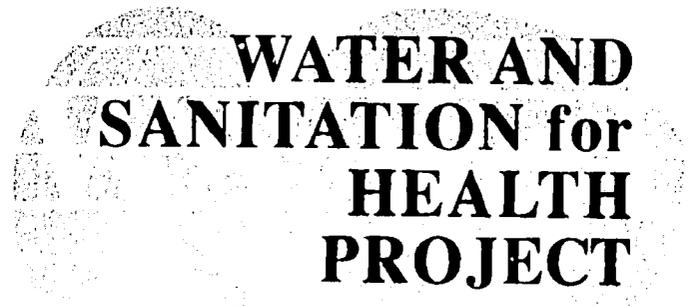


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SUSTAINABILITY ASSESSMENT FOR THE BENIN RURAL WATER SUPPLY AND SANITATION PROJECT

WASH Field Report No. 377
August 1992



Sponsored by the U.S. Agency for International Development
Operated by CDM and Associates

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**SUSTAINABILITY ASSESSMENT
FOR THE BENIN RURAL WATER SUPPLY
AND SANITATION PROJECT**

Prepared for the Office of Health,
Bureau for Research and Development
U.S. Agency for International Development
under WASH Task No. 377

by

Phil Roark
Deirdre LaPin
and
Elizabeth Kleemeier

August 1992

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RELATED WASH REPORTS

Final Evaluation of the Benin Rural Water Supply and Sanitation Project. WASH Field Report No. 349. March 1992. Prepared by James Chauvin, Suzanne Plopper, and Alan Malina.

Benin Rural Water and Sanitation Project Management and Supervision Workshop. WASH Field Report No. 280. November 1989. Prepared Thomas C. Leonhardt and Sarah Fry.

Benin Rural Water Supply and Sanitation Project Mid-term Evaluation. WASH Field Report No. 252. February 1989. Prepared by Philip Roark and Sarah Fry.

Benin Rural Water Supply and Sanitation Project Review Workshop. WASH Field Report No. 241. June 1988. Prepared by Graeme P. Frelick and Henry L. Jennings.

CONTENTS

| | |
|---|-----|
| ACRONYMS | v |
| ACKNOWLEDGMENTS | vii |
| ABOUT THE AUTHORS | vii |
| EXECUTIVE SUMMARY | ix |
| | |
| 1. INTRODUCTION | 1 |
| 1.1 Project Background | 1 |
| 1.2 Objective of Assignment | 2 |
| 1.3 Methodology | 2 |
| | |
| 2. DEFINITION OF SUSTAINABILITY | 5 |
| 2.1 Sustainability Issues | 5 |
| 2.2 Key Questions | 8 |
| | |
| 3. ANALYSIS OF PROJECT COMPONENTS | 13 |
| 3.1 Socio-Health | 13 |
| 3.1.1 Objectives | 13 |
| 3.1.2 Current Organization | 15 |
| 3.1.2.1 Project Organization | 15 |
| 3.1.2.2 National Health and Social Services Structures ... | 17 |
| 3.1.2.3 Recent Developments in Health Policy and Implementation | 21 |
| 3.1.3 Constraints on Sustainability | 22 |
| 3.1.3.1 Objective 1: Preserve CDSS Structure | 22 |
| 3.1.3.2 Objective 2: Improve or Maintain Personal Health Behaviors Related to WS&S | 23 |
| 3.1.3.3 Objective 3: Maintain or Increase Health Outcomes | 24 |
| 3.1.4 Interventions | 24 |
| 3.2 Latrine Demonstration and Maintenance | 26 |
| 3.2.1 Objectives | 26 |
| 3.2.2 Current Organization | 27 |
| 3.2.3 Constraints on Sustainability | 27 |
| 3.2.4 Interventions | 28 |

| | | |
|-------|---|----|
| 3.3 | Improved Water Supply | 28 |
| 3.3.1 | Objectives | 28 |
| 3.3.2 | Current Organization | 28 |
| 3.3.3 | Constraints on Sustainability | 30 |
| 3.3.4 | Interventions | 35 |
| 4. | OPTIONS | 37 |
| 4.1 | No Further A.I.D. Inputs | 37 |
| 4.2 | Continuation of Selected Project Activities | 38 |
| 4.2.1 | Peace Corps | 39 |
| 4.2.2 | Private Voluntary Organizations (PVOs) | 40 |
| 4.2.3 | UNICEF | 40 |
| 4.2.4 | Government of the Republic of Benin | 41 |
| 4.2.5 | PRAGMA | 41 |
| 4.2.6 | Illustrative Budget | 42 |
| 5. | CONCLUSIONS AND RECOMMENDATIONS | 43 |
| 5.1 | Conclusions | 43 |
| 5.2 | Recommendation | 44 |

APPENDICES

| | | |
|----|----------------------------|----|
| A. | Scope of Work | 45 |
| B. | Bibliography | 53 |
| C. | Persons Contacted | 57 |
| D. | Towns and Villages Visited | 61 |
| E. | Schedule | 63 |
| F. | Field Questionnaire | 65 |
| G. | Photos | 69 |

FIGURES

| | | |
|----|---|----|
| 1. | Alternative Paths of Benefit Stream | 6 |
| 2. | Actors and Activities during the Project Cycle | 7 |
| 3. | Organogram for Rural Water and Sanitation Project | 16 |
| 4. | Organization of the Ministry of Health | 18 |

5. Handpump Operation and Maintenance System in North Zou Department under the Benin Rural WS&S Project 29

6. Handpump Operation and Maintenance System: Structure Defined in the 1992 National Sector Strategy for Rural Water Supply 31

ACRONYMS

| | |
|---------------|---|
| A.I.D. | U.S. Agency for International Development |
| BI | Bamako Initiative (Health financing through a revolving drug fund) |
| CCS | Complexe Communal de Santé (Communal Health Center) |
| CDSS | Comité du Développement Socio-Sanitaire (Socio-Health Development Committee) |
| COGEC | Comité de Gestion à la Commune (Commune Management Committee) |
| COGES | Comité de Gestion à la Sous-Préfecture (Subprefect Management Committee) |
| CS-SP | Centre de Santé à la Sous-Préfecture (Health center at the level of subprefect) |
| DAS | Direction des Affaires Sociales, MTEAS |
| DPS | Direction de la Protection Sanitaire, MSP |
| DH | Direction de l'Hydraulique, MEMH |
| EP | Emergency Program |
| FCFA | West African franc (\$1 = CFA 270) |
| GRB | Government of the Republic of Benin |
| GWC | Guinea Worm Coordinator (at commune level) |
| GWD | Guinea worm disease |
| GWEP | Guinea Worm Eradication Program (UNICEF) |
| IDAB | International Development Bank |
| IEC | Information, Education, Communication |
| MEMH | Ministère de l'Energie, des Mines, et de l'Hydraulique |
| MSP | Ministère de la Santé Publique (Ministry of Public Health) |
| MTEAS | Ministère du Travail, de l'Emploi, et des Affaires Sociales (Ministry of Labor, Employment and Social Affairs) |
| PC | Peace Corps |
| PCV | Peace Corps Volunteer |

| | |
|-----------------|---|
| PDSS | Projet des Services de Santé (Health Services Project) |
| SAP | Structural Adjustment Program |
| SBEE | Société Béninoise d'Electricité et d'Eau |
| SDD | Social Dimensions of Development |
| UNICEF | United Nations Children's Fund |
| USAID | U.S. Agency for International Development (overseas mission) |
| UVS | Unité Villageoise de la Santé (Village Health Unit) |
| VIP | Ventilated improved pit (latrine) |
| WASH | Water and Sanitation for Health Project |
| WS&S | Water supply and sanitation |

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Many others too numerous to mention also contributed information to this report and our thanks are extended to them.

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EXECUTIVE SUMMARY

The Benin Rural Water Supply and Sanitation Project is scheduled for completion in September, 1992. During the past five years the project has successfully constructed wells and demonstration latrines; provided training to village health committees, government extension workers, and pump repairmen; and provided health education to over 500 villages in the North Zou region of Benin. In September, 1991, a final evaluation was completed of the project which raised issues of sustainability. As a result, the Water and Sanitation for Health Project (WASH) was requested by the U.S. Agency for International Development (USAID) mission to undertake a sustainability assessment. The assessment was carried out in Benin by a three-person team from May 14 to 31, 1992.

The primary objective of the assessment was to ascertain whether the project could be made sustainable with additional assistance and, if so, in what form should the assistance be provided. Several options were to be considered including the impact of no further USAID assistance.

Sustainability was defined as a post project condition whereby the benefits provided by the project are continued at some acceptable level for a long period of time. Key questions were provided to define "acceptable level" including the percentage of pumps operating and the activity level of the community health committees.

An analysis was completed of the three major project components—socio-health, latrine construction, and improved water supply. The analysis described constraints to the sustainability of benefits produced, and outlined possible interventions for removing or mitigating constraints.

For the socio-health component, three major actions are needed to assure sustainability—preserve the CDSS (community health committee) structure, improve or at least maintain personal health behaviors related to WS&S, and maintain or increase health outcomes especially by using Guinea worm disease incidence as a proxy indicator. The committees' role in collecting fees for pump maintenance and continuing the hygiene education messages is critical. The individual members of the community must realize and recognize that good hygiene provides improved health, especially in relation to Guinea worm disease. Continued work is needed by government extension agents to advise the communities on required activities and this will be greatly facilitated if agents at the commune level are involved.

The latrine construction component was meant to be a demonstration activity only. It was found that there is a significant interest in VIP latrines but primarily only the more affluent in larger villages are willing to pay the full costs of construction.

The improved water supply component was successful in drilling wells, installing pumps, and setting up a maintenance system that depends upon private sector actions driven by a market demand. The communities are responsible for managing their systems and paying all costs of operation and repair. Regional repairmen undertake repairs, parts are supplied by regional

distributors, and an importer has been contracted to bring spare parts into the country. While the system is well established, it is fragile, since each party is financially marginal and interdependent. Continued monitoring by government agents is needed to assure the systems operation.

Several options were outlined, including the relative benefits of each, that USAID may take in regard to the project. The options include:

1. No further A.I.D. inputs
2. New project managed by Peace Corps
3. New project managed by a private volunteer organization
4. New project managed by UNICEF
5. New project managed by GRB
6. New project managed by PRAGMA

The assessment team concluded that ending all project activities on September 30, 1992, as presently planned, would result in some reduction in project benefits. It is probable that some pumps would be allowed to fall into disrepair because of the failure of the Comité du Développement Socio-Sanitaire (CDSSs) to manage their water systems. If a few pumps fail there will be little effect except to the communities directly involved. However, in the worst case scenario, if more than 25 percent fail then the entire O&M system will be jeopardized because the spare parts suppliers and repairmen will lose interest due to the lack of a sufficient market. The market system depends on a critical mass for its continuation.

The assessment team believes that a continuation of the project for two years with significantly reduced project activities would increase the sustainability of benefits achieved to date. Because of A.I.D. rules setting a duration limit of 10 years (the project has already been extended beyond that date with great bureaucratic difficulty) a project extension is unfeasible. A new project is therefore recommended. The key components of an extension would be as follows:

- No further drilling of boreholes;
- No further construction of latrines;
- Continued reinforcement of CDSSs (for O&M and health education) but at gradually reduced inputs;
- Continued monitoring of the O&M system by the Hydraulic Service;
- Decentralized commune-level extension program and training for commune health center staff, community leaders, educators, and the newly established Guinea worm health educator and coordinator; and
- Advice added to the extension program on income generating activities.

The emphasis within a new project would be placed on consolidating gains already made in project villages rather than adding new communities with boreholes and latrines. The O&M system is vulnerable because it is based on a private sector market system only recently established and without alternatives if any of the key actors quit. Therefore, close monitoring is needed by the Hydraulic Service to provide support if needed. Decentralization to the commune level will provide more reliable and frequent support to CDSSs. The CDSSs have taken on new and challenging management responsibilities under the project and will appreciate continued reinforcement, especially when linked to future income generation. This last intervention, though an addition to the project design, holds the possibility of greatly enhancing sustainability of project gains. It will sustain the self-financing health centers and schools which, in the future, will provide information and reinforcement about health-seeking behaviors and pump maintenance.

The assessment team concluded and recommended the following.

1. Project benefits will be sustained if the rural economy grows and if all institutional structures—in place and foreseen—function as expected. However, as with most Beninese institutions and the national economy, the health sector—including water and sanitation—is presently on a marginal footing. The government and its donors have earmarked 1992-1993 for an “emergency program” in the social sector. Further support to ensure maintenance of benefits from the Benin Rural WS&S Project is warranted for this emergency transition period.
2. Although an amendment to the present project would be the least disruptive to activities, this option is administratively impossible; therefore, a new project is needed. Several possibilities have been considered for management responsibilities for the new project, while the need to minimize USAID/Cotonou’s management burden has been recognized.
3. In order to improve the probability that project benefits will be sustained, it is recommended that selected activities be continued under a new project for two years. Each management option being considered has specific advantages and disadvantages. However, the Peace Corps appears to be in the best position to manage the new project. It is important that a new project design be drafted as soon as possible to avoid any delays in continuing activities.

Chapter 1

INTRODUCTION

1.1 Project Background

The goal of the Benin Rural Water Supply and Sanitation Project, as stated in the 1985 Project Paper Amendment, is to “assist the Government of Benin to qualitatively improve the health and living conditions of the rural population.” More specifically, the project seeks to “assist the Benin government to improve the health practices of [the rural poor], and the adequacy and quality of water supply and sanitation facilities available to the rural poor in selected districts (North Zou) of central Benin.” To achieve this aim, the original project planning document called for:

- Drilling 225 positive boreholes equipped with handpumps
- Construction of 100 latrines
- Creation and training of village committees for self-management of the new water supply
- Organization of education campaigns related to health and to water and sanitation
- Reduction of Guinea worm incidence by 30 percent in the heavily infested project zone

The project, a joint effort among the U.S. Agency for International Development (USAID), the Government of the Republic of Benin (GRB), UNICEF, and the Peace Corps, is implemented through three GRB ministries. However, the Ministry of Mines, Energy, and Water Resources serves as the lead agency. Over the course of the project the construction targets changed, partly as a result of the recommendations from a midterm project evaluation (late 1988) and partly based on the outcomes of a workshop the following year. The third Project Amendment Agreement (1990) increased the target figures from 225 wells equipped with handpumps to 275, and from 100 latrines to 400.

The original project completion date was set at September 30, 1988, and was revised in the second Amendment (1985) to March 30, 1989. However, events beyond the control of project management delayed actual start-up until well after the Project Amendment had been signed. The first training for extension personnel occurred in late 1987, and drilling did not begin until early 1988. Third and fourth Amendments extended the completion date to September 30, 1992.

A final evaluation of the project was carried out in September 1991. The project achieved and, in several instances, surpassed the established targets. The project implemented an innovative and practical approach for community development and for the introduction of health and hygiene education messages. It was considered premature to expect a

demonstrable change in all behavior related to water and sanitation, although a limited survey carried out during the evaluation indicates that villagers have absorbed the health education messages and have begun to put this knowledge into practice in large measure.

The final evaluation made two primary recommendations: (1) the GRB should continue to deploy and support the activities of government personnel involved in project activities; and (2) USAID should give serious consideration to approving project extension to complete all activities and solidify sustainability.

1.2 Objective of Assignment

Considering the concerns raised by the final evaluation regarding sustainability of project benefits, USAID/Benin requested that WASH carry out an assessment of potential sustainability after disengagement of USAID and/or other donors (a complete Scope of Work is attached in Appendix A). The question is whether additional assistance beyond the current closing date of September 30, 1992, will make the project sustainable. The assessment addresses the following questions:

1. Can the project be made sustainable with additional assistance for another two to three years (at most) after September 30, 1992?
2. If so, what form of assistance should be provided?
 - a) Continue the project in its present form, or
 - b) Provide assistance for one or more aspects of the project and for which aspects?
3. For how long should the assistance be provided beyond September 30, and for what period should the assistance be provided at a constant or gradually diminishing level?
4. Should the assistance be provided by amending the present project, or should an entirely new project be started just for this purpose?

