4, No. 4, 1982

**TABLE 7**  
**CHILDHOOD MORTALITY**  
**KENYA**

| MORTALITY BY CAUSE                     | INFANTS         | CHILDREN         |
|--|-----------------|------------------|
|  | (< 1 YEAR)<br>% | (1-4 YEARS)<br>% |
| Pneumonia                              | 31              | 25               |
| Tetanus                                | 17              | 24               |
| Enteritis and other diarrheal diseases | 12              | 9                |
| Measles                                | 8               | 8                |
| Other diseases                         | 32              | 34               |
| <b>TOTAL</b>                           | <b>100</b>      | <b>100</b>       |

SOURCE: GOK, Ministry of Health, Health Information System.  
In-patient Report 1978, Vol. 4, No. 4, March 1982

## **10. Recommendations for USAID**

Collaborative efforts will be essential if Kenya is to meet its water and sanitation targets by the year 2000. Keeping coverage ahead of this rapidly growing population will require a coordinated effort by donors and government where all the resources at the national and district levels for water supply, sanitation, and related activities are combined as part of a comprehensive planned approach. As already mentioned, the framework is provided through the district focus for rural development and recent policy decisions of the Government for the implementation of a more coordinated and effective program. The level of success in implementing such a program will depend largely on Government/donor coordination and collaboration.

At present, USAID is not funding any water and sanitation projects in Kenya. However, given the recent moves by the Government to develop a national strategy for small enterprise development and to emphasize the private sector in its development strategy for the next 10 to 15 years, it would appear that there are several opportunities for USAID to support government initiatives in the water and sanitation sector while fulfilling its own policy objectives.

Supporting the local manufacture of water pumps, sanitation units, rainwater harvesting components, etc., can have significant impact both on local businesses as well as on improving basic services. The AFRIDEV handpump is a very low-cost village-level operation and maintenance (VLOM) pump which has been developed and tested in Kenya with very positive results. It can be locally manufactured in Kenya and support in its manufacture might be considered by USAID.

The lack of basic sector information is a constraint to developing the water and sanitation sector. There is a real need for comprehensive sector studies to enable donors and Government to more effectively use limited sector resources. Such studies might be undertaken by USAID.

Support to the significant nongovernmental organization community in Kenya through the provision of funds for water and sanitation activities would help to increase coverage to meet decade goals. USAID is already funding many non-governmental organizations through its Rural Enterprise Development Project.

The Kenyan Government is supporting local entrepreneurs and the creation of industrial estates throughout the country. These groups often require adequate water and sanitation facilities which might also be supported through the Rural Enterprise Development Project or one similar to it.

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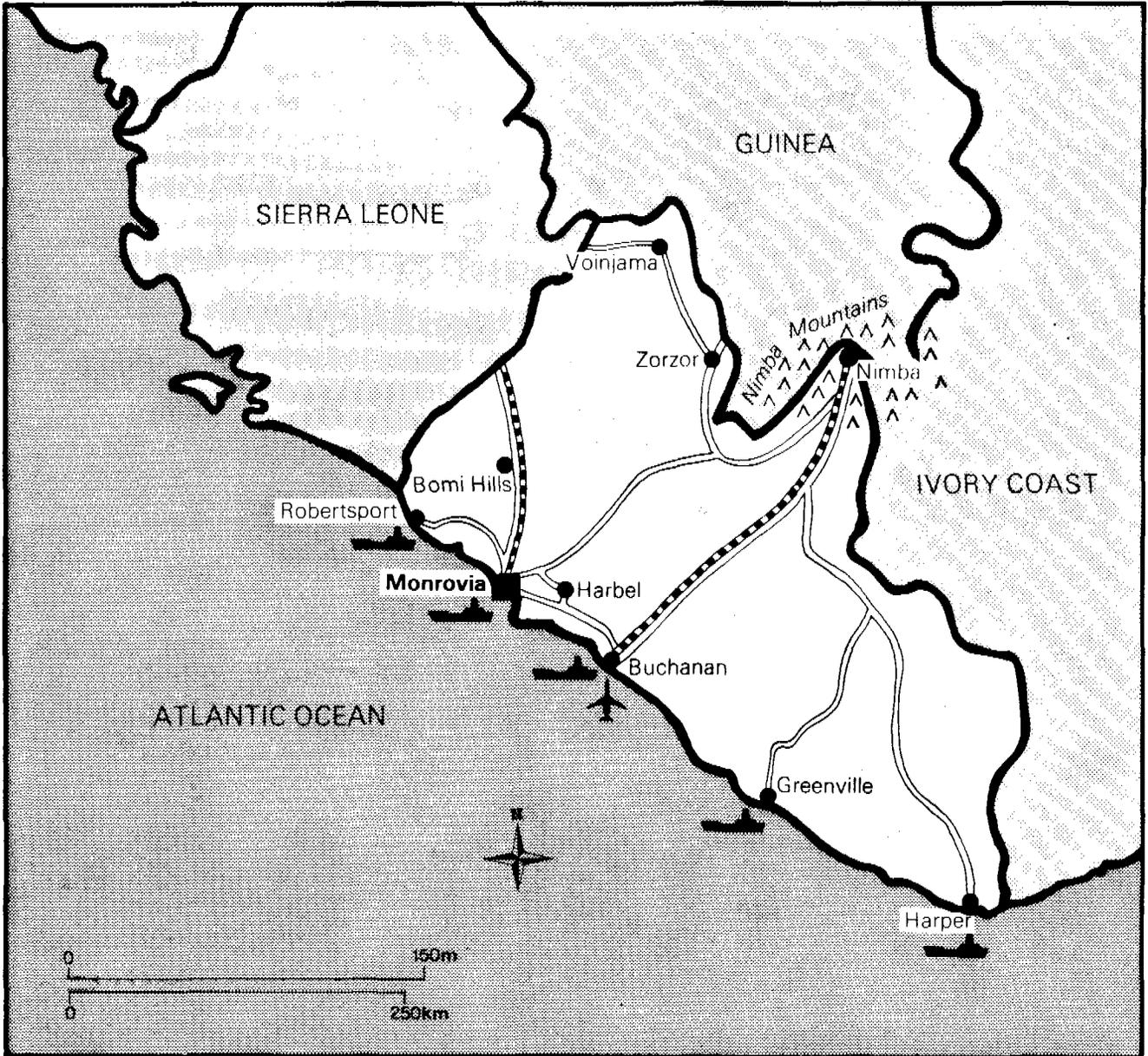
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LIBERIA



# LIBERIA

**Population:** Total 2.5 M (Urban 38%, Rural 62%)  
**Population Growth Rate:** 3.1% per year (Urban 4.3%)

**GNP Per Capita:** US \$460  
**Adult Literacy:** Total 35% (Male 47%, Female 33%)  
**Life Expectancy:** 54 years (Male 52, Female 55)  
**Infant Mortality (under 1 year):** 124 per 1,000 births  
**Child Mortality (under 5 years):** 215 per 1,000 births

**Status of Decade/Sector Plan:** In preparation

**Water and Sanitation Agencies:**

Liberia Water and Sewerage Corporation (LWSC)

Ministry of Rural Development (MRD)

Ministry of Health and Social Welfare

## Decade Progress

Liberia, in spite of civil strife and economic problems in the early 1980s, appears to have made great strides over the last eight years in the provision of urban water supply. However, a great deal of the urban infrastructure provided was reported in need of overhaul or repair. Further, the rural population with access to safe water is extremely low, and nationwide sanitation coverage is poor.

Thus, reaching Decade targets even by the year 2000, for either water supply or sanitation, appears extremely doubtful due to the large investments required, coupled with the relatively weak institutions involved and the shortages of human resources in all of Liberia's development sectors.

There is no formal Decade plan for Liberia. However, tentative targets have been set and responsibilities for service provision in various subsectors have been firmly established for some

time. Coverage targets are 100% for urban water supply and sanitation and 90% for rural water supply and 17% for rural sanitation.

Urban water supply and sanitation is the responsibility of a parastatal agency, the Liberia Water and Sewerage Corporation (LWSC). The LWSC has had a great deal of external support since its creation in 1973. Notwithstanding its status and putative responsibilities, the LWSC has no ministerial reporting responsibilities, and for the most part, provides urban water supply only to Monrovia and 10 other urban locations.

West Germany and the World Bank have provided approximately \$18 million (or 60% of the sector's external assistance) to the LWSC over the last eight years. The ongoing, second water supply project, sponsored primarily by the World Bank, had as a main objective the institutional strengthening of the LWSC.

Responsibility for the rural sector rests with the Ministry of Rural Development, which is primarily involved with the provision of rural water supply infrastructure. Although this agency has had extensive aid from UNICEF, its low budget and insufficient level of expertise have sorely constrained the rural sector's development.

The sector nominally has a high level of coverage for urban water supply: 87% in 1988. Nevertheless, it is

doubtful that Decade targets will be reached. In rural water, the goal of 90% coverage is especially unrealistic given the current very low (18%) coverage and the weakness of sector institutions. Similarly, the gap between current coverage and the Decade target for urban sanitation is a daunting 72%. (Coverage is at 18%; the Decade target is 90%.) Rural sanitation is almost nonexistent, but the Decade target of 17% does not place enough emphasis on this subsector.

USAID has not been a major player in Liberia's water supply and sanitation sector. Its only intervention was to provide elements of rural water supply and sanitation (total investment about \$0.7 million) as part of a \$14.7 million primary health care project. However, USAID has exhibited a great interest in Liberia and overall assistance levels have been substantial over the last 10 years.

Liberia's greatest need in the sector is in rural water and both urban and rural sanitation. Based upon rough estimates, one million dollars invested in the rural sector could provide water supply and sanitation for approximately 50,000 persons (i.e., 2% of the estimated 1988 national population). The cost is for a "comprehensive UNICEF-type program" including community participation, health education, and training for villagers to operate and maintain the systems.

TABLE 1  
 INVESTMENT REQUIREMENTS  
 LIBERIA

| ESTIMATED COVERAGE<br>COSTS AND POPULATION | URBAN |            | RURAL |            | TOTALS |
|--|-------|------------|-------|------------|--------|
|  | WATER | SANITATION | WATER | SANITATION |        |
| Population Served 1988                     | 0.8   | 0.1        | 0.3   | 0.1        |        |
| Coverage Target 2000                       | 1.6   | 1.6        | 1.8   | 0.4        |        |
| Shortfall/Unserved                         | 0.8   | 1.5        | 1.5   | 0.3        |        |
| Cost (US \$)                               | 70.0  | 160.0      | 35.0  | 11.0       | 276.0  |
| Proposed Investment                        |       |            |       |            |        |
| Net Shortfall                              |       |            |       |            |        |

- 1 Population and costs in millions.
- 2 Assume 1988 population .94M urban, 1.52M rural; year 2000 1.56M urban, 2.04M rural.
- 3 Assume urban growth rate of 4.3%.
- 4 Assume % access to water supply 1988 87% urban, 16% rural; year 2000 100% urban, 90% rural.
- 5 Assume % access to sanitation 1988 10% urban, 5% rural; year 2000 100% urban, 17% rural.
- 6 Assume per capita cost urban water supply \$87, sanitation \$107; rural water \$23, sanitation \$37. (Based on mid-Decade report, except rural sanitation which is Africa average.)

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## COUNTRY PROFILE: LIBERIA

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### 1. Population

Population data was synthesized from several sources. The yearly totals for 1980, 1988, and 2000 were taken from the World Population Profile (1987), published by the U.S. Bureau of the Census. The urban and rural components were estimated utilizing urbanization data as presented by the World Bank's World Development Report - 1988. The percent of urban population was applied to the estimated 1985 population (determined by extrapolating the Bureau of the Census values) to obtain an estimate of the urban total for 1985. This 1985 value was projected to years 1988 and 2000, and extrapolated back to year 1980 by utilizing the average urban population growth rate for 1980-1985.

Approximately 50% of the urban population resides in metropolitan Monrovia, and a very large portion of the remaining urban population resides in 10 urbanized areas outside the capital. The rural population is dispersed throughout 13 counties, with about half the rural total residing in the four most interior counties on Liberia's northern and eastern borders.

Table 2

Past, Present, and Projected Population  
(in millions)

|      | <u>Total</u> | <u>Urban</u> | <u>Rural</u> |
|------|--------------|--------------|--------------|
| 1980 | 1.90         | .64 (35%)    | 1.23 (65%)   |
| 1988 | 2.46         | .94 (38%)    | 1.52 (62%)   |
| 2000 | 3.60         | 1.56 (43%)   | 2.04 (57%)   |

Source: U.S. Bureau of the Census

### 2. Coverage

The coverage data shown in Table 3 were difficult to estimate. Liberia's Decade plan is in preparation (although preliminary coverage target levels appear to have been set), and there were very few recent reports available which analyzed the sector from a national perspective. The 1980 values were roughly estimated using summary reports of mid-Decade progress. The coverage level for 1988 was based upon extrapolations of 1985 data. Year 2000 levels were estimated using the reported Decade target levels of service.

There were many indications that the 1985 values for both urban and rural water coverage might be somewhat high. While the infrastructure might be in place to cover the level of population shown, poor operation and maintenance and equipment failure may make the actual coverage much lower. The urban and rural water supply targets for the year 2000 thus appear too high to be realistic.

The current low coverage rate for sanitation reflects the very low priority given this subsector. None of the reports reviewed made prominent mention of wastewater planning. The high urban sanitation targets for the year 2000 are thus obviously too optimistic. Conversely, the target for rural sanitation appears too low if the health benefits afforded by any rural water supply investments are to be obtained.

TABLE 3  
 WATER AND SANITATION COVERAGE FOR 1980 AND 1988  
 AND TARGETS FOR 2000  
 (in percents)  
 LIBERIA

| YEAR  | WATER |       | SANITATION |       |
|-------|-------|-------|------------|-------|
|       | URBAN | RURAL | URBAN      | RURAL |
| 1980* | 30    | 10    | N/A        | N/A   |
| 1988  | 87    | 18    | 10         | 5     |
| 2000  | 100   | 90    | 100        | 17    |

SOURCE: W.H.O. IDWSSD Review of Mid-Decade Progress

\* Estimated by the author

### 3. Decade/Sector Action Plan

Liberia's Decade plan is said to be under preparation. Thus, no official Decade plan is in force. However, several reports made reference to "plan targets" (year 2000) and preliminary coverage target levels (as shown in Table 3) appear to have been set (albeit, in most cases, at optimistically high levels).

Several reports presented overviews of the rural water sector, but none could be classified as a true sector study. Likewise, there were no reports or plans available which characterized the urban subsector.

#### **4. Sector Administration**

Liberia's water supply and sanitation sector is organized along strict lines of responsibility. The Liberia Water and Sewerage Corporation (LWSC) was established in 1973 and is empowered to implement and operate water supply and sewerage systems throughout Liberia. Organized as a parastatal corporation, the commission nevertheless has no ministry reporting responsibilities.

The LWSC's operations cover Monrovia and 10 other cities, but in 8 cities outside of Monrovia operations are not on a truly commercial basis, as any operating deficits are covered by the Central Government. The corporation is primarily involved in providing water supply service and sewerage to a small part of Monrovia. Other urban wastewater responsibilities have fallen to local government authorities to implement. These are extremely weak organizations, able to provide only very low levels, if any, of formal service. In most urban areas, including Monrovia, wastewater disposal is almost exclusively provided through individual household facilities, namely latrines. (Septic tanks and cesspools are utilized in some of the newer urban areas.)

The Ministry of Rural Development (MRD) is the primary implementing agency in the rural sector. The MRD's program thrust in the sector is to provide rural water supply infrastructure for communities with populations under 5,000. The Ministry of Lands, Mines and Energy supports the rural water program through provision of hydrologic and water quality services. The Ministry of Health and Social Welfare, through its Division of Environmental Health, also supports the rural program through provision of health education and environmental awareness relating to water supply and promotes sanitation projects.

(The Ministry of Planning and Economic Affairs supports the urban and rural subsectors by coordinating donor assistance and monitoring the Government's contribution to the sector.)

The LWSC has a very weak institutional structure. One of the major objectives of the World Bank's ongoing second water supply project was to strengthen the LWSC so that it could function successfully as a utility. Thus, a large portion of the total project cost -- about \$US 12 million -- is to be expended in upgrading LWSC's management and its technical and financial capabilities.

The MRD's efforts in rural water supply were described as "constrained" due to low budgets and lack of technical expertise. A sizeable portion of the MRD's program is managed by UNICEF personnel.

#### **Program Direction in Sector**

Over the past ten years, Liberia's most significant efforts in the sector have been directed towards upgrading the facilities and management capabilities of the LWSC and increasing its water supply service area. (Approximately 70% of the external aid to the sector has been utilized in these efforts. See Section 7.)

The MRD's program has similarly been focused on provision of water supply infrastructure. However, the rural water supply programs have enjoyed long-term UNICEF involvement in terms of assistance in managing and implementing the programs.

Donor-sponsored elements of the MRD's program are under the UNICEF management purview. Over the last several years, most projects in Liberia's rural water supply program have taken on a decided "UNICEF flavor" in that they appear to be more comprehensive in scope. Rather than providing only water supply infrastructure, the projects include community involvement to a greater degree than previous projects did. They also contain elements of environmental and health education and may be executed in conjunction with primary health care efforts.

The MRD's activities include certain elements which, although not explicitly indicated as such, comprise a rural sector policy. These policy elements include:

- ◆ development of a handpump which is suitable for use in Liberia,
- ◆ development of new water sources (for use with handpumps where possible) primarily directed towards hand-dug shallow and drilled wells and spring boxes,
- ◆ rehabilitation of existing facilities,
- ◆ improved maintenance practices,
- ◆ an integrated approach to water projects which includes sanitation and community participation and
- ◆ the requirement that villagers make payments for operation and maintenance.

## 5. Water Sector Studies

The reports reviewed for this sector profile which provided the most useful and/or specific information are identified below. Other reports reviewed for this assignment pertinent to this Liberia sector profile are listed at the end of the text.

Proposal: For a Community Water Supply Maintenance and Sanitation Project - Grand Gedeh County, UNICEF, September 1987.

Rural Water Supply in Liberia, J.M. Yarsiah, Director, National Rural Water Program, Ministry of Rural Development; E.B. Glay, Engineer Ministry of Lands, Mines, and Energy, October 1986.

Staff Appraisal Report - Republic of Liberia Second Water Supply Project, World Bank, February 1985.

## 6. Past Investments in the Sector

The lack of comprehensive sector studies and/or development budgets makes it difficult to estimate sector investments in the 1980-1988 period. The Country External Support Information listings compiled by WHO, USAID data, the World Bank Appraisal Report for Liberia's Second Water Supply Loan (1985), and UNICEF reports were used to compile Table 4, which gives investments for the 1980-1988 period.

Table 4

Past Investments in Water Supply and Sanitation  
1980-1988  
(In millions US \$)

|   |            |
|---|------------|
| Government of West Germany              | 13.2       |
| World Bank                              | 5.0        |
| African Development Bank                | 4.0        |
| Government of Denmark                   | 3.2        |
| Government of France                    | 2.4        |
| Government of Liberia                   | 1.8        |
| UNDP                                    | 1.7        |
| USAID                                   | <u>0.7</u> |
| (part of a primary care health program) |            |
|   | \$ 33.0    |

The amounts listed for the World Bank, the African Development Bank, West Germany, and the Government of Liberia (representing about 70% of the total) were for LWSC projects (i.e., primarily for urban water supply).

The total investment shown in Table 4 is probably an underestimation due to the low level listed for the Liberian Government and the omission of sector investments by private voluntary and other nongovernmental organizations. In addition a 1987 UNICEF proposal for a comprehensive rural water supply program (including sanitation, health education, and community participation) indicated that projects were being funded in many of Liberia's counties through external development assistance being provided by the EEC, and the governments of Japan, Holland, and the United Kingdom. However, the program levels of these and/or any co-commitments by Liberia for these projects were not indicated, nor were any details about them available in other reports.

## 7. Proposed Investments in the Sector

Very few data were available on proposed investments. The references in Section 6, above, indicated that external aid of approximately \$4.7 million was available for rural water supply and sanitation projects and \$3.6 million for further LWSC projects. There were no indications given as to the probable levels of Government investments.

## **8. Health Indicators**

Very few quantitative and/or statistical data were available describing the general health levels in Liberia. However, data on life expectancy and child and infant mortality given on the first page of this profile give some idea about the health situation.

Child and infant mortality rates (124 and 215 respectively) are ranked by UNICEF as very high.

Several reports listed the major causes of infant and child deaths as respiratory infections, diarrhea, measles, tetanus, premature birth, and malaria. Further, malaria was cited as the major cause of sickness and death in adults, followed by gastroenteritis, upper respiratory infections, and intestinal parasites.

Obviously safe water supplies and proper sanitation could help provide wide-ranging benefits in terms of child survival and increased health levels in general.

## **9. Privatization**

In the reports reviewed for this profile, the only mention of privatization opportunities was that some water vending was practiced in Monrovia. However, it appears this practice is limited to delivery of water from standposts as a convenience to persons who can afford to pay. Thus, coverage is not substantially increased through the vending. From the reports reviewed, it is difficult to determine if other viable possibilities exist for the private sector.

Nevertheless, as per past practice, construction of systems/facilities offers an obvious option. Further, handpump manufacture in Liberia, and/or provision of maintenance for the handpumps utilized, also may be a possibility. Private repair services would probably be dependent upon the number and type of handpumps in use and their distance from Monrovia.

Expanding the supply provided by vendors also may be a possibility for the private sector. However, several conditions would be required. First, delivery points or standposts would either have to be dedicated to vendors or would have to provide enough water to serve the vendors' needs as well as those of the public using the facility. Further, the LWSC would have to license and monitor vendor activity to assure high water quality at reasonable prices, and both the public and the LWSC would have to accept water-vending as a proper practice which could be an economical substitute for piped delivery (either through direct connections or additional standposts).

## 10. Recommendations for USAID

USAID has a very sizeable mission in Monrovia and provides a great deal of assistance to the Government of Liberia. USAID's development strategy appears to be directed towards helping Liberia to stabilize its economy, increase its child survival rate, and improve its education and housing. It is estimated that \$38 million will be expended in FY 1988 for USAID's entire program, not counting about 10% for private voluntary and nongovernmental organization support. USAID's only water supply and sanitation intervention over the past several years appears to be as part of its primary health care program (estimated at about 5% of this \$14.7 million program).

There are several possibilities for USAID in the sector. The most promising options include projects in rural water supply and especially sanitation (through MRD, UNICEF, and/or private organizations), institutional development for the MRD (Ministry of Health, Department of Environmental Health) or the LWSC, and various possible privatization activities (vending or handpump manufacture).

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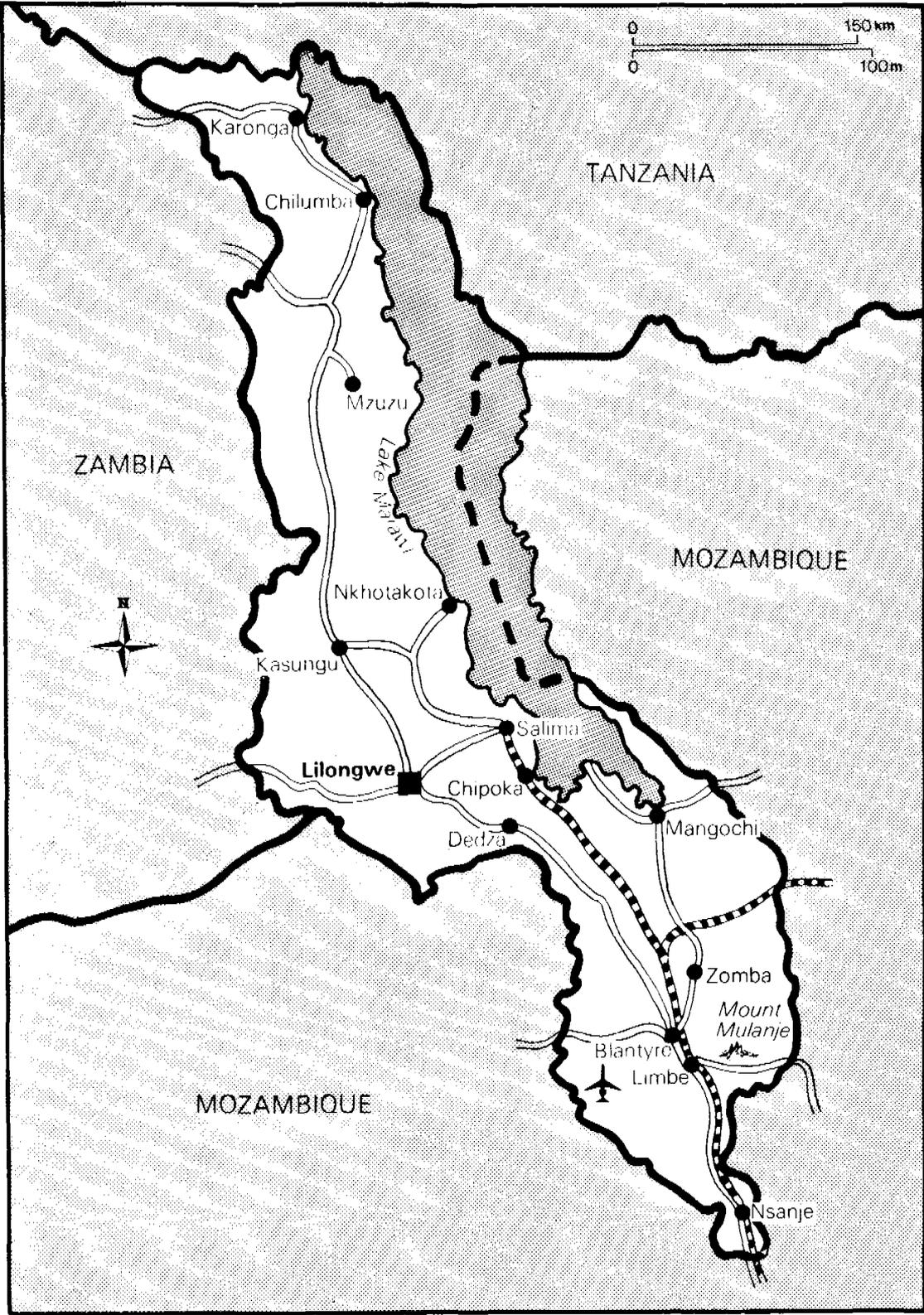
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MALAWI



# MALAWI

**Population:** Total 7.7 M (Urban 12%, Rural 88%)  
**Population Growth Rate:** 3.2% per year (Urban 7%)

**GNP Per Capita:** US \$170  
**Adult Literacy:** Male 59%, Female 32%

**Life Expectancy:** 45.6 years (Male 44.3, Female 47.1)

**Infant Mortality (under 1 year):** 151 per 1,000 births

**Child Mortality (under 5 years):** 275 per 1,000 births

**Status of Decade/Sector Plan:** Plan completed in 1988

## Water and Sanitation Agencies:

Department of Water, Ministry of Works  
 Ministry of Health  
 Lilongwe Water Board  
 Blantyre Water Board

## Decade Progress

Malawi's approach to providing water has been quite successful, particularly in rural areas with the community-based, self-help schemes. Also, because the Government has put a strong emphasis on community maintenance, there is less of a tendency for equipment to stand idle. Most of the materials used for rural systems are low cost and manufactured in Malawi.

In rural areas three basic water supply systems are used: piped water supplied by gravity from surface sources and, from groundwater sources, dug-well handpumps and borehole handpumps. In rural areas water has been supplied free as a government subsidy, but plans call for phasing-in a cost-recovery program.

In urban areas house connections predominate, but a scheme promoting communal water points in peri-urban areas and poor districts has been instituted. There are tariffs for all urban water systems, even for communal water points.

Major investments have been made in Malawi's water supply, particularly in

the rural self-help gravity piped water schemes, by a large number of bilateral donors (USAID, the African Development Fund, Germany, Canada, Britain, Denmark, the European Development Fund), and multilateral organizations (the World Bank, UNDP, UNCDF), as well as numerous non-governmental organizations. Based on available documents (which may underestimate the amounts), total investment to date is estimated at \$107.5 million, \$34 million of which was supplied by the Government of Malawi between 1981 and 1987.

Until just recently Malawi had developed no core plan for the water and sanitation sector. The recently completed Sector Position Paper and Action Plan sets goals of 94% coverage for water in urban areas and 74% in rural areas by 1996. Given Malawi's fast growing population, it will be extremely difficult to meet those goals. The planned 1988-1989 investment is \$5.57 million, far short of the estimated \$20 plus million needed per year to meet Decade goals.

The most recent available figures (1987) put water coverage at 77% for urban areas and 36% for rural areas. Approximately 41% of the population overall has access to clean water.

The situation is not as good for sanitation. In rural areas no reliable data exist concerning the use of latrines and not as much emphasis has been placed by the Government on providing sanitation in rural areas. In urban areas about 15% of the population has

access to a waterborne sewage system. Other urban dwellers rely on pit latrines and septic tanks. The Action Plan lists no specific coverage goals for sanitation.

Malawi is encouraging the involvement of the private sector in water and sanitation. Two parastatals are responsible for water supply in Malawi's principal cities, Lilongwe and Blantyre.

Water supply in other urban areas and in rural areas is the responsibility of the Department of Water of the Ministry of Works. Responsibility for sanitation is not as clear. The Ministry of Health is responsible for rural sanitation but urban sanitation is administered by local councils. One of the goals of the current Action Plan is to sort out administrative responsibilities for sanitation and set some specific goals.

At the top of the list of Malawi's basic constraints is a severe shortage of trained personnel in water and sanitation. Also, the rapid increase in population means that even with great efforts Malawi will find it difficult to increase the proportion of the population covered. While Malawi is one of the least developed countries with one of the lowest per capita GNPs and very limited resources to devote to water and sanitation, it has attracted, and should continue to attract, considerable external investments--largely because its water supply programs are practical and well thought out.

TABLE 1  
 INVESTMENT REQUIREMENTS  
 MALAWI

| ESTIMATED COVERAGE<br>COSTS AND POPULATION | URBAN |            | RURAL |            | TOTALS |
|--|-------|------------|-------|------------|--------|
|  | WATER | SANITATION | WATER | SANITATION |        |
| Population Served 1988                     | 0.7   | 0.6        | 2.4   | 2.4        |        |
| Coverage Target 2000                       | 1.9   | 1.4        | 7.0   | 7.0        |        |
| Shortfall/Unserved                         | 1.2   | 0.8        | 4.6   | 4.6        |        |
| Cost (US \$)                               | 72.0  | 88.0       | 175.0 | 170.0      | 515.0  |
| Proposed Investment                        |       |            |       |            |        |
| Net Shortfall                              |       |            |       |            |        |

- 1 Population and costs in millions.
- 2 Assume population 1988 .9M urban, 6.8M rural; year 2000 2.0M urban, 9.4M rural.
- 3 Assume urban growth rate of 7%.
- 4 Assume % access to water supply 1988 77% urban, 36% rural; year 2000 94% urban, 74% rural.
- 5 Assume % access to sanitation 1988 70% urban, 36% rural; year 2000 70% urban, 74% rural. (Since no data available, rural sanitation coverage figures for 1988 and year 2000 are assumed to be no greater than rural water supply coverage figures.)
- 6 Assume per capita cost urban water supply \$60, sanitation \$122; rural water supply \$38, \$37 sanitation. Figures based on averages for Africa.

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## COUNTRY PROFILE: MALAWI

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### 1. Population

According to the US Bureau of the Census, the population of Malawi is currently 7.68 but USAID/Malawi puts the figure much higher at 8.27 million. The Government of Malawi gives eight million as the population in 1987.

All sources agree, however, that the population is growing very rapidly; the current rate of increase is 3.2 to 3.7%, depending on the source. This means that by the year 2000 Malawi's population will be 11.4 to 12 million.

Malawi's population is still largely rural. Current estimates of the percent living in urban areas range from 11 to 15%, up from 10% in 1980. According to Government of Malawi reports, Malawi is still in an early stage of urbanization, and the emphasis put on agricultural development has slowed the rural exodus. The government does not expect a drastic increase in the urban population by the year 2000. However, the rate of urbanization is higher than the growth rate. For planning purposes the government uses 7% per annum as the rate of urbanization.

Table 2  
Past, Present, and Projected Population  
(in millions)

|      | <u>Total</u> | <u>Urban</u> | <u>Rural</u> |
|------|--------------|--------------|--------------|
| 1977 | 5.6          | 0.6 (10%)    | 5.0 (90%)    |
| 1988 | 7.7          | 0.9 (12%)    | 6.8 (88%)    |
| 2000 | 11.4         | 2.0 (18%)    | 9.4 (82%)    |

Source: U.S. Bureau of the Census

### 2. Coverage Data

Malawi has a very good record in providing clean water supplies for rural areas. Much of this success is due to the Rural Gravity Piped Water Projects organized through grassroots district development committees. The government pays the capital costs, and the community supplies labor and continuing operations and maintenance. These projects have attracted substantial external support.

In urban areas coverage has also been good, but it is at present diminishing. The growth in population and urbanization has made it very difficult for the government to keep pace.

While Malawi has been very successful in providing water, it lags behind in sanitation. Very few data are available on sanitation coverage. The 1983 draft Water Sector Plan stated that 15% of urban areas had waterborne sewage systems. The remainder used septic tanks and pit latrines. The IDWSSD 1987 Directory gives 70% coverage as the Decade goal for urban areas.

While the Ministry of Health is committed to the goals of the Decade, it also has other goals, such as the Health for All by the Year 2000 project, and has decided to deal with rural sanitation more globally. IDWSSD activities are thus encompassed within the framework of primary health care. There are very few data available on the proportion of the rural population using latrines.

The Government of Malawi has been committed to seeing that provisions are made for operating and maintaining systems in place and has put effort into helping communities organize themselves to this end. However, as the systems age, more money is needed for replacement parts and major repairs. The 1988 Action Plan calls for phasing out subsidies in rural areas where service has traditionally been free. This could have a negative effect on the self-help ethos.

TABLE 3

WATER AND SANITATION COVERAGE FOR 1980 AND 1988  
AND TARGETS FOR 1996 and 2000  
(in percents)

MALAWI

| YEAR | WATER |       | SANITATION |       |
|------|-------|-------|------------|-------|
|      | URBAN | RURAL | URBAN      | RURAL |
| 1980 | 77    | 37    | 15         | N/A   |
| 1988 | 77    | 36    | 70 *       | 36 *  |
| 1996 | 94    | 74    | 70         | N/A   |
| 2000 | 94    | 74    | 70 **      | 74 ** |

SOURCE: W.H.O. IDWSSD Review of Mid-Decade Progress

\* No data available. Assume urban sanitation coverage at 70% for 1988 from mid-Decade report and rural sanitation at 36% (or no higher than rural water coverage)

\*\* Assume no growth in urban sanitation 1988 to 2000, but great growth in rural sanitation.

### 3. Decade/Sector Action Plan

Malawi attended the meeting in Mar Del Plata, Argentina, in 1977, when the Water and Sanitation Decade was established and committed itself to the Decade goals: water and sanitation for all people by the year 1990. While Malawi had an effective water supply and sanitation program, the Decade gave a new sense of urgency. Rural areas and poor urban areas were given the highest priorities for action plans.

In 1977, preparation of a master plan for the sector was recommended. A number of WHO/Cooperative Programmes missions visited Malawi and assisted the Government to expound various components of a Decade master plan. In the latter part of 1981, a UNDTCD/Government of Malawi National Water Resources Master Plan was prepared. The requirement of domestic water supplies to meet the IDWSSD targets forms an integral part of this master plan. In 1982 the Environmental Sanitation Master Plan was prepared.

In 1982 a National Action Committee for coordinating the IDWSSD program was established. This committee has advisory authority only. All indications are that it has not been very active. In 1985, it had not met since 1983.

Until just recently Malawi has lacked an overall plan and implementation strategy for the sector. The plan, Water and Sanitation Sector: Sector Position Paper and Action Plan (Republic of Malawi, July 1988, prepared by the Regional Water and Sanitation Group, UNDP/World Bank), has just been completed. The following is a summary of the main objectives of this plan.

#### Water Supply

In urban areas, the goal is to meet the full demand for treated water with individual connections for those who can afford them and standpipes or kiosks for those who cannot.

In rural areas the goal is to supply an appropriate quantity of clean water through public standpipes or wells at a maximum distance of 500 meters.

#### Sanitation

No specific coverage goals are set. Instead, the aim is to rectify the current situation in which the sanitation sector operates on an ad hoc basis. There is a need for streamlining the organizational structure and responsibility of the sector and ensuring better coordination with water supply and health education.

Specific strategies to carry out these objectives are as follows:

- ◆ continue detailed planning of water resource allocation;
- ◆ improve liaison between the Water Department and concerned agencies in the protection and utilization of all water resources;
- ◆ develop, test, and introduce technologies suitable for small urban and rural water systems;

- ◆ invest in urban systems;
- ◆ expand the program of communal water points for peri-urban and traditional residential areas;
- ◆ continue the rural gravity-fed program, utilizing community involvement;
- ◆ expand the groundwater program (provision and maintenance);
- ◆ continue to relate rural schemes to agriculture;
- ◆ build up a stockpile of materials and equipment needed for rural water supply projects;
- ◆ increase the involvement of private enterprise in the construction and maintenance of water schemes;
- ◆ continue a planned program of staff training;
- ◆ establish an effective regional organizational structure for the Water Department so that program implementation is decentralized; and
- ◆ introduce needed legislation.

The overall goal is to increase overall coverage in water supply from the present 41% to 77% by 1996, giving high priority to rural areas and maximizing financial and technical self-sufficiency.

The action plan proposes the following actions to address important constraints.

- ◆ Carry out a willingness-to-pay study and establish policies on recurrent cost recovery for the rural piped water supply program with the aim of a gradual phasing out of government subsidies.
- ◆ Initiate village-level maintenance of handpump-equipped wells with the aim of gradually phasing out the current government subsidies.

#### 4. Sector Administration

In 1979, prior to the commencement of the Decade, the water-related functions of 14 departments and 6 ministries were integrated under the Department of Lands, Valuation, and Water. (Later, in 1984, a new Department of Water was created and made responsible for potable water supply in all areas -- both urban and rural. It was placed under the Ministry of Works and Supplies, the premier development ministry in Malawi.) With this consolidation, the Blantyre and Lilongwe Water Boards retained their parastatal statutory authority over water supply in the two main cities, and the Ministry of Health retained some responsibility in water supply (monitoring water quality in rural areas).

The Ministry of Health is in charge of rural sanitation through its Hygiene Education and Sanitation Promotion Program. In urban and peri-urban areas local councils are responsible. (These local authorities are under the Ministry of Local Government).

## 5. Water Sector Studies

According to the Government of Malawi, there is only a very basic system for collecting data on water supply and sanitation service in Malawi. There is a severe lack of trained staff to collect such data. Consequently, there is very little in the way of accurate up-to-date information on the water sector.

A number of reports covering various subjects have been completed during the Decade. These are listed below in chronological order.

1982. Environmental Sanitation Master Plan (funded by WHO).

1983. Plan of Action for Water Supply and Sanitation, First Draft, (funded by WHO).

1987. National Water Resources Master Plan (funded by UNDP).

1987. Self-Help Rural Gravity Piped Water Projects in Malawi. Malawi Ministry of Works and Supplies.

1987. Malawi Water Master Plan for 44 Water Supply Schemes in Urban and Semi-Urban Areas. Carl Bro International in Association with I.Kruger (funded by the African Development Bank).

## 6. Past Investments in the Sector

External investments in the water supply and sanitation sector from 1980 to the present (including ongoing programs) are summarized in Table 4 (figures are from the WHO Country External Support Information on Malawi, September 19, 1988):

Table 4

Past Investments  
(in thousands of U.S. \$)

|                          |                |
|--------------------------|----------------|
| World Bank               | 24,000.0       |
| African Development Bank | 23,644.5       |
| USAID                    | 10,920.0       |
| Germany (KfW)            | 5,160.0        |
| European Community (CEC) | 4,820.0        |
| UNDP                     | 1,758.0        |
| UNCDF                    | 1,749.0        |
| Canada (CIDA)            | <u>1,400.6</u> |
| Total                    | 73,452.7       |

This gives a grand total of \$73,452,700, very likely an under-estimation, however. In one of its reports to the IDWSSD in 1985, the Government of Malawi listed the external donors in the water supply and sanitation sector. Some of these donors do not appear on the above list: i.e., DANIDA, European Development Fund, Japan, Britain. (No amounts were given.)

There are numerous private voluntary organizations operating in the sector in Malawi, including the Christian Service Community of the Churches of Malawi, World Vision, Africare, Save the Children, and the International Eye Foundation. However, no data were available to indicate what their investments have been.

