



**ENVIRONMENTAL HEALTH PROJECT**

# **ACTIVITY REPORT**

**No. 78**

The CIMEP Activity in Benin:  
An Example of the Decentralization  
Processes to Come

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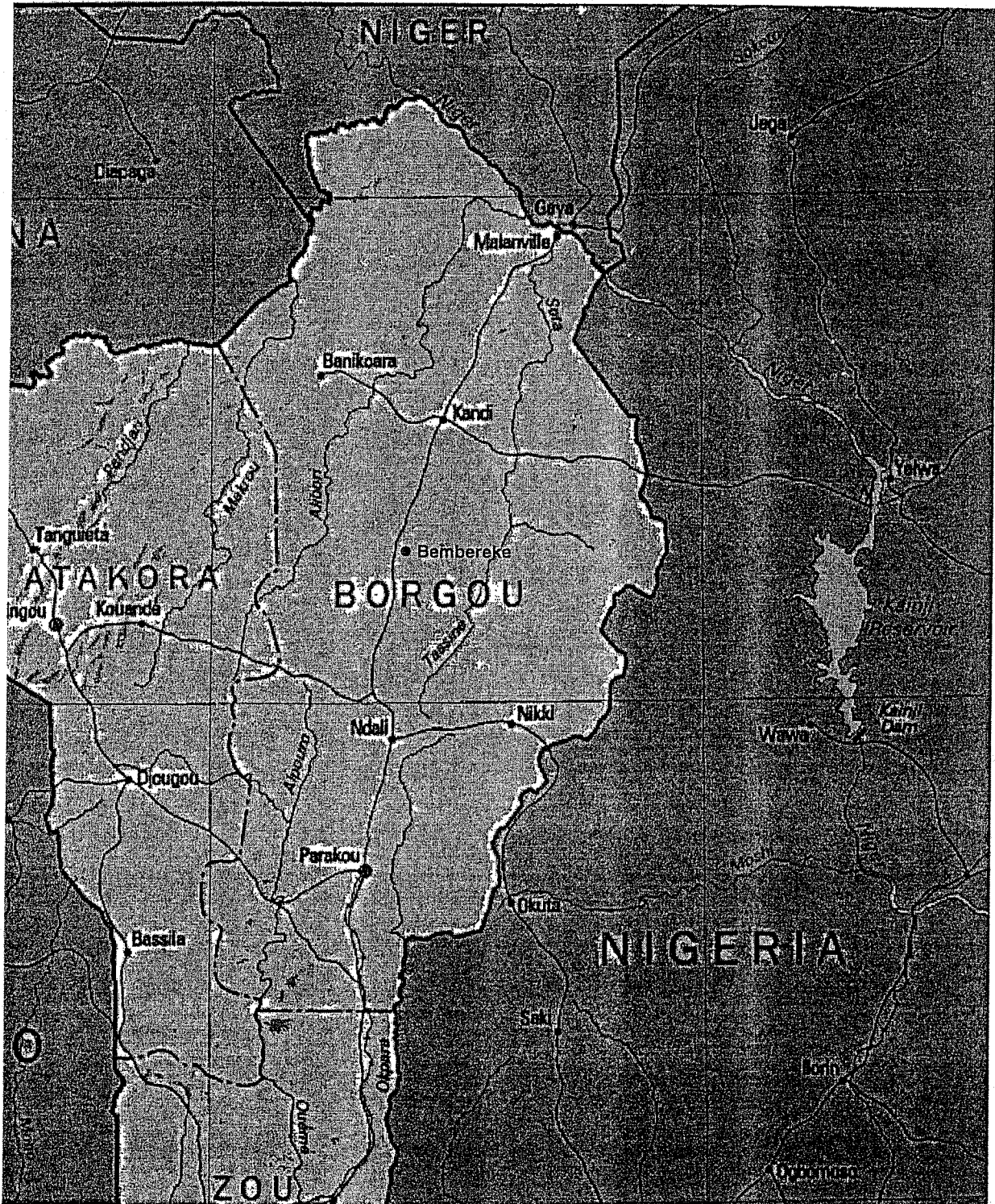
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## ACRONYMS