1.3 Methodology

The sustainability assessment was carried out in Benin by a three-person team from May 14 to 31, 1992. The team consisted of the following members:

| | |
|---------------------|---------------------------------------|
| Phil Roark | Team Leader and Project Design |
| Deirdre LaPin | Health Planning/Community Development |
| Elizabeth Kleemeier | Socio-Economics |

The methodological approach taken by the team was to review project documents, interview individuals from participating organizations, and contact persons from other organizations involved in related water and sanitation projects. Interviews were carried out at the national level in Cotonou, at the regional offices in Bohicon with project staff, and in the field. A two-day rapid assessment was undertaken in 15 randomly selected villages in the project zone. A

brief questionnaire was used to elicit responses from villagers, management committees, pump repair persons, latrine masons, and spare parts vendors. The results of the field study were consistent with those found by the final evaluation team. A meeting was also held with the Project National Coordinating Committee. A schedule of activities, people contacted, field questionnaire, and documents consulted are included in the Appendices.

Chapter 2

DEFINITION OF SUSTAINABILITY

2.1 Sustainability Issues

Sustainability is a concept that has received much attention in development circles in recent years. Several definitions have been advanced, usually depending on the development sector involved or whether an economic justification is required. In order to assure an understanding of the concept in water and sanitation projects a brief discussion is warranted.

It is helpful to begin with a description of the project cycle. A project may be described in terms of activities undertaken over time. Pre-project activities include design and project agreements based on prevailing conditions. After activities are begun outputs start to accrue. These may include, as in the Benin Rural Water Supply and Sanitation (WS&S) Project, constructing wells, building latrines, training field agents, establishing village water and health committees, and setting up a pump O&M system. These outputs form a symbiotic combination of facilities, trained personnel, and institutional structures. When used or employed effectively, these project outputs lead to benefits or impacts in the domains of health, socio-economics, and the environment. The goal of most WS&S projects, including the Benin Rural WS&S Project, is to improve the health of targeted populations. All benefits, as a matter of development philosophy, should be sustained.

One example of a health benefit would be the reduction in morbidity and mortality from diarrheal diseases through the provision of water, sanitation facilities, and health education. Benefits accrue over time as project activities provide wells and people consume uninfected water. At some point project inputs are terminated and three possible scenarios relating to sustainability in the post-project phase can be envisioned. Figure 1 shows the different benefit paths as measured over time within the project cycle. The ideal project would have its activities replicated, with benefits accruing (represented by line "a"). More often, there is a continuation of benefits, perhaps at a lower level (line "b"). In the extreme case, benefits fall below an acceptable norm, they are labeled "unsustained", and the project is considered a failure (line "c").

Critical to the concept of sustainability is the time of measurement after the project ends. Physical structures cannot be expected to provide benefits beyond their design life unless they are replaced. Generally, sustainability can only be realistically assessed several years after the project ends, so facilities, trained individuals, and institutions can be affected and thus tested by outside influences. In the present case, the assessment team must predict whether benefits will be sustained over a long period, which could conceivably be as long as 20 years for a pump, if maintained and repaired properly. It can be stated that benefits will accrue as long as the water and sanitation facilities are utilized in an effective manner.

Sustainability is thus defined as a post-project condition whereby the project benefits are continued at some acceptable level for a long period of time.

Figure 1

ALTERNATIVE PATHS OF BENEFIT STREAM

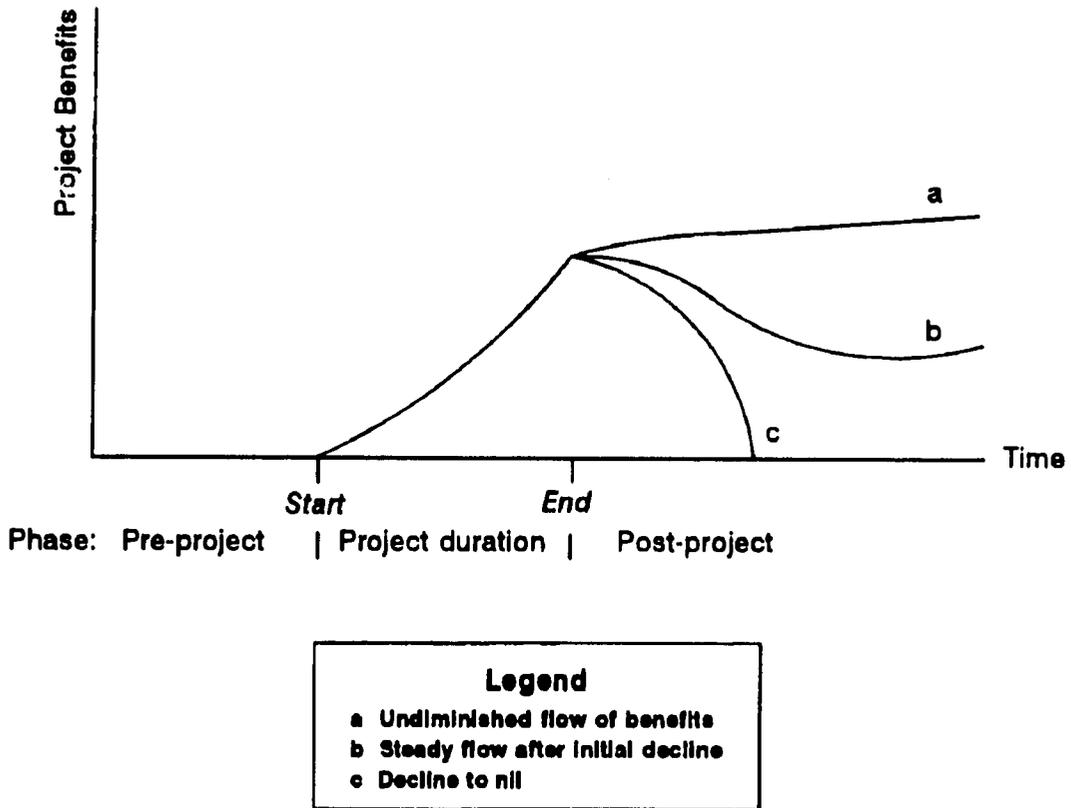


Figure 2 provides a diagram of actors and activities involved in a typical water and sanitation project over the three stages of a project cycle, pre-project, project, and post-project.

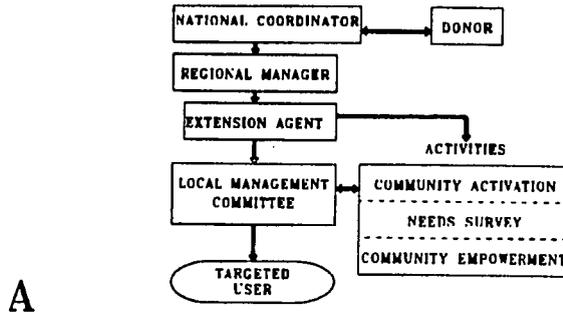
In the "project" stage the emphasis is on construction activities which produce facilities and training to enhance human resources. The establishment and development of local management committees to plan and oversee these activities is a key component. Hygiene education provides the targeted user populations with an enhanced awareness of the role that water and sanitation plays in health care. The users will then begin to realize health, social, economic, and other benefits. As the project nears completion, inputs are gradually removed and designated actors take over full responsibility. Most important is the responsibility for operation and maintenance. This includes provisions for financial autonomy and spare parts

Figure 2

ACTORS AND ACTIVITIES DURING THE PROJECT CYCLE

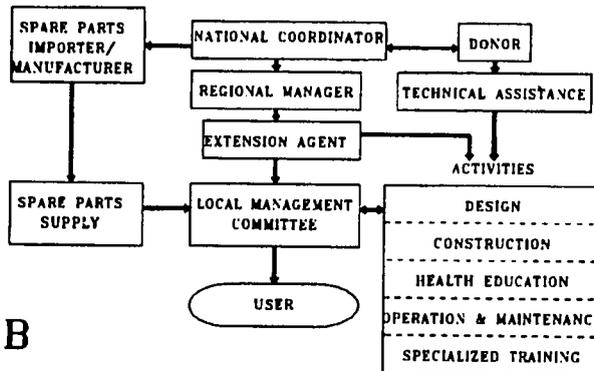
Actors and Activities During Project Cycle

PRE-PROJECT STAGE



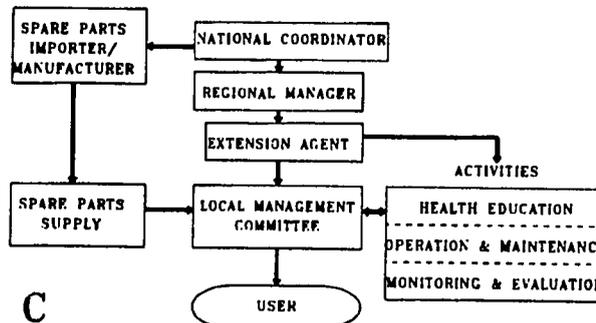
Actors and Activities During Project Cycle

PROJECT STAGE



Actors and Activities During Project Cycle

POST-PROJECT STAGE



procurement. Increasingly, the users are given full responsibility for financing, although some governments may choose to subsidize parts of key sectors as a matter of policy. Spare parts procurement often requires importation, although many countries are stressing local manufacturing of needed components. Distributors of equipment and parts are needed at locations convenient to the users.

The “post-project” stage occurs after donor inputs are removed and all responsibility is in the hands of designated host country actors. Facility users have the biggest stake in assuring the continuation of benefits and most of the responsibility rests with them. In some cases full ownership is ceded to the community. However, other inputs are still needed from the government to monitor the situation and provide assistance if required. Monitoring the status of people and facilities in the communities and advising the users on solutions to any problems that develop continues to be the role of the extension agent. In particular, the agent would monitor O&M practices, give periodic health education sessions, and continue to focus on local management committees.

To assure the sustainability of benefits provided by a typical WS&S project, the indicated actors and activities described in the last few paragraphs must be in place during the post-project phase. However, this alone may not be sufficient. In order to determine sufficiency, and thus, to judge the sustainability of a particular project, a number of key questions must be asked of the post-project actors related to their effectiveness.

2.2 Key Questions

Affirmative responses to the questions below would lead to a decision that the benefits provided by a specific project are being sustained. In reality, meeting the threshold values of questions one and two is the critical test, since they tend to integrate the responses of the remaining questions. Questions 3 to 7 serve to identify factors and conditions that contribute to the facility use and repair questions.

1. Is the majority of the population using the facilities?

An acceptable threshold value indicating a majority would be 50 percent of the targeted population.

It is unrealistic for various reasons to expect all of the targeted population to be using the facilities. Some social reasons include the inconvenient location of the water supply, unpalatable water, objectionable latrine odor, or not enough privacy, etc. Economic reasons include levied fees that are unaffordable. Design reasons include insufficient water supply resulting in long waiting times, a pump too difficult to operate by children, and latrines that are threatening for small children. While these factors are normally evaluated during project design, they are difficult to judge and subject to change.

Use of water supply facilities will also vary over the year depending on the availability of optional water sources. The 50 percent value is meant to be an average over the year.

It is understood that appropriate water and sanitation technologies will provide significant benefits when “properly used,” but there are varying degrees of “proper use.” For example, potable water supplied at the well may be degraded if it is not stored properly in the home. Any information related to the effective use of the facilities is valuable but usually difficult to obtain. The presumption is that if the facilities are being used, then they are being used in a manner that provides health benefits, and that if hygiene education is a part of the project, then health benefits are more assured.

2. Are the facilities mechanically operational?

At least 75 percent of the project WS&S systems should be in correct operational order at any given time.

The operational threshold value is somewhat higher than the majority use value because the system of maintenance and repair is dependent upon a set of conditions and circumstances that is more rigidly defined, and consequently easier to carry out than predicting consumer use. All mechanical systems will eventually wear out, need repair, replacement and therefore undergo inoperable periods.

In order for the systems to be operational three components must be in place. First, a qualified repair person; second, a supplier of spare parts; and third, an adequate and accessible fund designated to paying for the first two.

While the operational components are easy to delineate, the motivation for assuring that they are carried out is dependent on the demand for facilities use which varies as described in Key Question #1 above, and which in turn influences willingness to pay for spare parts and services. However, even an enthusiastic demand and a relatively high willingness to pay cannot offset costs that are beyond a user's ability to pay, or compensate for a lack of spare parts because of import restrictions.

3. Are management committees functioning?

At least 75 percent of all management committees should be meeting and carrying out agreed upon tasks.

The management committees should be carrying out their duties of arranging required activities including O&M, financial accounting, monitoring, and evaluation. The most important activity is to assure adequate funding for O&M and to provide overall leadership to keep the community involved in WS&S activities. Some committees are expected to expand their work

into other areas such as agriculture or education, which should be seen as a particularly strong indicator.

4. Are extension agents meeting with committees on a regular basis to facilitate ongoing activities?

Extension agents should meet with each community at least twice a year to provide support for ongoing activities, to assist in solving community problems and/or to provide information on new developments related to the sector. Ideally, they will continue to reinforce lessons about hygiene and the relation of water and sanitation to good health.

Visits to villages are primarily dependent on a proactive program of extension activities and the availability of transportation for the agents.

5. Are there trained repair persons in place and local supplies of spare parts?

Repair persons may come from the government or private sector. If private, they will need an assured market for their services and be paid an acceptable rate. Government repair people will need an adequate budget and reliable transportation. Spare parts may also be provided by either the public or private sector but must be located conveniently to the users.

6. Is there a government individual or office that is responsible for overall national management within the WS&S sector?

Someone must accept and, more importantly, carry out the responsibility for overall planning, management, and coordination for the sector, as well as provide regional oversight for the project area. It may involve several ministries and require coordination between ministries, such as health and water. This individual should be recognized within the sector as having clear responsibility for these duties and also, of course, must have an adequate budget to carry out these responsibilities.

7. Is there a national importer or manufacturer of spare parts in place and operational?

At least one importer is necessary for spare parts, unless there is a manufacturing capability in-country. The importer may be either the government, a private company, or a company under contract to the government. There must also be a system for distributing the spare parts to the regional sites of need.

In response to the questions raised herein, it is clear that at the time of this writing (four months before the project closing date), the answers are affirmative. The project benefits are sustainable. This conclusion is based on present conditions as determined by the assessment team. However, as stated earlier, the analysis of sustainability requires a view which considers the long term, that is, 5 to 10 years or more.

Chapter Three provides a more detailed analysis of the primary project components: socio-health, sanitation, and improved water supply. Each component is divided into sections that address component objectives, current organization, constraints on sustainability, and interventions needed to remove these constraints.

Chapter 3

ANALYSIS OF PROJECT COMPONENTS

3.1 Socio-Health

3.1.1 Objectives

The socio-health component of the Benin Rural WS&S Project uses a dual strategy to meet the project objective of improved health and living conditions for the rural poor. First, it encourages adoption of behaviors that enhance the health benefits of a clean water supply; second, it imparts the organizational and financial management skills needed to own and maintain a handpump. However, the project's educational activities combine health and management strategies under the assumption that those aware of the health benefits associated with a safe water supply are more motivated to sustain the source of clean water and to use it in greater quantities.

More than 144 peer-reviewed studies have documented the health benefits of water supply and sanitation to developing-country populations (Esrey et al., 1990). A summary of results shows that in children under age five, appropriate WS&S interventions lead to a median reduction of 22 percent in diarrheal disease morbidity and a 65 percent reduction in mortality. Similar data for ascariasis shows a median morbidity reduction of 28 percent. Incidence of the debilitating Guinea worm disease (GWD) falls by a median of 76 percent.