The Government of Malawi investment in the sector from 1981 to 1985 was \$19 million or 3.10% of the total investment in development. According to the 1988 action plan, sector expenditures from 1985 to 1988 total \$15 million (34.64 million Kwachas). This gives a total investment for the Decade of \$34 million. Thus, the total investment since the onset of the Decade is in the neighborhood of \$171.5 million.

## 7. Proposed Investments in the Sector

Information on proposed investments, as listed in WHO Country External Support Information is given in Table 5.

Table 5

Proposed Investments  
(in thousands of U.S. \$)

|       |                                      |
|-------|--------------------------------------|
| USAID | 8,300.0                              |
| UNCDF | 1,320.0 (joint project with Germany) |
| UNDP  | 368.0                                |
|       | <hr/>                                |
| Total | 9,988.0                              |

In addition, the Government has requested projects totalling U.S. \$ 927,000, thus bringing the total proposed investment to U.S. \$ 10,915,000.

Based on the figures given above the total invested and proposed is as follows:

|                            |                |
|----------------------------|----------------|
| External investments:      | \$ 73,452,700  |
| GOM investments (to 1985): | 34,000,000     |
| Proposed to date:          | 10,915,000     |
| Total                      | \$ 118,367,770 |

For reasons mentioned above and in Section 6, this is only the roughest estimation.

At the beginning of the Decade, it was estimated that the total investment needed to meet Decade goals was \$266 million. The 1988 Sector Position Paper and Action Plan summarizes proposed investments for 1988-1989. Total sector investments will be \$5.57 million, of which 16% will come from internal sources. There are no updated figures available on projected investments to reach Decade goals. This rate of investments falls far short of what is needed if Malawi is to meet its goals. As seen in Table 1, just to meet water supply goals, the investment would have to be over \$20 million per year.

## 8. Health Indicators

Malawi has one of the highest infant and child mortality rates in Africa. More than 50% of all deaths are of children under five. Nutritional deficiency is the leading cause of death for these children. Public health conditions are poorest in rural areas. According to the IDWSSD 1985 Update, the incidence of waterborne disease per 100,000 population in Malawi was 92 in 1980. No more recent figures were available.

The 1988 Sector Position Paper and Action Plan lists the most common diseases in Malawi; about half are water-related. The list is given in order of frequency.

- measles
- malaria
- diarrheal diseases
- tuberculosis/pneumonia
- bilharzia
- hookworm
- dysenteries
- infectious hepatitis
- typhoid, paratyphoid

In 1977, according to GOM reports, malaria accounted for 11% of mortality and was the major cause of death among children. Diarrheal diseases were responsible for 9% of the deaths. In addition, it was stated that cholera was a constant health problem. Between 1973 and 1981, 72,130 cases of gastro-enteritis/cholera were reported with total deaths of 1,585. Schistosomiasis was also widely prevalent in rural areas. Overall national prevalence was 40%. In some areas up to 100% of the children were infected.

One would guess that current figures would show some improvement in these water-related diseases as a result of the emphasis on improved water supplies in rural areas. Water supply coverage in rural areas increased from 37% in 1980 to 54% in 1986. In addition, the government carried out other programs to prevent the incidence of these diseases.

## **9. Privatization**

It is the policy of the Government of Malawi to allow the private sector to be actively involved in water and sanitation. For many years the Piped Water Project has utilized a local manufacturer of PVC pipes and local building contractors to construct tanks, weirs, and concrete structures for the gravity-fed systems. In addition, locally manufactured handpumps, including the Maldev, the Madzi, and the Mark I-IV series, have been marketed in Malawi for over eight years, and the above-ground components of the Afro-Dev handpump, which has recently been developed by a UNDP/World Bank-supported project in Kenya, have been manufactured by two companies in Malawi. Also there are five private well-drilling companies and numerous shallow-well-digging contractors operating in various areas of the country. In peri-urban and rural areas pit latrine slabs are being produced by private companies and sold at subsidized, but still fairly high prices. Malawi's sector plan lists the promotion of private-sector involvement in water and sanitation as one of its goals.

## **10. Recommendations for USAID**

USAID has been the major funder of the highly acclaimed Malawi gravity fed water project for eight years. A new expanded child survival health care project with a significant water/sanitation component is about to be signed by the Malawi Government. This project is building on the strengths of the past and incorporating all of the major success factors of the program. The new project will provide greater emphasis and support for the Ministry of Health's Health Education and Sanitation Program (HESP) and behavior research. Some of the new gravity water systems will probably require some form of treatment since the number of high quality potable sources is limited. Also there is a need to consider issues such as cost recovery for operation and maintenance, qualified senior staff shortages, and new policies and rules regarding tap water usage and connections.

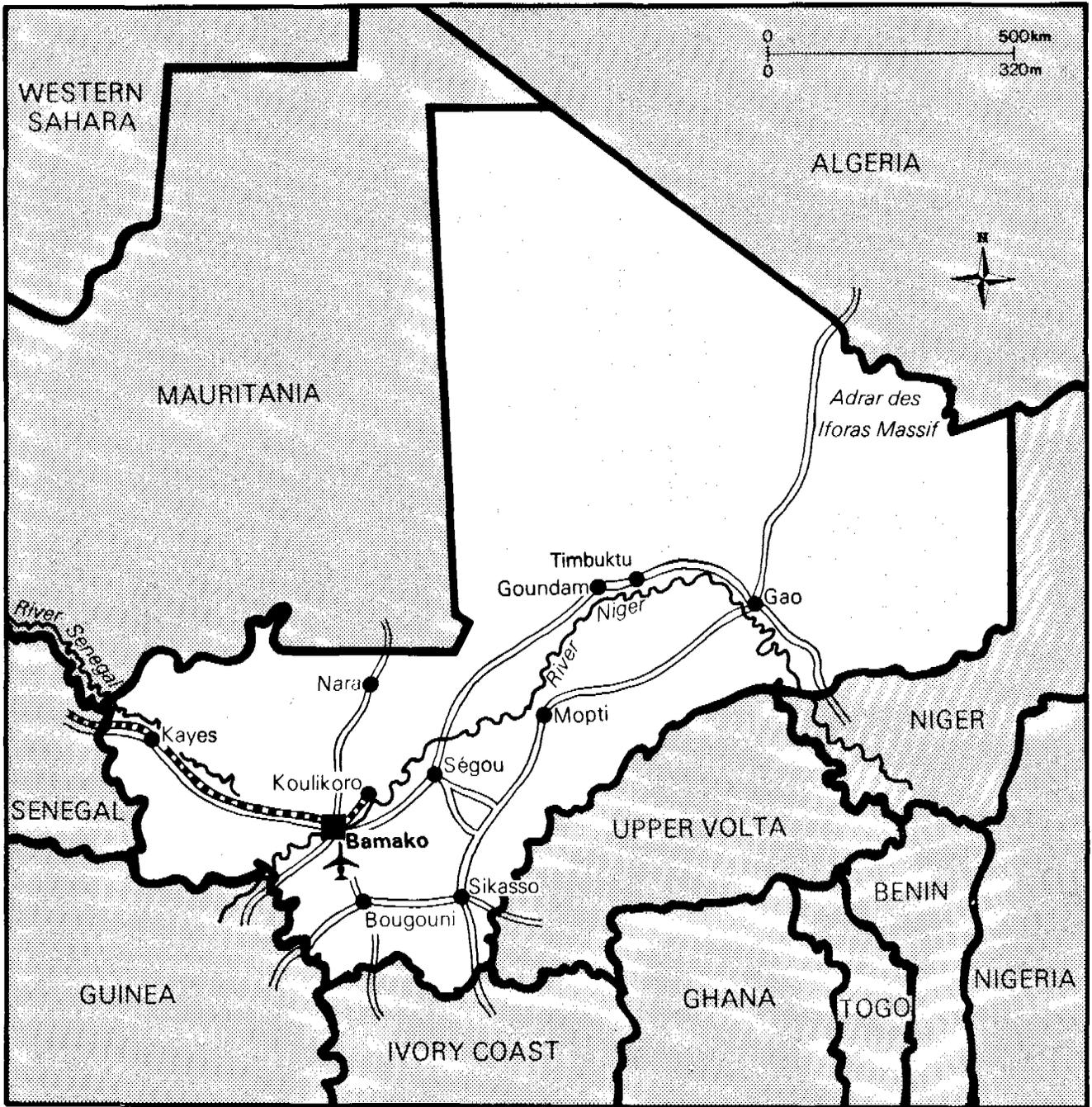
Besides continuing the support of the gravity fed water program with its expanded HESP activities, USAID should consider greater involvement in groundwater and possibly rainwater catchment projects. This could be done through expanded support of the various non-governmental organizations already receiving some USAID funds in the sector or in assistance to UNICEF.

Support for water/sanitation and health services for the ever-increasing number of Mozambique refugees is also a potential involvement for USAID. However, the GOM and various UN agencies appear to be adequately addressing this problem.

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MALI



# MALI

**Population:** Total 8.7M (Urban 20%, Rural 80%)

**Population Growth Rate:** 2.8% per year (Urban 4.5%)

**GNP Per Capita:** US \$180

**Adult Literacy:** Total 17% (Male 23%, Female 11%)

**Life Expectancy:** 45 years (Male 44, Female 46)

**Infant Mortality (under 1):** 171 per 1,000 births

**Child Mortality (under 5):** 302 per 1,000 births

**Status of Decade/Sector Plan:**  
Completed 1984

## Water and Sanitation Agencies:

Direction Nationale de l'Hydraulique et de l'Energie (DNHE) (Ministry of Industry and Tourism)

Direction Nationale de l'Operation Puits (DNOP)

Direction Nationale de l'Hygiene Publique et de l'Assainissement (DNHPA)

Direction Nationale de l'Urbanisme et de la Construction (DNUC)

The Government of Mali has adopted several policies to address sector constraints experienced during the early part of the Decade. These include a regionalized approach to project implementation which limits donors to specific geographic areas, encouraging more direct financial involvement by participating communities, increased emphasis on training local communities, a renewed emphasis on the interrelationship between health and water supply activities, and increased decentralization of project management and more coordination of sector activities. Cost-recovery elements are beginning to be incorporated in project designs, particularly in the rural sector, to cover operation and maintenance costs. Implementation is not yet uniform or completely institutionalized.

Donor investment in the water and sanitation sector during the period 1981-1985 totaled approximately \$23.2 million, of which about 95% came from external financing. Investment to date, according to WHO, World Bank, and United Nations data, is close to \$35 million in the urban sector and \$145 million in the rural sector for the period 1977-1990. This includes completed and ongoing activities. Major funding has been provided through bilateral support from Canada, France, Belgium, Italy, Japan, Switzerland, and Saudi Arabia, and by multilateral support through the UNDP, UNICEF, WHO, the African Development Bank, CEAO, the World

Bank, and nongovernmental organizations.

In Mali a number of private and public companies are involved in well drilling, handpump manufacture, sale of spare parts, water tank construction, etc.

There is an increasing awareness in Mali of the linkages between the various sectors of the economy and the need to move from a strategy of isolated sectoral efforts to an integrated approach to development. There is some donor collaboration in sector project activities and the potential exists for much more. However, to date, collaboration among donor and government agencies active in the sector has been lacking. A comprehensive development strategy for the sector and increased coordination of sector activities should result in more effective cooperative efforts.

Cost estimates to meet Decade targets were originally set at \$1,762 million in 1980. This was based on a per capita cost for urban schemes of \$424. The per capita cost is now estimated at \$100 for house connections and \$14 for standpipes. The per capita cost for water supply in the rural sector has declined from \$246 to about \$50. Sanitation costs have also decreased. Thus, the 1985 estimates project that approximately \$272 million will be required to meet Decade targets set for 1990.

## Decade Progress

In 1980 Decade targets were set to achieve 100% coverage for urban water supply and sanitation and 50 to 60% coverage of the rural population of Mali by 1990. These figures were later revised to 48% for water and 94% for sanitation in urban areas and 36% for water and 30% for sanitation in rural areas.

By 1985 about 46% of the urban population and 10% of the rural population had access to a safe water supply. Financing had been secured to construct enough additional water points in the rural sector to raise the coverage figure to 21% which may now have been attained. To date, it is estimated that 90% of the urban and 3% of the rural people have sanitation facilities.

TABLE 1  
INVESTMENT REQUIREMENTS  
MALI

| ESTIMATED COVERAGE<br>COSTS AND POPULATION | URBAN |            | RURAL |            | TOTALS |
|--|-------|------------|-------|------------|--------|
|  | WATER | SANITATION | WATER | SANITATION |        |
| Population Served 1988                     | 0.8   | 1.6        | 1.4   | 0.2        |        |
| Coverage Target 2000                       | 1.4   | 2.8        | 3.3   | 2.8        |        |
| Shortfall/Unserved                         | 0.6   | 1.2        | 1.9   | 2.6        |        |
| Cost (US \$)                               | 36.0  | 144.0      | 95.0  | 21.0       | 296.0  |
| Proposed Investment                        |       |            |       |            |        |
| Net Shortfall                              |       |            |       |            |        |

1 Population and costs in millions.

2 Assume 1988 population 1.8M urban, 6.9M rural; year 2000 3M urban, 8.3M rural.

3 Assume urban growth rate of 4.5%.

4 Assume % access to water supply 1988 46% urban, 20% rural; year 2000 48% urban, 36% rural.

5 Assume % access to sanitation 1988 90% urban, 3% rural; year 2000 94% urban, 30% rural.

6 Assume per capita cost urban water supply \$60, sanitation \$120; Rural water supply \$50, sanitation \$8.

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## COUNTRY PROFILE: MALI

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### 1. Population

U.S. Bureau of the Census data put the 1980 population of Mali at 7.0 million, the current population at 8.7 million, the 1990 projected population at 9.2 million, and the estimated population for the year 2000 at 12.3 million. The 1987 population growth rate was at 2.8%, up from approximately 2.6% in 1985 and 2.3% in 1980, according to the World Development Report of 1988.

This report also indicates that the population living in urban areas has increased from 13% in 1965 to 20% in 1985. In urban areas the average annual growth rate in 1985 was estimated at 4.5%. Between 1976 and 1985 the urban population increased 44%, with Bamako, the capital, growing at a rate of 7.5%. It is estimated that by 1995, Bamako's population will double to 1.5 million and will represent 50% of the total urban population in the country. The rest of the urban population will be spread among 65 secondary towns and 34 emerging centers. Table 2 shows population figures and projections for the years 1980-2000.

Table 2

Past, Present, and Projected Population  
(in millions)

|      | <u>Total</u> | <u>Urban</u> | <u>Rural</u> |
|------|--------------|--------------|--------------|
| 1980 | 7.0          | 1.2 (17%)*   | 5.8 (83%)    |
| 1988 | 8.7          | 1.8 (20%)    | 6.9 (80%)    |
| 2000 | 12.3         | 3.0 (24%)**  | 9.3 (76%)    |

\* Based on U.S. Bureau of the Census rural/urban percentages in 1987.

\*\* Based on an average urban growth rate of 4.5%.

Source: Population data on Mali were taken primarily from the U.S. Bureau of the Census; other sources were World Population Profile, the IDWSSD 1987 Directory, and Statistics on Children in UNICEF Assisted Countries.

### 2. Coverage Data

According to the IDWSSD national baseline data, 1980 coverage in urban areas at the outset of the Decade was 37% for water and 79% for sanitation. No coverage was registered for rural areas. The 1987 IDWSSD Directory, revising these earlier coverage

estimates, put water supply coverage at 46% in urban areas and 0.1% in rural areas. The WHO/World Bank Rapid Sector Evaluation put urban water supply coverage at 42%, while noting that it would have been only about 14% if Bamako had not been included. The report also estimated that about 63% of the urban population had access to sanitation facilities. (This lower percentage is used in Table 3.) All sources agree that the rural sector had negligible access to water supply and sanitation in 1980 and that urban sanitation was provided mostly by latrines and septic tanks, with only about 10,000 people benefiting from sewer connections.

Sources: Past coverage data were taken from IDWSSD National Baseline Data 1980: WHO/World Bank Rapid Sector Evaluation, May 1978; and IDWSSD 1987 Directory. Current coverage figures were taken from four sources: the IDWSSD Review of Mid-Decade Progress 1987 (1985 data), the IDWSSD Directory (1985 data), "Seminaire sur les Systems d'Adduction d'Eau en Zones Rurales Abidjan 1986," and UNDP/World Bank Country and Global Work Plan 1988-1990.

The IDWSSD Review of Mid-Decade Progress and the IDWSSD 1987 Directory agree that water supply coverage as of 1985 was 46% in urban and 10% in rural areas, while sanitation coverage was 90% in urban and 3% in rural areas. A paper on rural water supply given at a 1986 seminar in Abidjan states that approximately 7,600 water points were completed or financing secured, representing 21% of the rural water supply requirement. The UNDP/World Bank report also puts current rural water supply coverage at about 20%.

As shown in Table 3, urban water supply coverage remains about the same as in 1980. While house connections have decreased, overall coverage has kept pace with population growth through the provision of public water points. Sanitation coverage in the urban sectors has declined slightly since 1980 but is still relatively high. The rural sector has been the focus of increased attention during the Decade, and there has been a dramatic improvement in coverage in rural areas. At the beginning of the Decade, coverage for both water and sanitation in rural areas was almost nil; at present coverage in water has reached 20% and sanitation 3%.

Decade targets set in 1980 were 100% water and sanitation coverage in the urban sector and 50-60% coverage to the rural areas by 1990. The figures have since been revised. At present, coverage targets for 1990 in urban areas are 48% for water and 94% for sanitation and in rural areas 36% for water and 30% for sanitation. The Abidjan report mentioned above notes further that about 32,000 water points and 490 distribution systems will be required for 100% water supply coverage of the rural areas. Targets of 9,500 water points by 1990 and 26,000 by the year 2000 have been set. Since 7,600 have been completed to date, 2,900 remain to be completed to meet the 1990 targets and 18,400 to meet the year 2000 targets.

**TABLE 3**

**WATER AND SANITATION COVERAGE FOR 1980 AND 1988  
AND TARGETS FOR 2000  
(in percents)**

**MALI**

| YEAR  | WATER |       | SANITATION |       |
|-------|-------|-------|------------|-------|
|       | URBAN | RURAL | URBAN      | RURAL |
| 1980  | 46    | 0.1   | 63         | N/A   |
| 1988  | 46    | 20    | 90         | 3     |
| 2000* | 48    | 36    | 94         | 30    |

SOURCE: W.H.O. IDWSSD Review of Mid-Decade Progress

\* These 1990 targets were assumed to have no increase in percentage by 2000.

### 3. Decade/Sector Action Plan

In May of 1978, a rapid sector evaluation for water and sanitation was prepared with WHO/World Bank assistance leading to a proposed Plan of Action/Preparatory Activities for the IDWSSD in Mali 1979. In 1984, the Government of Mali prepared a Decade action plan. As already noted, this plan has been updated in terms of revising targets and adjusting the projected work program to a realistic pace based on investment and national institutional capacity to implement sector programs.

The water and sanitation sector operations have experienced several constraints during the Decade, particularly the lack of medium and long-term planning leading to a comprehensive sector strategy. There has been a lack of coordination among agencies active in the sector. Project designs, particularly in the rural sector, have lacked sufficient community participation in both financing and decision-making. Environmental education and sanitation have not received attention commensurate with their importance as part of water supply project designs.

The numerous donor agencies active in Mali need to coordinate their activities as part of the planning process to reduce duplication and maximize impact. There is great potential for collaborative efforts, but collaboration needs to be orchestrated through a sector development strategy. National budget provisions, especially for planning and maintenance, have not been sufficient, and there is a lack of trained national staff, although DNHE has strengthened itself during the Decade.

During the Decade, the Government has adopted some new policies to deal more effectively with issues facing the water and sanitation sector. Programs have been regionalized and donors given specific geographical areas in which to operate. This delineation of project areas for drilling teams has significantly reduced the cost per water unit and has increased output. The estimated investment necessary to achieve Decade targets has been revised from \$1,762 million in 1980 to \$272 million in 1985. Increased emphasis is being placed on cost recovery, and, in the rural areas, communities are beginning this process by purchasing pumps for water points as well as making a financial commitment to maintain the pumps. In some cases, user fees cover operation and maintenance costs. Greater importance is also being placed on training villagers so that they will be able to maintain their water points. Additionally, rural water supply projects should be more integrated in their design and implementation to provide and include health aspects which are closely related to water supply.

The Government of Mali defines rural towns and villages as those with fewer than 5,000 inhabitants. The Government has decided to provide a well or borehole with a pump for those villages with populations of 2,000 or less. For villages or towns with between 2,000 and 5,000 inhabitants, a distribution system with standpipes will be provided. It is currently estimated that 32,000 water points and 490 distribution systems will be required to meet the needs of the rural population. Drilled wells are being given preference in order to construct the maximum number of units in the shortest time.

#### **4. Sector Administration**

Several government agencies are responsible for various aspects of water supply and sanitation. Under the Ministry of Industry and Tourism, the Direction Nationale de l'Hydraulique et de l'Energie (DNHE) has primary responsibility for the development and execution of water supply and sanitation policies and programs both in the rural and urban sectors. Groundwater exploration, supervision and construction of most urban and rural water supply schemes, and the overall coordination of water supply and sanitation programs throughout the country are also responsibilities of DNHE. The Direction Nationale de l'Operation Puits (DNOP) collaborates with DNHE and is responsible for the identification and implementation of wide-diameter well construction in the rural sector. The Direction Nationale de l'Hygiene Publique et de l'Assainissement (DNHPA) is responsible for the monitoring of water quality and, along with the Direction Nationale de l'Urbanisme et de la Construction (DNUC), is responsible for the design of urban sanitation facilities. The Ministry of Livestock and Natural Resources and the Ministry of Agriculture provide water supplies in the rural areas within the context of integrated development and livestock projects.

## 5. Water Sector Studies

No water sector studies were located or reviewed.

## 6. Past Investments in the Sector

During the period 1981-1985, it is estimated that approximately \$23.2 million was invested in the water and sanitation sector. This represents 8.5% of the estimated \$272 million needed to meet Decade targets. During this period, the rural sector received about 2.5 times as much assistance as the urban sector: \$14.4 million versus \$5.6 million. Most of the investment was provided by external financing with about 5% provided by the Government and 2.5% contributed by local communities.

The latest WHO Country External Support Information and World Bank data for the period 1977-1990 show an investment total of \$171.3 million, a significantly higher figure than the 1985 estimates. The current figures represent total project costs while the earlier estimates are based primarily on construction costs. On-going projects 1984-1989 represent an investment of about \$26.9 million in the urban sector and \$110.2 million in the rural sector. Completed projects 1977-1987 show an urban sector investment of approximately \$4.2 million and investment in rural water supply and sanitation of about \$30 million. Table 4 lists the organizations investing in water and sanitation in Mali.

Table 4

### SECTOR INVESTMENT 1977-1990 (in millions US \$)

#### A. On-Going Projects 1984-1990

|                                   | <u>Total</u> | <u>Urban</u> | <u>Rural</u> |
|-----------------------------------|--------------|--------------|--------------|
| African Development Fund          | 27.879       | 11.331       | 16.548       |
| African Development Bank          | 27.475       | 10.782       | 16.693       |
| Canada/CIDA                       | 19.759       | -            | 19.759       |
| World Bank                        | 12.900       | 2.000        | 10.900       |
| UNDP                              | 10.074       | -            | 10.074       |
| Kuwait State                      | 8.600        | -            | 8.600        |
| France/CCCE                       | 6.396        | -            | 6.396        |
| Federal Republic of Germany (KfW) | 5.874        | -            | 5.874        |
| European Development Fund         | 5.800        | -            | 5.800        |
| Islamic Development Bank          | 5.350        | -            | 5.350        |
| Swiss/SDC Heveths                 | 3.910        | -            | 3.910        |
| OPEC Fund                         | 2.750        | 2.750        | -            |
| UNICEF*                           | <u>3.000</u> | <u>-</u>     | <u>0.300</u> |

## B. Completed Projects 1977-1987

|                    |                  |                 |                  |
|--------------------|------------------|-----------------|------------------|
| Canada/CIDA        | 12.865           | 4.210           | 8.655            |
| UNDP               | 10.610           | -               | 10.610           |
| Swiss/SDC          | 6.941            | -               | 6.941            |
| UNICEF*            | 2.840            | -               | 2.840            |
| UNCDF              | 1.000            | -               | 1.000            |
| <b>TOTAL</b>       | <b>\$34.256</b>  | <b>\$4.210</b>  | <b>\$140.250</b> |
| <b>GRAND TOTAL</b> | <b>\$171.323</b> | <b>\$31.073</b> | <b>\$140.250</b> |

\*UNICEF totals may be low as many efforts were joint UNDP/UNICEF projects, and it was difficult to tell exactly how much each organization invested from the available data.

## 7. Proposed Investments in the Sector

Few specific data are available on proposed investments. Urban water supply should receive about \$1.0 million for Bamako under the Urban Development Project financed through the World Bank. It is estimated that about 32,000 water points are required to satisfy rural needs. With an average cost per unit of about \$10,000, it is estimated that around \$300 million will be required to meet this objective.

## 8. Health Indicators

According to the 1987 IDWSSD Directory in 1985 the rate of water-related diseases was 80,000 per 100,000 population. Unfortunately, there is no statistical breakdown presented by disease. The 1978 WHO/World Bank Rapid Sector Evaluation, noted that over 80% of the population suffered from intestinal and stomach disorders and that 24% of child mortality was linked to these illnesses.

According to UNICEF's State of the World's Children for 1987 and 1988, Mali and Sierra Leone had the highest under-five mortality rates and the highest infant mortality rates in Africa. In addition, mortality and morbidity rates for diarrheal disease are very high. Incidence is reported as 5.2 episodes per year for children under five. The mortality rate was 15.7% per year in 1983 in Bamako. There are also high morbidity rates for malaria and schistosomiasis.

## **9. Privatization**

A number of private firms and public companies are active in the water and sanitation sector. Private firms are drilling wells and, in a few instances, constructing large-diameter wells. Enterprise Malian de Maintenance (EMAMA) is a public company in Sikasso that for the last several years has been manufacturing, among other things, the India/Mali handpump. This pump is being used in Mali and is exported to neighboring countries as well. Mali Aqua Viva, a French nongovernmental organization, has been assisting the Government of Mali in training local motorbike mechanics to repair handpumps and to stock spare parts. Certain nongovernmental organizations are training local artisans in low-cost, low-technology solutions to water supply and sanitation needs. These artisans, like the bike mechanics, are gaining employment while providing a needed service.

## **10. Recommendations for USAID**

Given the extremely high infant mortality rate in Mali and the low level of sanitation coverage, USAID should join other donors in addressing water supply issues in Mali as they relate to health. This would seem compatible with USAID's expressed interest in child survival activities.

USAID resources could also be used to encourage the local manufacture of needed supplies and materials such as handpumps (as in the case of EMAMA), water tanks, etc.

USAID support of local groups, communities, and entrepreneurs in the development of effective methods, mechanisms, financial arrangements, etc., for the effective operation and maintenance of water supply and sanitation facilities constructed in their localities will reduce the burden on the Malian Government, possibly create employment, and increase the reliability of newly constructed units.

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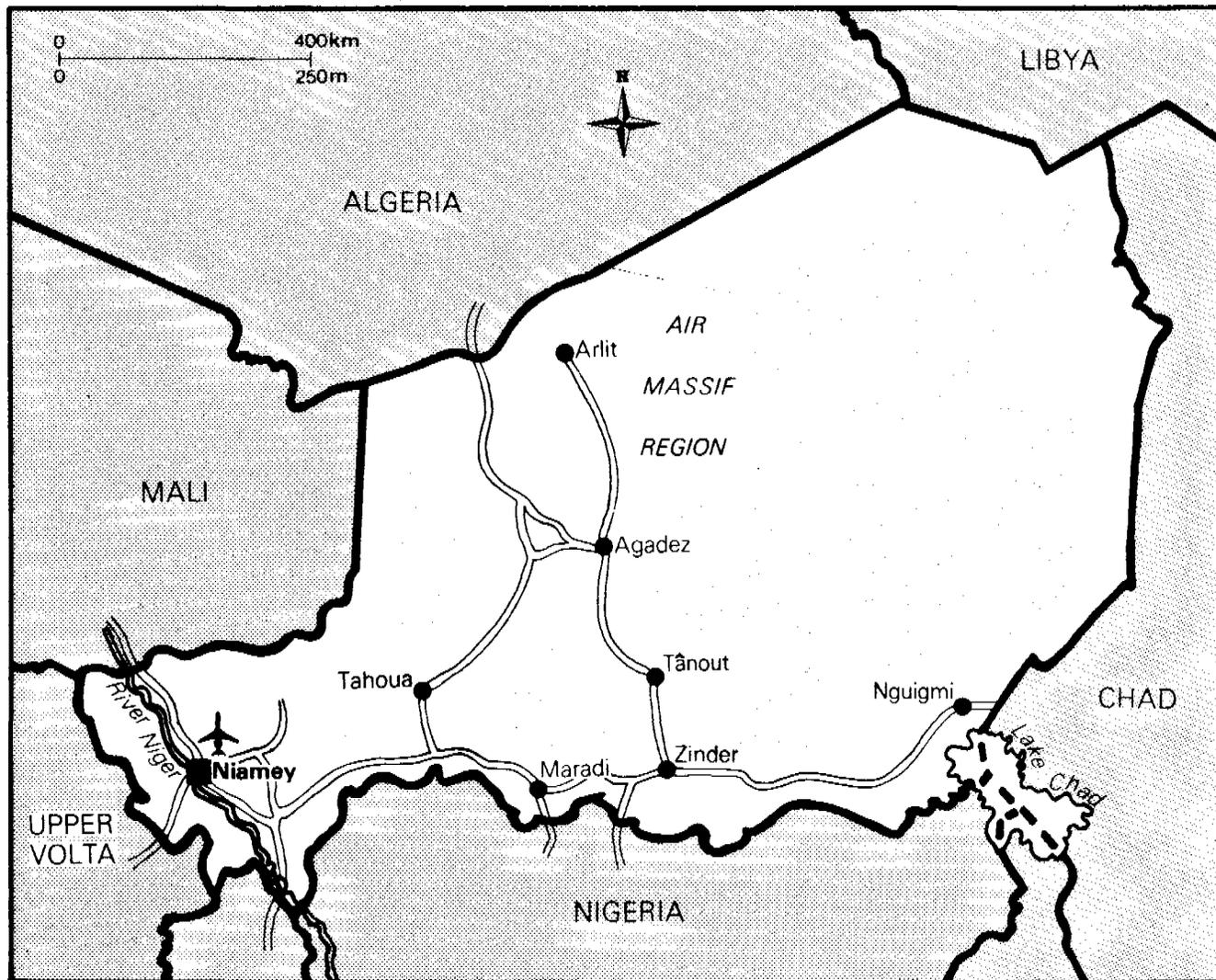
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**NIGER**



# NIGER

Population: Total 7.2 M (Urban 17%, Rural 83%)  
 Population Growth Rate: 3.2% per year (Urban 7.0%)

GNP Per Capita: US \$260

Adult Literacy: 14%

Life Expectancy: 48 years (Male 47, Female 49)

Infant Mortality (under 1 year): 140 per 1,000 births

Child Mortality (under 5 years): 237 per 1,000 births

Status of Decade/Sector Plan: No sector plan has been prepared

## Water and Sanitation Agencies:

Societe Nationale des Eaux (SNE)  
 Office des Eaux du Sous-sol (OFEDES)

Ministry of Animal Resources and Hydraulics

Ministry of Public Works and Housing

Ministry of Urban Affairs

## Decade Progress

Rural water coverage grew at a rate of 19% between 1980 and 1985, while it has been growing at a projected rate of only 8% per year since 1985. Investment levels for all sectors were at all-time highs in Niger in the latter half of the 1970s as the country recovered from drought, increased its agricultural output, and realized export earnings from uranium, the price of which was high during the latter half of the decade. The continued growth of rural water supply in the first half of the 1980s is partly due to investments in projects made at the end of the 1970s that carried over into the next decade.

With the precipitous drop of uranium prices beginning in 1980, sector investments declined, accounting for the decline in sector growth. Estimated rural water coverage of 55% for 1990 is far below the original Decade targets of 100%, made in the five-year plan and based on continued high export earnings.

An additional investment of \$654

million will be required to provide safe water for the entire rural population (at estimated 1986-1990 prices) by the year 2000, or \$65 million per year. If the 1986-1990 level of investment of \$28 million per year is maintained, then only 67% of the population will be covered by the year 2000. Thus, an additional \$37 million per year is required.

Only an estimated 35% of urban dwellers had access to safe water in 1985, down from 41% in 1980. Evidently, as cities have grown, water service provision has not kept pace.

An estimated 64% of urban households have no sanitary facilities. No sewerage system existed in 1985 at the time of the IDWSSD mid-Decade survey. However, a sewerage project, funded by the African Development Fund, is currently underway to provide a sewer system for three densely populated zones in Niamey. KfW also has a sanitation project in Niamey. Sanitation coverage in the rural areas was estimated to be 3% in 1980.

A substantial investment is being made by external donors for rural water supply during the period 1986-1990 -- an estimated \$169 million, including new construction, rehabilitation, and technical assistance. This amounts to \$34 million per year -- 15% of the development assistance received by the country per year on the average.

Little information is available on proposed investments for the period after 1990. It is known, however, that the World Bank is developing a second water supply project valued at approximately \$70 million and slated for approval in 1990.

The key sector institutions are financially autonomous: NIGELEC, a state corporation created in 1988, to construct and operate urban water supply systems; and OFEDES, responsible for the construction and maintenance of rural water supply systems. Both institutions are characterized by a lack of trained staff, particularly in planning and management. OFEDES sees itself primarily as a construction agency and, as a result, operation and maintenance activities suffer. Both institutions operate under financial constraints. The creation of SNE is part of the government program to nationalize institutional responsibilities in the sector.

There is no known Decade action plan for Niger, but its overall sector policy is contained in the five-year plan 1979-1983 which focusses on assessment and monitoring of water resources, new construction, and village-level operations and maintenance. A sector operational plan for the period 1988-1990 has been developed and retains the focus on rural water supply, village-level operations and maintenance, and evaluation and monitoring of groundwater resources, while adding as a goal institutional decentralization.

Although too little information is known about the sector in Niger to make specific recommendations for USAID, it is clear that technical assistance in village-level operations and maintenance for rural water supply is required as well as institutional strengthening of SNE.

TABLE 1  
 INVESTMENT REQUIREMENTS  
 NIGER

| ESTIMATED COVERAGE<br>COSTS AND POPULATION | URBAN |            | RURAL |            | TOTALS |
|--|-------|------------|-------|------------|--------|
|  | WATER | SANITATION | WATER | SANITATION |        |
| Population Served 1988*                    | 0.4   | 0.4        | 2.9   | 0.2        |        |
| Coverage Target 2000                       | 1.0   | 1.0        | 7.9   | 0.2        |        |
| Shortfall/Unserved                         | 0.6   | 0.6        | 5.0   | 0.0        |        |
| Cost (US \$)                               | 36.0  | 73.0       | 190.0 | 0.0        | 299.0  |
| Proposed Investment                        |       |            |       |            |        |
| Net Shortfall                              |       |            |       |            |        |

1 Population and costs in millions.

2 Assume 1988 population 1.2M urban, 6.0M rural; year 2000 2.7M urban, 8.3M rural.

3 Assume urban growth rate of 7%.

4 Assume % access to water supply 1988 36% urban, 49% rural; year 2000 36% urban, 100% rural. (Maintain present urban water coverage for year 2000.)

5 Assume % access to sanitation 1988 36% urban, 3% rural; year 2000 36% urban, 3% rural. (Maintain present urban and rural coverage for year 2000.)

6 Assume per capita cost urban water supply \$60, sanitation \$122; rural water supply \$36, sanitation \$37. Estimates are based on average costs.

\* Coverage figures are based on 1985 data for water and 1980 data for sanitation.

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## COUNTRY PROFILE: NIGER

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### 1. Population

U.S. Bureau of the Census figures for 1987 were used as the main source of population information. Other sources, such as the World Development Report 1988, IDWSSD, the Population Reference Bureau, and the Government of Niger, Department of Water Resources (Ministere de l'Hydraulique), were used to corroborate U.S. Census figures, and, most important, to estimate urban-rural percentages and rates of urban growth.

The estimates are consistent, with relatively small variations. The estimates of two sources considered reliable, the U.S. Bureau of the Census and the World Bank World Development Report, differ by fewer than 10,000 people for 1987, with projections to the year 2000 differing by only 5.7%.

Urban population growth, at 7% per year, is one of the highest in Africa. This growth will more than double urban populations by the year 2000.

Table 2  
Past, Present, and Projected Population  
(in millions)

|      | <u>Total</u> | <u>Urban</u> | <u>Rural</u> |
|------|--------------|--------------|--------------|
| 1980 | 5.5          | 0.8 (15%)    | 4.7 (85%)    |
| 1988 | 7.2          | 1.2 (17%)    | 6.0 (83%)    |
| 2000 | 11.0         | 2.7 (25%)    | 8.3 (75%)    |

Source: U.S. Bureau of the Census

### 2. Coverage Data

Coverage data are presented in Table 3.

For actual (1985) water coverage, figures come from the Ministere de l'Hydraulique. IDWSSD figures are likely to be based on these figures and therefore should not be used to corroborate ministry data. Percent coverage figures are based on U.S. Bureau of the Census population estimates and on the assumption that 85% of the population is rural.

Water coverage projections for 1990 and beyond are based on current investments to continue through that date (provided by a UNICEF-Ministere de l'Hydraulique report, Exploitation des Eaux Souterraines en Milieu Rural; and by WHO Country External Support Information. See Table 3).

**TABLE 3**

**WATER AND SANITATION COVERAGE DATA FOR 1980 AND 1988  
AND TARGETS FOR 2000  
(in percents)**

**NIGER**

| YEAR | WATER |       | SANITATION |       |
|------|-------|-------|------------|-------|
|      | URBAN | RURAL | URBAN      | RURAL |
| 1980 | 41    | 30    | 36         | 3     |
| 1988 | 36    | 49    | 36         | 3     |
| 2000 | 36    | 100   | 36         | 3     |

SOURCE: W.H.O. IDWSSD Review of Mid-Decade Progress

Rural water coverage grew at an expected rate of 19% between 1980 and 1985, while it is projected to grow at a rate of only 8% per year between 1985 and 1990. Investment levels for all sectors were at all-time highs in Niger in the latter half of the 1970s as the country recovered from drought, increased its agricultural output, and realized substantial export earnings from uranium, the price of which was high during the latter half of the decade. The continued growth of rural water supply in the first half of the 1980s is partly due to investments in projects made at the end of the 1970s that carried over into the next decade.

With the precipitous drop of uranium prices beginning in 1980, sector investments declined, accounting for the decline in sector growth. The estimated rural water coverage of 49% is far below original targets of 100%, made in the Five Year Plan and based on continued high export earnings.

If the present rate of growth in the provision of water supplies is maintained during the period 1990-2000, only 55% of the rural population will be covered by the year 1990 and only 67% will be covered by the year 2000.

The IDWSSD estimated that as of 1985, only 36% of urban dwellers had access to safe water, down from 41% in 1980. Evidently, as cities have grown, water service provision has not kept pace.

An estimated 64% of urban households have no sanitary facilities. No sewerage system existed in 1985 at the time of the IDWSSD survey. However, a sewerage project, funded by the African Development Fund, is currently under way to provide a sewer system for three densely populated quarters of Niamey. KfW also has a sanitation project for Niamey, concerned primarily with solid waste and grey-water disposal, and is providing relevant technical assistance.

Sanitation coverage in the rural areas of the country was estimated to be 3% in 1980. No new data were available for this study.

### **3. Decade/Sector Action Plan**

No formal Decade plan has been developed for the water sector, as far as currently available information indicates. The government has set a target of 100% coverage of the rural water sector by 1990, a goal which is most unlikely to be met (55% coverage is expected).

The government's basic sector policy is contained in the five-year plan (1979-1983) which presents three major components for rural water supply:

- ◆ evaluation, assessment, and monitoring of water resources,
- ◆ construction of modern water supply facilities, and
- ◆ establishment of a village-level operations and maintenance system.

More specifically, an operational plan for 1988-1990 has been developed, of which the following are the central elements:

- ◆ increased coverage of the rural population with safe water supply;
- ◆ the education and training of beneficiaries concerning the use and maintenance of equipment and the efficient use of water supplies;
- ◆ decentralization of the Ministère de l'Hydraulique, with the creation of regional divisions in all departments of the country;
- ◆ a study of underground water resources; and
- ◆ strengthening of sector institutions.