ADA	African Development Bank
BOA	Bank of Africa
CDSE	<i>Comité Départemental de Santé Environnementale</i>
CIMEP	Community Involvement in the Management of Environmental Pollution
EHP	Environmental Health Project
EME	<i>Equipe Municipale Elargie</i> (expanded municipal team)
IEC	information, education, and communication
MOU	Memorandum of Understanding
NGO	nongovernmental organization
REDSO	Regional Housing and Urban Development Office (USAID Office)
USAID	U.S. Agency for International Development
UMP	United Nations Development Program's Urban Management Program
WASH	Water and Sanitation for Health Project (Sponsored by USAID)
WHO	World Health Organization

# MAP OF THE BORGOU DEPARTMENT, BENIN



## EXECUTIVE SUMMARY

From October 1997 to August 1999, the Environmental Health Project (EHP) implemented an activity entitled “Community Involvement in the Management of Environmental Pollution” (CIMEP) in the Borgou Département in Benin. Three neighborhoods each in the towns of Banikoara, Bembereke, and Parakou were targeted. In addition to being the title of the Benin activity, “CIMEP” refers to a methodology or community-based process that evolved from more than a decade of experience from the former Water and Sanitation for Health (WASH) Project and its successor, EHP.

The Mission in Benin and EHP tried to achieve the following goals in implementing the CIMEP activity in the three towns:

- C Improve maternal and child health by addressing diarrheal disease risk factors.
- C Address diarrheal disease risk factors and related environmental health problems through community-based analysis of the problems and design of solutions.
- C Create a relationship of trust, along with improved provision of services, among the national ministries, municipalities, and client communities.
- C Develop a pilot project that would be a model for the region, and share the experience with other countries and donors.

These goals fit into both the Mission’s child survival and health and democracy and governance strategic objectives.

This report describes in detail the CIMEP activity in Benin, including the goals and strategy; country context; technical team; methodology; indicators; description of activities, which includes the skill-building training, policy roundtables, baseline survey, microprojects, and scale-up; results; lessons learned; and recommendations. The report is intended to give USAID officers, donors, and others interested in these activities an overview of the Benin initiative, what was learned from it, and recommendations for continuing the project.

The main lessons learned from the CIMEP/Benin activity are as follows:

1. *CIMEP Design?* Choosing to partner with the Borgou Département head influenced the orientation and direction of the activity more toward improved governance, that is, municipal and départemental services and processes and resulted in much less emphasis on trying to achieve a measurable health impact. Certain factors should be considered carefully when selecting participating neighborhoods, to ensure that communities are able to make their financial contribution to the microprojects.

For example the sense of neighborhood permanence or community commitment may be less for residents who are renting their homes from absentee landlords in contrast to those renting from other community members. Also, there may be certain times of year when household cash is relatively more available (e.g., harvest time) compared to other seasons.



2. *Methodology?* The Benin experience demonstrated that the methodology is sound, but, as in prior activities, the sequence and timing of the training, microprojects, and baseline survey will vary due to the country context and local constraints.
3. *Measuring Results?* Monitoring and evaluation efforts need to be closely aligned to the level at which the interventions occur? either household or communal.
4. *Integrating Local Governance?* Democracy and governance goals can be successfully woven into the CIMEP process.

Since USAID/Benin is continuing the CIMEP activity for another year under EHP II, the report concludes by providing some guidance to USAID and EHP II for that final year. The recommendations are as follows:

- Continue to hold the policy roundtables and encourage their being institutionalized.
- Continue funding the Local Coordinator and providing him with an office.
- Create another Equipe Municipale Elargie (EME) team in Kandi and have the EME trainers from the original three towns train team members there. Also, continue training the new EME team in Sinende.
- Institutionalize the EME in the municipalities; create a community outreach and local planning unit in each municipality; and coordinate this effort with other USAID actors in Borgou, especially the five-year Integrated Family Health Project.
- Expand the microprojects throughout other neighborhoods in Bembereke, Banikoara, and Parakou and start microprojects in Sinende and Kandi.
- Provide training on cost-recovery components that could be added to the microprojects.
- Develop town- and neighborhood-specific hygiene education materials.
- After another year, consider conducting a health impact evaluation of the microprojects.