Benin's overall mortality rate for children in the same age group is estimated at 220 per 1,000, but the rate in rural areas like those served by the Benin Rural WS&S Project (265 per 1,000) is classified as "very high" (UNICEF, 1991). Apart from incidence of GWD, data on disease-specific morbidity and mortality are difficult to obtain for North Zou, owing to an irregular, passive reporting system for health statistics. Good estimates for the country, however, suggest water-related diseases account for nearly half of all cases treated in health centers (DANIDA, 1991). Again, over half of these reported cases concern diseases having high fatality rates (e.g. diarrhea, ascariasis, malaria), especially in young children. In the absence of reliable statistics, it is difficult to estimate overall reductions in mortality or morbidity in the project area that may be attributed to WS&S interventions; however, epidemiological surveillance for GWD recorded in mid-1990 showed a 75 percent reduction in communities having both water supply and health education (Chauvin, et al., 1991; Yellot, 1990; GRB/UNICEF, 1990). In the past two years these gains have been extended (UNICEF epidemiological reports). Guinea worm is an easily measurable indicator for estimating the total health impact of the WS&S project activities.

In addition to measures of project results, a number of institutional outputs were also targeted to support the socio-health component. They include: (1) training six subprefect-level health/hygiene education extension teams in social mobilization and village health campaigns; (2) creating a functional Comité du Développement Socio-Sanitaire (CDSS) in all 524

participating villages; (3) ensuring effective cooperation between the CDSSs and the extension teams; (4) inviting collaboration of all other extension services (e.g., adult literacy, rural development), in the activities of the project extension teams; (5) conducting six health education and pump maintenance campaigns; and (6) upgrading skills of all supervisory personnel, including the national project coordinator and three supervisory staff. The present sustainability assessment team concurs with the conclusion of the final evaluation that these institutional output objectives were achieved. In addition, the team notes the high quality of national supervisory staff and of the epidemiological surveillance for GWD currently supported in association with Guinea worm eradication program (GWEP) *animateurs*.

Health/hygiene promoting behaviors indicate a second set of project outputs, in this case, bearing on the individual. Project training materials and flipcharts target such behaviors through six themes: clean water, the danger of fecal material, village hygiene, use and maintenance of latrines, Guinea worm disease, and the roles and responsibilities of the CDSS (this last flipchart is still in press). Examples of these targeted behaviors are grouped below with their related outputs:

1. *Maintaining water safety during collection and storage*: covering storage vessels, contamination from dippers, using clean collection pans, etc.
2. *Filtering water against Guinea worm*: purchasing or accepting filters free of charge, carrying filters to the farm, using filters on household water pots, etc.
3. *Maintaining village hygiene*: building latrines, keeping latrines clean, burying stools, disposing of refuse, etc.
4. *Practicing personal hygiene*: using sufficient amounts of water and soap for bathing, handwashing, dishwashing, laundry, etc.
5. *Drinking well water exclusively*: limiting deterrents (e.g., selling water, locking or not repairing pumps), carrying water when traveling, avoiding other water sources wherever possible, etc.

Such health/hygiene behaviors have thus far not been formally assessed by means of an appropriate observational study tool. The previous evaluation team was able to reach provisional conclusions about these qualitative targets by conducting an interview survey. Also, the present sustainability assessment team made a rapid assessment in 15 towns and villages using a specific-purpose field observation and interview schedule. Informal results from this rapid assessment of May 21-22, together with comments from experienced project staff, suggest that *knowledge* of health/hygiene promoting behaviors is indeed very widespread. *Attitudes* toward most individual output objectives are positive overall, and such outcomes as reduction in GWD have served to convince beneficiaries of the practical validity of health education messages. *Practices* based on attitudes have also begun to take root and can be expected to gain broad currency. The project has been unusually successful in persuading the target population that safe water is linked to health. However, the sustainability assessment team concurs with the final evaluation conclusion that full attainment and sustaining of

qualitative targets, owing to their behavioral character, will require further reinforcement through repetition of health messages, demonstration of practices, and competent monitoring. Specific proposals for fully attaining and sustaining qualitative project gains are presented in section 3.1.4.

A final objective of the socio-health component is to enhance maintenance of the handpump. The sustainability assessment team was impressed by the viability of the CDSS as a pump management structure, even in migratory, multiethnic settlements in which collective decisionmaking is typically difficult. All pumps visited were functioning well, and all except one had been repaired at least once. Evolved systems of financial participation range from the annual *côtisation* (collection of fees) of 60,000 West African Francs (FCFA) initially required by the project and by national water policy, to a negligible user fee of 5 FCFA for a large basin and exemption for a small basin, allowing access to safe water by the financially destitute. With additional monitoring and encouragement in the short term, sustainability of the CDSS structure is likely.

3.1.2 Current Organization

3.1.2.1 Project Organization

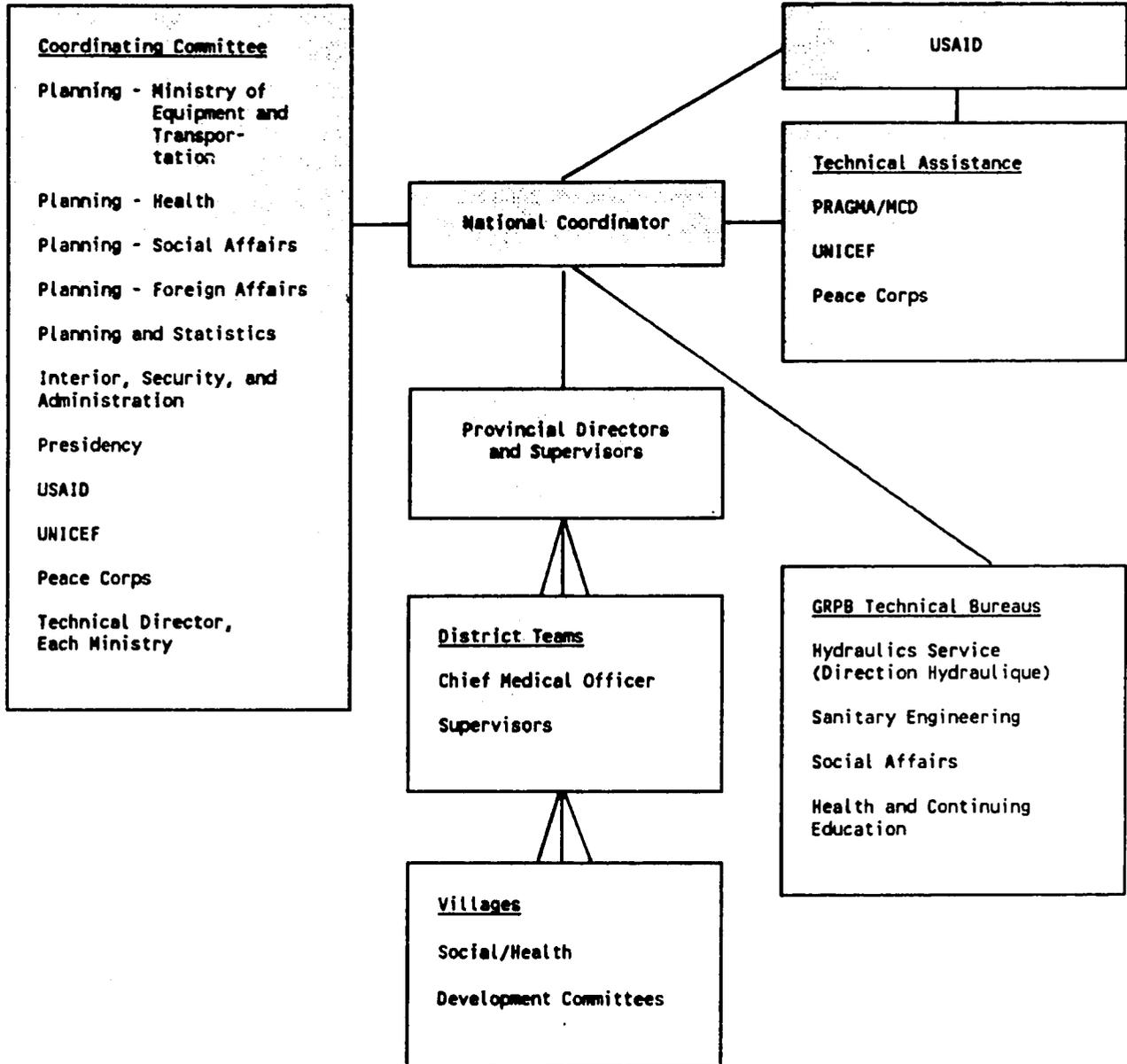
Key governmental actors in the socio-health component include the Direction des Affaires Sociales (DAS), especially the Service du Développement Social (MTEAS) and the Direction Nationale de la Protection Sanitaire (DPS), especially the Service de l'Information, Education, et Communication (MSP). For this component the role of the Direction de l'Hydraulique (DH) is to establish policy and provide monitoring for pump maintenance (see section 3.3).

Direction of the Benin Rural WS&S Project is entrusted to a National Project Coordinator from the DH. Until one year ago the coordinator was advised regularly by the National Project Coordinating Committee, composed of representatives from the ministries of Energy, Mines, and Water Supply (MEMH); Planning; Public Health; Labor, Employment, and Social Affairs; Foreign Affairs; the Presidency; USAID; the United Nations Children's Fund (UNICEF); and Peace Corps (PC) (see Figure 3 for organogram). Presently, the coordinator is assisted in Zou Department by a health education advisor (PRAGMA) and three full-time national technical supervisors, one each in Health Education, Social Affairs, and Sanitary Engineering.

The supervisory group supports six subprefect-level government extension teams, each initially composed of two health educators (60 percent time in project), two social affairs agents (60 percent), and two sanitation agents (100 percent). Their task is to create and support the CDSSs in the six health and sanitation themes mentioned earlier and train them in pump management and specific maintenance of latrines. Peace Corps Volunteers (PCVs) were also assigned to the subprefect level to assist with pump maintenance, latrine construction, and supervision. The Chief Medical Officer in each subprefect was originally entrusted with overall

Figure 3

**ORGANOGRAM FOR RURAL WATER AND SANITATION PROJECT
MINISTRY OF PUBLIC WORKS AND TRANSPORTATION**



supervision of subprefect extension teams. Because of an acute shortage of senior medical staff in the country, until mid-1991 this task was often done by a PCV.

Owing to attrition and reassignment, current extension teams consist of 1 to 5 persons, and the total number has been reduced to 22 from a possible 36. (Two team members who have been reassigned return regularly to work part-time on the project.) One PCV pump repair trainer also remains. Throughout most of the project period, the government honored its commitment to retain staff; however, uncertainties about the project's future, combined with staffing pressures inside the country, have led to some reassignment. Overall, the commitment and morale of remaining staff is high. For nearly a year the extension teams have carried out their tasks effectively with support from the national supervisory group, to which minimal external supervision has been added.

At present, extension teams have created and educated 524 CDSSs. In addition to the activities foreseen, the teams have supported CDSSs in such developmental initiatives as literacy education (27 project villages, with UNICEF support) and small income-generation.

3.1.2.2 National Health and Social Services Structures

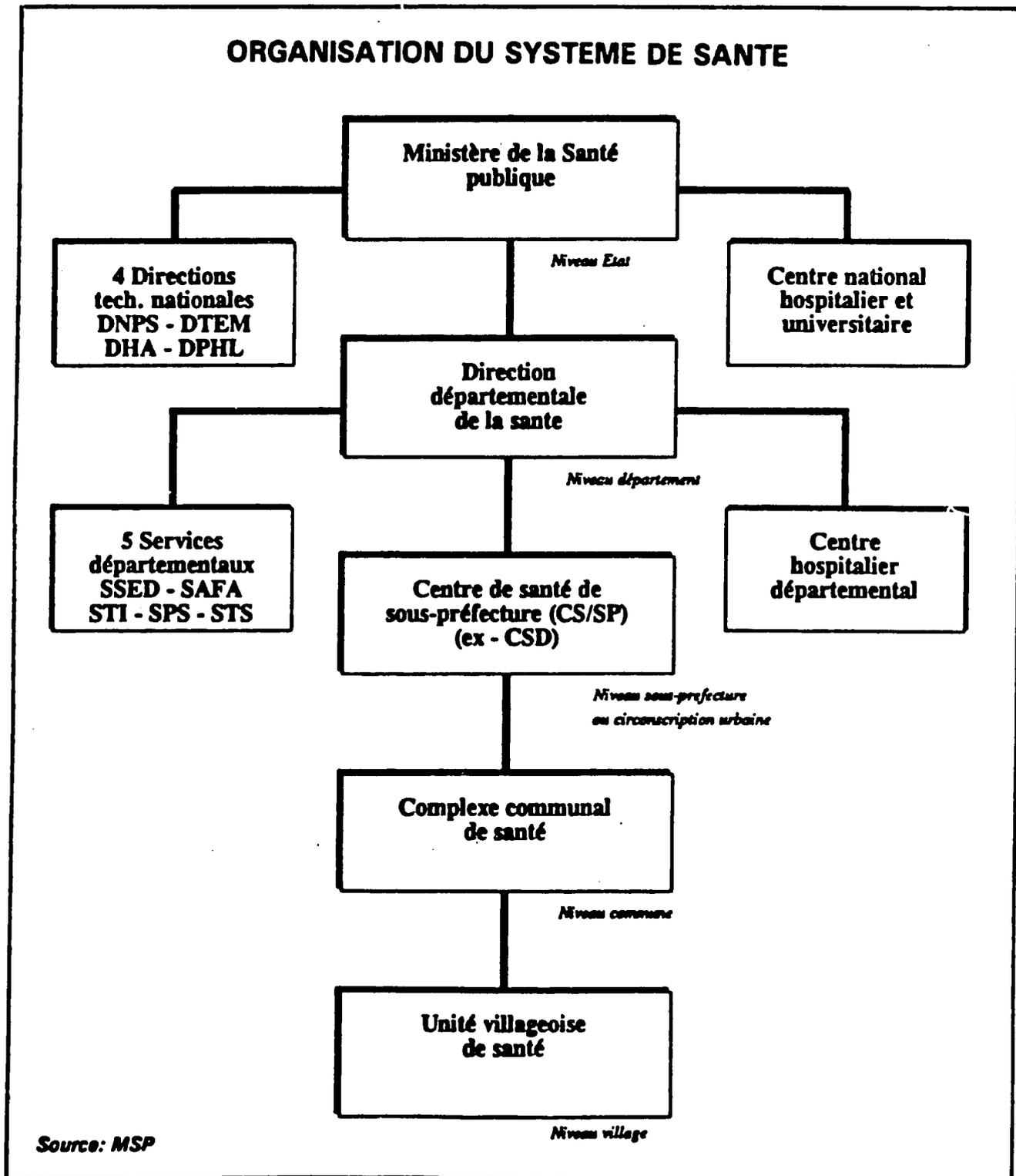
The Benin Rural WS&S Project organization rests upon and amplifies an existing national structure for health education and social affairs.

The Direction de la Protection Sanitaire (DPS) relies on a multitiered hierarchy. At department level the Health Director supervises medical and administrative staff including one or two health educators from the Information, Education and Communication Service (IEC, or health education) and one from sanitary engineering. In most departments each subprefect has a Centre de Santé de Sous-Préfecture (CS-SP), which ideally houses medical, surgical, and gynecological units, together with a laboratory and a pharmacy. Staff include the *médecin-chef*, one or two nurses competent in health education, and possibly a sanitation specialist. In each rural commune the Complexe Communal de Santé (CCS) is composed of a maternity, dispensary, and pharmacy and is in theory staffed by a nurse and a midwife. This key level of the health hierarchy suffered the worst effects of pre-1988 economic policies, and is gradually in the process of revival with concerted donor assistance. Finally, in a few villages one may find a functioning Unité Villageoise de Santé (UVS). A number of UVSs established in the past decade were rarely sustained owing to the weakness of the commune level. At present the project area in North Zou contains six CS-SPs, 39 CCSs in each rural commune, and an unknown number of UVSs (see Figure 4).