In terms of regional distribution of resources, the government favors those departments currently with low coverage: Tahoua, Maradi, and Dosso. No information is yet available on urban programs or policy.

#### 4. Sector Administration

General control of the water supply sector is centralized under the Ministry of Animal Resources and Hydraulics, operating through three Directorates -- Infrastructure, Water Resources, and Finance and Administration. The ministry has responsibility for planning and policy, investment planning, and implementation. It oversees activities of two autonomous public agencies: the state corporation SNE (Societe National des Eaux), which operates urban water supply systems; and OFEDES (Office des Eaux du Sous-sol), a financially autonomous public agency responsible for the construction and maintenance of wells and boreholes. OFEDES is mainly involved in construction, building wells and drilling boreholes under various programs financed by the government or external agencies. Responsibility for sewerage rests with the Ministry of Public Works and Housing.

Both NIGELEC and OFEDES are characterized by common institutional problems -- lack of trained staff, particularly in planning and management. The absence of long-term planning and inadequate operating revenues are major problems. The creation of SNE in 1988 is seen as a necessary first step toward rationalizing institutional responsibilities in the sector.

Of a number of major projects that have been completed, the World Bank's Water Supply Project provided important help in strengthening water supply and sanitation institutions and provided technical assistance in institutional analysis and design, particularly with regard to setting up a national water supply entity; strengthening of the Ministère de l'Hydraulique staff; improvement of the management of NIGELEC; and assistance to OFEDES in organization, management, and administration.

#### 5. Water Sector Studies

Documents available include the following:

Republic of Niger, Ministère de l'Hydraulique et de l'Environnement, Exploitation des Eaux Souterraines en Milieu Rural (Pre-project Document), July 1986.

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WHO/EHE/CWS, Country External Support Information (CESI), September 19, 1988.

World Bank, President's Report: Niger Water Supply Project, November 13, 1982.

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## 6. Past Investments in the Sector

There has been considerable donor activity in the sector in recent years as can be seen from Tables 4 and 5. The current investments for projects to be completed within the period 1986-1990 are as follows:

- ◆ \$140.8 million for rural water supply construction. Rural sanitation is a component, but no information is available concerning breakdown.
- ◆ \$27.5 million for rural water supply rehabilitation and technical assistance;
- ◆ \$45.6 million for urban water supply, sewerage, and sanitation construction;
- ◆ \$2.21 million for urban water supply, sewerage, and sanitation technical assistance.

TOTAL: \$216.1 million

In addition, during the period December 1981 to October 1985, donor projects worth \$13.22 million were completed. Table 6 provides details on these projects.

Few national resources have been invested in the water supply and sanitation sector since the 1970s, although the value of counterpart activity, both from government and community, and of community construction of wells must be considered in a final accounting.

According to UNICEF only 80 modern water points were financed directly from government funds from 1981 to 1985.

TABLE 4  
**RECENT AND CURRENT INVESTMENT IN THE RURAL WATER SECTOR\***  
**NIGER**

| PROJECT   | DONOR           | ESTIMATED<br>END DATE |
|---|-----------------|-----------------------|
| 120 boreholes **  | FED             | 1986                  |
| 300 boreholes   | Denmark         | 1987                  |
| 100 boreholes   | Belgium         | 1987                  |
| 500 points **   | Kuwait-BADEA    | 1987                  |
| 150 deep wells **   | IVED            | 1987                  |
| 100 deep wells  | Japan           | 1987                  |
| 300 deep wells  | Saudi Arabia    | 1988                  |
| 50 deep wells   | FAC             | 1987                  |
| 500 boreholes   | Italy           | 1987                  |
| 50 deep wells   | EERN-Dutch Vol. | 1986                  |
| 250 boreholes   | CIDA            | 1987                  |
| 30 boreholes  | UNDP            | 1986                  |
| 30 deep wells   | EAA             | 1986                  |
| 110 boreholes   | BID             | 1986                  |
| 11 boreholes  | South Korea     | 1986                  |
| 10 deep wells   | South Korea     | 1986                  |
| 347 points  | France/CCCE     | 1990                  |
| 3 deep wells  | GTZ             | 1991                  |
| 43 deep wells   | GTZ             | 1988                  |
| 400 deep wells ***  | KW              | 1990                  |
| 100 boreholes   | KW              | 1988                  |
| 470 boreholes/<br>deep wells  | Islamic DB      | 1988 (?)              |
| 67 deep wells   | OPEC Fund       | 1988 (?)              |
| 100 boreholes   | UNDP/UNICEF     | 1990                  |
| Groundwater Dev.  | Japan           | ?                     |
| Well boring tahova  | Saudia Arabia   | 1988 (?)              |
| 4141 Total Points. Total value @ average CFA 10.0 million/unit = CFA 41,410 million @ CFA 300 = \$1.00.<br>Total for rural water supply construction = \$140.8 M. |                 |                       |
| Rehabilitate<br>100 deep wells  | EEC             | 1989                  |
| TA  | GTZ             | 1990                  |
| TA  | KW              | 1990                  |
| TA  | KW              | 1988                  |
| TA  | Swiss           | ?                     |
| TA  | WB/IDA          | 1988                  |
| Total value of technical assistance for rehabilitation = \$27.5 M.  |                 |                       |

\* Many rural water supply projects include sanitation

\*\* Borehole primarily with handpump

Deep well = deep, protected well with handpump

Point = any water supply source

\*\*\* CESI data indicate only 2,000 people served, yet financing available if primarily used for construction, enough for 100,000 population (400 units). This higher figure, therefore, was used.

TABLE 5

RECENT AND CURRENT INVESTMENT IN URBAN  
WATER AND SANITATION SECTOR  
NIGER

| PROJECT  | DONOR      | ESTIMATED<br>END DATE |
|--|------------|-----------------------|
| Niamey Sewerage  | African DF | 1988 (?)              |
| Zinder Water   | KfW        | 1990                  |
| Maradi Water   | KfW        | 1989                  |
| Niamey<br>Sanitation TA  | KfW        | 1988                  |
| Kollo Water  | EEC        | 1989 (?)              |
| Total value urban infrastructure = \$45.6 M.<br>Total value technical assistance = \$2.21 M. |            |                       |
| Maradi sanitation  | KfW        | 1986                  |
| Zinder, tahova   | GTZ        | 1987                  |
| TA - sanitation  | GTZ        | 1988                  |

TABLE 6

RECENTLY COMPLETED PROJECTS  
(December 1981 - October 1985)  
NIGER

| PROJECT          | DONOR       | END<br>DATE | AMOUNT<br>(US \$<br>millions) |
|------------------|-------------|-------------|-------------------------------|
| 353 Water points | France/CCCE | 6/84        | 4.06                          |
| TA NIGELEC       | GTZ         | 12/84       | 0.41                          |
| 230 rural wells  | GTZ         | 10/85       |                               |
| Groundwater dev. | Japan       | 10/84       | 4.59                          |
| Village water    | Switzerland | 0/83        | 1.56                          |
| TA Training      | UNCDF       | 12/81       | 0.32                          |
| TA Management    | UNDP        |             | 1.07                          |
| Rural water      | UNDP        | 6/84        | 1.21                          |
| TOTAL            |             |             | 13.22                         |

SOURCE: WHO Country External Support Information

Private voluntary organization activity in the sector is limited. The Lutheran World Service has been the most active, with two projects providing water to a total of 80 villages. No information is available on the number of water sources or number of people served.

## 7. Proposed Investments in the Sector

The only detailed information available concerning proposed investments is that for the World Bank Second Water Supply Project, scheduled for loan approval in 1990 and valued at approximately \$70 million (IDA). Other projects worth approximately \$8.0 million were requested in 1985, but have found no interested donors.

## 8. Health Indicators

Table 7 gives information on key health, social, and economic indicators.

TABLE 7

HEALTH INDICATORS  
NIGER

|                                      |                |
|--------------------------------------|----------------|
| Infant (under 1 year) Mortality      | 140/1,000 (1)  |
| Child (under 5 years) Mortality      | 237/1,000      |
| Babies with low birth weights        | 20% (2)        |
| Malnutrition (3)                     |                |
| 1st degree                           |                |
| 2nd degree                           | 17%            |
| 3rd degree                           | 9%             |
| TOTAL                                | 26%            |
| Number of diarrhea episodes per year | 4.7 (1985) (4) |
| children under 5 years               | 4.4 (1986)     |

1. World Bank, Africa Region, Basic Indicators, 1988
2. WDR, 1988
3. UNICEF, Statistics on Children in UNICEF Assisted Countries, 1988
4. ISTI, Health Statistics Database, 1988

## **9. Privatization**

No information is available.

## **10. Recommendations for USAID**

At present, there are major gaps in the information base on Niger's water and sanitation sector. Only rural water supply appears to be receiving significant inputs. Urban water supply does not appear to be keeping pace with urban growth, and no data are available on sanitation, either urban or rural. As a preliminary step towards any investment activity in the sector a complete review of existing coverage and the formulation of realistic policies and plans are needed. USAID could consider sponsoring a national workshop on water and sanitation planning.

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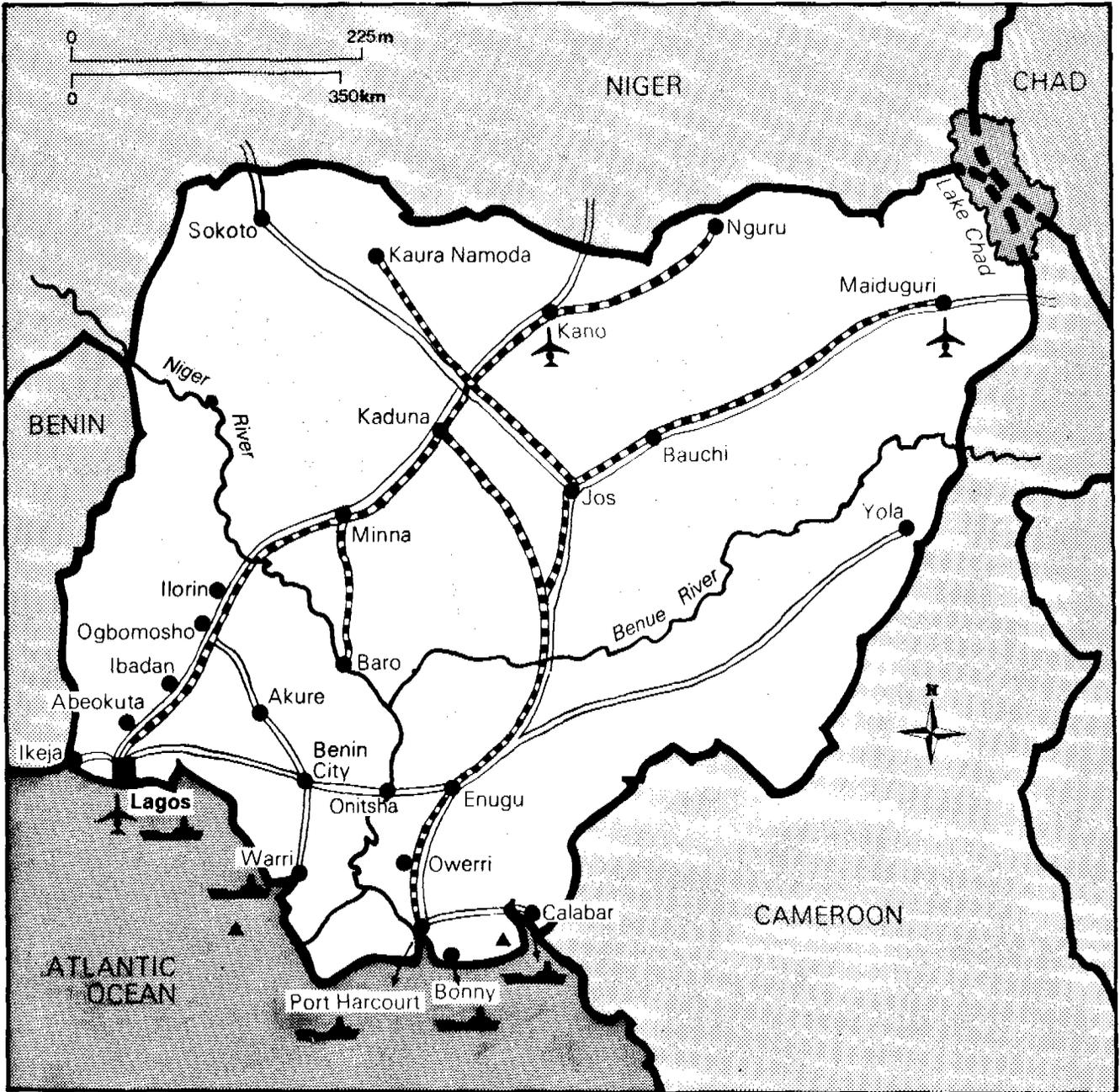
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NIGERIA



# NIGERIA

**Population:** Total 112 M (Urban 32%, Rural 68%)  
**Population Growth Rate:** 2.9% per year (Urban 5.2%)

**GNP Per Capita:** US \$640

**Adult Literacy:** Total 42% (Male 54%, Female 31%)

**Life Expectancy:** 47 years (Male 46, Female 48)

**Infant Mortality (under 1 year):** 107 per 1,000 births

**Child Mortality (under 5 years):** 182 per 1,000 births

**Status of Decade/Sector Plan:** No formal plan; memorandum on rural water supply and sanitation is pending GON approval

## Water and Sanitation Agencies

State Water Boards, State Ministries of Works

Department of Water Resources, Federal Ministry of Agriculture, Water Resources, and Rural Development

Local Government Authorities

## Decade Progress

Nigeria is Africa's largest country in terms of population. The 1988 estimated level is approximately 112 million, and by the year 2000 there will be approximately 160 million Nigerians. Because the population is large and the level of coverage is relatively low, especially in rural areas, the sector places enormous investment demands on the country's development budget.

Nigeria has no formal Decade Plan. A World Bank sector memorandum prepared in 1984 has been adopted by the central government and a final draft of a rural water supply and sanitation sector memorandum prepared under the World Bank's sponsorship is said to be pending government approval.

On the whole, sector development is driven by the largely autonomous actions of Nigeria's 20 separate states. Each state has a water board which is supposed to act as an autonomous public utility. In reality, the state water boards have limited autonomy due to interference by one or several state ministries.

Over the last several years, external development assistance has been chan-

neled to the state water boards of various states, mainly by the World Bank and other UN agencies (virtually no bilateral aid has been available), for the development of urban water supply projects. Urban sanitation has largely been left to local government authorities but provision of this service is extremely poor even in the largest cities.

In the rural water supply sector, there is no one agency with clear cut responsibility. Many agencies at the state and federal levels are involved, but none has had any significant success. Recently, the government has adopted the UNICEF approach for rural water supply and sanitation services. This "RUWATSAN" program is intended to function as the national model for this sub-sector. However, the RUWATSAN program is still limited to the UNICEF project functioning in 10 of the country's 20 states, providing coverage for about 4 million rural persons.

Table 1 represents rough cost estimates required to reach 80 and 30% coverage levels, respectively, for water supply and sanitation services. As may be seen, the amounts needed are enormous.

TABLE 1  
INVESTMENT REQUIREMENTS  
NIGERIA

| ESTIMATED COVERAGE<br>COSTS AND POPULATION | URBAN   |            | RURAL   |            | TOTALS  |
|--|---------|------------|---------|------------|---------|
|  | SUPPLY  | SANITATION | SUPPLY  | SANITATION |         |
| Population Served 1988                     | 20.5    | 3.4        | 23.3    | 7.8        |         |
| Coverage Target 2000                       | 56.5    | 18.8       | 88.3    | 29.5       |         |
| Shortfall/Unserved                         | 36.0    | 15.4       | 65.0    | 21.7       |         |
| Cost (US \$)                               | 1,008.0 | 1,879.0    | 1,170.0 | 152.0      | 4,209.0 |
| Proposed Investment                        |         |            |         |            |         |
| Net Shortfall                              |         |            |         |            |         |

1 Population and costs in millions.

2 Assume population 1988 34.2M urban, 77.7M rural; year 2000 62.8M urban, 98.1M rural.

3 Assume urban growth rate of 5.2%.

4 Assume % access to water supply 1988 60% urban, 30% rural; year 2000 90% urban, 90% rural.

5 Assume % access to sanitation 1988 10% urban, 10% rural; year 2000 30% urban, 30% rural.

6 Assume per capita cost urban water supply \$28 for standpipe service, urban sanitation \$122, rural water supply \$18, sanitation \$7.

NOTE: Many table values, especially estimates for sanitation coverage are rough estimates. Basis of estimates given in notes accompanying Table 3.

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## COUNTRY PROFILE: NIGERIA

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### 1. Population

Population data was synthesized from several sources. The yearly totals for 1980, 1988, and 2000 were taken from the U.S. Bureau of the Census, World Population Profile (1987). The urban and rural components were estimated utilizing urbanization data as presented in the World Bank's World Development Report - 1988. The percent of urban population was applied to the estimated 1985 population (determined by extrapolating the U.S. Bureau of the Census values) to obtain an estimate of the urban total for 1985. This 1985 value was projected to years 1988 and 2000 and extrapolated back to year 1980 by utilizing the average urban population growth rate for 1980-1985 (as given by the World Bank) of 5.2%.

The significance of the population values in Table 2 should not be overlooked. Nigeria, with its approximately 112 million inhabitants, is by far Africa's largest nation, in terms of population. (Ethiopia, the second largest sub-Saharan country, has a 1988 population estimated at about 48 million, and Egypt, the second largest on the continent, has a population estimated at about 53 million.) Nigeria's population is also very fast growing. U.S. Bureau of the Census figures give 2.9% as the yearly rate. Other sources give higher figures. Growth is especially rapid in urban areas.

According to estimates, Nigeria has well over 25 million persons residing in over 1,000 cities and towns with populations of over 20,000.

Table 2

Past, Present, and Projected Population

|      | <u>Total</u> | <u>Urban</u> | <u>Rural</u> |
|------|--------------|--------------|--------------|
| 1980 | 90.0         | 22.8 (25%)   | 67.2 (75%)   |
| 1988 | 111.9        | 34.2 (32%)   | 77.7 (68%)   |
| 2000 | 160.9        | 62.8 (39%)   | 98.1 (61%)   |

Source: U.S. Bureau of the Census

World Bank data further indicates that about half of the urban population resides in about one dozen metropolitan areas with populations of over 500,000, including Lagos, the nation's capital, with an estimated 1988 population of approximately 7.2 million.

The investments required to satisfy the urban demands exerted by these many population centers growing at the high rates indicated in Table 2 are extremely significant. These requirements are partially illustrated in the estimates shown in Table 1 and are further discussed in later sections of this profile.

## 2. Coverage Data

The estimated coverage data shown in Table 3 are very approximate. With the exception of data pertinent to the "existing" water supply coverage, little definitive coverage data were available in the documents reviewed. Nigeria has no formal Decade plan, but has adopted the World Bank's 1984 "sector memorandum" as a planning guideline. (This document presented general water supply sector data but provided very little on sanitation.) A rural water supply and sanitation sector memorandum is said to be undergoing government review; however, this draft document was unavailable for use in preparing this profile.

Thus, the figures presented in Table 3 are merely rough estimates presented to illustrate the enormous investments that will be required in the Nigerian water supply and sanitation sector if coverage is to be substantially increased.

**TABLE 3**  
**WATER AND SANITATION COVERAGE DATA FOR 1980 AND 1988**  
**AND TARGETS FOR 2000**  
(in percents)

NIGERIA

| YEAR | WATER |       | SANITATION |       |
|------|-------|-------|------------|-------|
|      | URBAN | RURAL | URBAN      | RURAL |
| 1980 | 60*   | 20    | N/A        | N/A   |
| 1988 | 60    | 30    | 10**       | 10**  |
| 2000 | 90    | 90    | 30***      | 30*** |

SOURCE: W.H.O. IDWSSD Review of Mid-Decade Progress

\* Urban WS value for 1980 assumed equal to 1988 value

\*\* All sanitation coverage values shown are rough estimates. Very little data on sanitation coverage available.

\*\*\* Decade target values were announced in early 1980s as 100 percent for both water supply and sanitation coverage in both urban and rural areas. However, the values for water supply coverage were estimated, and sanitation values were assumed to be one-third of water supply coverage.

### **3. Decade/Sector Action Plan**

There is no formal Decade plan for the sector in Nigeria. Planning is carried out at the state level. However, there was little evidence available which indicated that comprehensive statewide or even regional plans were available or in the works, or that the states had instituted guidelines for their sector investments which reflected how they fit into national development objectives.

As mentioned, the World Bank's sector memorandum, which deals primarily with urban water supply, has been endorsed by the government, and government confirmation of a final draft of a rural water supply and sanitation sector memorandum (prepared under World Bank sponsorship) is pending government approval. This should provide further guidance on the sector's needs, program characteristics, and funding levels.

### **4. Sector Administration**

#### State Autonomy

Nigeria's 20 states, through their state water boards, are largely autonomous in terms of the development of the sectors within their states. There is no direct linkage between the water utilities established in each state and Nigeria's federal ministries. However, the central government, through the Department of Water Resources of the Federal Ministry of Agriculture, Water Resources, and Rural Development (FMAWRRD), controls and directs 11 River Basin and Rural Development Authorities (RBRDAs). Thus, federal government control is strongly exerted on the national sectors and on all general sector development within each state through policy making, allocation of water resources for specific purposes, and implementation of large water resource projects. Lending agency and bilateral donor activities in the sector are directed toward the states and their parastatal utilities.

#### Provision of Water Supply Services

The state water boards are nominally autonomous agencies reporting to the state Ministries of Works. However, many of the documents on which this profile is based indicate that the autonomy of these boards is severely hampered by the actions and the interference of various state ministries, which often contravene existing statutes and regulations pertinent to state water board responsibilities. Further, the state water boards are generally pictured as relatively weak organizations (in terms of operating on sound utility principles) with poor reporting relationships with state ministries and exhibiting extremely poor liaison with the RBRDAs within their states. Absorptive capacities are characterized as low. Apparently the state water boards are in need of a great deal of institutional strengthening before they can operate as good utilities.

The state water boards have concentrated on providing urban water supplies. The general pattern has been to provide service to the state capitals and other cities. Headquarters are usually in the state capital, with other offices in the cities or large towns of the state where service is provided.

Provision of rural water supply, ordinarily left to state local government authorities, is extremely disorganized. In many states, local government authorities share this responsibility with RBRDAs, and, in some, boreholes for rural water supplies are drilled by the state Ministries of Community Development and Cooperatives. Various state Ministries of Agriculture, involved in integrated rural development projects (primarily those which are part of a World Bank - sponsored agricultural development project) have included components which provided rural water supply projects. The federal government has also sponsored borehole drilling programs in all states. Needless to say, the organization of rural water supply is somewhat in disarray, with responsibilities overlapping and no clear-cut authority being exhibited.

### Provision of Sanitation Services

Urban sanitation services are the responsibility of the local government authorities, but a very low level of service is provided, for the most part only in the larger central cities and sometimes in the larger towns. Sanitation service is rarely provided in rural areas and does not appear to be viewed as a formal government responsibility. Any rural sanitation service provided is done so on an individual household basis.

Except for the central areas of Nigeria's largest cities, urban sanitation service rarely consists of sewerage systems. Septic tanks, privies, and pit latrines are used extensively. These systems, for the most part, have failed to incorporate adequate public health safeguards, and the general sanitary conditions in most of the nation's urban areas have been characterized as extremely low.

Nigeria's sanitation problems are exacerbated by many factors, including:

- ◆ The lack of local government resources (financial and human) to adequately implement and maintain these systems (the local government authorities do not even have the support of a technical ministry, as the Ministry of Local Government is mainly an administrative body).
- ◆ Coordination between the local government authorities and the State Ministries of Health and Works is very poor, often nonexistent.
- ◆ The modest national and statewide health and environmental education efforts do not attempt to transmit data on the benefits of clean water supplies and proper sanitation systems or on the relationship of these services to higher health levels.
- ◆ Most Nigerians, especially those in rural areas, do not perceive the need for sanitation as a high priority. Thus, the agencies seeking to provide such services must overcome cultural constraints and human behavior patterns built-up over many generations.

While sanitation services will probably be given low priority in the next several years, the problems recognized by poor sanitation have been recognized, and projects are expected to be identified.

### RUWATSAN and UNICEF Programs

The Government of Nigeria's newest approach in rural water supply and sanitation is the RUWATSAN project modeled on UNICEF's rural water supply and sanitation project. The on-going UNICEF program is an \$81 million program (over 80% of financing expected from state and federal governments) encompassing a comprehensive approach to rural water supply, health, and environmental education, village/community participation, and demonstration projects for sanitation using VIP latrines. This project had its genesis in the early 1980s and now is functioning, to some degree, in all of Nigeria's 20 states.

Key elements of this program include:

- ◆ the use of "village-level operation and maintenance" (VLOM) handpumps (locally manufactured handpumps suitable for village level maintenance),
- ◆ training of villagers to use and maintain the systems,
- ◆ comprehensive community participation in the projects,
- ◆ environmental and health education training coupled with sanitation demonstration projects, and
- ◆ in-depth liaison at all levels of state and local government to insure proper implementation and sustainability of the projects.

The government has adopted this program model and has named the Directorate of Foods, Roads, and Rural Infrastructure (DFRRI) to administer it. DFRRI, which was formed by the Government to provide rural infrastructure, directs the RUWATSAN program as part of its responsibilities. The program is actually executed by state directorates, with DFRRI providing comprehensive liaison at all levels of government.

The objective of the RUWATSAN program is eventually to turn over all facilities to local government authorities. The sanitation programs will similarly be implemented at the local level.

### **5. Water Sector Studies**

The reports reviewed for this sector profile which provided the most useful and/or specific information are identified below.

Federal Republic of Nigeria -- Water Supply and Sanitation Sector Memorandum, World Bank, October 1984.

Mid-Term Review -- Country Programme of Cooperation, 1988-1990, UNICEF, July 1988.

Nigeria -- RWS Handpumps, by E.O. Okeke (paper presented at the international seminar on low-cost rural water supply systems, Abidjan, Ivory Coast, October 1986).

Policies Followed and Main Issues Nigeria Is Facing In The Wide Coverage Goal Providing Water Supply and Sanitation To Its Rural Communities, by E.O. Okeke, Assistant Director (WS), Federal Department of Water Resources, Ministry of Agriculture, Water Resources and Rural Development, Nigeria (paper presented at the regional seminar on water supply and sanitation for low-income groups in rural and peri-urban areas, Recife, Brazil, September/October 1988).

The Situation of Women and Children in Nigeria, UNICEF and Nigerian Institute of Social and Economic Research, November 1985.

Staff Appraisal Report -- Lagos, Nigeria Water Supply Project, World Bank, April 1988.

## 6. Past Investments in the Sector

Sector investments in Nigeria for the 1980-1988 period have been made by the central government and multilateral donors (primarily the World Bank, UNDP, and UNICEF). There has been no significant bilateral support.

No comprehensive analysis of past investments in Nigeria's water and sanitation sector was available for this study. Further, the document reviewed did not provide data pertinent to specific levels of investments by the central or state governments.

The WHO Country External Support Information list and World Bank and UNICEF references provided the following breakdown of sector investments over the 1980-1988 period:

|                      |               |
|----------------------|---------------|
| World Bank           | 139.0 million |
| UNDP                 | 6.8 million   |
| UNICEF               | 17.0 million  |
| Government of Canada | 3.6 million   |

(The World Bank investments were about 60% of the investments needed for urban water supply projects in Borno and Anambra states. Other UN agency investments were for rural water supply and sanitation projects.)

In addition to the above, the government of Nigeria contributions (both state and federal government) are roughly estimated at \$120 - 180 million. (These contributions include about \$33 million -- of a total \$66 million -- for the UNICEF-directed RUWATSAN project, plus about \$90 million towards the World Bank projects.)

Thus, the range of total sector investments over the 1980-1988 period can be roughly estimated at \$290 to \$350 million.

## 8. Proposed Investments in the Sector

According to the WHO Country External Support Information and other sources, the following proposed investments will be obligated by 1992:

|   |       |         |
|---|-------|---------|
| World Bank (Lagos WS project)                       | \$173 | million |
| Others (for Lagos WS project)                       | 212   | million |
| World Bank (water rehab fund)                       | 240   | million |
| World Bank (unspecified multi-state water projects) | 300   | million |
| UNDP (new)  | 10    | million |

The World Bank and "others" portions of the Lagos water supply project would be supplemented by an additional \$73 million from the Lagos state government. An additional \$33 million has already been invested locally for the RUWATSAN project. The \$540 million expected from the World Bank (water rehabilitation plus unspecified multi-state water projects) could generate \$200 to \$300 more in local contributions if the local funding ratios remain similar to past investments.

Thus, the range of proposed investments could be roughly US \$1.3 to 1.6 billion. (Note, however, that, based upon the references utilized in this report, it is doubtful that the sector could absorb this level of investment in less than a 10 or 12 year period.)

## 9. Health Indicators

The most recent statistics from the Federal Ministry of Health regarding hospital morbidity and mortality (1981), based on data from six states, indicate that infective and parasitic diseases account for 36% of total in-patient admissions and 37% of total hospital deaths. Of these deaths from infectious diseases, approximately 65% were accounted for by diarrheal diseases and dysentery, malaria, and tetanus. UNICEF assumes that the majority of these statistics relate to children under age five.

Nationally, the major causes of morbidity, on average in all states, as published in Nigeria's Health Profile of 1984, were as follows:

Malaria  
Dysentery (all types)  
Measles  
Pneumonia  
Whooping Cough  
Gonorrhea  
Schistosomiasis (all types)  
Chicken Pox  
Filariasis  
Leprosy

Another way to characterize the general health levels in Nigeria is by examining the perceptions of many of its health practitioners. (These may be of great interest to USAID, recognizing the agency's high level of child survival interventions world wide.) Interviews of personnel of health institutions and health services management bodies conducted by UNICEF in late 1985 in ten of Nigeria's states and at the Federal Ministry of Health, as well as fragmentary data, indicated the following:

- ◆ Malaria, diarrhea, respiratory infections, measles, neonatal tetanus, and nutritional deficiencies are the most important immediate causes of persistently high mortality and morbidity among Nigerian children.
- ◆ These principal causes of death are potentially preventable.
- ◆ There is a close relationship between public and household family economic and environmental situations on the one hand, and the patterns of infant/child diseases and death on the other.
- ◆ The factors deserving particular attention in any effort to improve the health status of Nigerian children include nutrition, health education, public sanitation, personal hygiene, and immunization against communicable diseases.

Based upon the above several paragraphs, there is little doubt that increased access to adequate water supplies and provision of technically applicable sanitation, especially in rural areas, will provide extremely high benefits, especially in terms of child survival. For Nigeria, the child survival situation can best be understood by the following example. In the 1987-1988 period, the number of births roughly estimated was approximately 5 million per year. The infant and under five mortality rates indicate that approximately 535,000 of these children will die within the first year of their lives, and about 375,000 more will perish prior to their fifth birthday.

## **10. Privatization**

Virtually all water supply and sanitation services are provided via the state water boards, local government authorities, or other governmental entities. Thus, from the standpoint of service provision, little opportunity appears to exist for the private sector.

The RUWATSAN program, with its objective of utilizing locally manufactured handpumps, may offer the private sector the possibility to establish cooperative agreements for manufacturing these devices. Similar opportunities may exist in the construction of water supply systems and/or devices for urban/rural sanitation (i.e., septic tanks, VIP latrines).

## **11. Recommendations for USAID**

USAID's development strategy in Nigeria is concentrated solely in the areas of family planning and child survival. Both programs, funded via regional program funds for Africa, have started in recent years. The FY 1988 request for both programs was approximately \$12 million.

USAID's child survival program appears to offer an ideal project to which a water supply or environmental health education/training component could be added. The comprehensive RUWATSAN program being administered by UNICEF could be increased in scope by 6 to 10% a year with a contribution of \$1 million from USAID. (Note that a \$1 million investment in rural water supply could increase coverage to approximately 55,000 persons, if split equally for rural water supply and sanitation, approximately 38,000 rural persons could be covered with both services.)

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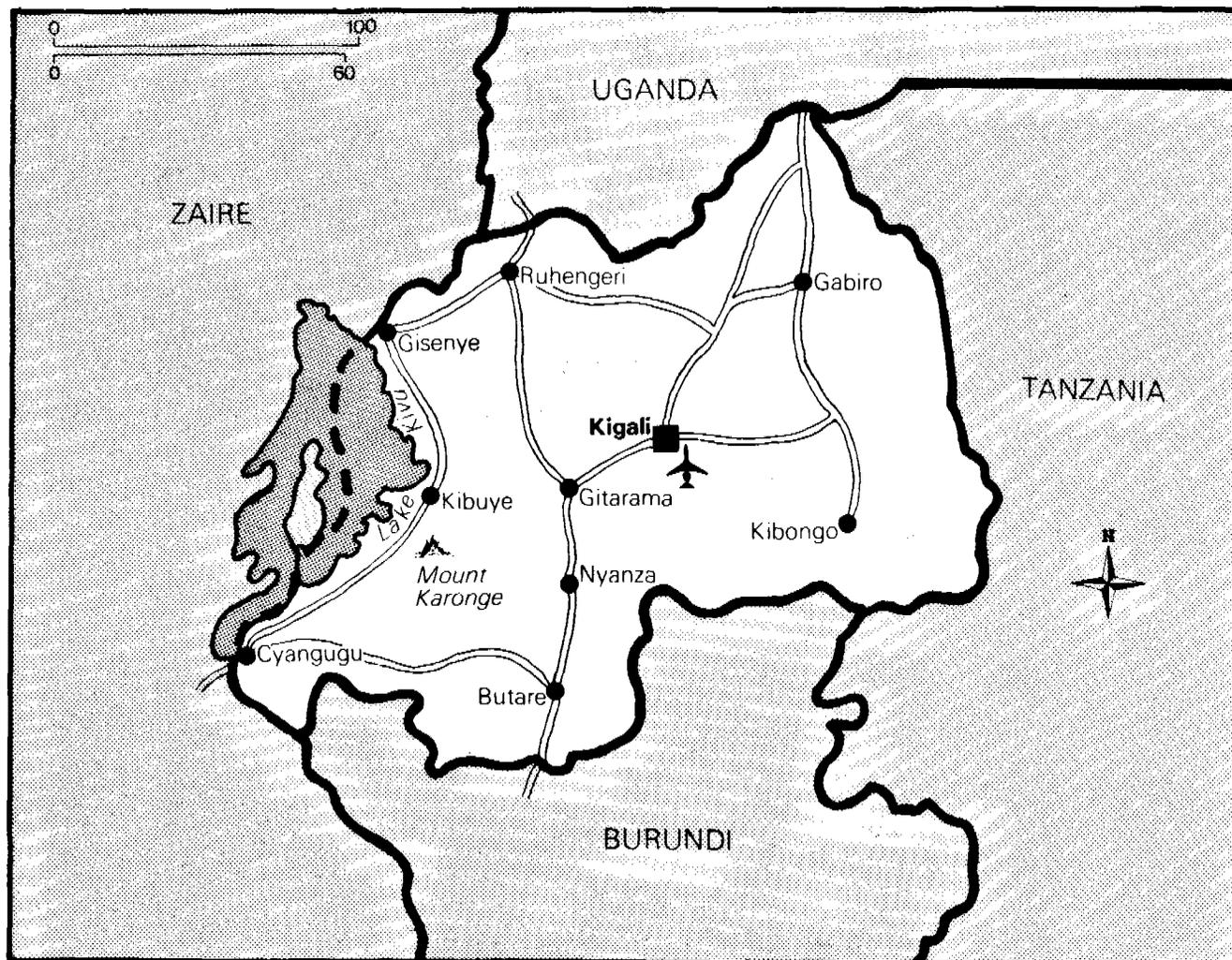
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**RWANDA**



# RWANDA

**Population:** Total 7.1 M (Urban 6%, Rural 94%)

**Population Growth Rate:** 3.7% per year (Urban 6.7%)

**GNP Per Capita:** US \$280

**Adult Literacy:** Total 50% (Male 61%, Female 39%)

**Life Expectancy:** 50 years (Male 49, Female 52)

**Infant Mortality (under 1 year):** 124 per 1,000 births

**Child Mortality (under 5 years):** 214 per 1,000 births

**Status of Decade/Sector Plan:**  
Completed in 1984

## Water and Sanitation Agencies

Electrogaz, Ministry of Public Works and Energy  
General Directorate of Water, Ministry of Public Works and Energy  
Ministry of Health  
Interministerial Coordinating

## Decade Progress

The Government of Rwanda has expressed strong support for the Water and Sanitation Decade. The country's Decade plan, completed in 1984, called for substantial increases in coverage levels by 1990 and highlighted the institutional and human resources weakness that had kept Rwanda from progressing further, especially in rural water supply.

The target set for water supply was 90% in urban areas (half by standpost and half by house connections) and 70% in rural areas. In sanitation, the targets were 85% in urban and 75% in rural areas. These targets are fairly ambitious, requiring Rwanda to provide water supplies to 2,049 million additional persons and sanitation to almost a million persons between 1985 and 1990.

Coverage at the mid-Decade point was 79% for urban and 48% for rural water and 77% for urban and 55% for rural sanitation. Rwanda has placed a large emphasis on sanitation with the result of obtaining the highest coverage in Africa. This is essentially latrine

building. In urban areas there are no sewage systems; people rely on latrines or septic tanks.

Poor environmental sanitation remains a problem in Rwanda, and it is not being fully addressed by the latrine program, although the Decade plan does emphasize the need to sensitize the population to the problems of environmental and personal hygiene.

UNICEF, in its 1985 report on the state of children in Rwanda, calls for a greater emphasis on environmental sanitation and the protection of water sources. This report also points out that the generally poor state of child and maternal health in Rwanda is due to unsanitary conditions, poor personal hygiene, and poor quality water.

The quantity of water available is also a factor in health. The average rural Rwandan utilizes 9 to 10 liters of water per day; that is about half of what is considered adequate. In many areas, the nearest water point may be as much as 10 or 15 kilometers away. It can take up to six hours per day to collect water for a family. The effect of these long trips is to reduce consumption and to make it difficult to maintain personal hygiene.

Many of these problems are accentuated by the rapid rate of population increase in Rwanda. At the current rate, the population will exceed 10 million at the end of the century. The country is also very crowded. Over 400 persons live on each square

kilometer of arable land. Many development organizations feel that reducing the growth rate of the population is Rwanda's number one development challenge.

Numerous multilateral and bilateral donors have been willing to invest heavily in the country, especially in rural water projects. Also, a number of nongovernmental organizations are active there. However, Rwanda's sector institutions need to become stronger to be able to utilize a high level of external investment effectively. In 1984, the sector was reorganized by establishing a special directorate for water within the Ministry of Public Works and Energy. This agency still needs strengthening.

The largest donor is the World Bank which has invested \$28 million since the beginning of the Decade, mostly in rural water. The Bank is proposing another large rural water supply project for \$ 25.7 million. France and Canada have also invested considerable amounts. CARE has been active in the rural water and sanitation sector.

The challenge for Rwanda is to be able to move ahead as quickly as it hopes to with relatively new agencies at the helm. It seems apparent that it will take the country longer than anticipated to meet the Decade targets, but the time will be well spent if institutional and human resources are strengthened.

TABLE 1  
INVESTMENT REQUIREMENTS  
RWANDA

| ESTIMATED COVERAGE<br>COSTS AND POPULATION | URBAN |            | RURAL |            | TOTALS |
|--|-------|------------|-------|------------|--------|
|  | WATER | SANITATION | WATER | SANITATION |        |
| Population Served 1988                     | 0.3   | 0.3        | 3.2   | 3.7        |        |
| Coverage Target 2000                       | 0.8   | 0.8        | 7.1   | 7.6        |        |
| Shortfall/Unservd                          | 0.5   | 0.5        | 3.9   | 3.9        |        |
| Cost (US \$)                               | 28.0  | 193.0      | 88.0  | 82.0       | 391.0  |
| Proposed Investment                        |       |            |       |            |        |
| Net Shortfall                              |       |            |       |            |        |

1 Population and costs in millions.

2 Assume 1988 population .4M urban, 6.7M rural; year 2000 .9M urban, 10.1M rural.

3 Assume urban growth rate of 6.7%.

4 Assume % access to water supply 1988 79% urban, 48% rural; year 2000 90% urban, 70% rural.

5 Assume % access to sanitation 1988 77% urban, 55% rural; year 2000 85% urban, 75% rural.

6 Assume per capita cost urban water supply standpost \$55; sanitation \$385 (non-sewerage); rural water supply \$22.50, sanitation \$21.