# 1

## Activity Background and Context

### 1.1 Introduction

In January 1997, the Environmental Health Project (EHP), funded by USAID's Office of Health and Nutrition, Bureau for Global Programs, Field Support and Research, began discussions with USAID collaborators about developing an initiative in West Africa. This initiative was to address environmental health issues in peri-urban communities through a mixture of skill building, institution strengthening, policy dialogue, and creation of partnerships among municipal officials, community leaders, and local NGOs. After a planning trip in March 1997, the Benin Mission, USAID/Washington through EHP, and the Government of Benin decided to implement a Community Involvement in the Management of Environmental Pollution (CIMEP) initiative in the Borgou Département in Benin. An initial work plan was developed for the activity in March 1997.

Because the first five-year EHP contract came to an end in September 1999, it is useful to have a report on the status of the CIMEP/Benin initiative at that point. This report covers the following areas: goals and strategy; country context; technical team; methodology; evaluation indicators; description of activities, which includes the skill-building training, policy roundtables, baseline, microprojects, and scale-up; results; lessons learned; and conclusion. This report, prepared in September 1999, should give USAID officers, donors, and others interested in these activities an overview of the Benin initiative, what has been learned from it, and how the CIMEP process can be improved for the future.

### 1.2 Goals and Strategy

Although working in collaboration toward similar goals, EHP and USAID/Benin came to this activity with somewhat different focuses. EHP and its predecessor, the Water for Sanitation and Health (WASH) Project, developed the CIMEP approach and had implemented it in evolving forms in several countries. For example, in Ecuador the approach was used to identify behaviors and risks associated with cholera and then to implement interventions that would lead to a reduction of cholera cases in the targeted communities. After the Ecuador experience, the approach was used in Tunisia to create partnerships to extend municipal services to underserved peri-urban communities. Drawing on the lessons learned from these two experiences, EHP wanted to apply an evolved and "expanded" version of the CIMEP methodology in Benin to try to achieve more targeted health results.

The Mission saw it as a good opportunity to fund an activity that would address the Family Health Team's goal of improved maternal and child health through better infrastructure, maintenance, and behavior change and the Democracy and Governance Team's goal of decentralization and democratization through improved management and services to communities at the municipal level. Thus, the Mission was interested in having a synergistic activity that addressed two of its main strategic objectives—health and governance—that had not been achieved before.

In finding the key government counterparts with which to collaborate, EHP discussed the project with the administrative head of the Département—the Préfet—rather than the Départemental Health Officer, although the latter was consulted and engaged to a lesser extent in the project. This relationship was then formalized by a Memorandum of Understanding that was signed at the Start-Up Workshop by USAID, EHP, and the Préfet, who was the representative for the Government of Benin. (See Annex A for a copy of the MOU.) Thus, the CIMEP activity was the first USAID-supported activity to work directly with the administration, on the département level, to improve services and address the cross-cutting environmental health issues—specifically targeting diarrheal disease. It is important to understand this background and set of relationships to clarify the context of the results achieved by the project.

The specific objectives of the CIMEP activity in Benin were as follows:

- C Improve maternal and child health by addressing diarrheal disease risk factors.
- C Address diarrheal disease risk factors and related environmental health problems through community-based analysis of the problems and design of solutions.
- C Create a relationship of trust, along with improved provision of services, among the national ministries, municipalities, and client communities.
- C Develop a pilot project that would be a model for the region and share the experience with other countries and donors.