The Direction des Affaires Sociales (DAS) is the second national structure in the socio-health component. It supervises Centres de Promotion Sociale in each subprefect and metropolitan area. These centers organize health and educational activities focusing on the family. Their staff consists of an average of two agents who conduct outreach activities into rural areas.

Figure 4

ORGANIZATION OF THE MINISTRY OF PUBLIC HEALTH



At the close of 1990, the DAS described among its functions: the promotion of projects favoring community self-help, education of rural populations, and support to local NGOs (DAS, 1990). By 1991, the intimate connection between health and income was recognized and institutionalized. DAS inserted the MSP's IEC approach into activities leading to creation of local development and income-generating groupements. Furthermore, the DAS committed itself specifically to *participation active aux programmes suivants: ... Programme Eau/Assainissement/Environnement/ Ver de Guinée*, in other words, to the Benin Rural WS&S Project (DAS, 1991).

Because the project takes place during a time of national economic and political transition, it is influenced by policy changes in the macroeconomy and in the cooperating ministerial departments. Any anticipated benefits from these changes are likely to evolve gradually in rural social development over the next two years, and are therefore important intervening variables in evaluating the future sustainability of the project. For this reason, recent policy developments for the social sectors and their economic context are described below.

Structural Adjustment

During the 1980s Benin saw major declines in economic performance owing to mounting debt service, a fall in commodity prices for the major exports of cotton and oil palm, and a reduction in re-export trade. Corrective measures strained the banking system, which virtually collapsed in 1987. By 1988 the government concluded that profound economic changes were required, and a "classic" structural adjustment program (SAP) was begun with IDB and IMF support. Implementation of SAP I was dogged by a confluence of inherited weaknesses; by 1989 GDP dropped by 2.2 percent, and per capita incomes fell to their lowest levels in five years. SAP II was therefore initiated in 1990, aiming for sustainable recovery. Meanwhile, a movement toward democratization led to a major policy review in social and other sectors with democratic elections taking place in April 1991.

In addition to the standard economic reforms, SAP I and II have also envisaged a Social Action Program package intended to protect vulnerable groups from the harmful effects of structural adjustment over the short term. The protective program includes funds which may be accessed by communities and NGOs for microprojects and rural development. Additions to the original package have been proposed by other donors, notably the World Bank and UNDP in order to promote the Social Dimensions of Development (SDD). Meanwhile, a 1992-1993 Emergency Program (EP) has identified the health and education sectors for immediate intervention, owing to their profound deterioration and fragility in the current economic climate.

The Bamako Initiative

Beginning in 1986, the GRB accepted the principle of self-financing health centers through a revolving drug fund as national policy, in the context of the Expanded Program of Immunization. Benin was the first country in Africa to apply this approach to decentralized

financing in the health structure. By 1987, the idea was adopted by WHO, UNICEF, and the World Bank as a general health policy for Africa. Called the Bamako Initiative (BI), the system permits health centers to pay their own recurrent costs (and sometimes other costs) by supplying services which include the sale of low-cost generic drugs. A revolving drug fund is maintained and replenished through sales at a markup price determined by the market and by health center income requirements.

Under the aegis of a *Projet de Services de Santé* (PDSS), a central drug fund has been established in Cotonou in order to supply low-cost generic drugs to every health center. A mark-up on drugs ranging from 150 to 300 percent enables the health center to finance recurrent costs including fuel for vaccine transport, storage, and outreach; nonsalaried staff; maintenance; and utilities. The fund is managed by a *Comité de Gestion* known at the commune level as COGEC and in the subprefect as COGES. Most participating centers have currently or formerly been given an initial stock of drugs by a donor, for example, in Zou the Swiss (Ouessé, Glazoué), Germans (Savalou, Banté), and UNICEF (Savé, Dassa).

A recent attempt has been made to standardize drug management policy and to establish a mechanism for redistributing a portion of receipts in departments having health centers with widely varying levels of returns (PMSBS, 1992a,b,c; MSP, 1992). Constraints of the program include inadequate revenue and a greatly increased workload for staff. Benefits include a regular supply of drugs, higher quality services, and greater access and utilization of preventive and curative health care. One indicator of workability is the relatively stable vaccination coverage. In 1990, when nearly all recurrent costs were donor-funded, the total immunization of children under age two was 75 percent. In 1991, with self-financing in force, coverage only fell to 65 to 70 percent.

The Bamako Initiative has brought about a remarkable growth of primary care institutions in the last six years, especially at the commune level. Because the sustainability of rural health centers depends on providing quality services and a constant inflow of user fees, the protection of rural incomes is an implicit requirement for the success of the policy.

Information, Education, Communication (IEC) Policy

A new national IEC policy calls for establishing a *Service de Promotion de l'IEC* at each CS-SP and IEC commissions at the commune and village levels. Schools will be included as a principal channel of health education (MSP, 1991). These structures, aiming chiefly at the promotion of preventive health, would theoretically serve as key channels for the communication of health messages to rural populations.

3.1.2.3 Recent Developments in Health Policy and Implementation

In the health sector, immediate effects of the SAP include a reduction in civil service staffing, greater reliance upon user fees for key social services, and increased decentralization of health services. The sector has responded to these measures in five ways that are relevant to the future sustainability of the Benin WS&S Project:

1. The Bamako Initiative, which finances decentralized health services through a revolving drug fund, uniformly applies the principles of self-financing to the management of the CS-SP and CCS.
2. Improvements to infrastructure and access to services are now focused on the CCS, a health center that directly serves the rural population (80 percent of national). A total of 80 CCSs are earmarked for rehabilitation in the SDD, with at least 23 in the short-term. Four are located in the project area.
3. Staffing levels have been frozen. Necessary but nonsalaried personnel in health centers must be paid from health service receipts.
4. Less expensive, preventive health care services are emphasized through increased IEC support (health education).
5. Encouragement will be given to income-generating schemes among the rural population in order to increase disposable income available for health services. The MSP has in some instances made funds available to villages for this purpose.

Each of the five measures mentioned above is in some sense experimental and evolutionary. All are interdependent and aim at medium- and long-range goals of sustained prevention, decentralization, self-management, and self-financing in the health sector. The Donor Round Table held in Geneva in April 1992 recognized that at present the health sector must continue to rely on donor support through EP and SDD measures in order to successfully implement health policy reform.

To summarize, the Benin Rural WS&S Project's current organization conforms to national organization and policy. In order to build its capacity, the Benin Rural WS&S has provided the following support: (1) assignment of one national project coordinator and three supervisors; (2) addition to each subprefect of two full-time sanitation agents not included in the government staffing plan; (3) construction of project headquarters adjacent to the DH in Bohicon; (4) provision of motorbikes to extension teams; (5) payment of recurrent costs (fuel, utilities, etc.); (6) payment of small motivation fees to extension teams for CDSS creation and health campaigns; (7) payment of per diems to participants who travel away from home for training; (8) creation of health education materials, now available from a local printer at modest cost; and (9) provision of technical assistance. In the post-project period, during which only recurrent costs are considered, many expenditures will be borne in the medium- to long-range by self-financing mechanisms.

It is important to observe that project organization, as designed in 1985, did not take into account the *commune* administrative level, owing to its extreme weakness at that time. In the intervening years commune-level health centers have benefited from significant new inputs and have now become an important source of support for rural communities.

3.1.3 Constraints on Sustainability

As stated, the objectives of a post-project phase for the socio-health component, will be to (1) preserve the CDSS structure; (2) improve or at least maintain personal health behaviors related to WS&S; and (3) maintain or increase health outcomes, using GWD incidence as a proxy indicator. Constraints to the realization of each objective are considered below. For each, short-term solutions are suggested which call for action over the next two years. Longer-term solutions will come into play when benefits of new self-financing and rural development policies begin to be felt in rural areas.

3.1.3.1 Objective 1: Preserve CDSS Structure

Absence of External Support

The final evaluation of the Benin Rural WS&S Project questioned project replicability and sustainability because of the intensive effort (30 visits) required to create and educate the village level CDSS. Granting the limitations for *replicability*, that is, continued creation and education of new CDSSs, the sustainability assessment team has drawn the opposite conclusion in connection with the *sustainability* of project benefits.

- Short-term solution—It is precisely this solid foundation of functioning, self-managing and self-financing committees that will serve to undergird future health-seeking behaviors.
- Longer-term solution—With the government's emphasis on community-level self-help, these committees have become in recent years the focus of numerous additional interventions in the areas of literacy, Guinea worm eradication, and income-generation. Thus, they are objects of continuous support beyond project objectives.

Absence of Internal Support

Ethnic divisions, attrition of membership, absence of cooperation from the community, and failure of financial management systems are all potential threats to CDSS cohesion.

- Short-term solution—It would appear that the will to sustain the CDSS has been driven thus far by belief in its capacity to finance and maintain the handpump and by an awareness of its potential to further health and other goals which promote individual and community well-being.

- Longer-term solution—The future of the CDSS will therefore depend on a dynamic interplay between granting the committee a recognized function and maintaining its capacity to fulfill that function.

3.1.3.2 Objective 2: Improve or Maintain Personal Health Behaviors Related to WS&S

This objective is the most fragile in the post-project phase because its success depends on a continuous flow of information about the relation of safe water and good health to hygiene practices, education in new values and beliefs, and the creation of opportunities for communication.

Lack of information

The project has developed health education flipcharts with pictures to send basic health education messages. However, these messages may become inaccessible if they are damaged, lost, or otherwise removed from general use.

- Short-and Long-term solution—The project has made educational flipcharts freely available to the public or other projects by arranging with a local printer to sell copies at a modest price of about 3,000 FCFA each. Therefore, price remains the only constraint to obtaining additional or replacement copies.

Continuing education

The project also developed training materials which can be reproduced in the public domain. Twenty-five trainers currently work at the department and subprefect levels. However, because the commune-level health staff and local schoolmasters have not received training thus far, important opportunities for educating the village population are missed. This constraint will be felt most when donor support for training and travel ceases for subprefect extension teams.

- Short-term solution—Training health and education staff at the commune level, together with local opinion leaders (e.g., key members of the COGEC), will increase the number of trainers. Another important channel for continuing education will come about at the end of 1992, when Guinea worm coordinators (GWC) in each commune begin outreach and health education for villagers. This essentially volunteer staff will be supported by a combined UNICEF and PC/GWEP effort, which will continue through 1995, at least.
- Longer-term solution—The range of educational channels and the number of children in school can be expected to increase in response to the Emergency Program (EP) and Social Dimensions of Development's emphasis on education. Moreover, a UNICEF project in health education for schools, social centers, and literacy groups will cover the entire project area by the close of 1993. Finally, as the CCS structure grows

stronger through self-financing and other benefits of the EP, staffing and income levels are likely to improve and thereby increase opportunities for health education.

Opportunities for communication

Distance from the target population is a key constraint.

- Short-term solution—Continued visits to village sites by subprefect-level extension teams will be necessary. As commune-level health staff and GWCs become trained in WS&S health messages, they will routinely carry this new information during their regular monthly visits to villages for immunization, GWD surveillance, and other observations. (Each GWC will have a bicycle provided by UNICEF.)
- Longer-term solution—In addition to the immunization outreach, more villagers will be drawn to the improved CCSs because of their expanded services of higher quality. Thus, a larger clientele increases the number of possible communication contacts.

3.1.3.3 Objective 3: Maintain or Increase Health Outcomes

GWD surveillance data have demonstrated the relationship between improved health outcomes and a combined strategy of safe water and health education. Villages benefiting from a combined strategy saw a 75 percent reduction in GWD incidence. At the same time, villages receiving only safe water saw a 35 percent reduction, and those receiving health education and no water supply a 26 percent reduction. The constraint in maintaining or increasing health outcomes would therefore be the failure to achieve the two preceding objectives, that is, (1) preservation of the CDSS in order to ensure pump maintenance and clean water supply and (2) reinforcement of health-seeking behaviors through health education and monitoring.

- Short and longer-term solution—Achieve Objectives 1 and 2. Monitor any gains through GWD surveillance and other health information system structures.

3.1.4 Interventions

Constraints to sustainability of gains from the socio-health component of the project *in the short-term* may be summarized through the following hierarchy:

- At the top is the weakness of the macro-economy, which is currently undergoing reform through increased emphasis on private participation at all levels.
- Underlying this constraint is (a) the current weakness of the social sector and limited opportunities for IEC by subprefect-level health and social affairs staff; (b) the minimal association of schoolmasters in underfinanced schools; and (c) the wholly voluntary

nature of the CDSS structure, which must have a clear purpose or role (e.g., pump maintenance) in order to survive.

- Undergirding these constraints are limited health center staffing and financing, low school enrollment (less than 65 percent), and low levels of rural development.
- This entire structure is ultimately constrained by low income levels of rural populations which limit user fee payments in health centers and schools and, also, investment in rural development schemes.

The ultimate solution to the *long-term* sustainability of project benefits, then, is to increase personal income together with personal health, well-being, and productivity. In addition to its original objectives, the CDSS structure is an ideal mechanism for this purpose, and it may be organized to tap sources of rural development funds now available through the structural adjustment plan. It is therefore proposed that one additional input of the post-project phase to the Benin Rural WS&S Project be the inclusion of information and methods for tapping existing sources of funds for income-generating projects in rural communities.

A package of very simple, low-cost interventions is proposed for the next two years. These activities will overcome the short-term constraints to sustainability of project gains during a period designated by government and donors for “emergency” intervention in the health and social sectors. They will also lead to the long-term preservation of gains in safe water supply, improved health-seeking behaviors, and positive health outcomes.

Proposed interventions will include the following:

- *Decentralize health education and project monitoring to the commune level*
Train health education teams at each of the 39 rural communes in the project area using 25 existing project trainers and health education materials. Add themes on income generation. The team will be comprised of maximum 5 persons, including health staff (1 or 2 persons), schoolmasters (1 or 2), the GWC, and leaders selected by the community.
- *Continue extension team outreach throughout decentralization process*
Carry out routine monitoring and health education activities among the existing CDSSs or until the commune level monitoring teams have been trained. Monitor the work of the commune teams and take any corrective measures needed.
- *Maintain project staff, office, and other infrastructure*
The Bohicon office, vehicles, and equipment should remain in the project. Government should agree not to transfer project staff from the project area until completion.

- ***Oversight and evaluation***

A person or entity should be given responsibility for project management. Technical assistance should be provided by short-term consultants for an income-generation module and observational studies of health-seeking behaviors.

At the close of the two-year project period, sustainability of project benefits for the socio-health component can be expected to be supported by the following ongoing and self-supporting structures, by then in place:

- A decentralized commune-level education and monitoring team;
- Strengthened CCS and CS-SP through the self-financing and self-monitoring structures COGEC and COGES;
- Guinea worm coordinators equipped with bicycles in all 39 communes;
- Income-generating projects to increase rural income and offer additional support to the CDSS;
- GWD surveillance as a key indicator of health benefits;
- Strengthened infrastructures in four CCSs and rural schools which will increase school enrollments and health clientele; and
- Health education activities through the UNICEF health education project and IEC efforts in health and social affairs.