7 Proposed investment is estimated at \$22 million/year. This does not include activities by nongovernmental organizations.

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## COUNTRY PROFILE: RWANDA

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### 1. Population

Rwanda has one of the fastest growing populations in the region and the highest population density in Africa. At the current growth rate of 3.7% per year, in the year 2000 Rwanda will have a population of over 10 million, according to USAID estimates. The continued rapid growth of the population is the single greatest threat to Rwanda's continued development.

The population is largely rural and extremely dispersed. Most people live in family settlements (called "urugos") spread out over the generally hilly terrain. Nonetheless, the urban population is increasing rapidly, and extensive squatter settlements or peri-urban areas have sprung up around the major towns.

The figures in Table 2 were taken from the U.S. Bureau of the Census, World Population Report.

Table 2  
Past, Present, and Projected Population  
(in millions)

|      | <u>Total</u> | <u>Urban</u> | <u>Rural</u> |
|------|--------------|--------------|--------------|
| 1980 | 5.2          | .2 (4%)      | 5.0 (96%)    |
| 1988 | 7.1          | .4 (6%)      | 6.7 (94%)    |
| 2000 | 11.0         | .9 (8%)      | 10.1 (92%)   |

Source: U.S. Bureau of the Census

### 2. Water and Sanitation Coverage

Current coverage data for Rwanda is apparently quite reliable, although the projected coverage levels may be somewhat unrealistic based on past performance. Between 1980 and 1985 Rwanda provided water to an additional .271 million persons, but plans call for extending water coverage to an additional 2.049 million persons between 1985 and 1990, a great increase in the pace of providing service. (The population increase for the period 1985 to 1990 is projected at approximately one million.) Similarly, from 1980 to 1985, .922 million additional persons were provided with sanitation, but to meet Decade goals, 1.950 million additional persons will have to be served in the 1985 to 1990 period.

The Government's Decade plan is optimistic about meeting the Decade goals however it is questionable whether the systems built will be operated and maintained adequately. Some authorities have suggested that the pace of development might better be slowed somewhat to let the sector institutions develop and mature without undue pressure on them.

Rwanda has a great many springs and other surface water sources, but many are heavily polluted because of the almost total lack of any provisions for ridding urban and peri-urban areas of domestic and industrial wastewater and garbage. Open ditches carry off rainwater and are often used also for disposing of household wastewater and garbage. Because of abundant surface water few attempts have been made to assess the groundwater resources and no data are available.

In both rural and urban areas, excreta disposal is through individual household pit latrines or septic tanks. In public gathering places, generally no latrines or water are available.

In the growing peri-urban areas, the situation is similar to that of rural areas with people obtaining their water from nearby streams or springs. Approximately 45% of urban dwellers are living just as their rural counterparts as far as water and sanitation are concerned.

TABLE 3

WATER AND SANITATION COVERAGE FOR 1980 AND 1988  
AND TARGETS FOR 2000  
(in percents)

RWANDA

| YEAR | WATER |       | SANITATION |       |
|------|-------|-------|------------|-------|
|      | URBAN | RURAL | URBAN      | RURAL |
| 1980 | 48    | 55    | 60         | 50    |
| 1988 | 79    | 48    | 77         | 55    |
| 2000 | 90    | 70    | 85         | 75    |

SOURCE: W.H.O. IDWSSD Review of Mid-Decade Progress

### 3. Decade/Sector Plans

The first National Decade Workshop was held in November 1980 and the second in February 1983. These meetings laid the foundation for the Decade program and established the need for a Decade plan. In 1981 a National Action Committee was created.

The Government of Rwanda is strongly committed to the Decade. In 1984 its Decade plan was completed. Only a summary of this plan--not the entire document--was available when this profile was prepared.

The coverage targets of the plan are given in Section 2, above.

The plan outlines the main constraints:

- ◆ lack of sector legislation,
- ◆ lack of sector organization,
- ◆ lack of trained manpower,
- ◆ poor operation and maintenance, and
- ◆ weak sector institutions.

It should be noted that in 1984, some administrative changes were made to give more coherence to the way the sector was organized. (See Section 4, below.)

The plan points out that funding for the sector is not a problem. There are numerous multilateral and bilateral organizations willing to fund development programs in Rwanda, but the country lacks trained manpower and strong institutions to absorb the investments and use them efficiently.

The overall sector objective for the Fourth Five-Year Plan (1987-1991) is to manage water resources in order to meet the needs of all the population, agriculture, livestock, and industry. To do this the Government aims to put in place an institutional and legal framework for rationalized water management, including

- ◆ giving the communes (local governmental bodies) full responsibility for water management through water users associations,
- ◆ establishing the principle that beneficiary families should cover the full cost of operation and maintenance and renewal of systems, and
- ◆ setting up a National Fund for Rural Water Supply as a special account of the existing Communal Development Fund to provide financing for rural water projects.

In addition, the Government intends to strengthen the General Directorate for Water (the agency in charge of rural water supplies).

Rwanda has an ongoing national community development movement known as "umuganda," which is oriented toward involving the community served in the construction and utilization of services provided. This movement can be used in involving communities more fully in the development and maintenance of water and sanitation projects.

In rural water supply, priority is to be given to less favorable zones--those in which coverage is under 30% or in which facilities need repair or replacement. Emphasis is to be placed on sensitizing the population to the problems of health, hygiene, and environmental sanitation.

The 1985 UNICEF report on the state of children in Rwanda proposed that sector planning focus more on sanitation because many of the country's health problems are related to the poor state of sanitation. Further it proposed that sanitation should focus on protecting the country's water supplies. Looking at the Decade targets, it appears that this is being done to some extent. At least it may be said that, in comparison with many other countries in the region, Rwanda is placing considerable emphasis on sanitation.

#### 4. Sector Administration

Two main water supply agencies operate under the Ministry of Public Works and Energy: Electrogaz, which serves Kigali and 11 other urban centers, and the General Directorate of Water, a fairly new agency responsible for those areas not covered by Electrogaz.

Operating like a traditional utility, Electrogaz systems provide metered water supplies and bill for service.

The General Directorate of Water was created in 1984 when the Ministry of Natural Resources was abolished and responsibility for water supply was transferred to the Ministry of Public Works and Energy. Before the creation of this directorate, the lack of rural water supply institutions and the absence of financial resources prevented the upgrading of rural water supply and sanitation and resulted in poor operation and maintenance. Since its creation, this agency has supervised the construction of 292 rural systems comprising 2,549 standpipes.

The National Committee on Water and Sanitation became the Interministerial Coordinating Committee at the same time that responsibility for water was transferred to the Ministry of Public Works. This committee, which is made up of representatives of the ministries of Transport, Agriculture, Health, Education, and Finance, is in charge of all policy questions relating to water supply and sanitation.

## 5. Water Sector Studies

No comprehensive studies are available. The most detailed report consulted in the preparation of this profile was the 1985 UNICEF report on the state of children in Rwanda. The country's Decade plan, which was not available for the preparation of this profile, may contain detailed data on the sector.

A WASH study, "Ruhengeri Water Resources Study, Rwanda," was directed at one region of the country but addressed several water resource issues that dominate much of the country.

## 6. Past Investments in the Sector

Past investments in the sector, according to the WHO Country External Support Information list, are shown in Table 4.

Table 4

Past and Current Investments  
(in thousands of U.S. \$)

|                          |              |
|--------------------------|--------------|
| World Bank/IDA           | \$ 28,000.0  |
| France (CCCE)            | 14,008.0     |
| Canada                   | 12,642.0     |
| European Community (CEC) | 7,700.0      |
| African Development Fund | 1,352.7      |
| Germany (GTZ)            | 1,602.7      |
| Germany (KFW)            | 1,410.4      |
| African Development Bank | 1,352.7      |
| UNCD                     | <u>986.0</u> |
| Total                    | \$ 70,757.3  |

As already mentioned, Rwanda has not suffered from lack of investments in the water supply and sanitation sector. In addition to the investments listed in Table 4, a large number of nongovernmental organizations are active in Rwanda, especially in the field of rural water supply.

There are no figures on the Government's investment during the Decade. The mid-Decade update does say, however, that 66% of the investment in water and sanitation came from external sources. Other reports consulted in preparing this profile agree that external donors normally supply about 85% of the investment. The amount of the GOR budget allocated to the Ministry of Public Works and Energy is normally about 7% (about 5% goes to water supply and sanitation).

According to the 1984 Sector Plan, costs for on-going projects and those completed in the period 1981-1984 amounted to \$88 million. The "Immediate Program" (1985-1988) budgeted \$86 million. In other words, the average yearly investment is around \$21 or \$22 million.

In addition to the above listed donors there are several private voluntary organizations involved in the WSS sector:

CARE International has a three and one-half year project (Byumba Southeast Rural Water Supply) funded at \$1.5 million.

AFRICARE has a grant under Farming Systems Research Project to cap 150 springs at a cost of \$75,000 plus additional funding for a gravity distribution system.

CORORWA, a Rwandan nongovernmental organization undertakes water supply and sanitation construction at about \$509,000/year financed from local contributions.

UNICEF has undertaken a springs improvement project over about five years. The total cost is about \$1 million.

The French volunteers also have a program to improve springs which is financed at about \$100,000/year.

## **7. Future Investments in the Sector**

According to the WHO Country External Support Information, a \$38.302 million investment is proposed. The largest project, is a \$25.7 million World Bank/IDA rural water supply project that follows on from the rural water supply projects funded earlier. The African Development Bank proposes a \$9.8 million project to rehabilitate and extend the Kigali water supply system. The Government of Rwanda has requested two small well development projects.

Rwanda has already committed itself to promoting stronger community control of and involvement in water and sanitation projects. In addition, the question of tariffs is being studied as part of the World Bank rural water supply project.

According to the Rwandan Government, the cost of the sector program 1987-1991 will be \$110 million, more than 75% of which is to be allocated for rural programs in poor areas. (That averages out to an investment of about \$22 million per year.)

## 8. Health Indicators

Health conditions in Rwanda are very poor and many of the conditions that lead to poor health are being aggravated by the increased crowding. Population density on arable land is over 400 persons per square kilometer. In peri-urban areas, crowding is severe. Further, there are almost no provisions for maintaining environmental sanitation and per capita water usage is very low, making it difficult for people to maintain an adequate level of personal hygiene.

Rwanda has good rainfall and a plentiful supply of surface water sources in most areas. However, in the eastern part of the country only groundwater is available. And in the Lava region the volcanic ground is porous and cannot retain water. This means that water points are few and far between and people may have to walk 10 or 15 kilometers to find water. It may take 6 hours a day to obtain 60 liters of water for a family. In the Lava region, one trip alone can take up to 5 hours. Sometimes the water supply is malfunctioning.

These conditions lead to low water consumption. In rural areas, utilization is 9 to 10 liters per person per day, about half what is deemed necessary to maintain health. The UNICEF report on the state of children in Rwanda asserts that the state of health of Rwandans, particularly that of children, and consequently their ability to work clearly depends on the quality and quantity of available water and on community and personal hygiene.

According to the World Bank, 80% of child morbidity is due to the lack of safe water and 70% of all endemic diseases are water-related.

Table 5 shows general mortality and morbidity, and Table 6 shows infant and child mortality and morbidity for the top five diseases. The data on infant and child mortality and morbidity probably is an underestimation since many episodes of illness and many infant deaths are not reported. Data was taken from the 1983 annual report of the Ministry of Health.

Table 5  
 General Mortality and Morbidity, 1983  
 Six Most Prevalent Diseases  
 (in hospital)

| <u>Disease</u> | <u>Mortality</u> | <u>Disease</u> | <u>Morbidity</u> |
|----------------|------------------|----------------|------------------|
| malaria        | 27.2%            | malaria        | 51.0%            |
| measles        | 24.2             | influenza      | 12.9             |
| pneumonia      | 20.0             | diarrhea       | 11.2             |
| diarrhea       | 16.0             | pneumonia      | 11.2             |
| tuberculosis   | 4.8              | gonorrhoea     | 3.7              |
| tetanus        | 2.1              | measles        | 3.1              |

Table 6  
 Infant and Child Mortality and Morbidity, 1983  
 Five Most Prevalent Diseases  
 (in hospital)

Infant (aged 0 to 1)

| <u>Disease</u>            | <u>Mortality</u> | <u>Disease</u>                        | <u>Morbidity</u> |
|---------------------------|------------------|---------------------------------------|------------------|
| born dead                 | 25.7%            | diarrhea                              | 25.0%            |
| diarrhea                  | 11.2             | malaria                               | 15.6             |
| low birth wt.             | 10.7             | pneumonia                             | 12.0             |
| measles                   | 10.4             | measles                               | 9.3              |
| complications<br>of labor | 9.3              | bronchitis,<br>bronchial<br>pneumonia | 8.5              |

Child (aged 1-4)

| <u>Disease</u> | <u>Mortality</u> | <u>Disease</u> | <u>Morbidity</u> |
|----------------|------------------|----------------|------------------|
| measles        | 31.8%            | malaria        | 21.7%            |
| diarrhea       | 12.0             | diarrhea       | 12.0             |
| kwashiorkor    | 10.0             | measles        | 12.0             |
| pneumonia      | 7.0              | pneumonia      | 9.5              |
| malaria        | 7.0              | respiratory    | 5.7              |

Diarrhea and malaria are responsible for a large amount of sickness and death in Rwanda, and the incidence of these disease is not diminishing. Also, UNICEF reports a large rise in the incidence of cholera, although the number of cases is small.

## **9. Privatization**

The commercial private sector is not a major player in the water and sanitation sector for construction activities. Most construction work in rural areas is accomplished through communal efforts. Operation and maintenance is also organized around the community. Government institutions, although limited in their capacity, are generally sound and provide few opportunities for private sector involvement, although there is no policy prohibiting increased involvement.

## **10. Recommendation for USAID**

For fiscal year 1989, USAID has allocated \$8.0 million for Rwanda out of the Development Fund for Africa. However, none of the funds is to be spent on water and sanitation. The goal of USAID's program is to raise per capita income, increase off-farm employment, reduce population growth, and increase agricultural production. USAID's priorities are well placed, given the high rate of population growth in Rwanda and the need to create more jobs for the ever-increasing ranks of youth.

Within the water and sanitation sector Rwanda has made significant investments but environmental sanitation is a significant omission. More emphasis is needed on institutional strengthening to support the sector. Institutional projects which focus on policy development and personnel training are recommended for USAID as future interventions.

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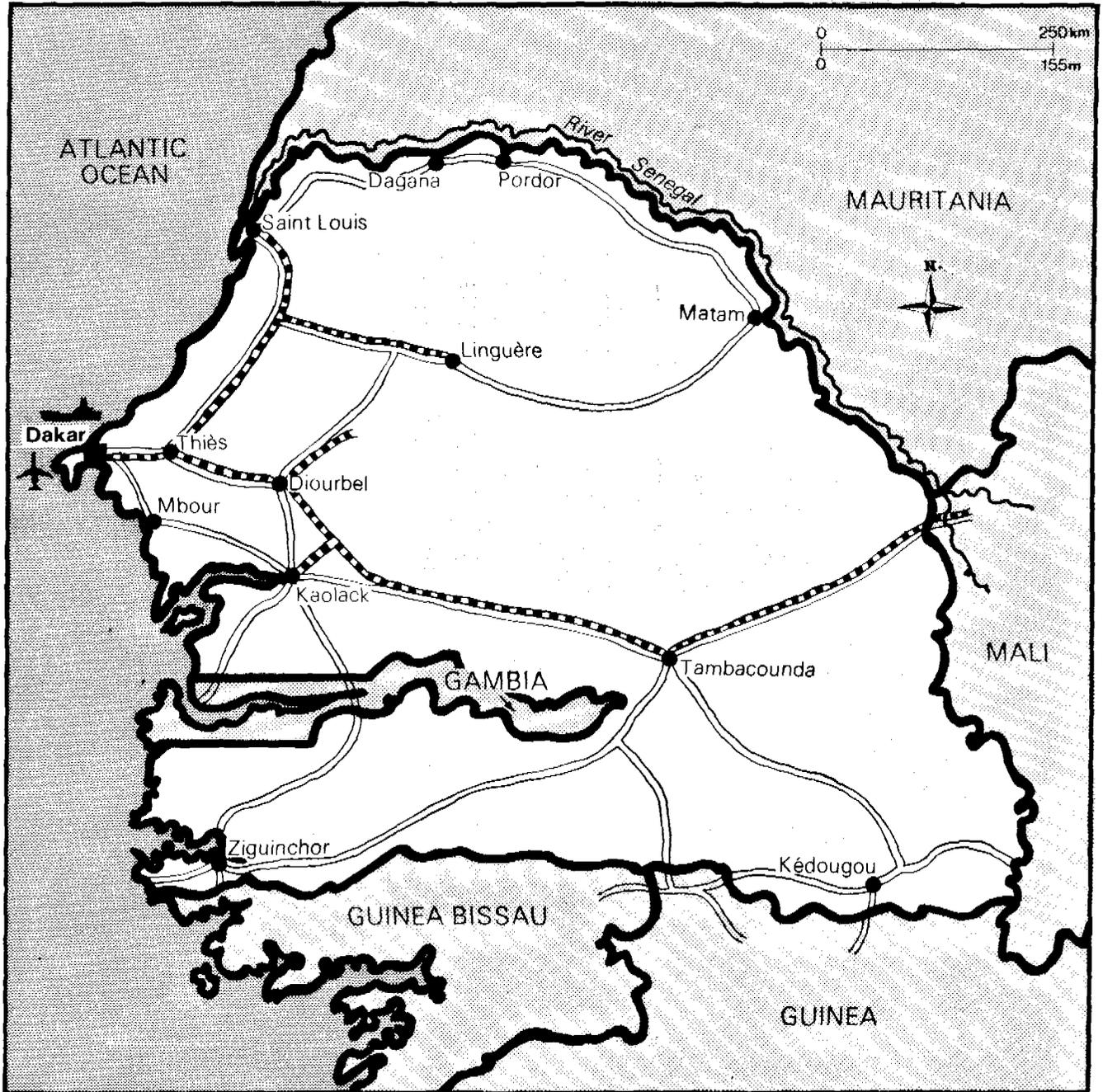
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SENEGAL



# SENEGAL

**Population:** Total 7.3M (Urban 37%, Rural 63%)

**Population Growth Rate:** 3.0% per year (Urban 4%)

**GNP Per Capita:** US \$420

**Adult Literacy:** Total 28% (Male 37%, Female 19%)

**Life Expectancy:** 51 years (Male 50, Female 53)

**Infant Mortality (under 1 year):** 134 per 1,000 births

**Child Mortality (under 5 years):** 231 per 1,000 births

**Status of Decade/Sector Plan:**  
Prepared in 1985

## Water and Sanitation Agencies:

Ministry of Hydraulics (MH)  
- Direction de l'Hydraulique Rurale (DHR)

- Direction de l'Entretien et de la Maintenance (DEM)

- Direction des Etudes Hydraulique (DEH)

Societe Nationale d'Exploitation des Eaux du Senegal (SONEES)  
Ministry of Health

## Decade Progress

In 1980, it was estimated that approximately 77% of the urban population in Senegal and 25% of the rural population had access to a safe water supply. About 2% of the rural population had access to sanitation, and, although no coverage figure was given for urban sanitation, it was estimated that about 5% of the urban population was served by sewers and most of the rest by latrines or septic tanks.

By 1985, according to the *IDWSSD Directory 1987*, 79% of the urban population and 38% of the rural had access to a water supply and 87% of the urban population had access to sanitation. No figure was given for rural sanitation.

According to the same document, Decade targets to be achieved by 1990 in urban areas were 93% for water supply and 94% for sanitation and, in rural areas, 67% for water supply coverage. Again, no figure is given for rural sanitation.

Issues and constraints experienced in the urban water supply and sanitation sector include technical difficulties involved in providing an adequate water supply to Dakar, organizational and coordination problems, financial problems involving overdue bills, bill collection, tariffs, and other cost recovery issues. Major constraints to rural water supply and sanitation activities have included lack of maintenance, lack of adequate budgetary provision for maintenance, and insufficient planning, organization, and information systems required to cope with the influx of donor assistance during the Decade. The Government has adopted a number of policies and initiated several reforms to address some of the major issues that affect the sector. In 1983 institutional reforms were implemented, giving SONEES full responsibility to plan, implement, and operate all urban water supply activities; in 1988 urban water supply and sanitation were combined under SONEES.

Financial issues are also being studied and addressed as part of this reform. Medium-term and long-term solutions to provide an adequate water supply to Dakar have been agreed upon and financing is being sought. The rehabilitation and extension of urban water supply in 11 urban centers is a significant start to resolving urban water supply problems outside of Dakar.

In the rural water supply sub-sector where maintenance has been a major issue, the Ministry of Hydraulics created a directorate for operation and main-

tenance (DEM) in 1983. Additionally, local water committees have been formed to collect a financial contribution from users to cover most normal operation and maintenance expenditures. The Ministry of Hydraulics is also taking steps to strengthen its capacity for sectoral planning, programming of investments, and coordination of donors active in the sub-sector.

The Senegalese government has accepted the principle that local communities will participate in the costs of rural water supply development and is studying various mechanisms to shift these costs from government to the private sector. In terms of construction, a number of private drilling companies and other entrepreneurs with business associations relevant to the water and sanitation sector operate in Senegal.

Bilateral and multilateral support has come from a large number of countries and organizations, and donor collaboration has generally been good. An excellent example of this is the joint financing by the World Bank, Germany (KfW), and France (CCCE) of urban water supplies in 11 urban towns.

The Government program for the water and sanitation sector calls for an estimated \$369 million to reach its objectives for the period 1985-1990. This represents an investment of about \$74 million per year of which 59% is financed and another 14.3% is at present being negotiated.

TABLE 1  
INVESTMENT REQUIREMENTS  
SENEGAL

| ESTIMATED COVERAGE<br>COSTS AND POPULATION | URBAN |            | RURAL |            | TOTALS |
|--|-------|------------|-------|------------|--------|
|  | WATER | SANITATION | WATER | SANITATION |        |
| Population Served 1988                     | 2.1   | 2.3        | 1.7   | 0.9        |        |
| Coverage Target 2000                       | 4.0   | 4.0        | 4.2   | 1.3        |        |
| Shortfall/Unserviced                       | 1.9   | 1.7        | 2.5   | 0.4        |        |
| Cost (US \$)                               | 114.0 | 207.0      | 95.0  | 15.0       | 431.0  |
| Proposed Investment                        |       |            |       |            |        |
| Net Shortfall                              |       |            |       |            |        |

1 Population and costs in millions.

2 Assume 1988 population 2.7M urban, 4.6M rural; year 2000 4.3M urban, 6.3M rural.

3 Assume urban growth rate of 4%.

4 Assume % access to water supply 1988 (based on 1985 data): 79% urban, 38% rural; year 2000 93% urban, 67% rural.

5 Assume % access to sanitation 1988 (based on 1985 data) 87% urban, 20% rural; year 2000 94% urban, 20% rural (estimate).

6 Assume per capita cost: urban water supply \$60, sanitation \$122; rural water supply \$38, sanitation \$37 (based on regional averages).

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## COUNTRY PROFILE: SENEGAL

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### 1. Population

U.S. Bureau of the Census, World Population Profile 1987, indicates that Senegal's population was 5.7 million in 1980 and 7.3 million in 1988 and projects a population of 7.7 million in 1990 and 10.6 million in the year 2000. The current (1987) annual growth rate is estimated at 3.0% for the total population. The World Development Report 1988 indicates that this is an increase from 2.5 % for the period 1965-1980 and 2.9% for the period 1980-1986. It also noted that in 1985, about 36% of the population was urban, up from 27% in 1965, and that the annual average growth rate in urban areas was 4.0%. A demographic survey done by Westinghouse and the Government of Senegal in 1986 put the urban population at 40%, with a growth rate of 5% per year. U.S. Bureau of the Census data for 1988 indicate an urban population of 2.7 million or 37% and a rural population of 4.6 million or 63%. The population is unevenly distributed with about one fourth residing around Dakar. The rest of the urban population is distributed among 10 regional centers and 25 secondary towns. Population data are shown in Table 2.

Table 2

Past, Present, and Projected Population  
(in millions)

|      | <u>Total</u> | <u>Urban</u> | <u>Rural</u> |
|------|--------------|--------------|--------------|
| 1980 | 5.7          | ?            | ?            |
| 1988 | 7.3          | 2.7 (37%)    | 4.6 (63%)    |
| 2000 | 10.6         | 4.3* (40%)   | 6.3 (60%)    |

\* Based on a 4.0% average yearly urban growth rate.

Source: U.S. Bureau of the Census

### 2. Coverage Data

The WHO Rapid Sector Assessment 1978 report put urban water supply coverage at 68% and rural water supply coverage at 23%. No sanitation figures were given. IDWSSD baseline data for 1980 show water supply coverage in urban areas at 77% and in rural areas at 25%, while sanitation coverage was 100% urban and 2% rural. (The 100% figure seems unrealistically high.) The IDWSSD 1987 Directory noted that in 1980 about 5% of the population was served by sewers and the rest had some kind of individual system. A Government memorandum prepared for the donors meeting indicated that rural water supply coverage in 1980 was only about 10%.

The IDWSSD 1987 Directory indicated that in 1985 about 79% of the urban population had access to water supply, having kept up with population growth. Urban sanitation coverage was given as 87%. Rural water supply coverage was put at 38%. No rural sanitation figures were given. A more detailed breakdown is given in the memorandum referred to above which distinguishes between urban water supply coverage in Dakar and in other urban centers. It indicates that Dakar had 80% coverage in 1985. With leakage and increased demand, 1990 coverage could slip to 70% and coverage in 2000 might only be 44% if measures were not taken to improve provision for Dakar. Coverage in other urban centers and secondary towns was estimated at 71%. Rural water supply coverage was estimated at 60%, corresponding to 15 liters per day per person. However, a lower figure of 30% was given for access to safe drinking water from modern water points. It is estimated that 15% of the urban population will be served by sewers in 1988. While no comprehensive data exist for rural sanitation, the memorandum estimates 20% coverage.

**TABLE 3**

**WATER AND SANITATION COVERAGE FOR 1980 AND 1988  
AND TARGETS FOR 2000  
(in percents)**

**SENEGAL**

| YEAR | WATER |       | SANITATION |       |
|------|-------|-------|------------|-------|
|      | URBAN | RURAL | URBAN      | RURAL |
| 1980 | 77    | 25    | N/A        | 2     |
| 1988 | 79    | 38    | 87         | 20 *  |
| 2000 | 93    | 67    | 94         | N/A   |

\* Based on Government estimates for 1988

SOURCES: Current coverage figures were taken from two sources:

- a) the W.H.O. IDWSSD Review of Mid-Decade Progress
- b) Memorandum sur la Politique Generale de l'Hydraulique 1986.

Past coverage figures were taken from three sources:

- a) WHO Rapid Sector Assessment 1978,
- b) IDWSSD National Baseline Data 1980, and
- c) Memorandum sur la Politique Generale de l'Hydraulique 1986.

IDWSSD reports put 1990 target levels for water supply at 93% and 67% coverage for urban and rural populations, respectively. Urban sanitation coverage is set at 94%. No figure is given for rural sanitation. The memorandum outlines a program for rural water supply from 1986-2000 which calls for 800 boreholes, 2,800 wide diameter wells, and the rehabilitation of 4,500 existing wells to meet rural sector needs. In the urban sector, several new boreholes will be constructed as an interim measure for Dakar before the long-term solution of the Canal de Cayor Project is implemented. The 11 town projects previously mentioned will begin to address urban needs in the interior. Coverage data are shown in Table 3.

### 3. Decade/Sector Action Plan

The IDWSSD Review of Mid-Decade Progress 1987 indicates that a Decade action plan was prepared in 1985. In addition a sectoral review and investment program was prepared for a proposed 1988 donors meeting in the "Memorandum sur la Politique Generale de l'Hydraulique 1986."

Many unresolved issues remain concerning urban water supply: organization of the sector, financing sector projects and operations (tariffs, low collection levels, etc.), technical problems regarding the provision of water to Dakar, and problems faced by urban areas outside Dakar (high demand, inadequate supply, low capacity of existing storage tanks, highly corrosive water, etc.). The rural water supply sub-sector has faced a number of planning and organizational issues associated with the significant increase of investment and assistance to the sector in recent years. Another major issue that has arisen is lack of adequate maintenance for new water points which have been constructed in increasing numbers during the Decade.

The World Bank is making recommendations for the restructuring of the sub-sector concerning organizational and cost-recovery and financial issues. Present tariffs are very low and designs of several recently completed schemes are being reviewed as to cost and adaptation to local conditions. Collection and disposal of solid waste is also a major issue facing this sub-sector. Rural sanitation has not received as high a priority as is warranted, given its potential health impact. West Germany (KfW) is funding a pilot latrine scheme which, if successful, may be a model for future activities.

The Senegalese Government is taking steps to address these and other sectoral issues. Institutional restructuring has shifted responsibility for all aspects of urban water supply (planning, construction, operation, maintenance, etc.) to the Societe Nationale d'Exploitation des Eaux du Senegal (SONEES) and established SONEES as a public company with financial and administrative autonomy. The Government has undertaken to set adequate tariffs as part of the reorganization and is proceeding to audit municipalities and other agencies with overdue bills. The provision of a water supply for Dakar will be implemented in phases.

Urban sanitation will be combined with urban water supply and responsibility for it will be shifted to SONEES from the Ministry of Hydraulics in 1988. The restructuring is part of World Bank assistance. It is expected that a sanitation code--like the already adopted water supply code--will soon be established. Comprehensive plans for rural sanitation have not been formulated, although KfW is financing a rural latrine program which may provide missing data and pave the way for a larger program.

As SONEES has taken over the responsibility for urban water supply, the Ministry of Hydraulics can now concentrate on the rural sector.

The Senegalese Government has taken several steps to address maintenance and cost recovery issues in the rural sector. The Direction de l'Entretien de la Maintenance (DEM) was established in 1983 and will be given both a national and regional scope. Local water committees are being organized to assure local financial participation to cover some operation and maintenance costs. The Government is studying a tariff system for the rural sector and will eventually pass all recurrent costs on to local beneficiaries. It is also in the process of defining a National Water Fund which will finance rural water supply projects, service the rural water debt, and cover operation and maintenance costs.

#### **4. Sector Administration**

A new Ministry of Hydraulics was given responsibility for water supply and sanitation in 1981. As the sector was then organized, once urban water supply schemes were constructed, SONEES was responsible for operation and maintenance of the systems. The other directorates of the Ministry of Hydraulics handled urban sanitation and rural water supply.

In 1983, some institutional restructuring was implemented, aimed at streamlining the activities of the Ministry of Hydraulics and redefining responsibilities in the sector. SONEES became the national water company with administrative and financial autonomy and was given responsibility for all aspects of urban water supply. In 1988, after sector studies and recommendations have been completed, urban sanitation responsibilities will also be passed from the Ministry of Hydraulics to SONEES.

Rural water supply is handled by three Ministry of Hydraulics directorates: Direction de l'Hydraulique Rurale (DHR), Direction de l'Entretien et de la Maintenance (DEM), and Direction des Etudes Hydrauliques (DEH). Other ministries involved to a lesser degree in the sub-sector include the Ministere du Plan et de la Cooperation, Ministere du Developpement Rural, Ministere du Developpement Social, and Ministere Charge de la Recherche Scientifique et Technique. The Ministry of Health is responsible for rural sanitation.

## **5. Water Sector Studies**

A major review of the water and sanitation sector, completed in September 1986, was recently updated for presentation at a donors meeting in late 1988. The review includes an analysis of each sub-sector, policies, constraints, and investment levels. In addition, the World Bank and West Germany (KfW) have financed a number of studies in the urban water supply and sanitation sector.

## **6. Past Investments in the Sector**

The Sixth Development Plan (1980-1984) called for \$105.6 million for rural water supply, of which \$66.7 million was actually provided. Of \$47.7 million proposed in the sixth plan for urban water supply, \$31.3 million was actually spent. Of \$25.3 million proposed for sanitation, \$16.3 million was actually used.

## **7. Proposed Investments in the Sector**

A total of 110.7 billion FCFA or \$369 million is the estimated required investment to meet government objectives for 1990. Tables 4-6, prepared by the Senegalese Government, give a detailed breakdown by sub-sector. The tables also indicate specific projects and donors and whether funds are secured or are under negotiation.

## **8. Health Indicators**

Infant and child mortality rates in Senegal are among the highest in the world. Infant mortality in 1986, according to UNICEF documents, was 134 per 1,000 live births and child (under 5) mortality in 1985 was 231 per 1,000 live births.

The situation analysis of children in Senegal indicates that child mortality increases during the rainy season when there are particularly high levels of malaria and parasitic illness. A study in Gambia on water quality in wells and the relation to infant diarrheal illness also found a significant increase during this period. A 1984 diarrheal study in Dakar found a prevalence of diarrhea of 14.5% in those surveyed the day of the interview. With extrapolation, it was estimated that in this area about seven episodes of diarrhea per child per year was experienced. A similar study in the rural sector identified a prevalence of 13.4% the day of the survey and estimated about five episodes per child per year.

## **9. Privatization**

A number of private and public companies are already involved in various aspects of water supply construction activities. As maintenance and cost-recovery mechanisms are further established in the rural sector, an increased role for the private sector can be envisaged.

## **10. Recommendations for USAID**

**USAID activities in the water sector consist of assistance to private voluntary organizations and participation in a regional project: Assessment of Environmental Effects of Proposed Developments in the Senegal River Basin.**

**USAID should look for opportunities to increase the impact of its assistance through collaborative efforts with other donors and by fostering the linkages between closely related sectors and activities, i.e., child survival and water supply. The upcoming donors' meeting offers a good opportunity for USAID to do this kind of planning.**

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Table 4

## HYDRAULIQUE RURALE : PROGRAMMATION DES INVESTISSEMENTS

| PROJETS (Total)                         | : Montant             | : 1985-86 | : 1986-87 | : 1987-88 | : 1988-89 | : 1989-90 | : Total PTIP | : Après | : Niveau d'avancem  |
|---|-----------------------|-----------|-----------|-----------|-----------|-----------|--------------|---------|---------------------|
|   | : 7 <sup>o</sup> Plan | :         | :         | :         | :         | :         | : (1987-88 à | : 1990  | : (09-86)           |
|   | : révisé              | :         | :         | :         | :         | :         | : 1989-90)   | : (1)   | :                   |
| 1 <sup>o</sup> ) Programme d'Action     | :                     | :         | :         | :         | :         | :         | :            | :       | :                   |
| <u>Prioritaire Equipement</u>           | :                     | :         | :         | :         | :         | :         | :            | :       | :                   |
| . Programme Spécial                     | :                     | :         | :         | :         | :         | :         | :            | :       | :                   |
| <u>Volet Casamance-Louga (6277)</u>     | : 6277                | : 1000    | : 2300    | : 2600    | : 377     | : -       | : 2977       | : -     | : Appel d'offres en |
| Fonds Saoudien 57 M Ryal =6277          | :                     | :         | :         | :         | :         | :         | :            | :       | Cours               |
| . <u>Volet Thiès-Tambacoundi (1800)</u> | : 1800                | : 100     | : 1000    | : 700     | : -       | : -       | : 700        | : -     | : En cours          |
| Koweit 5,133 M\$ = 1800                 | :                     | :         | :         | :         | :         | :         | :            | :       | :                   |
| . <u>Volet Diourbel-Louga (2750)</u>    | : 2750                | : 715     | : 1500    | : 535     | : -       | : -       | : 535        | : -     | : En cours          |
| Arabie Saoudite 7,797 M\$ =2750         | :                     | :         | :         | :         | :         | :         | :            | :       | :                   |
| . <u>Volet Kaolack-Fatick (4500)</u>    | : 3500                | : -       | : 500     | : 1500    | : 1500    | : 1000    | : 4000       | : -     | : En voie de démar  |
| Italie 4500                             | :                     | :         | :         | :         | :         | :         | :            | :       | :                   |
| . <u>Volet Saint-Louis (1500)</u>       | : 1500                | : -       | : -       | : 700     | : 800     | : -       | : 1500       | : -     | : En négociation a  |
| en négociation avec KFW 1500            | :                     | :         | :         | :         | :         | :         | :            | :       | : KFW - BOAD pres-  |
|   | :                     | :         | :         | :         | :         | :         | :            | :       | : sentio            |
| . <u>Alimentation Mpal-Fass-Rao</u>     | : 1500                | : -       | : -       | : 750     | : 750     | : -       | : 1500       | : -     | :                   |
| (1500)                                  | :                     | :         | :         | :         | :         | :         | :            | :       | :                   |
| Italie 1500                             | :                     | :         | :         | :         | :         | :         | :            | :       | :                   |

(1) Seuls sont portés les projets déjà identifiés

SOURCE: Government of Senegal

| PROJETS (Total)                    | Montant             | 1985-86 | 1986-87 | 1987-88 | 1988-89 | 1989-90 | Total PTIP | Après | Niveau d'avancement  |
|------------------------------------|---------------------|---------|---------|---------|---------|---------|------------|-------|----------------------|
| HYDRAULIQUE RURALE                 | 7 <sup>o</sup> Plan |         |         |         |         |         | (1987-88 à | 1990  | (09-86)              |
|                                    | révisé              |         |         |         |         |         | 1989-90)   |       |                      |
| . <u>CEAD 250 points d'eau</u>     | 2583                | 1500    | 1083    | -       | -       | -       | -          | -     | En voie d'achèvement |
| (5330)                             |                     |         |         |         |         |         |            |       |                      |
| Kowcit 3580                        |                     |         |         |         |         |         |            |       |                      |
| Madèa 1750                         |                     |         |         |         |         |         |            |       |                      |
| ONE 300                            |                     |         |         |         |         |         |            |       |                      |
| 5330                               |                     |         |         |         |         |         |            |       |                      |
| . <u>20 forages équipés (1750)</u> | 1750                | -       | 350     | 600     | 800     | -       | 1400       | -     | En démarrage         |
| Chine 20 Myvan = 1750              |                     |         |         |         |         |         |            |       |                      |
| . <u>Programme Britannique</u>     | 2600                | 560     | 1540    | 500     | -       | -       | 500        | -     | En cours             |
| (2600)                             |                     |         |         |         |         |         |            |       |                      |
| Grande Bretagne 2600               |                     |         |         |         |         |         |            |       |                      |
| . <u>Programme Japon IV (1000)</u> | 1000                | -       | 500     | 500     | -       | -       | 500        | -     | En cours             |
| Japon 600 M Yens = 1000            |                     |         |         |         |         |         |            |       |                      |
| . <u>Programme Japon V et VI</u>   | 1000                | -       | -       | 500     | 500     | 500     | 1500       | 500   | En préparation       |
| (2000)                             |                     |         |         |         |         |         |            |       |                      |
| Japon : 1200 M yens = 2000         |                     |         |         |         |         |         |            |       |                      |
| . <u>Aide d'urgence BID (880)</u>  | 880                 | -       | 380     | 500     | -       | -       | 500        | -     | En cours             |
| B I D : 880                        |                     |         |         |         |         |         |            |       |                      |
| . <u>Projet KFW II (1130)</u>      | 765                 | 565     | 200     | -       | -       | -       | -          | -     | En achèvement        |
| KFW : 1130                         |                     |         |         |         |         |         |            |       |                      |
| . <u>Création 2 Brigades puits</u> | 1064                | 364     | 300     | 200     | 200     | -       | 400        | -     | En cours             |
| (1064)                             |                     |         |         |         |         |         |            |       |                      |
| FENU 2,48 M\$ = 894                |                     |         |         |         |         |         |            |       |                      |
| ONE 0,47 M\$ = 170                 |                     |         |         |         |         |         |            |       |                      |

| PROJETS (Total)  | Montant             | 1985-86 | 1986-87 | 1987-88 | 1988-89 | 1989-90 | Total PTIP | Après | Niveau d'avancement |
|--|---------------------|---------|---------|---------|---------|---------|------------|-------|---------------------|
| HYDRAULIQUE RURALE   | 7 <sup>o</sup> Plan |         |         |         |         |         | (1987-88 à | 1990  |                     |
|  | révisé              |         |         |         |         |         | 1989-90)   | (1)   |                     |
| <hr/>  |                     |         |         |         |         |         |            |       |                     |
| . Equipement 24 forages et   |                     |         |         |         |         |         |            |       |                     |
| 200 puits (1650)   | 800                 | -       | -       | 400     | 400     | 400     | 1200       | 450   | En négociation ACI  |
| Négociation ACDI 1650  |                     |         |         |         |         |         |            |       |                     |
| . Réalisation-réfection de   |                     |         |         |         |         |         |            |       |                     |
| 166 puits (700)  | 700                 | -       | -       | 350     | 350     | -       | 700        | -     | En négociation UN.  |
| Négociation UNICEF 700   |                     |         |         |         |         |         |            |       |                     |
| . Secours d'urgence au   |                     |         |         |         |         |         |            |       |                     |
| monde rural (800)  | 800                 | -       | -       | 300     | 500     | -       | 800        | -     | En négociation PM   |
| Négociation PNUD 800   |                     |         |         |         |         |         |            |       |                     |
| Programme Soviétique   | 350                 | -       | -       | 100     | 250     | 450     | 800        | 1000  | En négociation URSS |
| (1800 prêt)  |                     |         |         |         |         |         |            |       |                     |
| En négociation URSS  |                     |         |         |         |         |         |            |       |                     |
| . Plan directeur hydraulique. Cellule permanente de programmation. Etude financière du secteur (765) | 565                 | -       | 65      | 300     | 200     | 200     | 700        | -     | 700 M à chercher    |
| IDA : 65   |                     |         |         |         |         |         |            |       |                     |
| A chercher 700   |                     |         |         |         |         |         |            |       |                     |
| <hr/>  |                     |         |         |         |         |         |            |       |                     |
| Total PAP équipement   | 32.184              | 4.804   | 9.718   | 11.035  | 6.627   | 2.550   | 20.212     | 1.950 |                     |

|                                   | : Montant             | : 1985-86 | : 1986-87 | : 1987-88 | : 1988-89 | : 1989-90 | : Total PTIP      | : Après | : Niveau d'avancement   |
|-----------------------------------|-----------------------|-----------|-----------|-----------|-----------|-----------|-------------------|---------|-------------------------|
|                                   | : 7 <sup>o</sup> Plan | :         | :         | :         | :         | :         | : (1987-88 à 1990 | :       | :                       |
|                                   | : révisé              | : -:      | :         | :         | :         | :         | : 1987-1990)      | : (1)   | :                       |
| 2°) <u>P.A.P Maintenance</u>      | :                     | :         | :         | :         | :         | :         | :                 | :       | :                       |
| · <u>Renforcement infrastruc-</u> | :                     | :         | :         | :         | :         | :         | :                 | :       | :                       |
| <u>ture DEM (2624)</u>            | : 2624                | : -       | : 250     | : 1174    | : 1200    | : -       | : 2374            | : -     | : En cours              |
| KFW : 2386                        | :                     | :         | : (198)   | : (1094)  | : (1094)  | : -       | : (2188)          | : -     | :                       |
| BNE : 238                         | :                     | :         | : (52)    | : (80)    | : (106)   | : -       | : (186)           | : -     | :                       |
| · <u>Ateliers Centraux DEM</u>    | : 450                 | : -       | : -       | : 150     | : 300     | : 115     | : 565             | : -     | : Italie saisi          |
| (565)                             | :                     | :         | :         | :         | :         | :         | :                 | :       | :                       |
| A chercher 565                    | :                     | :         | :         | :         | :         | :         | :                 | :       | :                       |
| · <u>Appui formation (700)</u>    | : 400                 | : -       | : -       | : 200     | : 200     | : 300     | : 700             | : -     | : BIT (500) } saisi     |
| A chercher 700                    | :                     | :         | :         | :         | :         | :         | :                 | :       | : Franco (200) }        |
| · <u>Renforcement matériels</u>   | : 500                 | : -       | : -       | : 200     | : 300     | : 200     | : 1200            | : 800   | : Fonds saoudien) saisi |
| <u>et outillage (1800)</u>        | :                     | :         | :         | :         | :         | :         | :                 | :       | : CEAO                  |
| A chercher 1800                   | :                     | :         | :         | :         | :         | :         | :                 | :       | :                       |
| · <u>Renforcement moyens</u>      | : 655                 | : -       | : -       | : -       | : 655     | : 420     | : 1075            | : -     | : Danemark saisi        |
| <u>d'intervention (1075)</u>      | :                     | :         | :         | :         | :         | :         | :                 | :       | :                       |
| A chercher 1075                   | :                     | :         | :         | :         | :         | :         | :                 | :       | :                       |
| · <u>Réhabilitation forages</u>   | : 400                 | : -       | : -       | : 200     | : 200     | : 400     | : 800             | : 1200  | :                       |
| (2000)                            | :                     | :         | :         | :         | :         | :         | :                 | :       | :                       |
| A chercher 2000                   | :                     | :         | :         | :         | :         | :         | :                 | :       | :                       |
| <b>Total PAP Maintenance</b>      | : 5029                | : -       | : 250     | : 1924    | : 2855    | : 1935    | : 6714            | : 2000  | :                       |
|                                   | :                     | :         | :         | :         | :         | :         | :                 | :       | :                       |

| PROJETS (Total)<br>HYDRAULIQUE RURALE     | : Montant<br>: 7 <sup>o</sup> Plan<br>: révisé | : 1985-86 | : 1986-87 | : 1987-88 | : 1988-89 | : 1989-90 | : Total PTIP<br>: (1987-88 à<br>: 1989-90) | : Après<br>: (1) | : Niveau d'avance |
|---|--|-----------|-----------|-----------|-----------|-----------|--|------------------|-------------------|
| 3 <sup>o</sup> ) <u>Autres programmes</u> | : 240  | : 240     | : -       | : -       | : -       | : -       | : -  | : -              | : Achevé          |
| - <u>éoliennes (240)</u>                  | :  | :         | :         | :         | :         | :         | :  | :                | :                 |
| Argentino 240                             | :  | :         | :         | :         | :         | :         | :  | :                | :                 |
| - <u>Iles du Saloum (250)</u>             | : 250  | : -       | : -       | : 250     | : -       | : -       | : 250                                      | : -              | : En négociation  |
| A chercher 250                            | :  | :         | :         | :         | :         | :         | :  | :                | : Italo depuis 19 |
| - <u>150 puits mécanisés (500)</u>        | : 500  | : -       | : -       | : 250     | : 250     | : -       | : 500                                      | : -              | : Emploi des mach |
| A chercher 500                            | :  | :         | :         | :         | :         | :         | :  | :                | : tekni-for       |
| - <u>DNG (Caritas divers)</u>             | : 750  | : 200     | : 200     | : 200     | : 150     | : 200     | : 550                                      | : ?              | : Opérations mal  |
|   | :  | :         | :         | :         | :         | :         | :  | :                | : connues         |
| <b>Total 3<sup>o</sup></b>                | : 1740   | : 440     | : 200     | : 700     | : 400     | : 200     | : 1300                                     | : -              | :                 |
| <b>Total Hydraulique Ruralo</b>           | : 38953  | : 5244    | : 10168   | : 13659   | : 9882    | : 4685    | : 28226                                    | : 3950           | :                 |
| dont Programmes d'actions<br>prioritaires | : 37213  | : 4804    | : 9968    | : 12959   | : 9482    | : 4485    | : 26926                                    | : 3950           | :                 |
| 7 <sup>o</sup> Plan initial               | : 40532  | : 14321   | : 13753   | : 8309    | : 4149    | :         | :  | :                | :                 |
| dont PAP                                  | 43 638   | 15 977    | 13903     | 8859      | 4899      | :         | :  | :                | :                 |

| (                    | 1985 à 1990 | Après 1990 | ) |
|----------------------|-------------|------------|---|
| ( Financement acquis | 31 348      |            | ) |
| ( en négociation     | 6 000       |            | ) |
| ( A chercher         | 6 290       | 3 950      | ) |
| (                    |             |            | ) |
| (                    | 43.438      | 3 950      | ) |

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HYDRAULIQUE RURALE  
SITUATION DES FINANCEMENTS  
SUR LA PERIODE 1985-86 A 1989-90

|                   | Total de la<br>période | Financement<br>acquis | Financement on<br>négociation | A Chercher   | % de<br>financement<br>acquis |
|-------------------|------------------------|-----------------------|-------------------------------|--------------|-------------------------------|
| P A P Equipement  | 34 734                 | 28 034                | 6 000                         | 700          | 81 %                          |
| P A P Maintenance | 6 964                  | 2 374                 | -                             | 4 590        | 34 %                          |
| Divers (dont ONG) | 1 940                  | 940                   | -                             | 1 000        | 48 %                          |
| <u>Total</u>      | <u>43 638</u>          | <u>31 348</u>         | <u>6 000</u>                  | <u>6 290</u> | <u>72 %</u>                   |

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Table 5

## HYDRAULIQUE URBAINE : PROGRAMMATION DES INVESTISSEMENTS

| PROJET (Total)   | Montant             | 1985-86 | 1986-87 | 1987-88 | 1988-89 | 1989-90 | Total PTIP | Après   | Niveau d'avan-  |
|--|---------------------|---------|---------|---------|---------|---------|------------|---------|-----------------|
| HYDRAULIQUE URBAINE                                    | 7 <sup>o</sup> Plan |         |         |         |         |         | (1987-88 à | 1990    | coment          |
|  | révisé              |         |         |         |         |         | 1989-90)   | (1)     |                 |
| <u>AEP de St-Louis (1385)</u>                          | 1385                | 245     | 930     | 210     | -       | -       | 210        | -       | Achévé          |
| KFW 1385   |                     |         |         |         |         |         |            |         |                 |
| <u>AEP Onze centres (6900)</u>                         | 6900                | 900     | 5200    | 800     | -       | -       | 800        | -       | En cours        |
| IDA 4900   |                     | (800)   | (3350)  | (750)   |         |         |            |         |                 |
| CCCE 2000  |                     | (100)   | (1850)  | (50)    |         |         |            |         |                 |
| <u>Appui SONEES (Volet du projet précédent) (4000)</u> | 4000                | 600     | 1700    | 1000    | 700     | -       | 1700       | -       | En cours        |
| IDA 2800   |                     |         |         |         |         |         |            |         |                 |
| CCCE 1200  |                     |         |         |         |         |         |            |         |                 |
| <u>Travaux sur fonds SONEES (7600) SONEES</u>          | 7600                | 1470    | 2330    | 2200    | 1600    | 1700    | 5500       | 1700/an |                 |
| <u>Programme intérimaire Dakar</u>                     | 9650                | -       | 780     | 3330    | 5540    | 6500    | 15370      | -       |                 |
| -phase 1 (4650)  | (4650)              |         | (780)   | (3330)  | (540)   | -       | (3870)     | -       |                 |
| <u>Négociation KFW</u>                                 |                     |         |         |         |         |         |            |         |                 |
| -phase 2 (21500)                                       | (5000)              |         | -       | -       | (5000)  | (6500)  | (11500)    | 10000   | Japon pressenti |
| chercher : 21500                                       |                     |         |         |         |         |         |            |         | pour 10.000     |
| <u>Canal du Cayor</u>                                  | 1800                |         | 500     | 300     | 1000    | 1300    | 2600       | 63000   |                 |
| . étude factibilité (800)                              | (800)               | -       | (500)   | (300)   | -       | -       | (300)      | -       | En cours        |
| IDA 800  |                     |         |         |         |         |         |            |         |                 |
| . étude exécution (2300)                               | (1000)              | -       | -       | -       | (1000)  | (1300)  | (2300)     | -       |                 |
| chercher 2300  |                     |         |         |         |         |         |            |         |                 |
| . Travaux (63.000)                                     |                     |         |         |         |         |         |            | (63000) |                 |
| chercher 63.000  |                     |         |         |         |         |         |            |         |                 |

Seuls sont portés les projets déjà identifiés

SOURCE: Government of Senegal

| PROJET (Total)                    | : Montant             | : 1985-86 | : 1986-87 | : 1987-88 | : 1988-89 | : 1989-90 | : Total PTIP | : Après | : Niveau d'avan- |
|-----------------------------------|-----------------------|-----------|-----------|-----------|-----------|-----------|--------------|---------|------------------|
| HYDRAULIQUE URBAINE               | : 7 <sup>o</sup> Plan | :         | :         | :         | :         | :         | : (1987-88 à | : 1990  | : cement         |
|                                   | : révisé              | :         | :         | :         | :         | :         | : 1989-90)   | : (1)   | :                |
| <u>A E P 4 Centres fluviaux</u>   | : 50                  | : -       | : -       | : -       | : 50      | : 100     | : 150        | : 1050  | :                |
| 1200 A chercher                   | :                     | :         | :         | :         | :         | :         | :            | :       | :                |
| <u>A E P 14 Centres régionaux</u> | : 130                 | : -       | : -       | : -       | : 130     | : 120     | : 250        | : -     | :                |
| (Etudes 250) A chercher           | :                     | :         | :         | :         | :         | :         | :            | :       | :                |
| <u>A E P Mbour-Nianing</u>        | : 500                 | : -       | : -       | : 50      | : 450     | : 1000    | : 1500       | : -     | :                |
| (1500) A chercher                 | :                     | :         | :         | :         | :         | :         | :            | :       | :                |
| <b>TOTAL</b>                      | : 32015               | : 3215    | : 11440   | : 7890    | : 9470    | : 10720   | : 28080      | : 75000 | :                |
| <b>(7<sup>o</sup> Plan)</b>       | : 28422               | : 10281   | : 8038    | : 5622    | : 4481    | :         | :            | :       | :                |

| (                    | 1985 à 1990 | Après 1990 | ) |
|----------------------|-------------|------------|---|
| ( Financement acquis | 20 685      | -          | ) |
| ( En négociation     | 4 650       | -          | ) |
| ( A rechercher       | 17 400      | 75 000     | ) |
| (                    |             |            | ) |
| (                    | 42 735      |            | ) |
| (                    |             |            | ) |

Table 6

## ASSAINISSEMENT : PROGRAMMATION DES INVESTISSEMENTS

| PROJET (Total)                                  | Montant             | 1985-86 | 1986-87 | 1987-88 | 1988-89 | 1989-90 | Total PTIP | Après | Niveau d'avancement |
|---|---------------------|---------|---------|---------|---------|---------|------------|-------|---------------------|
|   | 7 <sup>o</sup> Plan |         |         |         |         |         | (1987-88 à | 1990  |                     |
|   | révisé              |         |         |         |         |         | 1989-90)   | (1)   |                     |
| <u>Canal Guéule Tapée (2000)</u>                | 1300                | 1040    | 260     | -       | -       | -       | -          | -     | Achevé              |
| FED 2000  |                     |         |         |         |         |         |            |       |                     |
| <u>Assainissement st-Louis (8000)</u>           | 4000                | -       | -       | 2000    | 2000    | -       | 4000       | 4000  |                     |
| ITALIE 4000                                     |                     |         |         |         |         |         |            |       |                     |
| <u>Assainissement Dakar (5600)</u>              | 3800                | 3040    | 760     | -       | -       | -       | -          | -     | En cours            |
| FAD 4160  |                     |         |         |         |         |         |            |       |                     |
| BNE 1440  |                     |         |         |         |         |         |            |       |                     |
| <u>Route et Canal front de terre (1200)</u>     | 1200                | -       | 400     | 800     | -       | -       | 800        | -     | En cours            |
| OPEP 200  |                     |         |         |         |         |         |            |       |                     |
| Fonds saoudien 1000                             |                     |         |         |         |         |         |            |       |                     |
| <u>Assainissement rural (20) KFW</u>            | 20                  | 20      | -       | -       | -       | -       | -          | -     | Achevé              |
| <u>Réalisation plan directeur DKR</u>           | 70                  | -       | -       | 30      | 40      | -       | 70         | -     |                     |
| A chercher 70                                   |                     |         |         |         |         |         |            |       |                     |
| <u>Plan directeur Centres secondaires (150)</u> | 150                 | -       | 30      | 120     | -       | -       | 150        | -     |                     |
| IDA 150   |                     |         |         |         |         |         |            |       |                     |
| <u>Etude recyclage eaux usées (50)</u>          | 50                  | -       | -       | 30      | 20      | -       | 50         | -     |                     |
| IDA 50  |                     |         |         |         |         |         |            |       |                     |

(1) Seuls sont portés les projets déjà identifiés.

SOURCE: Government of Senegal

| PROJET (Total)                       | : Montant             | : 1985-86   | : 1986-87   | : 1987-88   | : 1988-89   | : 1989-90 | : Total PIIP | : Après     | : Niveau d'avance |
|--------------------------------------|-----------------------|-------------|-------------|-------------|-------------|-----------|--------------|-------------|-------------------|
| ASSAINISSEMENT                       | : 7 <sup>o</sup> Plan | : -         | :           | :           | :           | :         | : (1987-88 à | : 1990      | : mont            |
|                                      | : révisé              | :           | :           | :           | :           | :         | : 1989-90)   | : (1)       | :                 |
| <u>Etude Assainissement Ziguin-</u>  | 250                   | -           | -           | -           | 250         | -         | 250          | -           | Recherche de      |
| <u>chor et Tambacounda</u>           |                       |             |             |             |             |           |              |             | financement       |
| A chercher 250                       |                       |             |             |             |             |           |              |             |                   |
| <u>Ecole d'assainissement de</u>     | 34                    | -           | -           | -           | 34          | 50        | 84           | -           | " "               |
| <u>Khombolo (84)</u>                 |                       |             |             |             |             |           |              |             |                   |
| A chercher 84                        |                       |             |             |             |             |           |              |             |                   |
| <u>Etude réorganisation du</u>       | 100                   | -           | 20          | 80          | -           | -         | 80           | -           |                   |
| <u>secteur assainissement</u>        |                       |             |             |             |             |           |              |             |                   |
| IDA 100                              |                       |             |             |             |             |           |              |             |                   |
| <u>Assainissement Rufisque (300)</u> | 300                   | -           | -           | 300         | -           | -         | 300          | -           | Recherche finan   |
| A chercher 300                       |                       |             |             |             |             |           |              |             | cement            |
| <b>Total</b>                         | <b>11274</b>          | <b>4100</b> | <b>1470</b> | <b>3360</b> | <b>2344</b> | <b>50</b> | <b>5784</b>  | <b>4000</b> |                   |
| <b>(Rappel 7<sup>o</sup> Plan)</b>   | <b>14792</b>          | <b>4292</b> | <b>5968</b> | <b>5610</b> | <b>2122</b> |           |              |             |                   |

|                      | 1985-90       | Après 1990   |
|----------------------|---------------|--------------|
| ( Financement acquis | 6 620         | -            |
| ( En négociation     | 4 000         | -            |
| ( A chercher         | 704           | 4 000        |
| (                    | <u>11 324</u> | <u>4 000</u> |

ASSAINISSEMENT BILAN DU 6<sup>o</sup> PLAN (1981 - 1985)

| PROJET                                    | : inscription                  | : financement acquis            | : Règlement | : Objectif   | : Niveau d'exécution       |
|---|--------------------------------|---------------------------------|-------------|--------------|----------------------------|
| Source (coût total) en millions CFA       | : 6 <sup>o</sup> plan réajusté | : acquis au 6 <sup>o</sup> plan | : (1)       | :            | :                          |
| Assainissement Dakar et environs :        | :                              | :                               | :           | : 40 km CD   | :                          |
| FAD (4160)                                | : 3.000                        | : 3.000                         | : 1.800     | : 1 STEP     | : 40%                      |
| BNE (1440)                                | :                              | :                               | :           | : 3 SP       | :                          |
|   | :                              | :                               | :           | : 6500 BP    | :                          |
| Reconstruction Canal Gueulo Tapée (Dakar) | : 2.000                        | : 700                           | : 700       | : 1,5 km CN  | :                          |
| FED (2000)                                | :                              | :                               | :           | : matériel   | : 50%                      |
|   | :                              | :                               | :           | : entretien  | :                          |
| Route et Canal front de terre (Dakar)     | : 250                          | : 250                           | : -         | : 1,5 km CN  | : Appel d'offres prêt      |
| Fonds Saoudien (1000)                     | :                              | :                               | :           | :            | : Présélection entreprise  |
| OPEP (1000)                               | :                              | :                               | :           | :            | : en cours                 |
| Branchements à l'égout                    | : 120                          | : -                             | : -         | :            | : pas d'inscription au BNE |
| Assainissement St-Louis                   | :                              | :                               | :           | : 29,5 km CD | : en négociation après     |
| ITALIE (8000)                             | : 800                          | : -                             | : -         | : 1 STEP     | : reformulation du projet  |
|   | :                              | :                               | :           | : 7 SP       | :                          |
|   | :                              | :                               | :           | :            | :                          |

(1)

STEP = Station d'épuration

CD = Conduite d'assainissement

SP = Station de relèvement

CN = Canal d'évacuation eaux pluviales

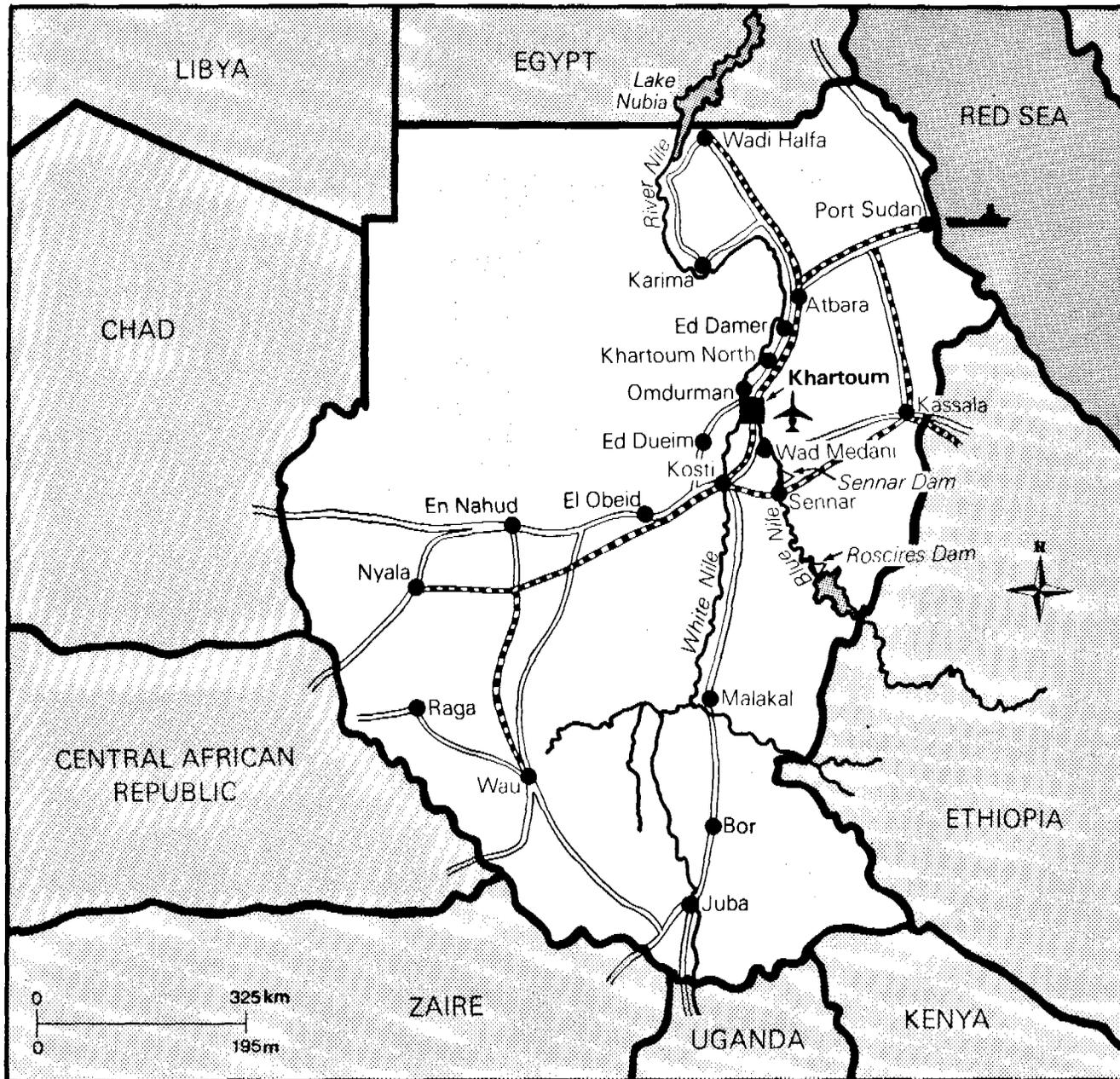
BNE = Budget national d'équipement

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ASSAINISSEMENT BILAN DU 6<sup>o</sup> PLAN (1981 - 1985)

|  |   |       |   |       |   |          |   |  |
|--|---|-------|---|-------|---|----------|---|--|
| Assainissement de Thiès                      | : | :     | : | :     | : | 11 km CD | : | 90%  |
| ITALIE (2100)                                | : | 630   | : | 938   | : | 938      | : | 4 km CN                                      |
| BNE (1400)                                   | : | :     | : | :     | : | :        | : | 1 STEP                                       |
|  | : | :     | : | :     | : | :        | : | Reste à faire la station épuration           |
| Assainissement de Ziguinchor (2700)          | : | 150   | : | -     | : | -        | : | Recherche de                                 |
| Diourbel - Tambacounda (5600)                | : | 100   | : | -     | : | -        | : | financement                                  |
| Plan directeur des centres secondaires (150) | : | 150   | : | -     | : | -        | : | acquis sur IDA fin 1985                      |
|  | : | :     | : | :     | : | :        | : | Va démarrer                                  |
| Recyclage des déchets solides à Dakar (520)  | : | 300   | : | -     | : | -        | : | Ne relève plus du Ministère de l'Hydraulique |
| Ecole des agents de Khombole (86)            | : | 86    | : | -     | : | -        | : |  |
| TOTAL (30276 millions CFA)                   | : | 7.586 | : | 4.880 | : | 3.438    | : |  |

SUDAN



# SUDAN

**Population:** Total 24 M (Urban 28%, Rural 72%)  
**Population Growth Rate:** 3.0% per year (Urban 4.8%)

**GNP Per Capita:** US \$320  
**Adult Literacy:** Total 31% (Male 41%, Female 21%)  
**Life Expectancy:** 52 years (Male 50, Female 44)  
**Infant Mortality (under 1 year):** 103 per 1,000 births  
**Child Mortality (under 5 years):** 182 per 1,000 births

**Status of Decade/Sector Plan:**  
 Sector Plan being prepared

## Water and Sanitation Agencies:

Ministry of Energy and Mining (MEM)

- National Urban Water Corporation (NUWC)
- National Corporation for Development of Rural Water Resources (NCDRWR)

Ministry of Housing and Public Utilities (MHPU)

Ministry of Health

In addition to the above, the nation's daily life and the fragile economy (one suffering from an enormous external debt, the largest in Africa), have been further imperiled by Sudan's willing acceptance of an influx of refugees, estimated at approximately one million from Ethiopia, Chad, the Central African Republic, and Uganda.

Sudan has an established water supply and sanitation sector involving three separate ministries, with special agencies devoted to urban and rural water supply. However, formal and extensive systems of sanitation facilities (and government-sponsored services) exist only in the two or three largest urban areas of the country. In the other smaller urban areas, these facilities are limited to those for public buildings, schools, mosques, and other large institutions. Virtually all urban domestic sanitation in smaller areas is provided by householders themselves.

There is no formal sanitation system in rural communities. Projects have recently started to foster the use of household VIP latrines. However, the number of families affected is less than 2% of the population.

Sudan has not yet formulated an "official" Decade plan. A sector study, under the joint auspices of the UNDP and the World Bank, was completed in August of 1988. This study is viewed as a first step in the formulation of national objectives and service-level targets.

With so few data available, it is difficult accurately to quantify the levels of water supply and sanitation coverage. However, various multilateral and bilateral agencies involved in Sudan's development efforts have indicated that overall coverage levels have in fact decreased over the last several years. This decrease has been caused, in large part, by the deterioration of existing facilities and the lack of investments in the sector.

Urban and rural water supply coverage, roughly estimated at about 50% in 1980, has been maintained in urban areas while dropping to at best 30% in rural areas. Actual coverages compare poorly to the Decade targets of 100 and 80% urban/rural, respectively, as indicated in the recent sector study.

In addition to the Government of Sudan activity, there has been significant external aid to the sector over the past ten years. Multilateral agencies active in the sector include the World Bank, UNDP, UNICEF, EEC, the African Development Bank, and the Islamic Development Bank. Bilaterals include USAID and the governments of Canada, West Germany, Yugoslavia, Norway, Japan, and the Netherlands. A great deal of the sector activity over the past several years has been in conjunction with programs related to refugees and general drought relief.

## Decade Progress

All aspects of life in Sudan during the 1980s have been profoundly affected by widespread drought conditions and the civil war raging in the nation's southern half. All development efforts must be measured against these two disasters which have caused

- millions of Sudanese to face the prospect of imminent starvation;
- the permanent displacement of approximately one million people, most to relief camps or urban areas, in search of assistance;
- the massive deterioration of physical infrastructure, due in part to the diversion of resources (financial and human) to relief efforts; and
- degradation of the environment and of health and nutritional status.

TABLE 1  
 INVESTMENT REQUIREMENTS  
 SUDAN

| ESTIMATED COVERAGE COSTS AND POPULATION | URBAN |            | RURAL |            | TOTALS  |
|---|-------|------------|-------|------------|---------|
|   | WATER | SANITATION | WATER | SANITATION |         |
| Population Served 1988                  | 3.4   | 1.0        | 5.2   | 2.6        |         |
| Coverage Target 2000                    | 11.4  | 7.4        | 17.6  | 11.0       |         |
| Shortfall/Unserviced                    | 8.0   | 6.4        | 12.4  | 8.4        |         |
| Cost (US \$)                            | 480.0 | 781.0      | 471.0 | 311.0      | 2,043.0 |
| Proposed Investment                     |       |            |       |            |         |
| Net Shortfall                           |       |            |       |            |         |

- 1 Population and costs in millions.
- 2 Assume 1988 population 6.8M urban, 17.2M rural; year 2000 11.4M urban, 22M rural.
- 3 Assume urban growth rate of 4.8%.
- 4 Assume % access to water supply 1988 50% urban, 30% rural; year 2000 100% urban, 80% rural.
- 5 Assume % access to sanitation 1988 15% urban, 15% rural; year 2000 65% urban, 50% rural.
- 6 Assume per capita cost urban water supply \$60, sanitation \$122; rural water supply \$38, sanitation \$37. These estimates are based on averages for Africa.

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## COUNTRY PROFILE: SUDAN

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### 1. Population

Population data were synthesized from several sources. Annual totals for 1980, 1988, and 2000 were taken from the U.S. Bureau of the Census, World Population Profile 1987. The urban/rural components were estimated using the data on urbanization (percent urban in 1985 and the rate of urbanization 1980-1985) of the World Development Report 1988.

Table 2

Past, Present, and Projected Population  
(in millions)

|      | Total | Urban      | Rural      |
|------|-------|------------|------------|
| 1980 | 18.9  | 4.0 (21%)  | 14.9 (79%) |
| 1988 | 24.0  | 6.8 (28%)  | 17.2 (72%) |
| 2000 | 33.4  | 11.4 (34%) | 22.0 (66%) |

Source: U.S. Bureau of the Census

### 2. Coverage Data

Coverage was extremely difficult to estimate, due to the lack of an official Decade plan and the unavailability of planning reports and documents with a national scope.

A 1988 sector study prepared under the auspices of the UNDP and the World Bank stated that, in 1987, 47% of the urban population and 30% of the rural were provided with a safe water supply. Sanitation coverage was given as 10% for urban and 20% for rural areas. Decade targets for water supply were 100% coverage for the rural population and 80% for the urban and in sanitation 65% coverage for urban populations and 50% for rural. These percentages were rounded and adopted as the year 1988 and year 2000 target levels in Table 3.

The sector study text and other reports indicated that while rural water supply coverage might, based on the existence of facilities, cover 30 to 40% of the population, actual coverage could be as low as 15 to 20% due to the deterioration, inadequate maintenance, and improper operation of the facilities.

Sanitation coverage figures presented in the sector study were little more than extremely rough estimates since virtually no formal sanitation sector exists outside of Khartoum. The urban figures shown in Table 3 are conjecture, while the rural figures represent the average of the range shown in the sector study.

While there has been considerable activity in the sector over the past several years, there is little doubt that an enormous portion of Sudan's development budget has been diverted to provide emergency food and health services for displaced persons and refugees. While some water supply and sanitation facilities have been included in these relief efforts, it appears doubtful that the focus of Sudan's budget priorities will change in the near future.

UNICEF at the district and provincial levels and several non-governmental organizations (especially CARE and Save the Children Federation) at the district and village levels, appear to have been successful in implementing programs to provide water supply and basic sanitation services. However, documentation of these efforts has been difficult to obtain for this study. Further, these separate efforts appear to have been implemented with little coordination. There is strong evidence that the need for greater coordination has been recognized by the GOS.

TABLE 3

WATER AND SANITATION COVERAGE FOR 1980 AND 1988  
AND TARGETS FOR 2000  
(in percents)

SUDAN

| YEAR | WATER |       | SANITATION |       |
|------|-------|-------|------------|-------|
|      | URBAN | RURAL | URBAN      | RURAL |
| 1980 | 50    | 50    | N/A        | N/A   |
| 1988 | 50    | 30    | 15         | 15    |
| 2000 | 100   | 80    | 65         | 50    |

SOURCE: W.H.O. IDWSSD Review of Mid-Decade Progress

### 3. Decade/Sector Action Plan

Except for some very preliminary documents in the early 1980s (subsequently superseded by the drought and civil war), Sudan has no formal sector plan for the Decade. However, an action plan is in the early stages of preparation. The recently completed UNDP/World Bank sector study mentioned above presents the guidelines the GOS will use in preparing the action plan. The UNDP and the World Bank are committed to assisting Sudan in this planning effort.

The coverage targets for the year 2000 shown in Table 3 are from the sector study and probably represent tentative or preliminary targets set by the GOS as long-term planning objectives.

The GOS has defined specific institutional responsibilities in the sector in terms of the provision of urban/rural water supply. In addition, there is a well-defined project cycle for water supply and sanitation projects in rural areas. This cycle starts with the projects being developed at the local level. The request moves "up the ladder" through the hierarchy of government departments, with final approval being made as part of the budget process (i.e., the ministerial level). While a mechanism for project approval exists, it is very cumbersome and often causes excessive delay.

The sector appears to have high visibility within the GOS as exhibited by the country's National Development Budget. Investments in the sector for 1986-1987 represented almost 13% of this budget. This high level of commitment is expected to continue as the Government's Recovery and Development Program 1987-1991 is implemented. However, due to the huge increase in coverage necessary to meet the preliminary goals for the year 2000, it is difficult even to guess if this budget percentage is high enough.

The sector study delineated areas in which significant improvements could be sought. The GOS has apparently concurred with these findings, and the action plan will be based on them. They include

- ◆ integration of water resources development with land or soil conservation;
- ◆ adoption of necessary legislation adequate for the achievement of sector objectives;
- ◆ the possible transfer to the National Urban Water Corporation (NUWC) of urban schemes still being operated by the National Corporation for Development of Rural Water Resources (NCDRWR);
- ◆ the possible merging of urban water supply and piped sanitation under one organization;
- ◆ improvements to the institutional framework for sanitation;

- ◆ further development and strengthening of sector organizations;
- ◆ provision of needed training;
- ◆ establishment of an investment planning mechanism including project prioritization;
- ◆ establishment of cost-recovery procedures and a plan to reduce sector subsidies for recurrent costs;
- ◆ development of rural and urban water supply and sanitation programs taking due account of appropriate technologies, delivery systems, and affordability.

Acceptance of these actions would require the following:

- ◆ a review of alternative arrangements for program implementation;
- ◆ a reactivation of the National Action Committee by the Ministry of Finance and Economic Planning and its establishment as the organization responsible for policy and coordination of all activities in that sector.

The World Bank and UNDP would continue to provide technical assistance to assure the action plan is prepared and implemented.

#### **4. Sector Administration**

Notwithstanding Sudan's problems related to drought and civil strife, there is an established water supply and sanitation sector with three separate ministries involved. Of greatest interest are the Ministry of Energy and Mining (MEM), the Ministry of Housing and Public Utilities (MHPU), and the Ministry of Health (MOH).

Urban water supply, for 62 of Sudan's largest urban areas, including the capital, Khartoum, is the responsibility of the NUWC. Rural water supply (and the remaining urban areas not covered by the NUWC) are handled by the NCDRWR. Both of these agencies are under the MEM.

The MOH is responsible for water quality control, rural sanitation, and health education. The MHPU is responsible for urban sanitation except for Khartoum, which is under the Sanitary Engineering Department of the Khartoum Commission.

## **5. Water Sector Studies**

The recent sector study for Sudan has a great deal of planning data regarding the water and sanitation sector. The UNDP and the World Bank are assisting in this study. Other donors (both multilateral and bilateral), especially UNICEF in its handpump program and several nongovernmental organizations, have data covering large sections of the country, especially the northern part. These data should make a valuable contribution to the action plan, but it will require a considerable effort on the part of the GOS to collect and properly analyze them as they are from many separate sources.

The main GOS agencies (NUWC and NCDRWR) appear to have some data at their headquarters. However, there are indications that these may also be incomplete with regard to the sector as a whole. The Government's decentralization of responsibilities for these services to regional centers appears to have caused the data also to be "decentralized."

The principal Water Sector Studies include the following:

Community Water Supply and Sanitation Sudan, WASH Field Report No. 37, April 1982.

Evaluation of CARE/Sudan Interim Water Supply and Management Project, WASH Field Report No. 227, May 1988.

North Kordofan RWS Baseline Survey, Institute of Environmental Studies, University of Khartoum, 1982.

Refugee Water Supply Port Sudan, USAID Project Paper, April 1981.

Water Supply and Sanitation Sector Review, Sudan by Regional Water and Sanitation Group, Eastern Africa (UNDP-World Bank Project) August 1988.

## **6. Past Investments in the Sector**

No comprehensive analysis of past investments in Sudan's water supply and sanitation sector was available for this study. However, the list of projects compiled by WHO and other material reviewed for this report provided a general breakdown of sector investments over the last several years. Many of the programs and investments overlap with those in the health sector or are tied to the relief of refugees and displaced persons.

The estimated breakdown of investments by source over the last eight years is given in Table 4.

Table 4

Past Investments in the Sector (1980-1988)  
(in millions of US \$)

|                                    |              |
|------------------------------------|--------------|
| Government of West Germany         | 31.7         |
| USAID                              | 19.0         |
| UNDP (plus other UN agencies)      | 14.0         |
| Government of Yugoslavia           | 10.0         |
| Islamic Development Bank           | 10.0         |
| Government of Japan                | 8.8          |
| UNICEF                             | 7.6          |
| Government of the Netherlands      | 5.6          |
| Others (including NGOs), estimated | 5.0          |
| Government of Canada               | 3.8          |
| Government of Switzerland          | 0.5          |
| <b>SUBTOTAL</b>                    | <b>116.0</b> |
| GOS (estimated at 33% of total)    | 58.0         |
|                                    | <b>174.0</b> |

As per the tabulation above, the level of sector investments in the last eight years averaged about \$22 million/year. About 70% of the estimated total was for rural water supply projects; overall, much of the external funding (especially from the Government of West Germany) was for projects aiding refugees and displaced persons.

The USAID total was for the Kordofan Province Water Supply Program (\$6 million implemented via CARE) and the Gedarif urban water supply project. In addition, USAID has provided over \$19 million for three rural health projects. USAID has also donated many millions in food programs and disaster assistance and to improve transportation and agriculture, child survival, environmental protection, and the nation's power grid.

The sector investments indicated for the 1987-1988 period correspond to about 13% of the total development budget of the country. Thus, the sector's high priority has been established by the Government. This level of commitment is expected to continue and increase as the Recovery and Development Program is implemented.

## 7. Proposed Investments in the Sector

There is no formal report on proposed investments. The following is based upon the sources used in Section 6, above.

- ◆ Sudan's largest pending water supply and sanitation project is for Port Sudan. This project, estimated at about \$133 million, will be funded by the Government of West Germany, the EEC, and the African, Arab and Islamic Development Banks. It is slated for completion in 1992.
- ◆ The Government of Yugoslavia will continue its ongoing water supply and sanitation project at El Obeid (\$10 million), and the Governments of Japan and Netherlands have indicated their willingness to provide a total of \$11 million for additional water supply and sanitation projects.
- ◆ The EEC has pledged approximately \$20 million for a sanitation project in the Juba region.
- ◆ The Government of West Germany has indicated its willingness to provide approximately \$13 million for two water supply and sanitation projects.
- ◆ The GOS has requested UNICEF, UNDP, and WHO to provide approximately \$30 million for various water supply and sanitation (and in some cases, health) projects.