3.2 Latrine Demonstration and Maintenance

3.2.1 Objectives

In most water supply and sanitation projects, the objective of the family latrine component would be the construction by families of acceptable latrines (the type demonstrated in the project) by a certain percentage of the target population. This aim might be coupled with raising the level of latrinization in general, regardless of the type of latrine constructed, and creating a sustainable capacity to construct the new type of latrines. The objective of the school latrine program would usually be to strengthen hygiene education in the schools.

However, in this project, the final evaluation states that the objective for the family latrine component was “to demonstrate the technology.” The stated objective for the school latrines was “improving sanitary conditions and passing hygiene messages to the beneficiary populations” (WASH, 1992, p.31).

This departure from the more typical set of objectives changes the issues of sustainability as well. For instance, whereas one would otherwise examine constraints on people’s adoption

of the new technology, and on masons' constructing the latrines on a profit-making basis, such issues appear not to be relevant to this project. The upshot is that there is actually very little to examine in regard to the sustainability of the latrine component; it becomes merely a question of whether the latrines built are being maintained.

The Benin Rural WS&S Project financed the construction of 109 ventilated improved pit (VIP) latrines at primary schools, 154 family VIP latrines, and 113 improved traditional latrines for families. The last type of latrine proved to be a failure, though, and the project in fact stopped promoting it. One of the reasons was that North Zou has unstable soil, and the minimal reinforcement used for the pits in these improved traditional latrines was not sufficient to prevent cave-ins.

3.2.2 Current Organization

Latrine construction has been completed. Maintenance is now the responsibility of the families and schools.

3.2.3 Constraints on Sustainability

The sustainability assessment team's observations regarding the upkeep of the structures coincides with those of the final evaluation team:

Team members visited latrines of all types; all appeared to be in regular use, generally clean, and of sound construction (with the previously noted exception of the...traditional latrines) (WASH, 1992, p.33).

However, the project staff took special care to show the team examples of problems with latrine maintenance. These can be summarized as follows:

- Some families have not yet completed the superstructure, saying they do not have the money to buy the materials which they initially promised to supply. Project staff have tried to convince them to build a less expensive, traditional type of structure, but the families prefer to wait until they can afford the more prestigious concrete blocks.
- Not all schools had water and soap for handwashing next to the latrines.
- In villages where there are no family latrine programs, villagers use and dirty the school latrine. The problem is that villagers who contributed to the construction of the latrines feel they have a right to use them.
- A long-range problem will be single pit family latrines that fill up.
- Finally, one important problem was the expense of the single pit VIP latrine, totaling approximately 45,000 FCFA or more per family.

3.2.4 Interventions

The project accomplished its aim of demonstrating latrine models and their value. However, the high costs of VIP models made latrines an uninteresting proposition to most Zou inhabitants.

Since there is no major problem with the use and maintenance of latrines constructed under the program, the team advises no further interventions. However, they recommend that in closing down this component by September 30, a way will be found to give masons (trained by the project) access to molds for making the slabs essential to the primary school type of latrine. There is some demand for these latrines from well-to-do families.

3.3 Improved Water Supply

3.3.1 Objectives

The objective of the water supply component of the Benin Rural WS&S Project was to construct water wells equipped with handpumps and, in conjunction with the socio-health component, establish a CDSS management responsibility and system of operation and maintenance for pumps.

The project installed 309 handpumps in the six sub-prefects of North Zou, and established a handpump O&M system to serve over 580 handpumps in this area. It appears that handpumps have improved the health of communities receiving them. To sustain this investment in functioning handpumps and gains in terms of improved health, the pumps must *inter alia* continue to be repaired as they break down. This section describes the (1) handpump O&M system, (2) threats to its sustainability, and (3) interventions which could diminish some of these threats.

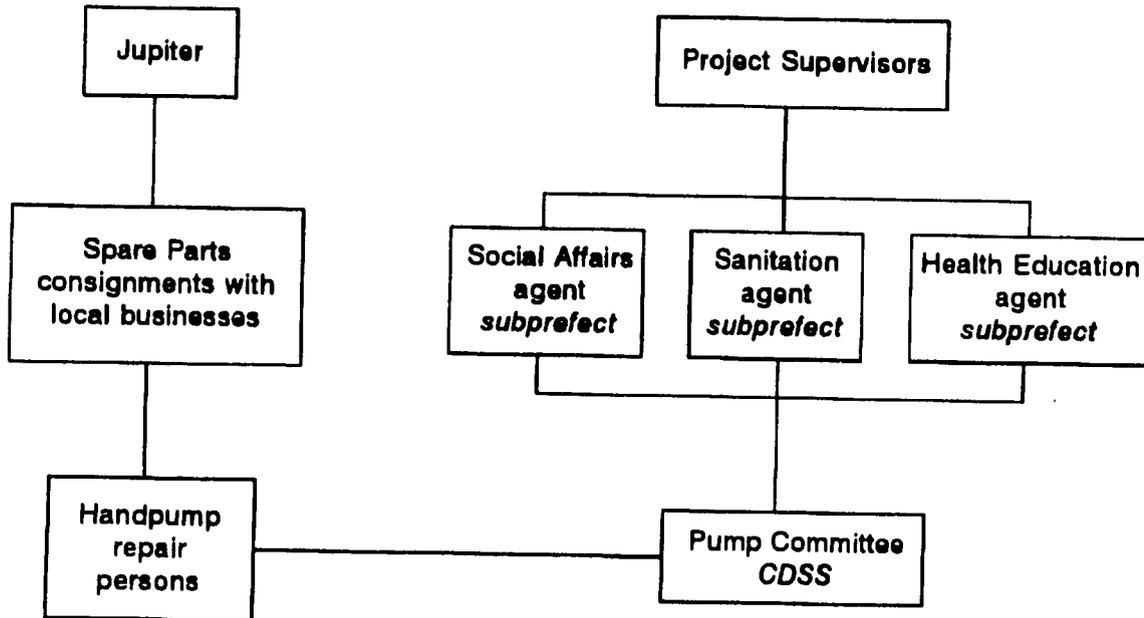
3.3.2 Current Organization

Prior to the Benin Rural WS&S Project, UNICEF had set up an operation and maintenance system under which a large part of the responsibility for handpump repair fell to the Water Supply Service (*Service d'Hydraulique*) of Zou Department. This system did not work very well. The project, in line with current national policy, replaced this system with one based largely on the private sector.

Figure 5 shows the major elements of organization for the project's O&M system.

Figure 5

**HANDPUMP OPERATION AND MAINTENANCE SYSTEM IN
NORTH ZOU DEPARTMENT UNDER THE BENIN RURAL WS&S PROJECT**



■ **Private Sector**

- **Supply**—A firm known as Jupiter imports India Mark II handpumps and spare parts, a small sideline to its principal activity of importing textiles from Tamil Nadu. As a gesture of goodwill toward its principal client, UNICEF/Direction de l'Hydraulique, Jupiter is also importing a certain spare part (65 cm leather buckets) available only from Togo.
- **Distribution**—Jupiter has arranged with merchants in three towns of Zou (Bohicon, Dassa, and Save) for the latter to sell Mark II spare parts on a 5 percent commission basis.
- **Repair**—Between two and four local mechanics per subprefect received approximately three weeks training and a tool box for repairing the Mark II. They are supposed to repair the pumps on a fee-for-service basis when villagers contact them. There have also been efforts to have them do regular preventative maintenance for a small sum, again to be paid by the villagers. In the past, Peace Corps Volunteers helped to supervise and train pump repair persons. One PCV continues in this capacity in the project.

■ Government

- **Project Supervisors**—The project structure has been described in Section 3.1. Briefly, a National Coordinator seconded from Direction de l'Hydraulique, two agents seconded from the Ministry of Public Health, and one agent from the Ministry of Work and Social Affairs, supervise the government staff involved in the project at the subprefect level. The Chef de Service de l'Hydraulique is a supervisor *ex officio*, but deals mainly with the drilling component. The UNICEF project, which assists with drilling, financed the training of the handpump repair persons, but has little involvement in the current functioning of the O&M system. The U.S. contractor, PRAGMA, has two staff members playing an indirect role in managing contacts between government subprefect staff, pump committees, and the handpump artisans.
- **Government Agents at the subprefect level**—Government staff played the principal role in creating and training pump committees up to June 1991. Since then, they have been mainly occupied with health education activities, as described in Section 3.1. This nonetheless represents an input to the O&M system in that agents, while in the villages, would also address problems regarding fundraising for pump repair, relations between the mechanics and villagers, etc.
- **Pump Committees**—Under project objectives, these committees are supposed to play roles in health education, sanitation, and pump maintenance. Specifically in regard to maintenance, committees are to raise funds to repair and replace pumps, and call in the artisan when the pump breaks down. After the project ends, the handpump O&M system in North Zou will function in principle according to the national sector strategy for rural water supply (DH/SBEE, 1992). Figure 6 shows the main elements of this structure.

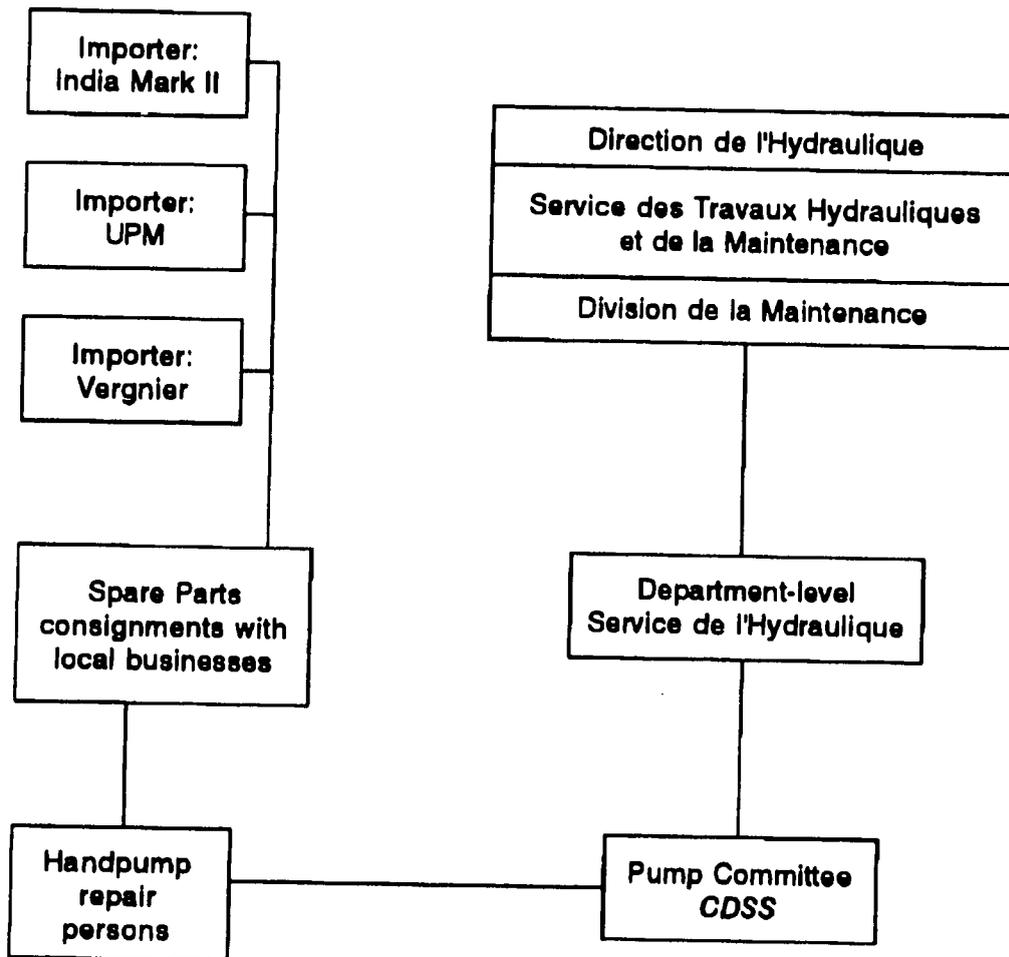
The Direction de l'Hydraulique is in the process of selecting, based on tenders, the official importer for each of the three pumps chosen as the standards for Benin. Jupiter will very likely be chosen for the India Mark III imports, as its prices are more attractive than those of the other competitor.

3.3.3 Constraints on Sustainability

The national policy is well thought out and realistic. The quality results from a consensus reached among sector donors and the Direction de l'Hydraulique regarding the main problems with past modes of intervention. USAID participated in this process, notably by financing a round table of sector donors, as did the government producing the broad lines of strategy later incorporated in national policy. The sector policy document (DH/SBEE, 1992) was formulated with the help of a World Bank mission, discussed at a meeting of donors, government administrators, NGOs, and the private sector, and approved by the Council of Ministers on

Figure 6

**HANDPUMP OPERATION AND MAINTENANCE SYSTEM:
STRUCTURE DEFINED IN THE 1992 NATIONAL SECTOR STRATEGY
FOR RURAL WATER SUPPLY**



April 23, 1992. However, the official policy incorporated, to a large extent, the ideas discussed and approved in a 1990 meeting, financed by USAID, of donors and the government (see Direction de l'Hydraulique, 1990).

To assist with the implementation of this strategy, the World Bank (IDB) has identified a \$50 million project. One aspect of this project particularly relevant to the O&M structure was presented in Figure 5, in that supporting decentralization of the Direction de l'Hydraulique will strengthen the capacity of the Service Hydraulique. Financial commitments by other donors are expected to materialize during meetings in 1992. Funds from donors such as Conseil de

l'Entente have already been used to strengthen the capacity of Services Hydrauliques in certain departments to play their envisioned, albeit limited, role in O&M.

This national context brightens substantially the prospects for sustaining project benefits in North Zou. The remaining constraints facing the handpump O&M system in the area are fourfold.

Spare Parts Supply

Jupiter imported four million FCFA of Mark II spare parts in December 1990, of which 1.7 million have been sold. Of this, one million FCFA worth of spare parts were purchased by the Benino-Swiss project. The stock was financed in part by loans taken out in India at 15 percent interest, which has now jumped to 38 percent after the recent devaluation of the rupee. Had the firm imported textiles instead, the investment would have turned over in three to four months or, at worst, six to eight months. Such a large amount of capital tied up for over one-and-a-half years is a losing proposition for Jupiter. At present the firm continues to order spare parts as a service to UNICEF and Direction de l'Hydraulique, which remain important clients for the purchase of new pumps.

In the long run, as Jupiter learns to regulate its inventory between fast- versus slow-moving parts, Mark II spare parts supply may become a viable economic undertaking. Zou, where most of the Mark IIs have been installed, had at last count about 690 Mark IIs. Over the next several years, through three Japanese and UNICEF projects, this can be expected to rise to about 1,500. Current data on annual costs for Mark II spare parts are not available, but Direction de l'Hydraulique has been using the ballpark figure of 10,000 FCFA/year. This translates into an annual turnover of 12 million FCFA. The profit margin on this is somewhere between 10 and 20 percent, that is, between 1.2 and 2.4 million FCFA, or \$5-10,000 a year. Whether a business such as Jupiter will find this attractive depends on the evolution of interest rates, inventory control, and villager demand.

An unknown factor in all of this is the rumored informal importation of Mark II spare parts from Nigeria and Togo. This activity could undermine the national import system by capturing the markets closest to the borders, without providing an alternative distribution system capable of serving all the subprefects.

Relations Between Handpump Repairers and Villagers

An underlying assumption of the handpump O&M system has been that handpump artisans will function in the same way that bicycle or motorbike mechanics do, on a competitive and profit-making basis. Today, though, one sees some important differences between the way the two enterprises operate.

- A bicycle owner knows enough about his or her bicycle and its spare parts to usually prevent the mechanic from (1) stealing good parts and replacing them with old, (2)

making unnecessary repairs, or (3) overcharging for parts. None of this is true for handpumps, where even the Pump Caretaker on the CDSS committee has not necessarily ever seen a pump dismantled. Unscrupulous mechanics could be a problem if they take advantage of an unsuspecting village.