The proposed investments listed above amount to \$208 million (approximately 65% is for the Port Sudan project alone). Thus, if GOS contributions are approximately 33% of the total, a proposed funding level (excluding the Port Sudan project, which is of extraordinary size) of approximately \$100 million is indicated.

There were no data available which indicated the level of sector-wide programs which could be handled by the sector institutions. Inferences made in many reports indicated that the GOS was having difficulties in smoothly implementing the projects financed by the investments discussed in Section 6 above.

## 8. Health Indicators

There has been a long history of endemic and epidemic diseases in Sudan, and with diseases related to improper water supply and sanitation which are similar to those found in almost all other African countries. Unfortunately recent epidemiological data on prevalence levels are unavailable.

Specific data notwithstanding, it can easily be postulated that Sudan's national health levels are low. Life expectancy is just over 50 years, and infant mortality and under five mortality levels are 103 and 182 respectively, per 1,000 live births.

Malaria, schistosomiasis, and diarrhea levels are extremely high. Data from the late 1970's indicate that

- ◆ malaria infected approximately 1.8 million people (1977) accounting for approximately 40,000 hospital admittances and almost 1000 deaths.
- ◆ schistosomiasis cases numbered between 500,000 and 600,000 per year (with economic losses of over 100 million annually).
- ◆ diarrheal incidence accounted for over 5 million episodes per year and over 10% of the hospital admissions.

The Sudanese National Health Program initiated in the mid-1980's (with the help of WHO and several other providers of external aid) planned to direct a large component of resources to these three diseases as well as other significant program elements which included primary health care facilities, water supply and sanitation efforts, health and environmental education, and immunization.

## 9. Privatization

USAID's FY 1989 budget documents for Sudan and other reports indicate that the private sector in Sudan is virtually cut off from access to foreign exchange and bank credit. Thus, in terms of manufacturing equipment or devices for use in the development of water and sanitation, the private sector's involvement appears severely constrained.

Nonetheless, it might be possible for the private sector to be involved in the following activities:

- ◆ provision of maintenance to water systems (provided the spare parts needs could be met) and
- ◆ contracting for water system construction and/or all portions of private sanitation devices.

While it is worth some cursory investigation, privatization for portions of the sector in Sudan does not appear to offer a solid alternative.

## 10. Recommendations for USAID

USAID's program in Sudan is wide-ranging, with some projects being implemented solely through AID, and others in cooperation with other organizations. Examples of cooperative efforts include a highway project sponsored jointly by the Government of Norway and USAID and contributions to the development of Sudan's power grid with the World Bank and others. In the water supply and sanitation sector, USAID has carried out projects on its own and through a non-governmental organization (CARE).

As far as USAID's future participation in Sudan's water and sanitation sector is concerned, there are many areas, projects, and programs to which it could contribute. A strategy worth pursuing is one which would galvanize sector investments in cooperation with other donors and agencies. Based upon material reviewed for this profile, including USAID's FY 1989 budget presentation for the Sudan Mission, the cooperative path appears to fit USAID's overall program.

USAID should closely monitor the Sudan Government's implementation of its sector plan. USAID is well positioned to monitor both implementation and donor coordination. (USAID has strongly supported the Joint Ministerial Committee (JMC) that the GOS established as the organization responsible for donor coordination in all sectors.) USAID activity in this regard will undoubtedly uncover many opportunities in the water supply and sanitation sector.

It must be recognized, however, that USAID/Sudan may be faced with difficult choices in terms of new water supply sector investments. Diversion of funds from refugee relief and health and child survival programs is obviously not recommended. However, many of these endeavors can easily accommodate water supply and sanitation components. Further, programs which strengthen the capabilities of Sudan's water and sanitation institutions can be implemented with relatively small amounts of funding.

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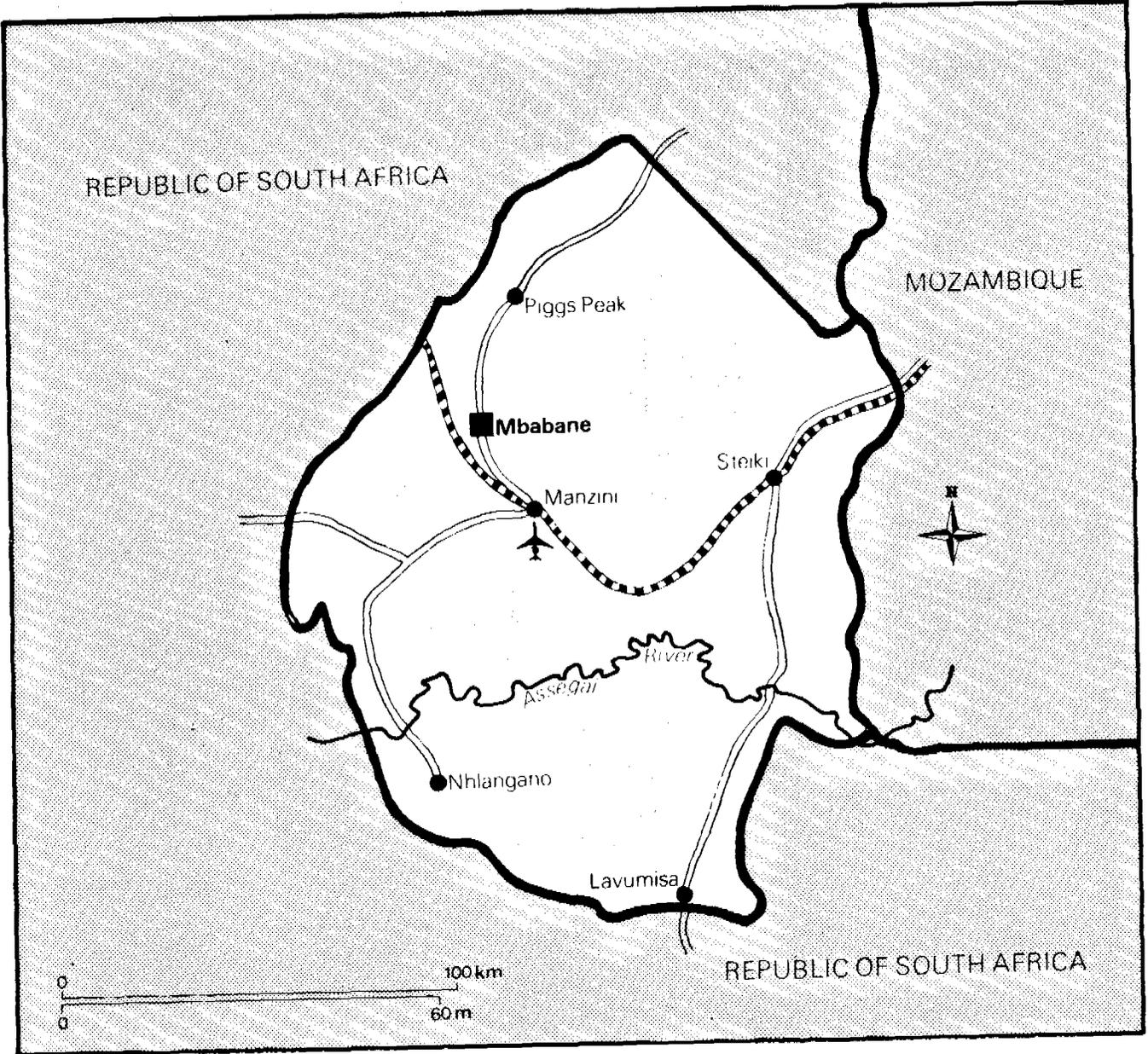
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SWAZILAND



# SWAZILAND

**Population:** Total 735,000 (Urban 16%, Rural 84%)

**Population Growth Rate:** 3.1% per year (Urban 5%)

**GNP Per Capita:** US \$810

**Adult Literacy:** Total 68% (Male 70%, Female 66%)

**Life Expectancy:** 50 years (Male 47, Female 54)

**Infant Mortality (under 1 year):** 120 per 1,000 births

**Child Mortality (under 5 years):** 182 per 1,000 births

**Status of Decade/Sector Plan:** Being revised

## Water and Sanitation Agencies:

Ministry of Natural Resources

- Water and Sewerage Board (WSB)
- Rural Water Supply Board (RWSB)

Health Inspectorate, Ministry of Health

Continuing development problems include lack of skilled manpower, too-rapid population growth, low agricultural productivity, and poor health status.

Urban water supply and sanitation is the responsibility of the Water and Sewerage Board (WSB) which is under the Ministry of Natural Resources (MONR). The Rural Water Supply Board, also of MONR, has the responsibility for all rural water supply. The Health Inspectorate of the Ministry of Health is responsible for rural sanitation and health education.

The Government of Swaziland has pursued modest economic growth policies since independence, and its development strategies are pragmatic and private-sector oriented. After initial delays, study and planning for the development of the water supply and sanitation sector have moved swiftly, especially since 1985. A national plan is now in place and is noteworthy for the participatory way in which it was developed. There are effective local

agencies for plan implementation. Service coverage is adequate in the country's few urban centers (where 100% coverage is projected for 1990) but lags in the rural areas, partly because the population is so widely dispersed. The Government estimates that 8% of the rural population will have adequate water supply service by 1990; the corresponding figure for sanitation is 66%. Although these are modest goals, achieving them will require continued financial support from external donors. In particular, the proposed latrine construction program represents a significant increase in costs (see Table 1).

External donors (particularly the United States, Great Britain, and Canada) have made substantial investments in the water supply and sanitation sector in Swaziland, and significant assistance is expected to continue. USAID should continue to provide both institutional and financial support.

## Decade Progress

Swaziland is a small (17,364 square km) country with a reported population of 735,000 in 1988. The population is young (50% under age 15), predominantly rural (84%), and growing rapidly (about 3.5% a year). Health conditions are substantially poorer than those in other countries with similar levels of socioeconomic development, and there is a relatively high infant mortality rate.

Since independence in 1968, and despite the stresses created by the circumstances in southern Africa, Swaziland has made steady and significant progress in the transition from a traditional to a modern market-oriented economy. The country has been an efficient user of its own and donor resources, and is one of the few African economies not overburdened by debt. It pursues a policy of modest growth based largely on mobilization of domestic resources within a conservative fiscal and monetary framework. Its development policies are pragmatic and private-sector oriented.

TABLE 1  
INVESTMENT REQUIREMENTS  
SWAZILAND

| ESTIMATED COVERAGE<br>COSTS AND POPULATION | URBAN |            | RURAL |            | TOTALS |
|--|-------|------------|-------|------------|--------|
|  | WATER | SANITATION | WATER | SANITATION |        |
| Population Served 1988                     | 118.0 | 118.0      | 43.0  | 154.0      |        |
| Coverage Target 2000                       | 211.0 | 211.0      | 78.0  | 556.0      |        |
| Shortfall/Unserved                         | 83.0  | 83.0       | 33.0  | 402.0      |        |
| Cost (US \$)                               | 5.6   | 11.3       | 1.3   | 14.9       | 33.1   |
| Proposed Investment                        |       |            |       |            |        |
| Net Shortfall                              |       |            |       |            |        |

- 1 Population in thousands and costs in millions.
- 2 Assume 1988 population 118 urban, 617 rural; year 2000 population 211 urban, 843 rural.
- 3 Assume urban growth rate of 5%.
- 4 Assume % access to water supply 1988 100% urban, 7% rural; year 2000 100% urban, 9% rural.
- 5 Assume % access to sanitation 1988 100% urban, 25% rural; 1990 100% urban, 66% rural.
- 6 Assume per capita cost urban water supply \$60, sanitation \$122; rural water supply \$38, \$37 sanitation. Based on averages for Africa.

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## COUNTRY PROFILE: SWAZILAND

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### 1. Population

Population figures reported and projected for Swaziland vary widely. Provisional results of the 1986 census put the de jure population at 706,000, but this figure is unconfirmed by post-census surveys, and the 1987 (IDWSSD) Directory cited 651,000 as the total population in 1987. The World Bank had estimated 757,000 in 1985. Various estimates of the population growth rate are not totally consistent, ranging from 3.0 to 3.6%, and the urban-rural distribution reported is also inexact. Table 2 gives a picture of Swaziland's population, using the reported census figures as a base and assuming a 3.5% overall growth rate and increasing urbanization (5% over ten years).

Table 2

Past, Present, and Projected Population

|      | <u>Total</u> | <u>Urban</u>  | <u>Rural</u>  |
|------|--------------|---------------|---------------|
| 1980 | 584,000      | 70,000 (12%)  | 514,000 (88%) |
| 1988 | 735,000      | 117,600 (16%) | 617,400 (84%) |
| 2000 | 1,054,000    | 211,100 (21%) | 842,900 (79%) |

Source: U.S. Bureau of the Census

Swaziland is a very homogenous country; Africans, the vast majority of whom are Swazis, constitute 97% of the population. About 4% of the total population is resident abroad, mostly in South Africa where they are employed as migrant workers.

The second smallest country in Africa, Swaziland comprises a land area of 17,364 square kilometers, about the size of the state of New Jersey, so that the average population density is about 40 persons per square kilometer. About 85% of the population, and 99% of the land area, is classified as rural, either lands held through freeholds or in trust as Swazi Nation land. The two main urban centers, Mbabane (the capital) in Hhohho District and Manzini in Manzini District, are growing at a rate of 10% per year.

The population growth rate, most often cited at 3.5% per year, (the US Bureau of the Census, World Population Profile, gives 3.1%) is one of the highest in the world. As a consequence, Swaziland has one of the world's youngest populations -- 50% under 15 years of age in 1986. Those under 5 years of age comprise 42% of the child population.

## 2. Coverage Data

The development of the water supply and sanitation sector in Swaziland has proceeded at a fast pace in the past ten years, but there are still substantial gaps in coverage. The mid-Decade review of progress indicated that 78% of the population did not have access to safe water and 64% were without adequate sanitation.

There was also a great disparity between the levels of service reported in urban and rural areas. Fully 100% of the relatively small urban population had drinking water service, either by household connection (86%) or public standpost (14%). The total urban population was also provided with sanitation facilities, either sewer connections (33%) or other means. By contrast, only 7% of the large rural population had drinking water service and just 25% had sanitation facilities. The projection for 2000 was that coverage in rural areas would increase slightly for water supply (to 9% of a growing population) and more (to 66%) for sanitation. Also, 100% of the urban population was to be served by household connections by 2000.

While water and sanitation coverage in urban areas appears to be adequate, pit privies and septic tanks still outnumber sewer connections, and there are problems in the spreading squatter settlements. Protection of water supplies and provision of sewage disposal systems in rural areas is complicated by the dispersed pattern of settlement of the population. The rural Swazi do not live in nucleated villages but in settlements revolving around small family homesteads.

TABLE 3

WATER AND SANITATION COVERAGE DATA FOR 1980 AND 1988  
AND TARGETS FOR 2000  
(in percents)

### SWAZILAND

| YEAR | WATER |       | SANITATION |       |
|------|-------|-------|------------|-------|
|      | URBAN | RURAL | URBAN      | RURAL |
| 1980 | N/A   | N/A   | N/A        | N/A   |
| 1988 | 100   | 7     | 100        | 25    |
| 2000 | 100   | 9*    | 100        | 66    |

SOURCE: W.H.O. IDWSSD Review of Mid-Decade Progress

\* Assume very modest growth of 2% from 1988.

### **3. Decade/Sector Action Plan**

The mid-Decade review of country-level Decade plans reported that the Swaziland plan was "under modification." The first steps toward preparation of a sectoral development plan were taken in 1981, but the emphasis in the early years of the Decade was on creating an organizational and personnel base rather than a plan for sectoral development; several plan preparation attempts were aborted.

By 1985, the necessary institutional framework had been created, and Decade planning was given higher priority. A Technical Subgroup (TSG) was established under the inter-ministerial National Action Group (NAG) to assist the latter body in carrying out sectoral planning for the Government of Swaziland. The TSG is made up of senior operational officers and thus has the technical and administrative expertise required; it has the support of the Government and is able to make decisions.

A policy and strategy document was produced that provides a clear plan for sectoral development. It commits the Government of Swaziland to national goals, establishes five-year targets, addresses the issue of operation and maintenance, and links water supply and sanitation to health education. The plan includes specific program elements for the rural subsector, many of them requiring external funding or technical support. The extent of capital investment needed was determined by the capacity of existing institutions to implement projects.

The implementation strategy includes a two-year action plan that provides a rational basis for attracting donor funding. By 1988, most of the program elements called for in the action plan had been funded and are being implemented; development of the master plan has just begun.

Particularly noteworthy, and possibly a model for other sectors, is the planning process that was used to arrive at the Decade plan. Planning was conceived of as a continuing activity rather than a one-time event to produce a specific document. The activity, which was highly participatory in nature rather than consultant-driven, involved continuing input from the national officials that would have to implement the programs. There was also participation by the private sector and non-governmental organizations. One of the mechanisms used to involve and inform concerned officials and organizations was a national seminar conducted by the TSG with help from consultants. The goal was to involve enough of the key participants in the planning process to ensure that guidelines developed in the plan would be followed when the plan was implemented. This goal has largely been achieved.

### **4. Sector Administration**

While overall planning and policy guidance in water supply and sanitation development is provided by the NAG and its technical arm, the TSG, specific water and sanitation projects are centered in the Water and Sewerage Board (WSB) and the Rural Water Supply Board (RWSB) in the Ministry of Natural Resources (MONR) and the Health Inspectorate (HI) in the Ministry of Health (MOH).

The basic division of labor is that the WSB is responsible for water and sewerage in urban areas while the other two implementing agencies have a rural focus. The RWSB is responsible for the development of rural water supplies, and it includes a Public Health Engineering Unit to assure the safety of water supplies and to provide expertise on the engineering aspects of environmental health. The HI is responsible for promoting water supply and sanitation in rural areas, assisting communities in latrine construction, and providing health education to encourage the use of water supply and sanitation facilities. Health education is provided within communities by health assistants and other community-level workers in the MOH and other development ministries. There is also a Health Education Center that provides training to community workers and develops health education materials.

In addition to the key agencies, several other government ministries have duties that impact the water supply and sanitation sector. These include the Ministries of Interior and Immigration, Agriculture and Cooperatives, Education, and Finance and the Department of Economic Planning and Statistics.

## **5. Water Sector Studies**

Swaziland participated in the 1977 Mar del Plata conference leading to the Decade and established the interministerial NAG in 1979 to coordinate Decade efforts. At about the same time, the Swaziland Rural Homestead Survey was carried out. Among other things, the survey revealed that 86% of the rural population relied on surface streams and springs for water and that 73% of rural children used open bush for defecation.

In subsequent years, a number of water sector studies and papers were prepared. These included the "1980 Decade Country Report," a survey of manpower needs; a plan for manpower development; a survey of springs; and a 1981 analysis for possible programs and consultations on the control of cholera and diarrheal diseases, health education, and Decade planning.

Despite several disruptive events in the early 1980s, such as a cholera outbreak and the death of the monarch, the NAG was able to carry out some water sector studies, including an analysis of projected costs for water and sanitation targets for both rural and urban areas of Swaziland through the year 2001. Various Swaziland officials also reviewed the national plan for Zambia and used it in drafting a plan for their own water and sanitation sector. A detailed case study of the development of the water supply and sanitation sector in Swaziland will be completed in early 1989. Participants in this development believe the case study may serve as a model for other countries.

## **6. Past Investments in the Sector**

From the beginning, funds for the development of water supply and sanitation projects, including the construction of facilities, have been contributed both by the Government of Swaziland and by external donor agencies. Local funds have been used both for capital construction and for operation and maintenance, with revenues from users offsetting at least part of the maintenance costs.

External donors have accounted for about 80% of the total investment in the sector. The major donors have been the Canadian International Development Agency (CIDA), the British Overseas Development Administration (ODA), and the U.S. Agency for International Development (USAID). CIDA had contributed about CDN \$4.3 million as of 1986 and has stressed manpower development and strengthening of the RWSB. ODA has concentrated on facilities construction, and its investment now totals nearly 3 million pounds.

Since 1981, USAID has provided technical, financial, and training support for sanitation and other health-related programs, including public health engineering and epidemiological support for projects aimed at the control of schistosomiasis and diarrheal diseases. Approximately \$6 million was invested through the Rural Waterborne Disease Control Program alone. USAID has also given strong financial and technical support through the WASH project to planning for sectoral development.

Other external donors that have contributed on a smaller scale in the past include the UNDP, the European Economic Community (EEC), and UNICEF. A number of nongovernmental organizations, especially church-related groups, have also been involved for a number of years.

## **7. Proposed Investments in the Sector**

The construction activity of the RWSB, funded mostly by donors, has cost approximately E500,000 annually (\$235,000 according to 1988 exchange rates) and annual recurrent costs, funded by the Government, have exceeded E320,000 (\$150,400). (Emalangeni is the local currency.) The two-year action plan for development of the water supply and sanitation sector has 19 elements, including both construction and support programs, all aimed at increasing service coverage. The increase in coverage with new water supplies is being achieved through RWSB projects and the work of nongovernmental organizations. Although costs are expected to increase as a result of inflation, the proposed construction does not represent an increase in the rate of capital investment in water systems.

The proposed latrine construction program represents a significant increase in output, which will increase costs. These costs are to be covered both by service recipients and external donors. The largest cost increase is projected to be in the requirements for maintenance, which will place a substantial burden on the government of Swaziland unless other funding mechanisms are found.

Although Swaziland has just begun to set targets for achieving full water supply and sanitation coverage in rural areas, achieving any targets will require continued financial support from external donors. All indications are that these contributions will be forthcoming. Most of the donor agencies that have been active in the country have new projects, or follow-on phases of old projects, underway. For example, CIDA is financing the Groundwater Evaluation Project, a CDN \$5.0 million investment to span the period 1985-1990. And USAID extended the Rural Water Borne Disease Control Project through September 1989.

## 8. Health Indicators

The basic reason why water supply and sanitation investment will continue is that health conditions in Swaziland are poor and well below those of other countries with similar levels of socioeconomic development. Although control programs have made some inroads on the problem, schistosomiasis still affects a large segment of the population, and typhoid, cholera, and malaria are still threats.

As usual in developing nations, children suffer most from poor health conditions. The infant mortality rate is higher than would be expected for a reasonable access to health services, and early infant mortality is disproportionately high. Malnutrition, diarrhea, and respiratory infections are common among children.

The child health indicators listed in Table 4 indicate the severity of the health problem.

Table 4

### Health Indicators: Swaziland Children

|   |    |
|---|----|
| Percentage of infant deaths occurring before age 2 months       | 50 |
| Percentage of infant deaths occurring before age 6 months       | 70 |
| Percentage of infants nutritionally stunted                     | 30 |
| Percentage of death due to malnutrition for children age 1 to 5 | 40 |
| Percentage of death due to diarrhea for children 1 to 5         | 15 |

## 9. Privatization

Privatization has not been an issue in Swaziland. The Government is committed to a free enterprise system and has attempted to design tax and loan policies to stimulate both foreign and domestic private investment. The major barrier to growth in the private sector is lack of skilled manpower. USAID is attempting to assist with this problem by making manpower development the centerpiece of its development strategy, stressing the training of both private and public sector personnel.

At the request of the Government of Swaziland, USAID has established a public enterprise monitoring unit in the Ministry of Finance to introduce market-oriented incentives in the management of parastatal organizations. Pilot activities by USAID-supported non-governmental organizations have identified both assistance needs and development potential in the area of small business development. USAID has also provided policy assistance in the restructuring of the insurance industry.

In the water supply and sanitation sector, there is heavy reliance on donor funding for construction and public sector leadership through the WSB and the RWSB. However, when it comes to operation and maintenance local communities, working through committees, are able to take over the operation of their systems, establish community funds to cover the cost of operation and maintenance, and perform inspection and preventive maintenance tasks. Private sector participation is welcomed but is inhibited by lack of skilled manpower.

## 10. Recommendations for USAID

Swaziland now has in place a national plan -- a policies and strategies document, a short-term action plan, and effective operating institutions -- for development of the water supply and sanitation sector. USAID can facilitate the implementation of this plan by providing institutional and financial support. The agency should

- ◆ work through the TSG on sector issues and programs;
- ◆ maintain linkages between water and sanitation projects and other USAID health-related projects in the rural sector and coordinate agriculture sector projects with water and sanitation components;
- ◆ assist in the development of a five-year sectoral development plan;
- ◆ assist in implementing borehole projects in rural areas, coordinating this work with the CIDA geophysical groundwater resource project; and
- ◆ work to rehabilitate failing water systems in rural development areas.

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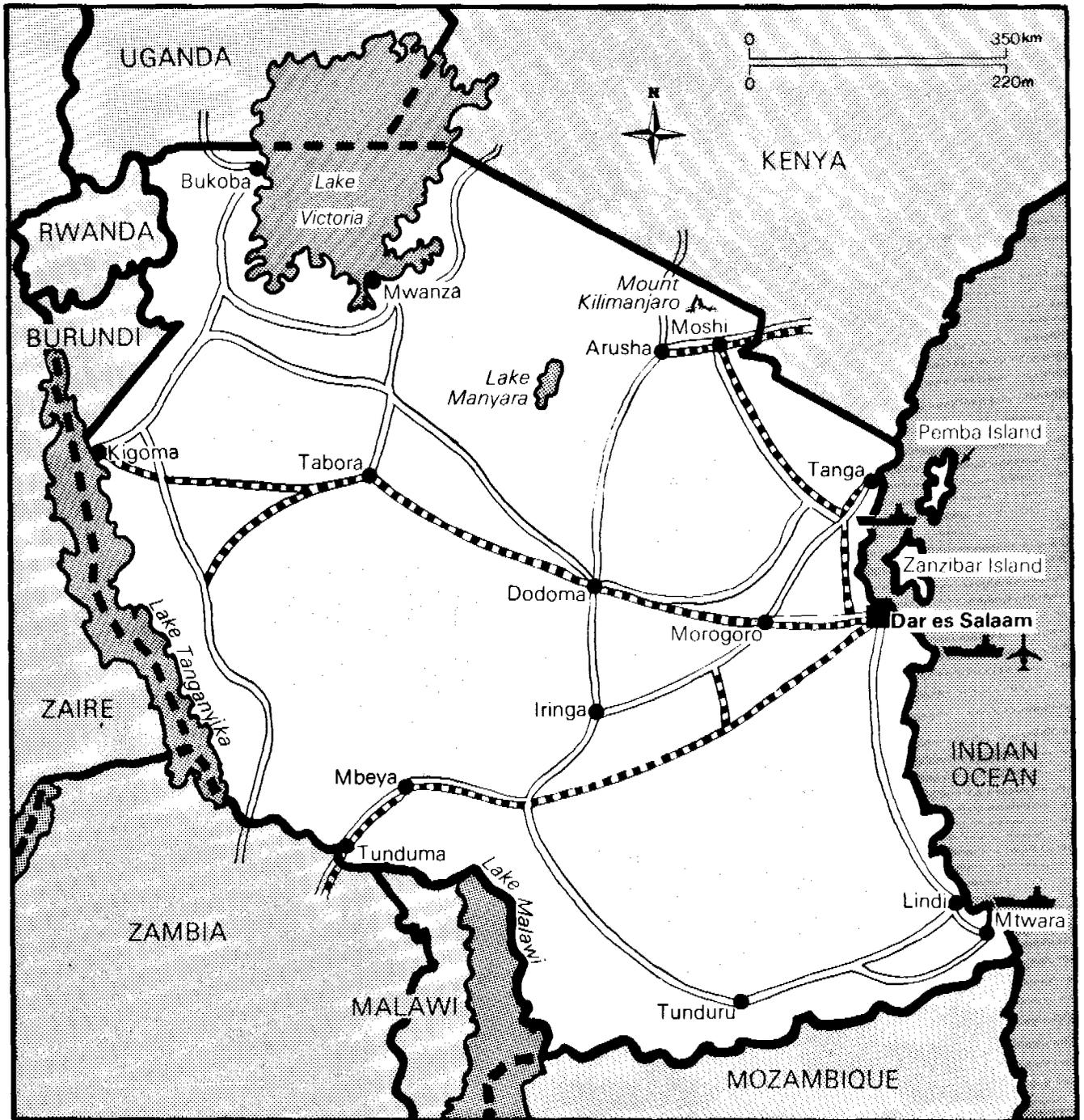
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TANZANIA



# TANZANIA

**Population:** Total 24.3 M (Urban 16%, Rural 84%)

**Population Growth Rate:** 3.3% per year (Urban 8.3%)

**GNP Per Capita:** US \$290.

**Adult Literacy:** Male 90%, Female 80%

**Life Expectancy:** 53.4 years (Male 51.6, Female 55.2)

**Infant mortality (under 1 year):** 107 per 1,000 births

**Child Mortality (under 5 years):** 183 per 1,000 births

**Status of Decade/Sector Plan:**  
Completed August 1988

## Water and Sanitation Agencies:

Ministry of Water  
National Urban Water Authority (NUWA)  
Ministry of Health and Social Welfare

## Decade Progress

In 1987, in an attempt to strengthen the administration of water supply and sanitation, the Ministry of Water was created and other administrative adjustments were made. This reorganization has been accompanied by an almost complete reorientation of the water and sanitation sector strategies, which have proven to be unsuccessful. In spite of a large investment--especially in rural areas--by a sizable number of bilateral and multilateral organizations and a strong government commitment to water supply and sanitation, little progress has been made in the last 15 years.

A great expenditure of time and money went into regional sector plans, but these were often impractical, depending on too high a level of technology and built with too little attention to the problems of operations and maintenance. Government policy was to provide piped water free to all rural Tanzanians. Communities did not

participate in planning and implementing their systems, nor were they expected to bear any of the costs or responsibilities for operations and maintenance. However, Government resources were not able to bear all these costs and systems have fallen into disrepair.

Due to these and other problems, no progress has been made since the beginning of the Decade; the program has not even kept pace with the growth in population. According to Government of Tanzania data, only 25% of the rural population actually has access to a reliable supply of drinking water. The figures given in the 1985 published data on Decade progress are higher but they must be adjusted downward to take into account that some 40% of the systems built are dysfunctional or operate only sporadically because of shortages of fuel, spare parts, etc.

Another important factor to be taken into consideration in looking at the coverage figures is utilization. Rough estimates are that only 58% of people with access actually use the systems they have. Often, especially during the rainy season, people may find it easier to use a traditional source or may be forced to use the traditional source because the protected water supply has broken down. Utilization of improved latrines is probably even lower. Many donors cite the need for health education and integrated systems combining water, sanitation, and health education.

Up until now, the major constraints that Tanzania has faced in working toward Decade goals have been lack of

funds, trained personnel, fuel, spare parts, etc.; confusing implementation of decentralization policies; overlapping responsibilities of different agencies and lack of cooperation; and lack of unambiguous policies and strategies to implement them. The new sector plan just completed in August 1988 is attempting to address all these constraints. To some extent it represents an effort to begin again to try to make some headway in providing water and sanitation to a rapidly growing, very poor population. However, the needs are so great that the temptation for Government planners is to continue to devise overly ambitious plans. Projected investments for the 1988-1993 period are five times greater than for the preceding five years. It is not clear whether Tanzania will be able to utilize such a large investment effectively, given the weakness of its sector institutions and lack of trained personnel.

The new Government strategies stress more realistic planning and human resources development. In addition, they call for promoting community participation in planning, implementation, and operations and maintenance of water supplies. In addition, communities will be asked to bear or share the costs of operations and maintenance. Emphasis will be placed on rehabilitation and maintenance of present systems and completion of systems already started. Simple technologies that can be manufactured locally will be preferred. Hygiene education will be stressed to make up for the insufficient appreciation of the value of sanitation.

TABLE 1  
INVESTMENT REQUIREMENTS  
TANZANIA

| ESTIMATED COVERAGE<br>COSTS AND POPULATION | URBAN |            | RURAL |            | TOTALS  |
|--|-------|------------|-------|------------|---------|
|  | WATER | SANITATION | WATER | SANITATION |         |
| Population Served 1988                     | 3.2   | 3.6        | 5.1   | 11.8       |         |
| Coverage Target 2000                       | 8.3   | 9.5        | 11.1  | 15.3       |         |
| Shortfall/Unserviced                       | 5.1   | 5.9        | 6.0   | 3.5        |         |
| Cost (US \$)                               | 306.0 | 720.0      | 360.0 | 123.0      | 1,509.0 |
| Proposed Investment                        |       |            |       |            |         |
| Net Shortfall                              |       |            |       |            |         |

1 Population and costs in millions.

2 Assume 1988 population 3.9M urban, 20.4M rural; year 2000 10.2M urban, 26.4M rural.

3 Assume urban growth rate of 8.3%.

4 Assume % access to water supply 1988 81% urban, 25% rural; Maintain present urban coverage and increase rural to 42% for year 2000.

5 Assume % access to sanitation 1988 93% urban; 58% rural. Maintain present coverage for year 2000.

6 Assume per capita cost urban water \$60; sanitation \$122 (based on averages for Africa); rural water \$60, sanitation \$35 (based on figures from IDWSSD mid-Decade Directory).

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## COUNTRY PROFILE: TANZANIA

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### 1. Population

The population of Tanzania is currently 24.3 million according to the U.S. Bureau of the Census; other sources do not vary much in their current estimates or their projections for the future. With a growth rate of 3.3%, Tanzania's population will reach 36.6 million by the year 2000, over double the 17.04 million recorded in the 1978 national census.

The Government of Tanzania has not adopted any policy on family planning or birth control and until fairly recently has not viewed the rapid growth of the population as a problem.

The 1978 census found that 87% of the population was rural; today the estimate is that 84% of Tanzanians live in rural areas. The rate of urbanization apparently increased dramatically in the past few years since the World Development Report cites the urban growth rate at 8.3%

Table 2

Past, Present, and Projected Population  
(in millions)

|      | <u>Total</u> | <u>Urban</u> | <u>Rural</u> |
|------|--------------|--------------|--------------|
| 1980 | 18.8         | 2.4 (13%)    | 16.4 (87%)   |
| 1988 | 24.3         | 3.9 (16%)    | 20.4 (84%)   |
| 2000 | 36.6*        | 10.2 (28%)   | 26.4 (72%)   |

\* Rural/urban breakdown extrapolated from earlier rate.  
Source: U.S. Bureau of the Census

### 2. Coverage Data

#### Water Supply

The coverage figures given in the 1985 Decade update for Tanzania and shown in Table 3 did not present a true picture of the situation. When the 1988 "Government of Tanzania, Sector Plan for Water and Sanitation" subjected the 1985 figures to some hard analysis, it was found that the 42% coverage in rural areas in 1985 was not only far short of the goal Tanzania had set for itself (89%) but, more important, it exaggerated actual coverage. In

reality, approximately 40% of the systems built to serve the rural population are not functioning. Thus, only 5.102 million persons or 25% of the rural population are actually being served.

In urban areas, few hard data are available, according to the sector plan, but of the 62 urban water schemes for which information is available, only 6 do not report serious deficiencies caused by lack of funds, spare parts, fuel, etc. The plan states that it is clear that the 2.26 million urban population in 1985 received seriously deficient service, and no improvements have been made for some time. Based on these very rough estimates, only about 8 million Tanzanians, out of the current population of 24 million can be said to have access to a fairly reliable water supply.

### Sanitation

In sanitation the need is also very great. The 1985 Decade update stated that 36% of Tanzanians were without adequate means of sanitation. Again according to the 1988 sector plan this was probably too optimistic a figure. Only 7 of 62 urban areas with piped water have sewage collection and disposal systems. In rural areas "sanitation is only in the early stages of development." While 80% of all households have latrines, 72% of the facilities are not satisfactory and most are not used.

The sector plan contains no specific targets for coverage, but apparently setting such goals will be one of the first tasks. However, the plan does state that priority will be given to rehabilitation and to completing projects already begun.

TABLE 3

WATER AND SANITATION COVERAGE FOR 1980 AND 1988  
AND TARGETS FOR 2000  
(in percents)

TANZANIA

| YEAR | WATER |       | SANITATION |       |
|------|-------|-------|------------|-------|
|      | URBAN | RURAL | URBAN      | RURAL |
| 1980 | 82    | 28    | N/A        | N/A   |
| 1988 | 81    | 42    | 93         | 58    |
| 2000 | 81    | 42    | 93         | 58    |

SOURCE: W.H.O. IDWSSD Review of Mid-Decade Progress

### **3. Decade/Sector Action Plan**

Tanzania has had very ambitious goals for the water and sanitation sector. In its twenty-year plan (1971-1991) the goal was to supply piped water free of charge to all rural Tanzanians. Even before the International Drinking Water Supply and Sanitation Decade had set similarly high goals for coverage, Tanzania had attached great importance to the water and sanitation sector.

Tanzania's coverage target has been revised downward a number of times. In 1978, the target for rural water supplies was officially redefined by the Minister of Water and Energy. The objective became not piped water but ease of access to a public domestic water point at a distance of 400 meters.

A number of actions have been taken by the Government of Tanzania to cooperate with the Decade. In 1982, a National Action Committee was formed. In 1986, a seminar on rural water supply, which was held in Arusha, came up with 26 recommendations. Based on these recommendations, the National Action Committee began working on the sector strategy and action plan. In August 1988, this plan was completed. The basic strategy of the plan is as follows:

- ◆ Appropriate institutions must be created or existing ones strengthened.
- ◆ The local community is to be responsible for providing water supply and sanitation services.
- ◆ The sector must generate its own resources for operation, maintenance, and replacement through charging for its services.
- ◆ Basic needs must be provided at costs affordable by all.
- ◆ Investment funds will be channeled to the sector according to government priorities and equity considerations.

So far several actions have been taken to carry out this strategy:

- ◆ The target date for the sector goals has been moved to the year 2000.
- ◆ Proposals for the local manufacture of handpumps are being discussed.
- ◆ An independent Ministry of Water was created.
- ◆ A consultant was appointed to develop national guidelines for community participation in rural water supply and sanitation.

The action plan outlines, in an extremely frank manner, the issues that must be dealt with in a number of key areas.

Institutional Aspects. The inadequate performance of the sector is due not just to the lack of funds, but also to inadequate existing sector policies and direction. What is needed now are proper institutions and organizational frameworks.

Human Resources Development. Changes in the organizational framework cannot be successful unless the institutions are staffed by able and willing people. An additional 1,000 staff are needed, few of whom are available; salaries must be increased if personnel are to be retained.

Investment Planning and Finance. Scarcity of funds will continue to be a major impediment to the proper development of the water and sanitation sector. Strict priorities must be set as follows: rehabilitation will be emphasized for rural water supply; in urban areas big town centers with important industries will be given first consideration for water supply rehabilitation and extension; and rehabilitation of sewerage systems will continue in the large towns.

Another document also sheds light on the difficulties Tanzania has faced in trying to extend water and sanitation coverage. This document, an assessment by SIDA of its own programs in Tanzania, states that a 1970 report by a Swedish consultant encouraged the Government of Tanzania to adopt an overly ambitious program for rural water supply aimed at providing the entire rural population with free piped water by 1991. Tanzania's eagerness to get this program going was enhanced by the attractiveness of rural water supply as an incentive for the national villagization scheme.

In the 1970s a number of other external donors joined with SIDA in this effort, mostly to devise regional plans. Unfortunately most of these plans were technically inappropriate or misconceived, with too little attention paid to the problem of operations and maintenance and to the importance of community participation.

Therefore, although great sums of money have been spent on the sector (the Government of Tanzania spent \$26 million on planning in the early 1970s), according to Government figures, only about 25% of rural Tanzanians have access to safe drinking water. (The SIDA report puts coverage even lower, stating that only half the rural systems are functioning and another 20% function only sporadically, leaving only 12% of the rural population with reliable access to safe water.)

In recognition of its inability to meet its sector targets or even to keep pace with the growth in population, the Ministry of Water is setting a new course for the sector as outlined above.

#### 4. Sector Administration

Recent changes in the administration of the water supply and sanitation sector involved creation in March 1987 of a separate Ministry of Water. Until then the water sector had been under the authority of the ministry of Lands, Water, Housing, and Urban Development. The new ministry is now the principal government agency responsible for all water supply and sanitation-related activities in Tanzania. In addition, the National Urban Water Authority (NUWA) is responsible for water supply in Dar-es-Salaam. (Eventually it will be responsible for sanitation in Dar-es-Salaam and all urban water and sanitation systems.) The Ministry of Water carries out its responsibilities in the regions and districts through the Regional Water Engineers (National Government) and District Water Engineers (District Government). The Ministry of Health and Social Welfare is responsible for rural sanitation policies and health education. This new organizational plan stresses decentralization.

#### 5. Water Sector Studies

No recent comprehensive water sector study on Tanzania is available. The sector plan, just completed, probably contains the best summary of the current situation.

A number of other reports on the water and sanitation sector have been prepared during the Decade:

1985. Analysis of the Situation of Children and Women, Volume 1. Government of the United Republic of Tanzania and the United Nations Children's Fund (UNICEF).

1986. Rural Water Supply System Options in Tanzania: A Mid-Decade (IDWSSD) Assessment. International Seminar on Low-Cost Rural Water Supply Systems, Abidjan, Ivory Coast, October 13-18, 1986. N. K. Msimbira, Director of Design, Construction and Maintenance. United Republic of Tanzania, Ministry of Lands, Water, Housing and Urban Development.

1987. Status of Water Supply and Sanitation Sector. United Republic of Tanzania, Ministry of Water.

1988. Water Supply and Sanitation Sector Situation in Tanzania. Regional Seminar on Water Supply and Sanitation for Low-Income Groups in Rural and Periurban Areas, Recife, September 29-October 5, 1988. United Republic of Tanzania, Ministry of Water.

#### 6. Past Investments in the Sector

External investments in the water supply and sanitation sector from the beginning of the Decade to the present (including ongoing programs) are summarized in Table 4 (figures are from the WHO Country External Support Information on Tanzania, September 19, 1988).

**Table 4**  
**Past and Present Investments**  
(in thousands of U.S. \$)

|                          |                    |
|--------------------------|--------------------|
| Sweden (SIDA)            | 49,270.8           |
| Denmark (DANIDA)         | 48,357.5           |
| Canada (CIDA)            | 42,304.9           |
| Germany (KfW)            | 37,827.9           |
| Norway (NORAD)           | 33,046.0           |
| WB/IDA                   | 26,500.0           |
| African Development Bank | 21,975.4           |
| European Community (CEC) | 19,950.0           |
| Finland (FINNIDA)        | 16,069.1           |
| UNCDF                    | 11,115.0           |
| Australia                | 9,336.8            |
| UNDP                     | 4,398.0            |
| Japan (JICA)             | 3,751.6            |
| African Development Fund | 2,767.5            |
| Switzerland (SDC)        | 1,112.3            |
| Germany (GTZ)            | <u>419.2</u>       |
| <b>TOTALS</b>            | <b>\$328,202.0</b> |

No figures were available on the Government investment in the water and sanitation sector, although a 1986 government report stated that 80% of the total investment is from external donors. Similarly, no figures were available on investments by private voluntary organizations.

In the 1988 action plan investments for planned-for projects are given for the period 1988/89-1992/93. These are shown in Table 5.

**Table 5**  
**Sector Investments 1988/1989 - 1992/1993**  
(in U.S. \$ millions)

|                       | <u>Local</u> | <u>Foreign</u> | <u>Total</u>  | <u>Percent of Total</u> |
|-----------------------|--------------|----------------|---------------|-------------------------|
| Rural Water           | 21.281       | 40.809         | 62.090        | 27                      |
| Urban Water           | 36.964       | 50.421         | 87.385        | 39                      |
| NUWA                  | 6.555        | 24.288         | 30.843        | 14                      |
| Hydro-Data Collection | 2.910        | .99            | 03.900        | 2                       |
| Drainage and Sewerage | <u>8.802</u> | <u>33.130</u>  | <u>41.932</u> | <u>18</u>               |
| <b>TOTAL</b>          | 76.512       | 149.638        | 226.150       | 100                     |

According to the action plan, this amount -- which represents an annual outlay of \$45 million -- is about three times higher than the average annual capital outlay in the preceding five years, and it is questionable whether such massive amounts can be mobilized and properly utilized. It is also worth noting that urban water and NUWA (also urban) account for 53% of the proposed investment, even though Tanzania's population is still largely rural.

## 7. Proposed Investments in the Sector

Table 6 shows the proposed investments as listed in the WHO Country External Support Information on Tanzania, September 19, 1988.

Table 6  
Proposed Investments  
(in thousands of U.S. \$)

|                          |              |
|--------------------------|--------------|
| African Development Bank | 9,802.100    |
| African Development Fund | 6,319.700    |
| UNCDF                    | 2,000.000    |
| UNICEF                   | <u>0.165</u> |
| Total                    | 18,121.965   |

In addition, the Government has requested \$370,000 for various projects, thus bringing the total proposed investment to U.S. \$18,491,965.

There is no reason to doubt that bilateral and multilateral organizations will continue to remain involved in Tanzania. Also, one of the goals of its new sector plan is to improve the planning process so that it can attract outside funding.

## 8. Health Indicators

No figures on the incidence of water-related diseases are available.

In 1978 a baseline survey was conducted for the Wanging'ombe Water Supply Program, a program integrating water, sanitation, and health education. The survey reported the following distribution of diseases among a total of 52,456 cases (using Feachem's classification):

|                |     |
|----------------|-----|
| water-borne:   | 11% |
| water-washed:  | 9   |
| water-based:   | 2   |
| water-related: | 24  |
| all other:     | 54  |

As indicated, almost half of the diseases were associated with water.

Malaria is endemic in large parts of Tanzania. It is a leading cause of outpatient hospital attendance and a major cause of death.

The top causes of morbidity and mortality among children are as follows, in rank order:

- low birth rate
- malnutrition
- neonatal tetanus
- diarrhea
- measles
- respiratory infection

Diarrhea is one of the main causes of death among children. Other diseases spread by poor sanitation and polluted water, such as hookworm and schistosomiasis, cause chronic debilitation and make children more likely to die from an acute infection.

According to the UNICEF/Government of Tanzania "Plan of Operations and Plans of Action, 1987-1991," the visible lack of health impact from 15 years of investment in rural water supplies shows that social and cultural conditions must be addressed.

## **9. Privatization**

Tanzania is privatizing a regional water supply project with a joint venture between local and Netherlands firms. The Tanzania Wells Service and Supply Co. has recently taken over all the activities of the former Morogoro Wells Construction Project, which adopted hand drilling as a low cost solution to rural water supply.

The 1988 sector plan recommends that the Government vigorously pursue local production of handpumps. Further it encourages external support agencies to expand their research and development programs to develop numerous options for rural water supply and sanitation technologies and to help promote local manufacture of water supply and sanitation equipment, plants, and chemicals.

## **10. Recommendations for USAID**

The Government of Tanzania appears to be serious about decontrolling, decentralizing, and, to some extent, moving toward privatization in many sectors. The recent USAID/WASH/ UNICEF study on willingness to pay for the operation and maintenance of a large water supply and sanitation project supports the concept of people paying for water. The challenge now is how to institutionalize the mechanism for making this happen. USAID could play a significant role in assisting in this process through the use of a modest amount of project development and support funds and the WASH project.

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Msimbira, N. K. Rural Water Supply System Options in Tanzania: A Mid-Decade (IDWSSD) Assessment. International Seminar on Low-Cost Rural Water Supply Systems, Abidjan, Ivory Coast, October 13-18, 1986. United Republic of Tanzania, Ministry of Lands, Water, Housing and Urban Development.

Ovaskainen, Esa, and Juhani Viiala. Development of Handpumps from Lever Action to Direct Action, Experiences in Mtwara-Linda, Tanzania. All Africa Seminar on Low-Cost Rural and Urban Fringe Water Supply, Abidjan, October 13-18, 1986. Finnwater Consulting Engineers, Mtwara, Tanzania.

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United Republic of Tanzania, Ministry of Water, Status of Water Supply and Sanitation Sector, Dar-es-Salaam, April 1987.

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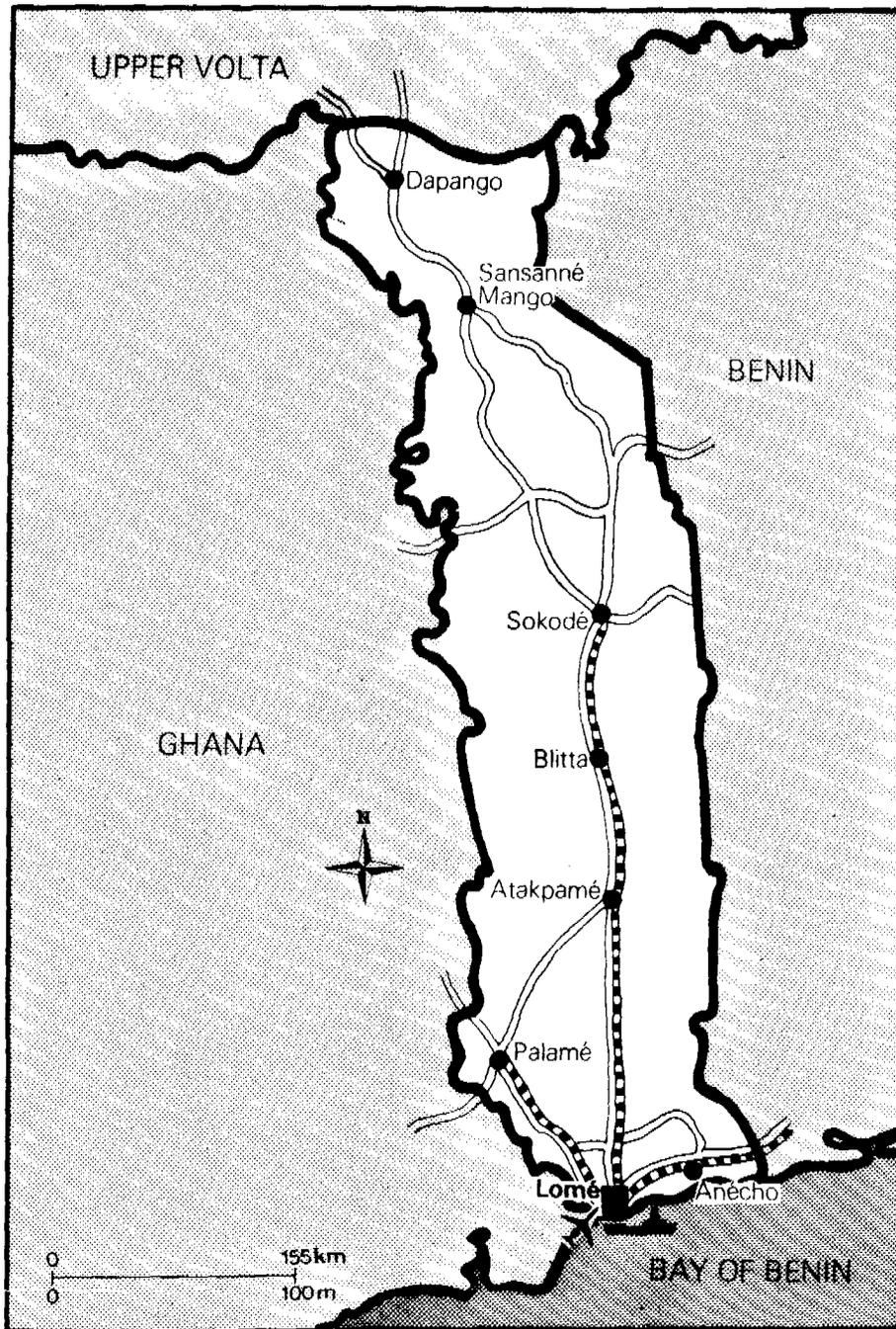
U.S. Agency for International Development, Annual Budget Submission, Fiscal Year 1989, Tanzania, May 1987.

U.S. Agency for International Development, Congressional Presentation, Fiscal Year 1989, Annex 1-Africa, 1988.

U. S. Agency for International Development, Tanzania. Country Development Strategy Statement, Fiscal Year 1983.

World Water, "Tanzanian Project Taken over by Dutch," September 1988, p. 11.

TOGO



UPPER VOLTA

Dapango

Sansanné  
Mango

BENIN

Sokodé

GHANA

Blitta



Atakpamé

Palamé

Lomé

Aného

BAY OF BENIN

0 155km 100m 0

# TOGO

**Population:** Total 3.3 M (Urban 33%, Rural 67%)

**Population Growth Rate:** 3.3% per year (Urban 6.4%)

**GNP Per Capita:** US \$300

**Adult Literacy:** Total 41% (Male 53%, Female 28%)

**Life Expectancy:** 52 years (Male 50, Female 54)

**Infant Mortality (under 1 year):** 95 per 1,000 births

**Child Mortality (under 5 years):** 160 per 1,000 births

**Status of Decade/Sector Plan:**  
Adopted in 1981

## Water and Sanitation Agencies:

Direction de l'Hydraulique et de l'Énergie (DHE)

Régie Nationale des Eaux du Togo (RNET)

Service National d'Assainissement (SNA)

## Decade Progress

The water supply and sanitation sector in Togo is noteworthy for its high degree of urban coverage. Although the coverage figures vary considerably from source to source, some estimate 100% coverage for Lomé. Togo has limited its urban network to 21 cities and towns and achieved a relatively high coverage, as high as 79%, within this network.

Rural water supply has also made significant progress in the Decade. USAID, the leading single donor to date, has financed a very successful rural water supply project, which has been described as a model in integrating water, sanitation, community development, and health education. It also has been notably successful in reducing Guinea worm disease in the project zones.

Until recently, sanitation was emphasized less than water supply. Newer projects now stress both urban and rural sanitation, and investments in water supply have fallen. Lomé has begun an urban sewerage program, one

of the few in Africa.

The private sector has many opportunities for involvement in water and sanitation in Togo as compared to other African nations. The USAID rural water project contracted for drilling, for example, and saved about 40% over government operations. The Togo civil service, however, remains a relatively efficient organization and is integral to the success of any future projects.

National health statistics are, as elsewhere in Africa, very limited. It is estimated that Togolese children average seven episodes of diarrheal disease per year. Guinea worm eradication has been stressed in recent years, and it appears that improved water supplies and education are having a notable impact.

It is recommended that USAID capitalize on its past experience and success in rural water supply and sanitation and child survival to invest in a new project which would integrate the two components. It is known that USAID would receive strong support for a project focusing on specific geographic regions within Togo.

TABLE 1  
INVESTMENT REQUIREMENTS  
TOGO

| ESTIMATED COVERAGE<br>COSTS AND POPULATION | URBAN |            | RURAL |            | TOTALS |
|--|-------|------------|-------|------------|--------|
|  | WATER | SANITATION | WATER | SANITATION |        |
| Population Served 1988                     | 0.9   | 0.2        | 1.1   | 0.2        |        |
| Coverage Target 2000                       | 2.3   | 2.1        | 2.6   | 2.1        |        |
| Shortfall/Unserved                         | 1.4   | 1.9        | 1.5   | 1.9        |        |
| Cost (US \$)                               | 84.0  | 232.0      | 36.0  | 70.0       | 422.0  |
| Proposed Investment                        |       |            |       |            |        |
| Net Shortfall                              |       |            |       |            |        |

1 Population and costs in millions.

2 Assume 1988 population 1.1M urban, 2.2M rural; year 2000 2.3M urban, 2.6M rural.

3 Assume urban growth rate of 6.4%.

4 Assume % access to water supply 1988 79% urban, 49% rural; year 2000 100% urban, 99% rural. \*

5 Assume % access to sanitation 1988 20% urban, 10% rural; year 2000 90% urban, 80% rural. \*

6 Assume per capita cost urban water supply \$60, sanitation \$122; rural water supply \$24, sanitation \$37.

\* Coverage figures based on unpublished USAID data.

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## COUNTRY PROFILE: TOGO

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### 1. Population

The last national census of Togo was conducted in 1970. The present population is 3.3 million with about one third located in cities and towns. The population density is rather high at 58 per square kilometer, but the ratio decreases as one goes north. The urban population is growing at a rapid 6.4% per annum. In this regard, Government of Togo (GOT) policy encourages people to settle in secondary urban zones, rather than in Lome. By the year 2000, almost half the population will live in urban areas if the present urban growth rate continues as shown in Table 2.

Table 2  
Past, Present, and Future Population  
(in millions)

|      | <u>Total</u> | <u>Urban</u> | <u>Rural</u> |
|------|--------------|--------------|--------------|
| 1980 | 2.5          | 0.7 (28%)    | 1.8 (72%)    |
| 1988 | 3.3          | 1.1 (33%)    | 2.2 (67%)    |
| 2000 | 4.9          | 2.3 (47%)    | 2.6 (53%)    |

Source: U.S. Bureau of the Census

### 2. Coverage Data

For the rural population about 49% has access to a safe drinking water supply, but only 10% has adequate sanitation (Table 3). The water supplies are provided primarily by deep-bore wells equipped with manual pumps. The design of appropriate repair and maintenance systems is, however, critical to their effectiveness. Though the government has been actively pursuing the establishment of a "three-tiered maintenance" system, efforts have been limited due to insufficient financing. The rest of the rural population is supplied from traditional sources (shallow wells, ponds, rivers) of dubious quality and without guarantee of perennial supply.

Under the auspices of the Regie Nationale des Eaux du Togo, a parastatal under the technical control of the Division of Urban and Rural Hydraulics and established to manage all urban water supplies, over the past few years the availability of water has increased at a rate of approximately 6% although urban population growth has been somewhat higher.

Approximately 78% of the total urban water supply is derived from subterranean sources and 22% from surface sources. The smaller urban centres are supplied primarily from surface sources requiring complete and costly treatment.

Lome, the capital, takes its water from the Continental Terminal aquifer underlying the coastal region. Fifteen boreholes located as far away as 20 kilometers have a capacity production of 40,000 m<sup>3</sup>/day. However, in the whole sedimentary coastal basin, estimated resources of 170,000 m<sup>3</sup>/day exist.

In 1987, about 79% of the urban population had house connections or access to a standpipe. Problems of urban water supply have been more critical in Lome where only about 65% of the population has access to such sources. The rest of the population in the capital use polluted hand-dug wells.

A small part of central Lome has a sewerage system. There are only 311 connections. Another 30% of the town relies on septic tanks. Through a parastatal organization (SOTOEMA), the municipality is able to provide solid waste and sludge disposal services. Plans call for extending these services to other major urban centers within the next five years.

TABLE 3  
WATER AND SANITATION COVERAGE FOR 1980 AND 1988  
AND TARGETS FOR 2000  
(in percents)

TOGO

| YEAR   | WATER |       | SANITATION |       |
|--------|-------|-------|------------|-------|
|        | URBAN | RURAL | URBAN      | RURAL |
| 1980   | 53    | 26    | 20         | 9     |
| 1988   | 79    | 49    | 20         | 10    |
| 2000 * | 100   | 99    | 90         | 80    |

SOURCE: Unpublished USAID/Togo data.

\* Decade targets for 1990 assumed for 2000.

### **3. Decade/Sector Action Plan**

The Decade plan, adopted in 1981, established targets for 1990.

Within the urban water sector the following goals were set:

- ◆ Provide potable water in a quantity sufficient for the whole population.
- ◆ Provide 100 liters of water per capita per day (lcd) in Lome, 80 lcd in other urban centers, and 50 lcd in other semi-urban centers through household connections.
- ◆ Furnish 30 lcd through standpipes.
- ◆ Provide household connections as rapidly as possible to all urban locations.

For the rural water sector the goals were to provide 20 lcd to rural communities depending on their location, the existing hydrologic conditions, stock raising needs, etc. Each village of 100 or more residents was to be furnished with a water point, primarily a borehole. To cover the whole country about 7,500 water points would be required.

Other objectives included the following:

- ◆ Adopt a permanent maintenance system for pumps.
- ◆ Promote health and community participation so that the people will learn how to take charge of the technical and financial components of the water and sanitation system.
- ◆ Undertake a study of appropriate technologies for the various geologic zones of the country.

Within the sanitation sector the following objectives were set:

- ◆ Provide 40% of the urban population and 20% of the rural population with an adequate means of excreta disposal by 1985.
- ◆ Provide 80% of the urban population and 50% of the rural population with a means to dispose of waste water by 1985.
- ◆ Pass legislation for environmental protection and coordination of initiatives.
- ◆ Extend the solid waste collection for Lome to 100% of the population.

- ◆ Initiate control measures for solid waste for all urban and semi-urban centers.
- ◆ Assure systematic water quality control for Togo by the Regie Nationale des Eaux du Togo (RNET).

As summarized below, by the end of 1986, mixed progress had been made in achieving the stated objectives.

- ◆ Twenty cities and towns had been included under the urban water authority (RNET). This provided a coverage of about 79% for the urban zone.
- ◆ The rural zone had achieved 49% coverage with on-going projects adding to the coverage.
- ◆ Sanitation in the form of excreta disposal had made few gains and remained a major problem in both urban and rural areas.
- ◆ Water quality control had not been established as a national service.
- ◆ Solid waste collection had made some gains through SOTOMA (Societe Togolaise d'Enlevement des Ordures Menageres et d'Assainissement). About 900 tons of trash a day are collected in Lome.
- ◆ Latrine construction in the rural zones had received only minor support.

The government policy in regard to water supply and sanitation is mentioned in each of Togo's five-year plans for development. The fourth plan (1981-1985) incorporates most of the Decade objectives and gives strong support to the sector. Specific importance is given to the various components of water, sanitation, health education, and community participation.

Beginning in the early 1980s, many of the water and sanitation programs initiated in Togo, especially those in rural areas, have placed a special emphasis on the inclusion of community development and health education components. This has been due to the recognition on the part of the Togolese Government and funding agencies alike that: communities which will be expected to maintain the water and sanitation equipment need to be prepared organizationally to fulfill this responsibility and beneficiary populations are more likely to fulfill this responsibility if they are aware of the health implications of the improved water supplies.

Two governmental services, the Division of Community Development of the Social Affairs Service and the National Health Education Service of the Department of Public Health are ultimately responsible for these two domains, though many agencies (governmental and

nongovernmental) are also involved. The Division of Community Development has approximately 200 personnel posted throughout rural Togo but, operationally, is severely hampered by financial constraints. As concerns the National Health Education Service, it is still in the process of establishing a national network of district health education coordinators. At present the network is about 50% complete.

Both of these services depend largely on exterior sources of financing, and estimates of actual and sustainable rates of coverage would be unrealistic.

#### **4. Sector Administration**

Various ministries and Departments were allocated specific tasks to implement Decade goals. The Water and Energy Directorate (Direction de l'Hydraulique et de l'Energie) in the Ministry of Public Works, Post Office, and Telecommunications (Ministere de l'Equipement, des Postes, et des Telecommunications) is responsible for rural water supply. In Lome and 17 smaller urban centers, the responsibility for water supply and sewerage provision lies with the National Water System of Togo (Regie Nationale des Eaux du Togo) which also operates under the supervision of the Ministry. The National Sanitation Service (Service National d'Assainissement) in the Ministry of Health (Ministere de la Sante Publique, des Affaires Sociales et de la Condition Feminine) are responsible for non-sewered excreta disposal. The Ministry of Health is also in charge of community mobilization and health education in the rural areas.

The names and addresses of the organizations are provided below:

Direction de l'Hydraulique et de l'Energie, BP 335, Lome,  
Telephone: 21-11-01

Regie Nationale des Eaux du Togo, BP 1301, Lome  
Telephone: 21-34-81

Direction Generale de la Sante Publique Service Nationale d' Assainissement  
B.P. 336, Lome  
Telephone: 21-09-07

Direction Generale de la Sante Publique  
Service National d' Education pour la Sante  
B.P. 8075, Lome  
Telephone: 21-36-87

Direction Generale de la Sante Publique Institut National d' Hygiene  
B.P. 1396, Lome  
Telephone: 21-06-33

Direction Generale des Affaires Sociales Division du Developement Communautaire  
B.P. 1247, Lome  
Telephone: 21-48-71

## 5. Water Sector Studies

The following reports are significant to the water supply and sanitation sector:

Atikpo, Hydraulique Rurale au Togo, (Rapport-bilan) 1985.

Comite National de l'Eau, Diepe-Deuxieme Atelier National sur la Planification du Secteur Eau Potable et Assainissement, Octobre 1983.

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World Bank, Staff Appraisal Report Lome Water Supply Project, April 1983.

## 6. Past Investments in the Sector

During the Decade the principal donors for water supply have been USAID, FED (Europe), FAC (France), BOAD (Bank Occidentale d'Afrique pour Developpment), JICA (Japan), CUSO (Canada), and SOTOCO (Societe Togolaise de Coton).

In addition many nongovernmental organizations have contributed to Decade goals, but their investments have not been nearly as significant as those provided by multilateral and bilateral agencies. In the first eight years of the Decade, approximately \$75 million has been spent by the Government of Togo water and sanitation agencies, 91% of which has come from external sources (Table 4). The contribution of nongovernmental organizations (CRS, Baptist Mission, etc.) can be evaluated at approximately 10% of this amount.

For sanitation, however, because of financial and managerial constraints, the country cannot cope with this subsector and meet its ambitious targets for drinking water supply at the same time. Given high growth rates, the future implications of this situation are rather ominous for the country's major urban areas, especially Lome. Studies are currently underway with World Bank and Danish assistance to assess the present and future needs of the capital.

As previously mentioned, USAID, along with FAC, FED, the Peace Corps, and the GOT, funded a \$16.7 million project for rural water supply and sanitation covering two regions of Togo. This highly successful project provided water to about 600,000 people primarily through boreholes. Health education and community participation were significant and key components of the project.

In 1988, USAID began a Child Survival Project which is at present working in many of the same villages and with the same health committees established under the water and sanitation project.

Total financial resources expended during the last 8 years in the water supply and sanitation sector are provided in Table 4.

Table 4  
TOGO  
GOT WATER AND SANITATION SECTOR INVESTMENT  
(in millions \$US)

| YEAR          | URBAN ZONES   |              | RURAL ZONES   |              | TOTAL INVESTMENT |              | GENERAL TOTAL |
|---------------|---------------|--------------|---------------|--------------|------------------|--------------|---------------|
|               | EXTERNAL      | GOT          | EXTERNAL      | GOT          | EXTERNAL         | GOT          |               |
| 1980          | 2.473         | 1.647        | 0.000         | 0.000        | 2.473            | 1.647        | 4.121         |
| 1981          | 1.129         | 0.040        | 6.500         | 0.000        | 7.629            | 0.040        | 7.669         |
| 1982          | 0.000         | 0.000        | 0.333         | 0.000        | 0.333            | 0.000        | 0.333         |
| 1983          | 0.958         | 0.763        | 0.000         | 0.000        | 0.958            | 0.763        | 1.720         |
| 1984          | 1.437         | 0.000        | 2.385         | 0.000        | 3.822            | 0.000        | 3.822         |
| 1985          | 10.039        | 0.000        | 5.487         | 0.048        | 15.526           | 0.048        | 15.574        |
| 1986          | 9.530         | 0.000        | 4.838         | 0.000        | 14.367           | 0.000        | 14.367        |
| 1987          | 6.090         | 1.444        | 1.573         | 0.210        | 7.663            | 1.664        | 9.317         |
| 1988          | 15.255        | 2.237        | 1.032         | 0.110        | 16.287           | 2.347        | 18.634        |
| <b>TOTALS</b> | <b>46.911</b> | <b>6.130</b> | <b>22.149</b> | <b>0.368</b> | <b>69.060</b>    | <b>6.498</b> | <b>75.558</b> |
| % of Total    | 62            | 8            | 29            | 0            | 91               | 9            | 100           |

NOTE: Sectorial investment figures do not include investment by nongovernmental organizations. These are approximately 10% of the total governmental investment.

## 7. Proposed Investments in the Sector

Major on-going projects in rural water include a project financed by Canada (CIDA). In addition, the World Bank has financed a master plan for sanitation, the weak component of the sector. Several specific urban water projects for regional towns are in various stages of planning and construction, although current policy is to limit new investments. The World Bank and FAC are the principal donors for the urban sector. Government policy has placed emphasis on operations and maintenance actions and thus limited new construction activities. Information is not available on the investment plans of other donors, but investments clearly will be insufficient in meeting Decade goals.

## 8. Health Indicators

Health data is limited in its availability. Table 5 provides recent data on water- and sanitation-related diseases, but the data underestimate the actual prevalence of these diseases. Some studies have shown, for example, that Togolese children average several episodes of diarrheal disease per year. Guinea worm has been found to affect 65 to 80% of the population in some zones.

Guinea worm disease has received national attention and has been emphasized in the USAID water supply and sanitation project. Significant reductions in Guinea worm disease have been anticipated in the project zone because of improved water supplies and health education.

**Table 5**  
**Cases of Water and Sanitation Related Diseases**  
**Reported to Health Centers in 1987**

|                             |              |
|-----------------------------|--------------|
| Diarrheal diseases          | 149,107      |
| Cholera                     | 4            |
| Typhoid                     | 225          |
| Amebiasis                   | 25,509       |
| Giardiasis                  | not reported |
| Schistosomiasis             | 5,248        |
| Dracunculiasis**            | 125          |
| Trachoma                    | 710          |
| Scabies/Other Skin Diseases | 2,187        |
| Ascariasis                  | 745          |
| Trichuriasis                | not reported |
| Other:                      |              |
| Onchoceroses                | 6,998        |
| Dysentary                   | 37,430       |
| Gastro Enteritis            | 1,507        |

\*\* It is important to note that the reported cases of Dracunculiasis (Guinea worm disease) severely underestimate the actual rate of incidence. This is largely due to the fact that those stricken do not seek professional assistance.

## **9. Privatization**

Togo has generally been supportive of private initiatives in the water sector. Contracting for specific tasks such as well drilling is common. Responsibility for maintenance of rural water systems rests with the communities and with private rural artisans for repairs.

Urban water systems are managed by parastatals. The various government institutions concerned with water supply and sanitation and health are generally staffed with highly qualified individuals. As a result, these institutions operate with an efficiency superior to most West African countries. This means that there are fewer opportunities for increasing private sector involvement. Much of the success, for example, of the USAID water supply and sanitation project was attributable to strong inputs from the Togo extension services in health and sanitation.

## **10. Recommendations for USAID**

In recognition of the past success that USAID has had in water supply and sanitation in Togo, it is recommended that consideration be given to funding another project. Ideally, such a project should combine water supply and sanitation with child survival interventions to provide a truly integrated approach to rural health. Sanitation should also be emphasized, as sanitation coverage has lagged behind water supply.

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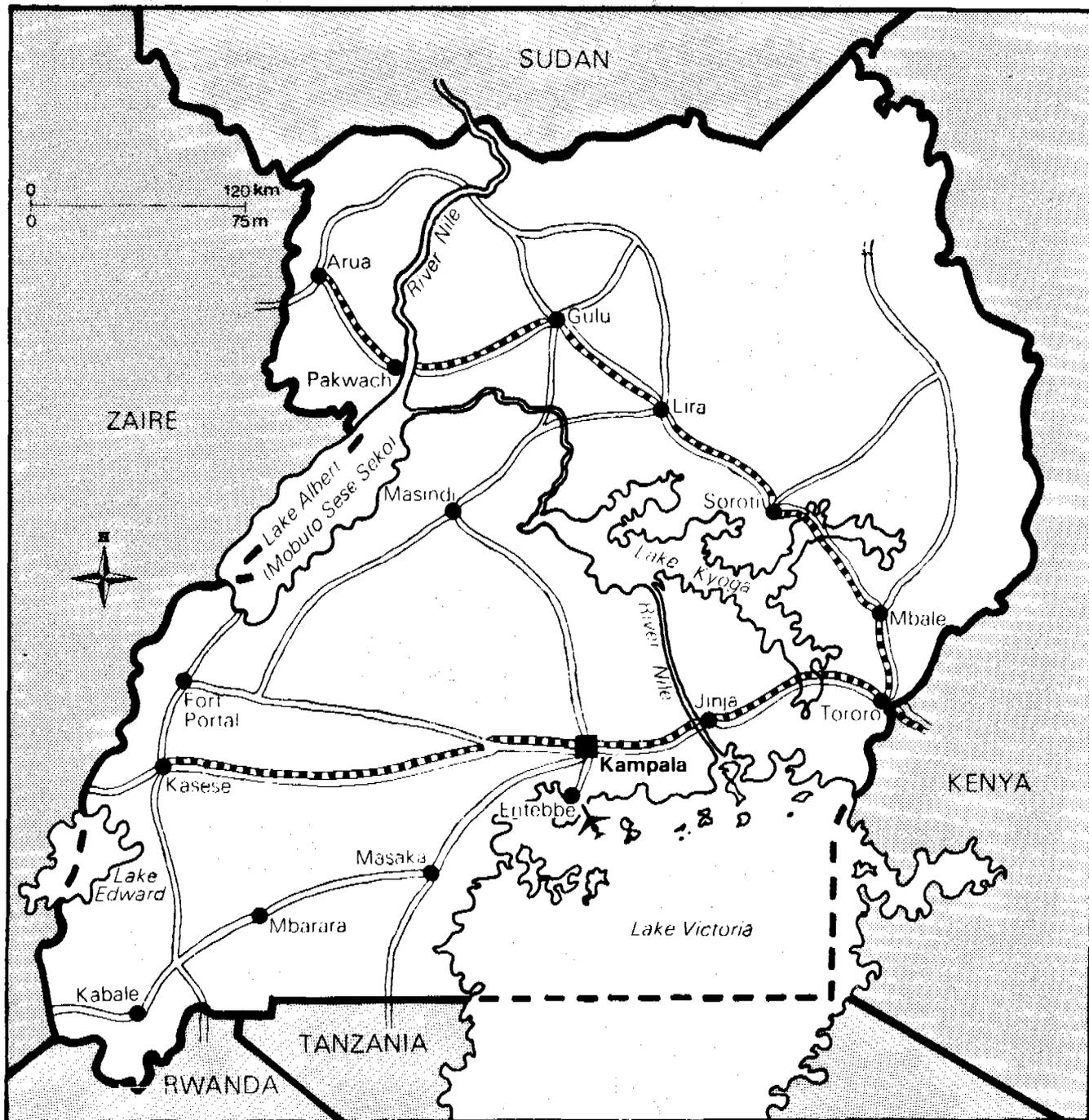
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UGANDA



# UGANDA

Population: Total 16.4 M (Urban 7%, Rural 93%)

Population Growth Rate: 3.3% per year (Urban 3%)

GNP per Capita: US \$230

Adult Literacy: Total 57% (Male 70%, Female 45%)

Currency: 165 Ugandan shillings = \$1 US

Life Expectancy: 49 years (Male 48, Female 50)

Infant Mortality (under 1 year): 103 per 1,000 births

Child Mortality (under 5 years): 174 per 1,000 births

Status of Decade/Sector Plan: Submitted in 1985, under review

Water and Sanitation Agencies:

Ministry of Water and Mineral Development (MWMD)

- Water Development Department (WDD)

- National Water and Sewerage Corporation (NWSC)

The population is growing rapidly, and the country is predominantly rural (well over 90%). Projections for the year 2000 indicate that the urban population will still be under 10%. Thus, massive investments in the rural sector are required over the next several years if the coverage levels are to be significantly increased by the year 2000.

In August 1988 Uganda completed a "Development Strategy and Action Plan" aimed at getting the water supply and sanitation sector back on a "Decade track." This action plan outlines a series of activities which, when implemented and taken together, will comprise Uganda's program for significantly increasing all components of sector coverage in the next 12 years.

The action plan was prepared by Uganda's Ministry of Water and Mineral Development (under the sponsorship of the World Bank and UNDP).

The GOU's present approach to the sector emphasizes rehabilitation of the existing infrastructure, complemented by new facilities.

UNICEF is the most significant agency working in the rural sector. UNICEF's Program of Assistance (water component) to Uganda calls for the provision of potable water to 2.4

million people by 1990.

Significant external funding (\$64 million) is expected from the World Bank by 1990 to rehabilitate and extend the urban water supply and sanitation systems in several of the nation's larger cities, including the capital, Kampala.

USAID's program in Uganda over the past several years has concentrated on the rehabilitation of facilities and improvements in Uganda's agricultural sector, child survival health, and AIDS research. The only intervention in the water and sanitation sector appears to be a small (5 to 10%) component of the Rural Health Center Project of Makerere University. It is worth noting that the USAID Mission in Kampala was evacuated in late 1985. However, it resumed operations in the spring of 1986.

As shown in Table 1, investments required to reach Uganda's coverage levels by the year 2000 are enormous by any standard. This should provide a strong motivation to apply low-cost technologies to optimize resources devoted to the sector and to coordinate donor activities. Because of the large investment required, the coverage targets may have to be revised to more realistic levels to fit Uganda's economic and development potential.

## Decade Progress

Uganda's development potential has been severely limited due to over 20 years of civil strife and limited financial resources. The country has only recently recovered from an intense civil war, with the National Resistance Movement stabilizing its power in 1986. However, there are still areas where full security is not assured.

The nation's Decade plans, initiated in the early 1980s, have been devastated; by 1985, much of the water and sanitation sector's infrastructure, which once provided some of the highest coverage levels in Africa, was in a state of almost total collapse.

Present coverage levels indicate that 45% of the urban and 12% of the rural populations have access to safe water supplies. Sanitation coverage is estimated at 20% for urban and 10% for rural populations, respectively.

TABLE 1  
INVESTMENT REQUIREMENTS  
UGANDA

| ESTIMATED COVERAGE COSTS AND POPULATION | URBAN |            | RURAL |            | TOTALS |
|---|-------|------------|-------|------------|--------|
|   | WATER | SANITATION | WATER | SANITATION |        |
| Population Served 1988                  | 0.5   | 0.2        | 1.8   | 1.5        |        |
| Coverage Target 2000                    | 1.4   | 1.5        | 9.2   | 11.5       |        |
| Shortfall/Unserved                      | 0.9   | 1.3        | 7.4   | 10.0       |        |
| Cost (US \$)                            | 54.0  | 159.0      | 296.0 | 250.0      | 759.0  |
| Proposed Investment                     |       |            |       |            |        |
| Net Shortfall                           |       |            |       |            |        |

- 1 Population and costs in millions.
- 2 Assume 1988 population 1.2M urban, 15.2M rural; year 2000 1.7M urban, 23.0M rural.
- 3 Assume urban growth rate of 3%.
- 4 Assume % access to water supply 1988 45% urban, 12% rural; year 2000 80% urban, 40% rural.
- 5 Assume % access to sanitation 1988 20% urban, 10% rural; year 2000 85% urban, 50% rural.
- 6 Assume per capita cost urban water supply \$60, sanitation \$122 (based on averages for Africa); rural water supply \$40, sanitation \$25 (based on IDWSSD Mid-Decade Directory).

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## COUNTRY PROFILE: UGANDA

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### 1. Population

While most African countries are experiencing rapid rates of urbanization, Uganda is today predominantly rural and will remain so in the year 2000.

Table 2

Past, Present, and Projected Population  
(in millions)

|      | <u>Total</u> | <u>Urban</u> | <u>Rural</u> |
|------|--------------|--------------|--------------|
| 1980 | 12.8         | 0.9 (7%)     | 11.9 (93%)   |
| 1988 | 16.4         | 1.2 (7%)     | 15.2 (93%)   |
| 2000 | 24.7         | 1.7 (7%)     | 23.0 (93%)   |

Source: U.S. Bureau of the Census

Population data (shown in Table 2) were synthesized from several sources. Annual population totals for 1980, 1988, and 2000 were taken from the U.S. Bureau of the Census, World Population Profile 1987. The urban/rural components were estimated using the data on urbanization (percent urban in 1985 and the rate of urbanization 1980-1985) of the World Development Report 1988.

### 2. Coverage Data

The estimated service levels for water and sanitation are shown in Table 3. The country's draft Decade plan (1983) cited the service levels shown in Table 3 as targets for the year 2000. (These targets were for 1990 in the 1983 draft plan.)

There were no data available on urban/rural water and sanitation coverage for 1980. The only reference was in a review paper published by the Ministry of Water and Mineral Development (MWMD) which stated that approximately 7% of the entire 1980 population had access to safe water. With the urban/rural population breakdown existing in 1980 (approximately 7%/93% urban/rural, respectively), the indication was that almost all the access to safe water was in urban areas.

The levels of coverage for 1988 were estimated from various sources, primarily UNICEF reports and the UNDP/World Bank Water Supply and Sanitation Program Country and Global Work Plan '88-'90 (September 1988).

Uganda's coverage levels are extremely low. Given that almost 93% of the estimated 1988 population is rural, over 13 million rural residents do not have access to safe water supplies and an even greater number do not have proper sanitation facilities.

TABLE 3

WATER AND SANITATION COVERAGE FOR 1980 AND 1988  
AND TARGETS FOR 2000  
(in percents)

UGANDA

| YEAR | WATER |       | SANITATION |       |
|------|-------|-------|------------|-------|
|      | URBAN | RURAL | URBAN      | RURAL |
| 1980 | N/A   | N/A   | N/A        | N/A   |
| 1988 | 45    | 12    | 20         | 10    |
| 2000 | 80    | 40    | 85         | 50    |

SOURCE: W.H.O. IDWSSD Review of Mid-Decade Progress

### 3. Decade/Sector Action Plan

The obvious inadequacies of water supply and sanitation in Uganda were recognized by the Government in its 1983 draft Decade plan. However, the programs slated for implementation in the mid-1980s were seriously curtailed or left in a state of advanced deterioration or stopped outright by the civil war. In fact, much of the infrastructure provided was destroyed, and only one agency, UNICEF, had any significant activity in the sector.