- A large number of bicycle and motorbike mechanics are established in the rural areas, whereas the handpump repair persons are an oligopoly. The high costs of tools for Mark II repair prohibits competitors from freely taking up the activity.
- Customers generally bring their bikes to the mechanic, whereas the latter has to visit the pump, usually once to diagnose the problem, and a second time to bring the spare part and do the actual repair. Both times the mechanic has to carry a heavy set of tools. Yet, the rate of payment is about the same, or less, for handpumps as for motorbikes.

The first two problems are potential disincentives for villagers to fix the pumps. (Experience with the ABI ASM pump has proven that costly and frequent repairs cause villagers not only to abandon the pumps, but also reject handpumps in general as a technology.) The last problem will encourage repairers to drop out of the sector or to overcharge.

Continued Willingness of Villagers to Demand and Pay for Handpump Repair

The creation, training, and follow-up support given to the CDSS is the project's effort to foster a willingness to pay within village society. No other handpump project in Benin has ever committed this level of resources and attention. It seems safe to say that these are the best-trained and strongest committees ever produced for handpump O&M duties in Benin.

Despite this exemplary activity, one would expect to find relatively few committees functioning in five years' time if USAID ends all assistance on September 30, 1992. CDSS management may not succeed simply because it is extremely difficult to institutionalize new socio-political structures in any society. Thus, in small tightly knit villages, where the committee structure coincides with existing social and informal political structures, CDSSs are firmly established. But in larger villages, where social and political structures are much more segmented, project staff are concerned these committees will fall apart. This comes as no revelation to those with experience in community-based approaches to rural water supply. SIDA and DANIDA, the donors with the greatest experience in Africa, make an *initial* ten-year project commitment, because they have become concerned with issues of institutional sustainability at all levels.

Therefore, the basic need is to provide a long-term backup to the committee structure, albeit at a much lower level of monthly input than has characterized the subprefect agents' contact to date. In addition, certain committees were only recently formed and are particularly vulnerable. The USAID project financed the creation and training of committees up to June 1991. After that, UNICEF financed committee formation and training for the new pumps, while USAID has paid for their subsequent health education training and general support from

the subprefect level. In short, these new committees have received only a few months to a year of support, compared to almost five years for the first committees.

There is also a special problem in the northernmost subprefects, which the committees have not yet been able to solve. Deep conflicts divide nomads and cultivators over the use and maintenance of the handpumps. (The former use the water for livestock, which enrages the cultivators who pay for the pumps and see this as an infringement on their land.)

Transfer the Responsibility for Monitoring the O&M System from the Project to Service de l'Hydraulique

The previous two problems highlight the limited but necessary role of government, even in a system based principally on free enterprise. Both Figures 3 and 4 indicated what this role should be in the handpump O&M system. The project has played this role during implementation, but whether the project ends in two months or two years, Service de l'Hydraulique du Zou will have to assume this function in the post-project period. The input can be much less than what it was during the project. But at minimum, the Service de l'Hydraulique should (1) periodically visit all villages to check on the status of the pumps and to remotivate villagers to repair them; (2) visit "problem" and "new" villages more frequently to shore up committees there; (3) check on the repair persons; and (4) monitor spare parts supply. This restates the role for the Services Hydrauliques outlined in the national strategy.

The problems in respect to this transfer are twofold. First, Service de l'Hydraulique is presently immobilized due to lack of funds. The four staff members (excluding the Regional Chief who works with UNICEF and USAID) go to the field only when projects such as the Japanese handpump project or the FAC water source survey pay expenses. This is sporadic and unrelated to the O&M tasks. In the medium-term, both the World Bank project mentioned above and improved government finance as a result of structural adjustment policies will diminish this constraint. However, these effects cannot realistically be expected to become implementational for several years; meanwhile the O&M system could lose considerable ground already gained.

Second, the Service de l'Hydraulique staff have had no involvement with the O&M system in North Zou, beyond some participation in training the artisans. No transition period has been planned during which the Service de l'Hydraulique technicians could learn from the experience of the subprefect agents. As a result, a lot of information will be lost concerning problematic villages, the nature of social and technical problems there, the informal leaders to contact if pump repair starts to flag, etc. These essentially technical people also need to learn some social mobilization skills from the project animation agents.

Although the constraints described above on the O&M system are real, prospects for sustainability look promising for the following reasons:

- A sound national sector strategy is being implemented with widespread donor support;
- The major elements of an O&M system based on the private sector are in place and functioning;
- Villagers in the region have demonstrated their capacity and willingness to pay for handpump repair; and
- The criticism that villagers are not saving sufficiently to eventually replace worn out pumps is unwarranted and misplaced. Reasons for this last point are:
 - The Mark II is so sturdy that the pumps may last for 20 years or more. It is economically irrational to save money over such a long time when the bank interest rate is 3.5 percent. It makes more sense to invest in cotton cultivation inputs, which would seem to yield a much higher return.
 - Villagers have purchased expensive and major items such as pipe and pump heads. This makes the situation a little like the man who has had the same axe for 20 years, although he replaced the head three times and the handle five times.

3.3.4 Interventions

The above analysis suggests that a responsible termination of the project is possible, but requires a bridging operation to insure a smooth transition between the present O&M system (Figure 5) and the one outlined in the national strategy (Figure 6). The latter will only become viable in four to five years' time as the effects from other donors' support to the sector, particularly the decentralization of the Direction de l'Hydraulique, becomes established.

Specifically, such an intervention would include the following:

- Training in social mobilization techniques for Service de l'Hydraulique technicians
- Service de l'Hydraulique technicians, accompanied by the present subprefect staff, would visit all villages four times over a two-year period to allow a handing-over of responsibilities (visits to the villages would naturally include meetings with the repair persons)
- Training and tools for additional artisan repair persons as need arises
- The integration and update of the project data base on handpumps, including socio-economic data, into the Direction de l'Hydraulique data base
- The development by the Service de l'Hydraulique, with project assistance, of an action plan for assuring a budget to continue the monitoring of pumps and the O&M system in the Zou area

Chapter 4

OPTIONS

Chapter 3 provided an analysis of the major project components, described constraints to the sustainability of benefits produced, and outlined possible interventions for removing or mitigating constraints. Chapter 4 provides an analysis of options—including the relative benefits of each—that USAID may take in regard to the project. The options include:

- No further A.I.D. inputs
- New project managed by Peace Corps
- New project managed by a private volunteer organization (PVO)
- New project managed by UNICEF
- New project managed by GRB
- New project managed by PRAGMA

4.1 No Further A.I.D. Inputs

The assessment team believes that ending all project activities on September 30, 1992, would cause some reduction in project benefits. Some pumps would probably fall into disrepair because of the CDSS failure to manage their water systems. If a few pumps fail, there will be little effect except to the communities directly involved. However, in the worst case scenario, if more than 25 percent fail, then the entire O&M system would be jeopardized, and spare parts suppliers and repairmen would lose interest for lack of a sufficient market. The market system depends on a critical mass for its continuation.

While the project has no data on the actual benefits obtained, except for Guinea worm reduction, results from similar projects may be applied to at least give an order of magnitude. Worldwide data on water and sanitation projects with health education components indicate a wide range of benefits as outlined in Chapter 3. The most significant benefit is the reduction in child mortality. If, for example, this benefit is removed because of the failure of 25 percent of the water supply systems, then 954 children would conceivably die because of lack of access to potable water. This calculation is based on the following data:

| | |
|-----|---|
| 131 | boreholes and/or CDSSs fail (25 percent of at least 524 total project committees) |
| 250 | people served per borehole |
| 20 | percent minimum are children |
| 265 | Benin rural child mortality rate |
| 55 | percent projected reduction in child mortality from WS&S |

(131 boreholes x 250 people/borehole x 20 percent children x 265/1,000 child mortality rate x 55 percent reduction from WS&S) = 954 child deaths

Another disadvantage of not extending a successful project is the unintended message that will be sent to the GRB. It may be perceived as a lack of support to a country that has made significant gains on political and economic fronts in the past few years but is struggling to maintain its momentum. The GRB needs all the support it can get.

The advantage of no further inputs to the project would be no further cost to USAID and reduced management responsibilities for an already burdened USAID staff.

4.2 Continuation of Selected Project Activities

The assessment team believes a continuation of the project for two more years with significantly reduced activities would increase the probability of sustaining the benefits achieved to date. However, because A.I.D. policy limits projects to 10 years (the project has already been extended beyond the limit with great bureaucratic difficulty) a project extension is unfeasible.

A new project is therefore recommended. The key components of a new project would be as follows:

- No further drilling of boreholes;
- No further construction of latrines;
- Continued reinforcement of CDSSs (for O&M and health education) but at gradually reduced inputs;
- Continued monitoring of the O&M system by the Hydraulic Service;
- Decentralized commune-level extension program and provide training to commune health center staff, community leaders, educators, and the newly established Guinea worm health educator and coordinator; and
- Advice added to the extension program on income-generating activities.

The emphasis of a new project would be placed on consolidating gains already made in project villages rather than adding new communities with boreholes and latrines. The O&M system is vulnerable because it is based on a private sector market system only recently established and without alternatives if any of the key actors quit. Therefore, close monitoring is needed by the Hydraulic Service to provide support if needed. Decentralization to the commune level will provide more reliable and frequent support to CDSSs. The CDSSs have taken on new and challenging management responsibilities under the project and will appreciate continued reinforcement, especially when linked to future income generation. This last intervention, though an addition to the project design, holds the possibility of greatly enhancing sustainability of project gains. It will sustain the self-financing health centers and schools which, in the

future, will provide information and reinforcement about health-seeking behaviors and pump maintenance.

As project beneficiaries, the communities are being asked to shoulder the financial responsibility of maintaining the pumps and continuing hygiene education activities. Other financial burdens are being placed on the Beninese population from other sectors while income growth is needed. To support these demands, more opportunities are needed for income-generating activities. There appears to be insufficient knowledge about the range of possibilities and sources of assistance; therefore, a study is recommended to outline these activities. The results would be added to outreach information messages already carried to the villages by project staff.

Also of importance to sustainability is the quantification of benefits to argue for continued support to the WS&S sector. The project has never carried out an observational study to document knowledge, attitudes, and practices of the targeted population. While this should have been done early in the project and again at the end, such a study still would provide documented information for future projects seeking to replicate some or all aspects of this successful example.

A key element of a new project would be to utilize existing staff for the indicated activities. The present Beninese agents involved in the project must continue to be assigned by their respective ministries. The Project Director, Julien Dossou-Yovo, is particularly vital because of his demonstrated capabilities and past experience. Expatriate technical assistance would be needed only to carry out the above-mentioned studies and to manage funding and reporting requirements. A "Personal Services Contract" is needed to hire a USAID Project Manager, who would handle USAID's reporting and disbursement requirements.

If a new project is designed to undertake the above activities, then there are several options for selecting the principal organization to manage activities. The choice of the organization depends on two criteria: (1) to minimize USAID management responsibilities since they have limited resources, and (2) to assure that the organization is capable and efficient in carrying out the required activities.

Management organization options include Peace Corps, a PVO, UNICEF, GRB, and PRAGMA.

4.2.1 Peace Corps

The Peace Corps should be considered a strong candidate for managing a new project since it presently manages eight PCVs in the Zou Department (three in the UNICEF Guinea worm program, four in social centers, and one in pump maintenance). According to the Peace Corps Director, the Guinea worm volunteers are underutilized and would like expanded roles. While there are no plans by the Peace Corps to bring additional volunteers into the country, UNICEF and the Peace Corps agree that Guinea worm PCVs working in other regions could be

transferred into the project area, where they may contribute supervisory functions, health education, and possibly promotion of income generation to their Guinea worm activities.

In addition, the Peace Corps is interested in income-generating activities and the new project would be a logical addition. Providing funds to the Peace Corps is administratively appealing because of the comparatively easy disbursement process. However, additional administrative staff would be needed by the Peace Corps. The project's current financial administrator is recommended as the logical choice to be hired by the Peace Corps.

4.2.2 Private Voluntary Organizations (PVOs)

A second management option would be to select a PVO. This choice does not require competitive bidding, a procedure that could delay the continuity of project activities. Thus, an appropriate organization could present itself through an unsolicited proposal. Africare and Cathwell (Catholic Relief) are examples of U.S. PVOs with much experience in water development in West Africa. However, the PVO would be new to the project and not have the benefit of past experience. This choice would thus introduce an unknown element into the equation. On the positive side, this choice could give the PVO an opportunity to develop long-range assistance to the Benin water sector, a goal consistent with USAID policy in promoting PVOs.

4.2.3 UNICEF

Since UNICEF has been a partner in the project, it is also in a position to provide continuity to project activities. However, its role in this project has been focused primarily on drilling activities, which will not be included in a new project. On the other hand, UNICEF has expanded its focus to include Guinea worm activities and has an ongoing project in three departments involving village-level outreach agents, including three Peace Corps volunteers in Zou. If UNICEF were to manage the new USAID project activities, then these activities would have to conform to UNICEF established objectives and operational procedures. This requirement has presented some constraints in the past. UNICEF has expressed a willingness to see Guinea worm coordinators at the commune level trained in health education messages so it may continue information, education and communication in the 524 project communities. At the same time, UNICEF may find it difficult and inconsistent to assume monitoring and management responsibilities for interventions bearing on only six subprefects within its total Guinea Worm Eradication Program.

4.2.4 Government of the Republic of Benin

The GRB has also been a partner in the project, and funding could be made directly to the GRB for extension. For sustainability reasons, this is a logical approach since at some point, after the extended project is completed, the various GRB agencies must continue their normal functions—at least to monitor the facilities and institutional structures established by the project. The question is whether they are presently in a position to undertake the management, accounting, and reporting responsibilities required by USAID. According to USAID this is not an acceptable option because of the lack of adequate accountability on the part of the GRB. Ultimately, however, the importance of government in planning, policy, and monitoring to the future sustainability of project benefits cannot be ignored. The project has established a minimal role for the government, but monitoring is a necessary function, and one for which the government must ultimately provide adequate funding.

4.2.5 PRAGMA

PRAGMA has carried out management responsibilities since the project began and has received limited oversight by USAID/Togo for most of the project life. The group is a known quantity and would therefore provide continuity to established project patterns. As emphasis is being placed on health education in an extended project, and since they have provided technical assistance to these activities, they are a logical choice to continue. However, a new project requires a bidding process for contractors, and the long time required for this process would be detrimental to project continuity.

4.2.6 Illustrative Budget

The budget will depend in some measure on the option chosen and on the detailed project design. The figures mentioned herein are indicative only:

Commune-level training (5 trainees at 40 communes)

| | |
|--|----------------|
| 200 persons X 6 days X \$10 | 12,000 |
| 5 trainers X 6 days X \$20 | 24,000 |
| 6 flipcharts X 200 X \$12 | 14,400 |
| 5 training manuals X 50 X 10 | 3,000 |
| Operating Costs | 60,000 |
| Purchase of 25 motorbikes | 100,000 |
| Office operating costs (USAID 2/3; UNICEF 1/3) | 60,000 |
| PSC/USAID (2 years) | 250,000 |
| Financial Administrator/Project (2 years) | 200,000 |
| Consultants | 80,000 |
| a. Observational study | |
| b. Income generating study | |
| 4 DH agents (field operating costs) | 16,000 |
| 4 all terrain vehicles @ \$30,000 each | 120,000 |
| Vehicle operating costs | <u>120,000</u> |
| | 1,059,400 |

Chapter 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The assessment team believes the following conclusions are warranted:

- Project benefits will be sustained if the rural economy grows and if all institutional structures in place (and foreseen) function as expected. However, as with most Beninese institutions and the national economy, the health sector—including water and sanitation—is presently on marginal footing. The government and its donors have earmarked 1992-1993 for an “emergency program” in the social sector. Further support to ensure maintenance of benefits from the Benin Rural WS&S Project is warranted for this emergency transition period.
- Additional assistance in the form of selected project activities will improve the probability that benefits will be sustained.
- Continuing selected project activities over a two-year period, to be gradually diminished the second year, will improve sustainability.
- An amendment to the present project would be least disruptive to activities, but this option is administratively impossible; therefore, a new project is needed. Several possibilities have been considered as management responsibilities for new activities, while the need to minimize USAID/Cotonou’s management burden has been recognized.
- An estimate of funds needed to undertake the recommended activities under a new project is \$1,059,400 in direct costs.
- Replication of all project components including drilling without donor assistance is not possible because the GRB does not have funds for this purpose. There are other donors, however, who are interested in funding projects in the WS&S sector, and the Beninese staff are technically capable of replicating activities. The project, which has been the first to implement the GRB policy of integrating water and health, will offer a valuable model for any future interventions in the sector.
- Villages have demonstrated an ability to fund the O&M costs for handpumps. It is recognized, however, that their household economies are fragile, and any disruptions may prove damaging.
- The resource needs of CDSSs is the major reason for extending project activities.

5.2 Recommendation

In order to improve the probability that project benefits will be sustained, it is recommended that selected activities be continued under a new project for two years. Several management options have been considered in Section 4.2, each with specific advantages and disadvantages. However, the Peace Corps appears to be in the best position to manage the new project. It is important that a new design be drafted as soon as possible to avoid any delays in continuing activities.

Appendix A

SCOPE OF WORK

(PIO/T No. 698-0501.80...)

Assessment for Benin Rural Water Supply Project (680-0201)

I. BACKGROUND

The purpose of the Benin Rural Water Supply Project is to assist the Government of Benin (GRB) to improve the health and living conditions of approximately 250,000 of the rural poor in selected districts of Benin. This is to be accomplished by providing potable water supplies, training for repair and maintenance of water pumps, materials, and technology for constructing sanitary facilities, by helping to organize village committees for community development, and by promoting improved health practices. Originally designed in 1980 for a life-of-project (LOP) cost of \$6,707,000 with a Project Assistance Completion Date (PACD) of December 31, 1985, the implementation of the project did not begin until mid-1986 due to political reasons. Several project amendments with increases in funding have brought the LOP-funding to the current level of \$8,074,095 and the revised PACD of September 30, 1992. A funding increase of \$500,000 has been requested to cover the period up to the PACD in order to wrap-up the project in an orderly manner. Additionally, the project has also funded a grant with UNICEF, included in the LOP-amount shown above, to finance the drilling of wells and installation of handpumps.

A final evaluation of the project was undertaken in November 1991 by consultants from WASH project. The consultants determined that the project has accomplished, and in many cases exceeded, the project targets. The project was considered to be highly successful, at least quantitatively, in all aspects of the project objectives and deserving to be replicated in other areas of the country. The report, however, raised serious concerns regarding the project's sustainability (and hence, replicability) after disengagement of USAID and/or other donors. Despite its significant successes and impact on health and sanitation in the target villages, the project still remains highly dependent on external assistance in keeping the mechanism of constant monitoring and reinforcing of village-level activities properly functioning. While three ministries of the GRB are actively participating in the project, none of them has taken the lead in its implementation. Also, the participation of their personnel remains largely dependent on per diems and bonuses which is unlikely to be continued by GRB after departure of PRAGMA Corporation, the USAID-funded implementing organization.

Because of these reasons, it is now necessary to take a closer look at the sustainability issue and the future of the project with objectives listed below.

II. OBJECTIVES:

According to the evaluation report, as well as in the opinion of the parties concerned, the project is currently not sustainable without further assistance. The concern is therefore, whether or not the project can be made sustainable with some additional assistance beyond the current PACD of September 30, 1992.

The assessment proposed by this PIO/T must, therefore, answer the following questions:

1. Can the project be made sustainable with additional assistance, say, for another 2 to 3 years after September 30, 1992?
2. If so, what form of assistance should be provided:
 - a) Continue the project in its present form? or
 - b) Provide assistance for one or more aspects of the project and for which aspects?
3. For how long should such assistance be provided beyond September 30, and for the period, should the assistance be provided at a constant or at a gradually diminishing level?
4. Should the assistance be provided by amending the present project, or should an entirely new project be started just for this purpose?

III. SCOPE OF WORK:

In order to fulfill the requirements of the objectives, the contractor shall provide three consultants: one with extensive experience in international public health within the water and sanitation sector; a financial analyst with extensive experience in the financial, institutional and management of health and water supply projects—especially in relation to sustainability and replicability issues and an environmental engineer to be supplemented by a Regional Engineering Officer (REO) from REDSO/WCA, Abidjan, to undertake the proposed assessment. Specifically, the team shall:

1. Study the Project Paper, Project Amendments, evaluation reports, and all other relevant documents related to the Benin Rural Water Project, and meet with Mission Officials in Cotonou for a briefing.
2. Meet with officials of the three GRB Ministries (Public Health, Labor and Social Affairs, and Energy, Mines, and Water Resources), UNICEF, PRAGMA Corporation, Peace Corps, and other agencies/organizations as required, both in Cotonou and in project-sites, in order to:
 - a) Obtain information on their respective future plans related to the various aspects of the current project, with or without A.I.D. participation; and

- b) Discuss possible conceptual alternatives (in light of the questions above) for imparting sustainability to the project objectives.
3. Determine whether replication of this project requires all of the personnel, financial and material resources that have been invested in the project by USAID and other donors. If not indicate the resources that are essential and whose needs must be covered from national resources to assure sustainability.
 4. Assess the villages' capacity to finance the operation, maintenance and depreciation of water pumps and latrines, as well as the health education program without external donor assistance or extra budgetary resources from the GOB.
 5. Identify the minimum financial resources required to:
 - sustain the project including resources to maintain pumps in good running condition,
 - deploy and provide logistical support (recurrent cost) for essential provincial and district-level staff.
 - continue and maintain village committees to oversee the implementation of project activities.
 - contribute a reasonable share toward the cost of replacing drills, pumps, and other capital associated with the program.
 6. Determine the resource needs of the Community Social Health Development Committees and the villages to continuing project initiatives such as health and hygiene education and other community development activities.
 7. Prepare answers to the questions asked under objectives, and formulate and discuss merits and demerits of several alternative interventions (including continuation of the current project as it is).
 8. It is expected that at least three to five alternative options for imparting sustainability should emerge out of the assessment. Recommend to the Mission the option which, in the opinion of the team, is optimum for USAID to pursue. A cost-benefit analysis for this option would be helpful.
 9. If the Team determines that the project cannot be sustained and/or replicated without continued USAID assistance ad infinitum, the recommendation may also call for termination of the project on September 30, 1992, without any further follow-up actions.
 10. Hold a debriefing meeting with Mission officials.

IV. SCHEDULES AND REPORTS:

One of the three consultants furnished by the contractor shall be the Team Leader. It shall be the Team Leader's responsibility to:

1. Coordinate with the other team members (the other consultant and the REO from REDSO/WCA) and the Project Coordinator the date for a briefing meeting with Mission officials in Cotonou. This day is to be called the Day 1 for reference purposes. The days are counted as work-days, six (6) days per week.
2. After the briefing and on the same day (Day 1) the Team will meet among themselves and prepare a detailed schedule of their activities and individual responsibilities. The schedule shall be submitted to the Project Coordinator (see under Relationships).
3. Day 2: With the assistance of the Project Coordinator, obtain appointments to meet with GRB and other officials (see III.2) in Cotonou and meet with some officials, as available, on the same day.
4. Day 3 through 13: Complete meeting with all officials in Cotonou and project-site, meeting with village committees and villagers in at least 5 project villages.
5. Day 14 through 16: Prepare Draft Report and Recommendations. Submit two copies of Draft Report to the Project Coordinator.
6. Day 17: Debrief Mission and depart for U.S. The Project Coordinator will forward one copy of the draft report to REDSO/WCA.
7. The USAID/Benin and REDSO/WCA will forward their comments on the draft report directly to the Team leader within 2 weeks of their receipt of the draft report.
8. The Team Leader will submit the Final Report within seven (7) days of the receipt of Mission comments on the draft report. The Final Report shall be submitted to USAID/Benin—one original and two copies, and to REDSO/WCA—2 copies.
9. Both the Draft and the Final Reports shall have the following format:
 - a) Table of Contents.
 - b) Executive Summary. No more than three (3) page, single spaced.
 - c) Body of the report consisting of:
 - i) Brief Project Background;
 - ii) Reason for and objectives of the Assessment performed; and
 - iii) Findings and analysis
 - d) Conclusion on sustainability of Benin Rural Water Project.
 - e) Options for imparting sustainability to the project and discussion of merits/demerits of each option, including the option of simply terminating the project on September 30, 1992.
 - f) Team's recommendation.

g) Appendices:

- i) Assessment Scope of Work.**
- ii) List of persons, committees and villages contacted.**
- iii) List and schedule of Team's activities.**
- iv) Description of Methodology and/or questionnaires used for the assessment.**
- v) Bibliography/References of documents consulted.**

The entire report, excluding appendices, should not exceed 30 pages, single spaced. The appendices should not exceed a total of 15 pages.

V. LEVEL OF EFFORT:

The level of effort required in the performance of the assessment totals 72 person days, i.e., 24 person days per consultant, as follows:

| <u>Activity</u> | <u>Days required per consultant</u> |
|--|-------------------------------------|
| Travel from and to the U.S.: | 4 |
| Initial Meeting, Briefing, Scheduling: | 1 |
| Meetings with officials, villagers, interviews, and data collection: | 12 |
| Preparation of Draft Report: | 3 |
| Preparation of Final Report: | 2 |
| Home Office/WASH support, etc.: | <u>2</u> |
| TOTAL: | 24 |

$$\begin{aligned} & \text{days/consultant} \times 3 \\ & = 48 \text{ person/days} \end{aligned}$$

VI. RELATIONSHIPS AND RESPONSIBILITIES:

The consultants shall report to the Mission Project Coordinator, Ms. Mary Ann Cusack, GDO, and shall work with the Regional Engineering Officer from REDSO/WCA, Abidjan, and others as assigned by the Project Coordinator. One of the consultants shall act as the Team

Leader (specified under Personnel Qualifications) of the Assessment Team and shall be responsible for the team's activities and submittal of reports.

VII. TERM OF PERFORMANCE:

The consultants should report for duty in Cotonou on or about March 23, 1992 (preferably on March 23, which shall be the Day 1 of the Schedule, Section IV). The estimated departure date from Cotonou is April 10, 1992, and the submittal date for the final report is May 1, 1992.

Any extension of time required for completion of work hereunder must receive prior written approval from the Contracting Officer.

VIII. AUTHORIZED WORK WEEK

The consultant are authorized a six-day work week while in Benin with no premium pay.

IX. LOGISTIC SUPPORT:

One official vehicle shall be provided by USAID/Benin for in-country travel. The Mission will also assist with hotel reservations. The contractor shall be responsible for all other logistic support required in the performance of this task, which shall include, but not be limited to, travel from and to the U.S. and related travel formalities (e.g., passports, visas, vaccinations, exchange services, etc.), laptop computers, secretarial services, and other office services, equipment, and supplies.

X. ACCESS TO CLASSIFIED INFORMATION:

Access to classified information is not required.

XI. DUTY POST:

The Duty Post for this Assessment shall be Cotonou, Benin.

XII. PERSONNEL QUALIFICATIONS:

The Assessment Team shall be composed of three members—two specialist consultants furnished by the contractor, supplemented by one Regional Engineering Officer (REO) from REDSO/WCA, Abidjan. One of the two consultants shall be the Team Leader and shall be responsible for all activities of the team. The desired qualifications of the two consultants are as follow:

All consultants must have a minimum of FSI 3/3 level in French.

1. Health Services Planning and Management/Administration Specialist:

Minimum ten years of professional experience, at least five of which was in health services planning and project design for developing countries, preferably in African context, and at least three of which was in management/administration, evaluation, and/or institutional development of projects related to community-based rural water supply and sanitation.

This specialist shall be the Team Leader and may be called upon to assist the Mission with Project Design if a decision is made to start a new project as a result of recommendations of this assessment.

An advanced degree in health services planning and administration with emphasis on third world rural health is required.

2. Health Education/Community Development Specialist:

Minimum ten years of professional experience, at least five of which was field experience in preventive health program, preferably related to water supply/Sanitation, health education, and community development in developing countries (African experience preferred).

An advanced degree in Public Health with emphasis on third world health education/community development is required.

Source Justification Memorandum

The sustainability assessment for the Benin Rural Water Supply Project (680-0201) must be performed by a three-person team with following expertise which comprise the primary areas of activity of the subject project:

- 1). A person with a strong background in health services planning and project design for developing countries and with experience in management/administration, evaluation, and/or institutional development projects related to community-based rural water supply and sanitation. This person will act as the team leader and may be called upon to assist with a project design if a decision is made to design a follow-up project.
- 2). A person with a strong background in financial analysis, institutional and management of health projects in developing countries, preferably related to water supply and sanitation.
- 3). A person with technical expertise in environmental engineering especially in rural water supply and sanitation in the African context.

All three persons must be familiar with AID-funded projects and AID procedures.

The required expertise is not available within the REDSO/WCA. These three experts must, therefore, be procured from outside, preferably through an IQC contract. The proposed IQC contractor, Camp, Dresser & McKee International is managing the WASH project of AID/W and has personnel with the required expertise. Also, this contractor has already furnished personnel for the mid-term and the final evaluation of the subject project in the past, and thus has a first-hand knowledge of the project. The three persons to be furnished by the contractor will be supplemented by a technical expert of REDSO/WCA to complete the assessment team.

Based upon the preceding discussion and the urgency of the proposed assessment, I recommend that a delivery order be negotiated with Camp, Dresser and McKee International for furnishing the three required specialists.

By: _____

Typed Name: Dulal C. Datta

Title: Chief, PDE/Engineering, REDSO/WCA

Date: 18 February, 1992

Appendix B

BIBLIOGRAPHY

- Benin Rural Water Supply and Sanitation Project. 1980. *Project Paper Document: Benin Rural Water Supply*. Project N° 680-0201. USAID. June 20.
- _____. 1985. *Project Paper Amendment: Benin Rural Water Supply Project*. Project N° 680-0201. USAID. 1985.
- _____. 1988a, rev. 1990. *Des membres du comité de développement socio-sanitaire à leurs rôles et responsabilités au sein du village*. Manuel de formation des formateurs.
- _____. 1988b, rev. 1990. *Prévention de ver de Guinée*. Manuel de formation des formateurs.
- _____. 1989. *Etapes de formation des Comités de Développement Socio-Sanitaire*.
- _____. 1990a. *La Latrine améliorée à la fosse sèche ventilée*. Manuel de Construction. Tombe I. Bohicon.
- _____. 1990b. *La Latrine améliorée à double fosses sèches ventilées*. Manuel de Construction. Tombe II. Bohicon.
- _____. 1990c. *La Latrine à simple fosses sèches revêtue ventilées*. Manuel de Construction. Tombe III. Bohicon.
- _____. 1990d. *Evaluation des matières fécales*. Manuel de formation des formateurs.
- _____. 1990e. *Eau potable*. Manuel de formation des formateurs.
- _____. 1990f. *Eau potable*. Manuel de formation des formateurs.
- _____. 1991. *Des villageois et ouvriers locaux en construction de latrines familiales*. Manuel de formation des formateurs.
- _____. n.d. Flipcharts: "Danger des selles," "L'Eau est la source de vie," "Togbanme: Village propre," "Utilisons et entretenons notre latrine," and "Le Ver de Guinée."
- _____. 1990. 1991. 1992. *Projet d'eau et d'assainissement en milieu rural: Rapport d'activités*. Bohicon. N° 11: 01/04/90–30/09/90, N° 12: 01/10/90–31/03/91, N° 13: 01/04/91–30/06/91, N° 14: 01/07/91–30/09/91, N° 15: 01/10/91–31/12/91, N° 16: 01/01/92–31/03/92.
- Cellule de Coordination du Programme d'Élimination du Ver de Guinée en République du Bénin. 1992. *Programme d'Élimination du Ver de Guinée en République du Bénin: Structure Organisationnelle*. Cotonou.