The situation today is almost the same, except that, through UNICEF's efforts, coverage has increased. The MWMD of the Government of Uganda (GOU) has prepared, an action plan for the sector with the support of the World Bank and UNDP. In effect, this plan outlines the preliminary activities required to formulate the programs necessary to meet the year 2000 targets shown in Table 3. Thus, Uganda's Decade plan can only be described as

in the process of formulation.

The development framework established in the action plan includes

- ◆ developing and strengthening water and sanitation organizations;
- ◆ adjusting service levels and technologies so that they are affordable for the user;
- ◆ accelerating decentralization and promotion of community participation; and
- ◆ introducing appropriate cost-recovery procedures.

The plan also proposes a new organizational structure (see Section 5), and one of its critical elements will be institutional development. It is hoped that growth of institutional capacity will make it possible for Uganda to absorb increases in investment levels in the sector.

Preliminary planning activities include the preparation of the following studies and projects:

- ◆ a sanitation sector strategy paper to outline related institutional arrangements and required coordination among water supply, sanitation, and health education activities;
- ◆ a sector-wide organizational and manpower development study;
- ◆ a national rural water supply program (this program would serve as a base for the preparation of district projects for donor financing);
- ◆ a demonstration project for water supply, sanitation, and health education in rural growth centers; and
- ◆ a demonstration project for water supply and sanitation in urban fringe areas.

#### **4. Sector Administration**

The Ministry of Water and Mineral Development (MWMD) is primarily responsible for the sector and executes its functions under the Water Development Department (WDD) and the National Water and Sewerage Corporation (NWSC). The NWSC is a parastatal organization established by the Government of Uganda to operate urban water systems on a self-sustaining basis. The NWSC operates the systems serving Kampala, Jinja, and Entebbe and recently rehabilitated water and sanitation systems in four other large urban areas.

The WDD develops water systems for rural areas and any urban areas not served by the

NWSC. The sanitation sector is very weak in terms of coverage in urban areas. This sub-sector can be classified as informal for all but the urbanized areas.

The 1983 draft Decade plan proposes the following organizational structure:

- ◆ The National Water and Sewerage Corporation (NWSC) will take over all existing urban water supply and sewerage schemes, leaving the Water Development Department (WDD) responsible for other urban and rural water supply and sewerage systems and water resources development.
- ◆ A Water and Sanitation Unit will be organized in the MWMD to establish sector policy, carry out planning, and allocate water resources.

## 5. Water Sector Studies

There are no recent sector studies available except the action plan mentioned above.

The reports reviewed for this sector profile which provided the most useful and/or specific information are identified below. Other reports reviewed for this assignment pertinent to this Uganda sector profile are listed at the end of the text.

Annual Report - Uganda 1988 (Excerpts), UNICEF.

Plan of Operation - Integrated Project for PHC/Community Development RWS and Sanitation - in South Western Uganda July 1987 - June 1990, (Supplement to UNICEF Country Program 1985-1990), UNICEF 1986.

Water Supply and Sanitation Sector Development Strategy and Action Plan, Ministry of Water and Mineral Development, Republic of Uganda (under World Bank sponsorship), August 1988.

## 6. Past Investments in the Sector

There was no comprehensive analysis of past investments in Uganda's water supply and sanitation sector available for this study aside from the WHO Country External Support Information. The estimated breakdown of investments is shown in Table 5.

UNICEF is the most significant agency working in the rural sector. The water component of UNICEF's Program of Assistance to Uganda calls for the provision of potable water to 2.4 million people by 1990.

Through the construction of 1,800 new boreholes, the protection of 6,000 springs, the construction of 300 shallow wells, and the replacement of all Uganda's remaining (more than 4,000) traditional handpumps with U-Two pumps. In addition, it provides for the

maintenance of all rural water sources by the communities using them, through a program of community participation.

Because of the continuing political disturbances and military operations, the program was seriously disrupted in the mid-1980s, and UNICEF consolidated its operations. In parallel with the consolidation policy, an Emergency Rural Water Supply and Sanitation Project was implemented by UNICEF over a six-month period in the war-devastated Luwero area. This project, having a total cost of more than \$2 million (\$600,000 from USAID), included:

- ◆ provision of safe water for at least 90,000 people,
- ◆ drilling of 375 new boreholes,
- ◆ rehabilitation of 30 existing boreholes,
- ◆ protection of 40 springs, and
- ◆ establishment of a self-sustaining, community-based handpump maintenance system for more than 400 new handpumps.

Table 5

Past Investments in the Sector (1980-1988)  
(in millions of US \$)

|                          |                     |
|--------------------------|---------------------|
| World Bank               | 37.0 million        |
| UNICEF                   | 20.0                |
| European Community       | 17.3                |
| African Development Bank | 14.5                |
| Islamic Development Bank | 5.6                 |
| West Germany             | 3.8                 |
| Canada                   | <u>0.5</u>          |
| <b>TOTAL</b>             | <b>98.7 million</b> |

No estimate of the GOU contribution over this period was available. Further, the \$ 98.7 million total does not include any estimated investments from the governments of Sweden, France, India, and Norway. These countries were listed by UNICEF as contributors to the handpump installation/rehabilitation project. These bilateral investments should be included in the UNICEF program.

Thus, it would be safe to assume that the sector investments over the 1980-1988 period were approximately \$100 million. Of the \$81 million total cited in Table 4, approximately 17% or \$15 million, was for sanitation.

USAID made no direct investments in the sector. However, USAID's primary health care project (budgeted at \$17 million), run by Makerere University, apparently had a small water supply and sanitation component (about 5%), but no details on this component were available for this profile.

## 7. Proposed Investments in the Sector

There is no formal report on or listing of proposed sector investments in Uganda. The following discussion is based upon the WHO Country External Support Information listing.

- ◆ Uganda's largest pending investments are from the World Bank. A project estimated at \$64 million is slated for a 1990 start. This project, which includes an institutional development component, will extend and rehabilitate the water supply and sewerage facilities for Kampala, Jinja, and Entebbe, and perhaps for other urban systems in Uganda. The Bank has also scheduled a water and sanitation project aimed at rural and smaller urban systems to start in 1993 with approximately \$30 million in funding to be provided.
- ◆ UNICEF expects to implement an integrated health project in Uganda's three southwestern provinces. The project's large urban water and sanitation component includes training of maintenance workers and community organization. A rural sanitation pilot project is also envisioned. The project should commence in late 1988 and run through 1991; the water supply and sanitation components are estimated at almost \$20 million, of which over 90% is earmarked for water supply.

There will probably be other investments in the sector, as the GOU appears to have stabilized security in much of the country. If this stability continues, other multilateral and bilateral agencies may be more willing to invest in the sector.

## 8. Health Indicators

WHO surveys indicate that children under five have four to five episodes of diarrhea per year, and UNICEF data indicate that the percentage of infants fully immunized against polio, measles, DPT, and tetanus ranges from only 5 to 33% and is approximately 50% for tuberculosis. The infant and child mortality rates are ranked in the high range by UNICEF.

Taken together, these statistics indicate an extremely poor health environment. This argument is strongly reinforced by an examination of Table 6.

TABLE 6

NATIONAL MORTALITY/MORBIDITY  
PATTERNS, REPRESENTATIVE OF 1987 CONDITIONS

Registered Mortality

|                                    |       |
|------------------------------------|-------|
| Measles                            | 25.3% |
| Upper Respiratory Tract Infections | 16.2% |
| Diarrhea/Vomiting                  | 9.2%  |
| Malaria                            | 7.1%  |
| Traumatic Injuries                 | 5.9%  |
| Tetanus                            | 5.1%  |
| Anemia                             | 4.7%  |
| Tuberculosis                       | 2.9%  |
| Malnutrition                       | 1.6%  |
| Whooping Cough                     | 1.4%  |
| Other                              | 20.6% |

OUTPATIENT MORBIDITY  
(Primary Diagnosis)

|                                   |       |
|-----------------------------------|-------|
| Malaria                           | 20.3% |
| Upper Respiratory Tract Infection | 17.3% |
| Traumatic Injuries                | 6.5%  |
| Intestinal Worms                  | 6.1%  |
| Skin Infections                   | 4.9%  |
| Gonorrhea                         | 4.9%  |
| Diarrhea/Vomiting                 | 4.8%  |
| Measles                           | 3.6%  |
| Teeth/Gum Disorders               | 2.8%  |
| Eye Infections                    | 2.5%  |
| Other                             | 26.3% |

Source: UNICEF (1987 Plan of Operation SWUGANDA Integrated Project for Primary Health Care, Community Development and Water Supply and Sanitation)

Improved water supplies and sanitation systems should decrease the mortality due to diarrhea and malaria (over 16% of the total) and should reduce the incidence of diarrhea, malaria, worms, and skin and eye infections (almost 40% of the total).

## **9. Privatization**

There is little indication in the reports and data reviewed that privatization will play a large role in the sector's development. However, there is one area where increased private sector involvement is a definite possibility -- the local manufacture of handpumps and spare parts. The handpump being installed throughout Uganda, the U-Two pump, is the Ugandan version of the Mark II pump manufactured in India. Over 5,000 more handpumps are planned for installation over the next ten years.

In addition to the manufacture of handpumps, the private sector could provide training in maintenance and repair to local pump mechanics and/or caretakers. Further, private sector firms could actually provide the pump maintenance directly to the local communities on a contractual basis. (For instance, the contract could be between the village and the company.) The GOU could foster this relationship by encouraging the private sector to get involved and by acting as a program monitor to assure that the people's rights are protected.

## **10. Recommendations for USAID**

USAID's FY 1988 programs in Uganda do not include any projects which will directly contribute to the enormous needs of the water supply and sanitation sector. It might be possible to tie a water and sanitation project to USAID's child survival efforts; however, the child survival program level appears too small (\$200,000 total) for this to occur.

With the reactivation of Uganda's long-term planning efforts, opportunities abound in all areas of the sector. It is recommended that USAID monitor Uganda's planning efforts and seek to support, in cooperation with other donors, projects with low cost/high benefit ratios. The only ongoing activity in this realm is UNICEF's integrated health program mentioned in Section 7, and USAID could easily contribute toward it.

Another area in which small amounts of aid could produce enormous long-term benefits is in training and institutional development. Many project opportunities in these areas should be identified as Uganda's programs in the sector intensify.

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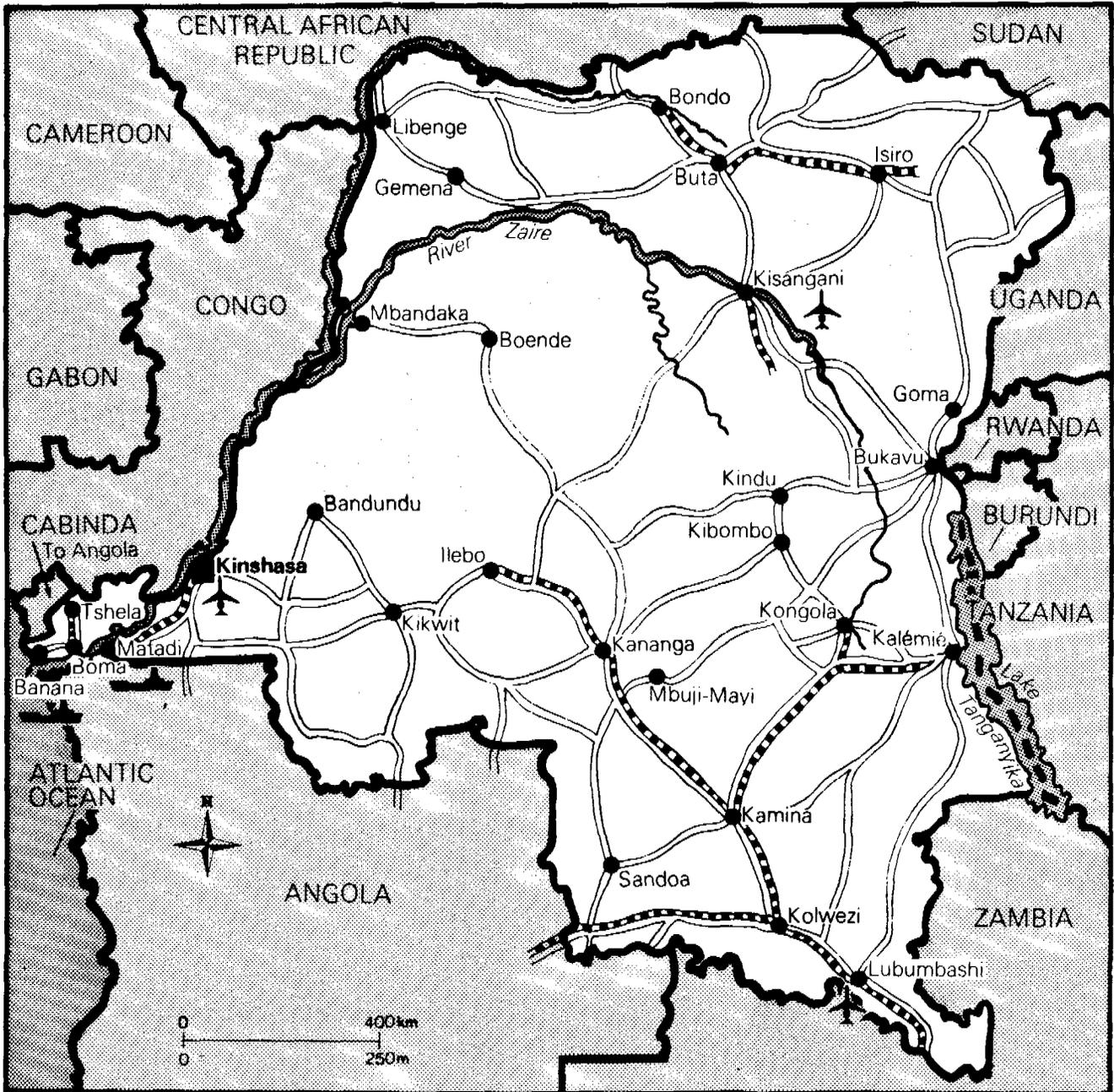
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World Bank, Staff Appraisal Report - Uganda Water Supply and Sanitation Rehabilitation Project, June 1984.

**ZAIRE**



# ZAIRE

**Population:** Total 33.3 M (Urban 38%, Rural 62%)  
**Population Growth Rate:** 3.1% per year (Urban 8.4%)

**GNP Per Capita:** US \$170

**Adult Literacy:**

**Life Expectancy:** 52 years (Male 50, Female 53)

**Infant Mortality (under 1 year):** 100 per 1,000 births

**Child Mortality (under 5 years):** 170 per 1,000 births

**Status of Decade Sector Plan:**

Completed in 1985, updated in 1988.

**Water and Sanitation Agencies:**

REGIDESO, the urban water supply company

SNHR, the rural water company, Ministry of Agriculture and Rural Development

PNA, the National Sanitation Program

## Decade Progress

Urban water supply coverage increased from 1.7 to 6.0 million over the period 1980-1985 and from 6.0 to 7.4 million for the period 1985-1987. Although the percentage of the urban population with unsafe water is currently a significant 38%, that figure has been dramatically reduced from 79% in 1980. Thus, not only was coverage extended at a significant rate, but also the rate of growth of coverage was increased, indicating a vigorous program.

This progress is consistent with the reputation of REGIDESO, the Urban Water Company of Zaire, as one of the best-run water institutions in Africa. Between 1968 and 1987, it has made investments totalling approximately \$300 million, mainly through government grants and self-financing, but also supported by international donors and lenders.

As a result of this investment and capable management, the number of urban centers served between 1967 and 1987 increased from 47 to 66,

production capacity by 72%, distribution networks length by 300%, and quantity of water sold by 68%.

The Decade target of 70% coverage for urban water, therefore, appears realistic.

Rural water supply has fared less well, with an estimated 10 to 20% of the rural population covered. Much of this coverage was made possible through donor support, most notably from UNICEF, USAID, and UNDP. Many of the installations, however, are reported not to be functioning because the equipment is poorly maintained. The rate of new construction by SNHR, the Rural Water Company, is approximately 200 boreholes per year, totally inadequate to meet the need and the demand. This slow rate is due both to financial and management constraints.

To remedy these problems, the government enunciated a clear sector strategy in 1985 (an updated document is to be made public in early 1989). The major elements of the rural water supply strategy are to require that village communities pay 5 to 10% of the capital costs of installation by purchasing their handpumps, to shift responsibility for the operation and maintenance of rural water supply systems to villagers, and to increase the role of private contractors selected through international competitive bidding in the construction of rural water supply systems.

Sanitation is the responsibility of the National Sanitation Program (PNA), created in 1981 to be responsible for planning, coordinating,

executing, and evaluating sanitation activities in both urban and rural areas. It is an inter-ministerial agency reporting to the Ministry of Environment. Operation and maintenance of sanitary sewerage systems is the responsibility of individual municipalities.

Urban sanitation is almost nonexistent in Zaire, with only 5% of households with any kind of sanitary facility. Only 100,000 people are connected to sewer systems. These systems, by and large, do not work or work poorly.

Rural sanitation is only marginally better, with an estimated 9% of the population covered. Whatever impact sanitation programs have had in the rural areas has been due to the activities of the Health Zones, operational units of the Department of Public Health, established in 1982 as part of Zaire's Primary Health Care Program. Planning for sanitation is apparently done at the local, Health Zone level or in the context of individual donor projects but is not coordinated by the PNA which, in theory, is the model agency for such planning.

Decade targets for sanitation are 40% urban and 35% rural coverage. Achievement of these targets is considered unrealistic.

Decade and overall sector planning has been the responsibility of the National Water and Sanitation Committee. The establishment of this committee was made possible, in part, through the technical assistance of USAID (WASH).

TABLE 1  
 INVESTMENT REQUIREMENTS  
 ZAIRE

| ESTIMATED COVERAGE COSTS AND POPULATION | URBAN |            | RURAL |            | TOTALS  |
|---|-------|------------|-------|------------|---------|
|   | WATER | SANITATION | WATER | SANITATION |         |
| Population Served 1988                  | 8.3   | 0.8        | 3.1   | 2.1        |         |
| Coverage Target 2000                    | 23.4  | 13.4       | 5.1   | 5.1        |         |
| Shortfall/Unserved                      | 15.1  | 12.6       | 2.0   | 3.0        |         |
| Cost (US \$) (IDWSSD)                   | 574.0 | 1,537.0    | 16.0  | 9.0        | 2,136.0 |
| Proposed Investment (U.S.)              |       |            |       |            |         |
| Net Shortfall (U.S. \$)                 |       |            |       |            |         |

1 Population and costs in millions.

2 Assume 1988 population 12.7M urban, 20.6M rural; year 2000 33.4M urban, 14.5M rural.

3 Assume urban growth rate of 8.4%.

4 Assume % access to water supply 1988 65% urban, 15% rural; year 2000 70% urban, 35% rural.

5 Assume % access to sanitation 1988 6% urban, 10% rural; year 2000 40% urban, 35% rural.

6 Assume per capita cost urban water supply \$38, sanitation \$122; rural water supply \$8, rural sanitation \$3.

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## COUNTRY PROFILE: ZAIRE

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### 1. Population

Five sources were consulted for population data: the Population Reference Bureau's Annual Population Statistics 1988; the World Bank World Development Report 1988 (1985-1986 data); the World Bank Staff Appraisal Report Zaire Third Water Supply Project, June 1988 (1987 data); the U.S. Bureau of the Census, World Population Profile: 1987, and the World Bank Staff Appraisal Report for the Second Zaire Water Supply Project, April 1982.

The four current sources agree on the estimated population for 1988 -- between 33.3 and 33.9 million, but there were significant differences in urban percentage and rate of urban growth. The Population Reference Bureau, for example, estimated the 1988 urban percentage at 34%, while the World Development Report estimated it at 39% in 1985 and the Zaire Staff Appraisal Report estimated it at 38% in 1987. A greater difference occurred in estimations of the urban growth rate. The World Development Report estimated a rate of 8.4% between 1980 and 1985 and the Staff Appraisal Report only 5% for the period 1980-1988. The Decade gives 6% as the rate of urban increase for 1985-1990. Also interesting to note is that the World Bank reports on the second and third projects differ substantially in their assessments of urban growth for the decade 1970-1980. Whereas the Second Project Appraisal Report estimates the 1970-1980 rate at 6.0%, the Third Project Appraisal Report estimates it at 7.0%. Such variations suggest that circumspection should be used when projecting coverage figures.

Also, U.S. Bureau of the Census figures do not project such a sharp increase in population in Zaire; the year 2000 projection is for 47.9 million, quite a bit lower than the World Bank figure of 57.4 million.

Table 2

#### Past, Present, and Projected Population

|      | <u>Total</u> | <u>Urban</u> | <u>Rural</u> |
|------|--------------|--------------|--------------|
| 1980 | 27.5         | 7.7 (28%)    | 19.8 (72%)   |
| 1988 | 33.3         | 12.7 (38%)*  | 20.6 (62%)   |
| 2000 | 47.9         | 33.4 (70%)** | 14.5 (30%)   |

Source: U.S. Bureau of the Census

\* World Bank World Development Report estimate

\*\* Assumes an urban growth rate of 8.4%

## 2. Water and Sanitation Coverage

Three sources were used for current coverage figures: the World Bank Staff Appraisal Reports for the Second and Third Water Projects, mentioned above and the Decade Directory for 1987.

Estimates on coverage were presented for different years, therefore rendering corroboration difficult, but permitting some historical analysis. For urban water coverage, for example, the Staff Appraisal Report for the Third Water Project estimated 7.4 million in 1987, while the IDWSSD estimated 6.0 million in 1985. The Staff Appraisal Report for the Second Water Project, using 1980 data, indicated a total coverage of 1.7 million.

The Staff Appraisal Report for the Second Water Project indicates clearly that the numbers given for urban population covered with private connections refer to that population served from private connections. That is, estimates include people to whom water has been sold or given by households with private connections. The Staff Appraisal Report for the Third Water Project is not clear, but breaks down the data into two categories -- those households with an interior water connection and those with a courtyard tap. Since no reference is made to the sale of water, and since the figures for interior connections and courtyard taps equal the total number served, it is assumed that the coverage figures include only those people directly served.

If this is the case, the total number of people served with safe water may be many more than indicated. Project figures contained in the Appraisal Report for the Third Water Project, however, indicate that the total number of people served from household connections is expected to be double that of those served directly by 1993.

There is a major discrepancy in estimates for rural water coverage. Whereas the World Bank Third Project Appraisal Report estimated only 10% coverage, the Decade estimates 20%, based on the Zairian National Water and Sanitation Action Committee Report of 1985. Since it is difficult to resolve this discrepancy, target and cost figures have been based on the average of the two figures, or 15%.

Estimates for 1980 coverage figures were obtained from the World Bank Staff Appraisal Report for the Zaire Second Water Supply Project, April 1982.

Targets and projections have been made separately. Targets refer to what government and international agencies have stated that they hope to achieve. Projections refer to likely future performance based on empirical evidence.

## Urban Water Supply

Urban water supply coverage increased from 1.7 million to 6.0 million for the period 1980-1985 and from 6.0 million to 7.4 million for the period 1985-1987. Although the percentage of the urban population with unsafe water is currently a significant 38%, that figure has been dramatically reduced from 79% in 1980. Thus, not only was coverage extended at a significant rate, but the rate of growth of coverage also increased, indicating a vigorous program.

This is consistent with the reputation of REGIDESO, the Urban Water Company of Zaire, as one of the best-run water institutions in Africa. According to the World Bank Staff Appraisal Report for the Third Water Project in Zaire, "between 1968 and 1987 [REGIDESO] has made large investments, totalling approximately \$300 million equivalent, mainly through Government grants and self-financing, and with the help of (international donors and development banks)... As a result, from 1968 to 1987, the number of urban centers served increased from 47 to 66, production capacity by 72%, distribution networks length by 300%, and quantity of water sold by 68%. The main beneficiaries of these investments have been the major towns: Kinshasa, Lubumbashi, Kanaga, Kisangani, Mbuji-Mayi, Likasi, Kamina, Mbandaka, and Matadi."

The percentage of the urban population served with private household connections has steadily increased from 20% in 1980 to 56% in 1987. The percentage of private connections of the total safe water distribution has increased slightly from 85% in 1980 to 90% in 1987, while the percentage of those served by public standpipes has decreased from 15 to 10%. This trend is certain to continue, since REGIDESO policy has been to decrease the number of standpipes built, while increasing the amount of water sold by "concessionaires" (individuals with private taps selling to neighbors at government controlled prices). The sector development policy, as stated in the Third Water Supply Project Appraisal Report, is "to cause REGIDESO to continue its present policy aiming at (a) making house connections accessible to as many people as possible through payments of said connections over four years; (b) limiting the number of public standpipes to about 1,500 with a very moderate increase of a few standpipes in the poor quarters of the new centers...."

## Rural Water Supply

As mentioned above, there are wide variations in coverage figures for rural water supply. However, if one takes the range presented, somewhere between 10 and 20% of the rural population has access to safe water. The World Bank Staff Appraisal Report for the Third Water Project indicates that "there are about 5,000 protected springs, 800 protected wells and boreholes, and 80 piped systems (mostly working by gravity)...." However, most of these systems are not working because of poor maintenance. SNHR (Societe Nationale de l'Hydraulique Rurale (the national agency responsible for rural water supply) is now implementing new rural boreholes at a pace of only about 200 per year.

## Urban Sanitation

The situation for urban sanitation is unclear. The World Bank Staff Appraisal Report for the Second Water Supply Project indicates that 600,000 urban inhabitants -- or 8% of the population -- is covered by sanitary facilities. The report for the third project indicates no change -- 600,000 inhabitants covered, but, because of an increase in urban population, they represent only 6% of the total. The Decade has no figures on urban sanitation for 1985. The Project Appraisal Report for the Third Water Project, indicates that of the 600,000 urban population covered, only 100,000 have sewer connections; the rest have individual sanitary systems, predominantly latrines. The reason for this is that there have been no investments in sewerage systems since Independence. The report goes on to say: "Most of the sewerage systems do not function. The most serious effects of the lack of adequate sewerage have generally been kept in check by low population density and permeable soil which enable the use of pit latrines and septic tanks and by the usual proximity of large, fast-flowing streams. However, there are potential health hazards where high density zones have grown up some distance from rivers, or where streams are small or polluted as in parts of Kinshasa and the cities in the southeastern region."

TABLE 3

WATER AND SANITATION COVERAGE FOR 1980, 1987, AND 1988  
AND TARGETS FOR 1990 AND 2000  
(in percents)

### ZAIRE

| YEAR        | WATER |       | SANITATION |       |
|-------------|-------|-------|------------|-------|
|             | URBAN | RURAL | URBAN      | RURAL |
| 1980<br>(1) | 21    | NA    | 8          | NA    |
| 1987<br>(2) | 62    | 10    | 5          | NA    |
| 1988        | 65    | 15    | 6          | 10    |
| 1990        | 70    | 35    | 40         | 35    |
| 2000<br>(3) | 70    | 35    | 40         | 35    |

- 1 World Bank, Staff Appraisal Report for the Second Water Project, Zaire
- 2 World Bank, Staff Appraisal Report for the Third Water Project, Zaire
- 3 Assumes no change in percentage coverage from 1990 to 2000.

## Rural Sanitation

The Decade estimates that 1.75 million people -- or 9% of the 1985 population -- are covered by rural sanitation. No figures were available either for 1987 or 1980 from the World Bank appraisal reports. The report for the third project, however, does state: "Excreta disposal in rural areas does not seem to be a major problem in the sector. The construction of appropriate sanitation facilities in rural areas (latrines) by the villagers themselves is sponsored by the Health Zones, which are semi-autonomous, decentralized parastatal entities essentially relying on NGOs for medical support and on donors for financing their operating costs. At present, 75 of the 306 Health Zones (into which Zaire has been subdivided) provide inter alia active technical support to villagers who build themselves their own sanitation facilities (latrines) at their own expense." This view is not shared by the World Bank/UNDP project officer responsible for Zaire low-cost sanitation, who states that rural sanitation is a serious problem in Zaire, and that the Health Zone system needs substantial assistance.

As mentioned above, targets and projections have been made on assumptions of rural and urban growth, both subject to variations in estimations.

Decade targets of 70% urban water supply coverage and 35% rural water supply coverage are those presented by the National Water and Sanitation Action Committee. The World Bank Third Project Staff Appraisal Report, however, notes that: "While [Zaire's] target of providing safe water for 70% of the urban population in 1990 is realistic, the target of providing safe water to 35% of the rural population appears to be over-optimistic in view of the present low level of service and the existing constraints on financial resources and limited absorption capacity for planning, design and implementation." The sanitation targets seem equally unrealistic given similar financial and institutional constraints affecting the responsible urban and rural institutions.

Table 3 summarizes percent coverage estimates from 1980 to the year 2000.

### 3. Decade/Sector Action Plan

According to a relatively recent WASH report (WASH Field Report No. 171), national planning is relatively new in Zaire. The first attempt at an overall national economic plan was the Mobutu plan which covered the period January 1981 - September 1983. Zaire's first five-year development plan was for the years 1986-1990.

Prior to 1984, the Government of Zaire had not attempted to prepare any national plan, urban or rural, for water supply and sanitation. Urban water supply planning, however, has been carried out for years by REGIDESO, the national urban water supply company.

In early 1981, the National Action Committee for Water and Sanitation (CNAEA -- Comite National de l'Hydraulique et de l'Assainissement) was created and given responsibility for all sector planning. CNAEA immediately set the current targets of 70% urban and 35% rural water coverage by the end of the Decade; however, these targets were not set in the context of a comprehensive sector plan.

The World Bank Staff Appraisal Report for the Third Water Project indicates that REGIDESO, in its capacity as Secretariat General of CNAEA, has been updating the sector strategy since 1985. A sector study, funded with Bank project preparation funds and carried out in collaboration with the National Sanitation Program and SNHR, was to be finalized in October 1988. A final sector strategy was completed in May 1988. Through this sector strategy and sector study, the government is reviewing its targets and estimates --particularly the 70% and 35% urban/rural water coverage

Although the Government of Zaire has not prepared a Decade action plan per se, REGIDESO has successfully planned for the urban water supply subsector and continues to do so.

The following selected key objectives of the proposed sector strategy have already been agreed to by CNAEA and are official government policy.

- ◆ To make house connections accessible to as many people as possible.
- ◆ To shift responsibility of rural water supply system operation and maintenance to villagers.
- ◆ To increase the role of private contractors, selected through international competitive bidding, in the construction of rural water supply systems.
- ◆ To fund rural water points (namely boreholes equipped with handpumps) exclusively through donors' grants, except for the handpumps (which represent only 5 to 10% of the total investment amount) which should be funded at least partly by the villagers themselves.
- ◆ To base the planning of sanitation systems (both sewerage and individual systems) on priority needs, making the best use of the know-how existing at REGIDESO for planning, design, research, financing, and implementation.
- ◆ To involve nongovernmental organizations in sector activities.
- ◆ To achieve full cost recovery for urban water supply systems through appropriate water tariffs.
- ◆ To recover at least the operation and maintenance costs of piped water systems of small urban, semi-rural, or rural centers.
- ◆ To motivate and sensitize rural populations to pay for operation and maintenance costs of water supply and sanitation systems and to carry out on-the-spot repairs or to hire mechanics living in the vicinity.

The sector strategy also lays out objectives for each sector agency.

The Urban Water Supply Company (REGIDESO)

- ◆ Rehabilitate water production and distribution networks, especially in the major cities and towns.
- ◆ Extend the piped water supply service to semi-rural centers which are priority development points for important surrounding rural areas, and increase the level and quality of service.
- ◆ Extend networks to increase urban water distribution, especially through house connections and neighborhood sales in order to lower the per capita investment costs and meet the consumers' ability to pay.

The Rural Water Supply Company (SNHR) (with the support of REGIDESO's planning and design sections)

- ◆ Implement regional packages of rural water supply systems through contractors.

The National Sanitation Program (PNA)

- ◆ Provide support to the sanitation program of Health Zones, especially in the large rural centers.

Financing remains the major constraint to urban water supply expansion -- a constraint attributed by the World Bank to the inadequacy of water tariffs which have not been adjusted to compensate for high inflation rates.

In rural water there are several serious constraints. First, SNHR is not yet considered a strong institution and has had difficulty in identifying and planning appropriate rural water projects, channeling donor funds, and selecting contractors. Operation and maintenance also continues to be a problem in rural water supply in Zaire, as in other countries. There are no obvious solutions, although village-level participation is considered to be key. Finally, financing is a major constraint to expanded rural water supply systems.

The sanitation sub-sector is particularly weak, with a demonstrably poor performance over the past decade. Given the low current coverage of urban sanitation and the substantial resources required, Decade goals are unlikely to be achieved. Institutionally, the sub-sector is in need of reform.

#### **4. Sector Administration**

Between independence (1960) and 1978, rural water supply was largely the responsibility of religious missions and non-governmental organizations. In 1978, the predecessor to SNHR (Societe Nationale de l'Hydraulique Rurale) was established, with support from UNICEF. In 1983, the SNHR was duly constituted and funded with government finances, as part of the Ministry of Agriculture and Rural Development. At the time of its establishment, SNHR prepared a list of projects for a five-year program expansion over the period 1983-1988. According to the World Bank Staff Appraisal Report for the Third Water Supply Project, a major problem facing SNHR is operational planning.

Sanitation responsibilities are divided between the Ministry of Public Health and the Ministry of the Environment. The PNA (National Sanitation Program) was created in 1981 to be responsible for planning, coordinating, executing and evaluating sanitation activities in both urban and rural areas. It is an interministerial agency reporting to the Ministry of the Environment. Its impact on urban areas, where it has direct responsibility, has been minimal. Operation and maintenance of sanitary sewerage systems in urban areas is the responsibility of the municipalities.

Whatever impact sanitation programs have had in the rural areas has been due to the activities of the Health Zones, operational units of the Department of Public Health, established in 1982 as part of Zaire's Primary Health Care program. Reports of success, as noted above, vary greatly. Planning for rural sanitation is apparently done at the local, Health Zone level or in the context of individual donor projects. It is not centrally coordinated by PNA.

REGIDESO, the national urban water supply company, was established in 1939. As stated above, it is considered a strong and well-managed institution and should be capable -- according to World Bank assessments -- of reaching urban water supply Decade targets.

#### **5. Water Sector Studies**

The Government of Zaire is finalizing a sector study which is expected by April 1989. The study, which was not available when this profile was prepared, was carried out with World Bank financial assistance.

#### **6. Past Investments in the Sector**

A recent World Bank study gives summary of loans and grants provided to REGIDESO for the urban water sector since 1976. The value of these projects in U.S. dollars is estimated to be \$300 million.

The National Water and Sanitation Committee states that between 1983 and 1985, a total of Z 40 million or US \$300,750 (exchange rates for February 1988 were \$1.00 = Z 133) was invested in rural water supply through SNHR. Of this, \$52,630 was from national sources and \$248,120 from USAID and UNICEF.

Since 1985, USAID has continued to invest (Basic Rural Health II and Shaba Refugee Water Supply) in rural water supply -- \$34.8 million. Basic Rural Health I, which began in 1981 and is not reported as completed, is valued at \$4.975 million.

Belgium has invested \$5.8 million in rural water supply (1986).

## 7. Proposed Investments in the Sector

Table 4 lists proposed projects for water supply and sanitation. Not included is a World Bank urban development project (1989 est.) which is likely to have a water and/or sanitation component.

Noteworthy is the increased attention given to rural water supply compared with projects since 1976.

Table 4  
WHO Country External Support Information  
Proposed Projects

|    | <u>External Support Agency/Govt.</u> | <u>Project Title</u>  | <u>Request Date</u> | <u>External Comp. 1000 US \$</u> |
|----|--------------------------------------|---|---------------------|----------------------------------|
| 1) | Govt. Request                        | Kivu Rural Water Supply/<br>UNICEF                                      | 3/85                | 350.0                            |
| 2) | Govt. Request                        | Equateur Rural Water Supply/<br>UNICEF                                  | 3/85                | 325.0                            |
| 3) | Govt. Request                        | Haut-Zaire Rural Water Supply<br>UNICEF                                 | 3/85                | 350.0                            |
| 4) | Govt. Request                        | Bas-Zaire, Bandundo and Kasai<br>Oriental Rural Water Supply/<br>UNICEF | 3/85                | 975.0                            |
| 5) | African DB                           | Water Supply to Bukavu,<br>Matadi and Mbandaka                          | 1985                | 37,738.1                         |
| 6) | African DF                           | Eight-Town Water Supply   | 1985                | 18,056.4                         |
| 7) | Germany/KFW                          | Kikwit et Bulungu - Phase II<br>Construction (Bulungu)                  | 4/87                | 8,784.0                          |
| 8) | WB/IDA                               | Water Supply Technical<br>Assistance                                    | 1987/1988           | 42,000.0                         |
|    |                                      |   | <b>TOTAL</b>        | <b>\$108,578.5</b>               |

The World Bank Staff Appraisal Report for the Third Water Project indicates REGIDESO's investment program for 1988-1992 for which the total amount is \$233 million (Z 31 billion) at 1987 constant prices. Although not stated specifically, it is assumed that this program covers Decade goals since it was developed within the context of the five-year plan, which in turn was based on the National Water and Sanitation Committee Decade Plan.

The total requested urban investment (from WHO County External Support Information data) expected to be received in the near term is \$106.6. Additional monies expected by REGIDESO as of May 1988 were FF 150 million (France), and U.S. \$5.5 million (UNDP).

The total requested rural investment (CESI) expected to be received in the 1988-1990 period is \$2.0 million; plus approximately half, or \$2.9 of Belgian money programmed from 1985 and half of USAID money, or \$17 million, also programmed from 1985 totals approximately \$22 million. According to the mid-Decade review it would cost \$42 million to reach the 1990 target. In other words, there is a projected shortfall of \$20 million. UNICEF also estimates a three-year cost of meeting Decade targets (1988-1990) at \$44.1 million. This estimate -- as part of a seven-year rural water supply development plan prepared by UNICEF in 1986 -- is detailed and thorough, costing labor, material, and management. The IDWSSD cost per capita for rural water supply construction in Zaire, however, is low -- \$8 -- far below the \$42 per capita average for all African countries.

## 8. Health Indicators

Table 5 gives information concerning key health, social, and economic indicators.

Table 5

### HEALTH WELFARE INDICATORS

#### ZAIRE

|                           | 1988 Data<br>PRB | 1987 Data<br>WDR  | 1987 Data<br>SAR III | 1980 Data<br>SAR II | 1985 Data<br>IDWSSD |
|---------------------------|------------------|-------------------|----------------------|---------------------|---------------------|
| Per Capita<br>GNP (US \$) | 160              | 160               | 170                  | 260                 | 271                 |
| Annual Rate<br>GNP Growth | N/A              | -2.2<br>(1985-86) | -1.1<br>(1971-80)    | N/A                 | N/A                 |
| Life Expectancy           | 51               | 52                | N/A                  | N/A                 | 50                  |
| Infant Mortality<br>Rate  | 103              | N/A               | 114                  | N/A                 | 106                 |

PBR = Population Reference Bureau

WDR = World Development Report 1988

SAR II = World Bank Staff Appraisal Report for the Second Water Project

SAR III = World Bank Staff Appraisal Report for the Third Water Project

## 9. Privatization

As can be seen from the discussion in Section 3, the sector will become increasingly privately operated. The number of public standpipes will be reduced and former standpipe water consumers will be served by private concessionaires -- individuals living on adjoining plots with private connections who will sell water to their neighbors.

In rural areas, responsibility for operation and maintenance will be shifted to villages, which will either do maintenance work themselves or engage private contractors. In addition, the role of private contractors will become more important in the construction of rural water supply systems.

## 10. Recommendations for USAID

In order to restructure the rural water supply and sanitation sector, the Government of Zaire will have to support the establishment of village-level operations and maintenance systems. This will mean the training of village technicians, the development of local private entrepreneurs, and the establishment of a system of spare parts sale. USAID can play an important role in setting up this system and providing the management organization within which it will operate.

Urban areas of Zaire are poorly served with sewerage and sanitation. In poor urban and peri-urban areas, it is unlikely that people will have access to sanitation before the year 2000. USAID could assist these urban dwellers by providing them with individual, low-cost sanitation.

Since REGIDESO is a well-run water utility, USAID could sponsor pilot projects to determine ways in which this water company can extend its services to the urban poor.

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