- Chauvin, James, et al. 1992. *Final Evaluation of the Benin Rural Water Supply and Sanitation Project*. WASH Report No. 349. Arlington, Va.: WASH Project.
- DANIDA. 1991. *République du Bénin: Société Béninoise d'Electricité et d'Eau*. Cotonou.
- Direction de l'Hydraulique. 1990. *Journées de réflexion des 18, 19 et 20 juin 1990 sur la maintenance des équipements d'hydraulique villageoise*. Cotonou: Ministère de l'Equipement et des Transports. June.
- Direction de l'Hydraulique et Société Béninoise d'Electricité et d'Eau. 1992.
- Stratégie de Développement du secteur de l'alimentation en eau et de l'assainissement en zone rurale*. Cotonou: Ministère de l'Energie, des Mines, et de l'Hydraulique. January.
- Esrey, Steven A., Leslie Roberts, James B. Potash, and Clive Shiff. 1990. *Health Benefits from Improvements in Water Supply and Sanitation: Survey and Analysis of the Literature on Selected Diseases*. WASH Technical Report No. 66. Arlington, VA: WASH Project.
- Emsellem, Yves. 1990. *Bilan des programmes d'hydraulique villageoise au Bénin pour la décennie 1981-1990. Perspectives pour la Décennie 1991-2000*. Benin: UNDP. August.
- Gouvernement de la République du Bénin/UNICEF. 1990. *Situation épidémiologique du ver de Guinée en République du Bénin: Rapport de L'enquête nationale février-juin 1990*. Cotonou: Ministère de L'Equipement et des Transports/Ministère de la Santé Publique/UNICEF.
- Hagel, Thomas, et al. 1992. *Dimensions sociales du développement (DSD) et politique DSD au Bénin*. Rapport préliminaire. German Development Institute, Cotonou: April.
- Karp, Eliane and Thierry Paccoud. 1991. *Aide-mémoire de la mission de suivi DSD. 25 novembre au 4 décembre 1991*. Cotonou: World Bank.
- LaPin, Deirdre. 1992. *Evaluation of the Peace Corps Guinea Worm Eradication Program (Draft)*. Arlington, VA: WASH Project.
- Ministère du Plan et de la Restructuration Economique. 1992. *Round Table of the Partners for the Economic and Social Development of the Republic of Bénin: Background Paper*. Geneva.
- Ministère de la Santé Publique. 1991. *Politique Nationale de L'Information, Education, et Communication Pour la Santé*. Cotonou: Direction Nationale de la Protection Sanitaire.
- _____. 1992. *Rapport Final des Journées de réflexion sur le financement communautaire et le recouvrement des coûts, 30-31 janvier 1992*. Cotonou.
- Ministère du Travail, de l'Emploi, et des Affaires Sociales. 1990. *Decret No. 90-385 du 4 Décembre 1990 portant attributions, organisation, et fonctionnement du Ministère du Travail et des Affaires Sociales*. Cotonou.

- _____. 1991. *Politique en matière du travail, de l'emploi, de la formation professionnelle et des affaires sociales*. Cotonou.
- Programme Medico-Sanitaire Benino-Suisse (PMSBS). 1992a. *Bref Aperçu général du départ à aujourd'hui (1981-1991)*. Abomey.
- _____. 1992b. *Journées de réflexion sur le financement communautaire et le recouvrement des coûts: 30-31 Janvier 1992. Présentation du système centralisé*. Cotonou.
- _____. 1992c. *Système décentralisé niveau sous-préfecture avec gestion par les communes*. Abomey.
- Roark, Phil, and Sarah Fry. 1989. *Benin Rural Water Supply and Sanitation Project Mid-term Evaluation*. WASH Field Report No. 252. Arlington, Va.: WASH Project.
- UNICEF/Gouvernement de la République du Bénin. 1991. *Enfants et femmes, avenir au Bénin*. Cotonou.
- USAID. 1989. *Plan de lutte pour élimination de la dracunculose en République Populaire du Bénin*. Cotonou. July.
- Yellot, H.L. 1991. *Enquête sur l'incidence de la dracunculose dans les six districts du Zou nord de la République du Benin*. Cotonou.
- World Bank. 1991a. *World Development Report 1991*. Washington, D.C.: World Bank.
- World Bank. 1991b. *Alde-mémoire. Mission du suivi du deuxième Programme d'Ajustement Structurel (Crédit 2283-BEN). 25 novembre – 13 décembre 1991*. Cotonou: World Bank.

Appendix C

PERSONS CONTACTED

Bohicon

| | |
|--------------------|---|
| Edward Aldrich | Administrative and Financial Assistant, PRAGMA. |
| Karim Andélé | Directeur Départementale de la Santé. Département du Zou. |
| Michel Crecel | Supervisor, Health Education. Benin Rural WS&S Project. |
| Julien Dossou-Yovo | National Project Coordinator, Benin Rural WS&S Project. |
| Méré Aimé Kona | Ingenieur Hydrogéologue, Chef du Service. Service de l'Hydraulique du Zou. |
| Gabriel Kpinsoton | Supervisor, Sanitation. Benin Rural WS&S Project. |
| Evelyne Laurin | Chief of Party. PRAGMA. |
| Antonio Lozito | Médecin-Conseiller. Programme Médico-Sanitaire Bénino-Suisse/IUED. |
| Ange Mezizou | Supervisor, Social Affairs. Benin Rural WS&S Project. |

Cotonou

| | |
|----------------------|--|
| Roger d'Almeida | Associate Peace Corps Director (Health), Peace Corps/Benin. |
| Alouise Bassene | Administrateur. UNICEF. |
| Marc Chabi | Chef, Division des Travaux Hydraulique. Direction de l'Hydraulique. |
| Thomas Cornell | USAID Representative-Benin. |
| Dulal Datta | Chief Engineer, REDSO (USAID-Abidjan) |
| Bertin Danvidé | Assistant Programme Officer (Guinea Worm), UNICEF |
| Blaise Dossa | Responsable. Animation et Suivi. Direction de l'Hydraulique. Programme Hydraulique Villageoise du Conseil de l'Entente. |
| Paul Dovi | Direction des Affaires Sociales, MTEAS |
| Brad Favor | Director, Peace Corps/Benin. |
| Victorine Houéssinou | Directeur des Affaires Sociales, MTEAS. |

| | |
|------------------------------|---|
| Keke Nakashima-Hiroko | Coordinateur, Projet Japonais. |
| Harriet Isom | U.S. Ambassador to the Republic of Benin. |
| Pierre Jekinnou | Service Départementale des Affaires Sociales du Zou |
| Raphael Mensari | Ministère des Affaires Etrangères et de la Coopération |
| Ndolamb Ngokwey | Programme Coordinator, UNICEF-Cotonou. |
| Rémy Oster | Conseiller Technique. Direction de l'Hydraulique. |
| Charles Omer Ogouchi | Programme Assistant. USAID-Cotonou. |
| Georgette Pokou | USAID-Cotonou |
| Rashid Raji | Economic Officer. World Bank-Cotonou. |
| Emanuel Soussoumihein | Directeur par Intérim. Direction de l'Hydraulique. |
| M. Sukumar | Société Jupiter |
| Emile Tomenou | Chef du Service des Travaux Hydrauliques et de la Maintenance. Direction de l'Hydraulique. |
| Mohammed Yacoub | Chef de Mission. Burgeap-Cotonou. |
| <i>Dassa-Zoumé</i> | |
| Honoré Houessou | Social Affairs Agent. Dassa Team Member. |
| <i>Glazoué</i> | |
| Pascal Comlan | Nurse. Glazoué Team Member. |
| Celestin Gansè | Médecin-Chef, Glazoué. |
| Léontine Houéchouanou | Social Affairs Agent. Glazoué Team Member. |
| Jean Zossungbo | Sanitation Agent. Glazoué Team Member. |
| <i>Savalou</i> | |
| Samuel Adjanousi | Nurse. Savalou Team Member. |
| Lucien Sassounon | Sanitation Agent. Savalou Team Member. |

Savé

Chitou Issa

Nurse, Savé Team Member.

Scott Marquis

Peace Corps Volunteer (Guinea Worm Program), Savé.

Faustin Onikpo

Médecin-Chef, Savé.

Appendix D

TOWNS AND VILLAGES VISITED

Dassa-Zoumé

Gbedavo

Ichegou

Kodjatakan

Soclogbo

Glazoué

Béthel

Wédémé

Savalou

Monkpa

Sosse

Savé

Boubou I

Boubou II

Gobé-Lé

Appendix E

SCHEDULE

- 11-12 May Team Planning Meeting in Washington D.C.
- 14 May Arrive in Cotonou (Roark, Kleemeier)
meeting with USAID Representative, US Ambassador
- 15 May Meetings with Department of Rural Water Supply (Direction de l'Hydraulique), Ministry of Foreign Affairs, BURGEAP Consulting Engineers
- 16 May Review documents
Arrive Cotonou (LaPin)
- 18 May Meetings with Peace Corps, UNICEF, World Bank, Direction de l'Hydraulique
Arrive Cotonou (Datta, REDSO/Abidjan)
- 19 May Travel to Bohicon
Meetings with Project Staff
- 20-21 May Visits to Villages
Depart Bohicon (Datta)
- 22 May Meetings with Benino-Swiss Project and project staff
- 23 May Report writing
- 24 May Travel to Cotonou
Report writing
- 25 May Meetings with European Development Fund, Direction de l'Hydraulique, UNICEF
Report writing
- 26 May Report writing
- 27 May Report writing
Submit Draft to USAID
Depart Cotonou (Kleemeier)

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| | |
|---------------|---|
| 28 May | Debrief USAID |
| 29 May | Meeting with Peace Corps; debrief U.S. Ambassador Revise draft |
| 30 May | Revise and submit draft |
| 31 May | Depart Cotonou |

Appendix F

FIELD QUESTIONNAIRE

CDSS

1. What is the role of the committee?
2. Is the composition of the committee appropriate for the job?
3. When was the last meeting or consultation with or without agents present?

(Observations)

1. Attitude of members.
2. Number of members present.
3. Who is taking a leadership role?

Latrines

1. Number built by project, of which type (traditional improved or VIP).
2. Any built by people of their own initiative? Who? Why?
3. Is a school latrine present?
4. If yes, is health education taught in school?

(Observations)

1. Latrine used?
2. Clean?
3. Water/soap in evidence?
4. Other uses of the latrine?
5. Village hygiene.

Pump

1. Any breakdowns?
2. When? What action was taken?
3. Who is responsible for the pump?
4. Any problems with repairmen/spare parts?

(Observations)

1. Condition of pump.
2. Cleanliness of area around the pump and well

Health Education

1. Health campaigns undertaken in village? Which?
 - potable water
 - clean village
 - Guinea worm
 - danger of fecal material
 - use of latrines
2. Who attended the training?
3. Health/sanitation benefits you note from the training.
4. Do you have flipcharts in the village? Which ones? How many?
5. When was the last time extension agents came to your village?
6. For what purpose?
7. Any cases of guinea worm since during last dry season?
8. Is there a UNICEF “animateur” for Guinea Worm nearby?
9. Any guinea worm filters distributed? Which type (UNICEF/percale or USAID/nylon cloth)? How many HH use them?

(Observations)

1. Attitude or interest in health education.
2. Who seems to be in charge?

Financing

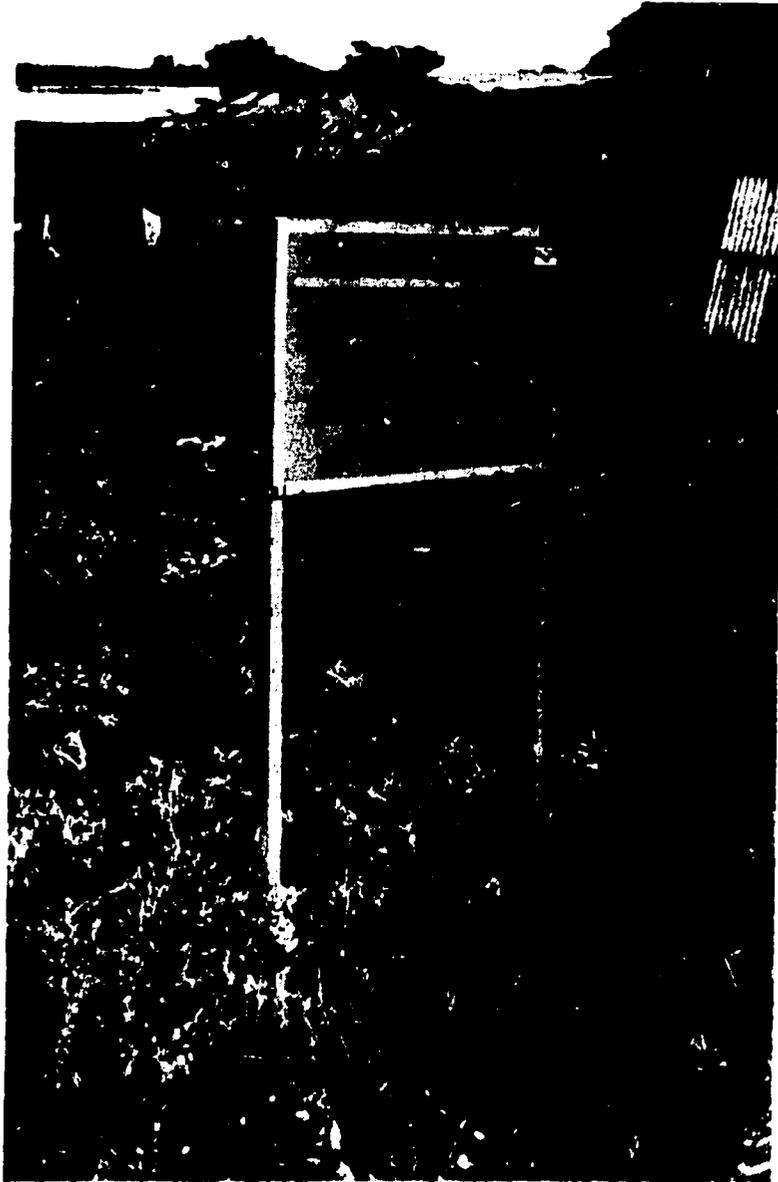
1. From whom did you collect the initial pump fund?
2. How much money is left in the account?
3. Where is the account kept?
4. Did you collect last year?
5. Is the amount collected sufficient for repairs?

Traditional Water Sources (Open wells, pools, ponds, streams, rivers, etc.)

1. Nearest source?
2. How far do you have to walk to reach it?
3. Is the water still used?

Appendix G

PHOTOS



The Project has recognized the importance of community participation, as in the village of Gobe Lema III, in efforts to collect O&M funds.



India Mark II handpumps were found to be well maintained and utilized.



Health committees (CDSS) were found to be active and well versed in project affairs.



For more affluent homeowners the construction of VIP latrines was of interest but were too expensive for most villagers.



Some traditional latrines are found in most villages but they are not very popular.



Wastewater and drainage continues to be a problem in many villages.



The provision of potable water and health education has greatly reduced the use of ponds for water supply and resulted in a significant reduction in Guinea worm.