These goals fit into the Mission's Family Health program, which targeted improved access to and quality of family health services, child survival, family planning, and HIV prevention. CIMEP fell under the Mission's Special Objective No. 3: "Decrease Infant, Child, and Maternal Mortality through Targeted Health and Nutritional Education and Complementary Activities" and Special Objective No. 1: "Improve Governance and Reinforce Democracy." (Special Objective No. 3 is now a Strategic Objective of the Mission.)

In May and June 1997, EHP staff traveled to Benin and worked with the Mission and local counterparts to identify the sites and select participants for this initiative. Given the Mission's desire to focus most of its programs in the Borgou Département, the Préfet's interest in and support of the activity, and the need to target the poorest areas of the country—EHP chose to implement the activity in the three pilot towns of Parakou, Bembereke, and Banikoara in Borgou. After that trip a more detailed, revised work plan was written in August 1997 that described the three towns, the process of selecting participants, institutional setting, and outline of activities.

The specific scope of work involved building local capacity by holding a series of skill-building workshops for municipal teams to learn how to work with communities to identify risk factors, conducting a baseline survey of diarrheal disease factors, implementing community-level interventions or microprojects, highlighting environmental health issues and the CIMEP activity through a regional workshop held in Cotonou, conducting policy dialogue meetings, and replicating the process in other settings.

### 1.3 Country Context

To understand the relevance of this activity, a thumbnail sketch is provided of the overall socioeconomic and political picture in Benin. The estimated population in 1998 was 6.1 million and the area is slightly smaller than the state of Pennsylvania. Average life expectancy is 53.6 years, and infant mortality is high at 94 deaths per 1,000 births (*Statistics in this section come from the 1996 Demographic Health Survey*). For children under five years of age, the mortality rate is 167 deaths per 1,000 live births. These rates have been declining in the last 10 years, but that trend could be reversing itself as a result of declining child survival services. The birth rate is also very high—6.3 children per woman. Though 50% of the population does have access to health services, only about 20% of the people actually use them. As regards diarrhea, based on mothers' recall during two prior weeks, the diarrheal rates for children three years old and younger ranged from a low of 17.2% in the Oueme Département to a high of 35.1% in the Mono Département, with the Borgou Département being on the higher end at 28.1%.

Benin is considered to be “underdeveloped” economically and one of the poorer countries in Africa, with the majority of people surviving through subsistence farming, cotton production, and regional trade. The literacy rate is 37% to 48.7% for men and only 25.8% for women. Basic infrastructure is poor, with only 56% of households having access to clean water and only 19% having their own functioning latrines. These percentages are even lower in the more rural towns in Benin.

The country receives substantial foreign aid. Between 1991 and 1995, foreign assistance amounted to \$1.6 billion, or about 15% of the country's gross domestic product. Figures for 1996 show that 86% of the government's public investment budget came from donors—the top five being France, Japan, the African Development Bank, the World Bank, and the United States. Donors and western countries have been very interested in Benin because of the positive political changes and reforms the country has undertaken in the last 10 years.

In 1990, Benin held a National Conference and took the first steps to shed two decades of dictatorship under a Marxist-Leninist regime and move toward democracy. Since then, multi-party presidential elections have been held twice in Benin, with fair and peaceful transitions to new leaders. The government has instituted structural adjustment programs and made strides toward reducing its bloated civil servant rolls and privatizing failing government enterprises. Donors have been working with the national leaders to decentralize the governmental services and promote better accountability and greater transparency. A decentralization bill is currently

being debated in the National Assembly, and municipal elections will be held once it is passed. Decentralization bills have recently been passed in the National Assembly, but still have to be approved by the judicial branches. Once that occurs, municipal elections will be scheduled. Thus, the country is in a transitional mode. Although instituting these reforms is a slow and difficult process, the political will and grassroots support to make these changes are evident.

### *Borgou Département and the Pilot Towns*

Benin is divided into six départements. Borgou, located in the northeast and bordering Niger, Burkina Faso, and Nigeria, is the largest département, covering 52,098 sq. kilometers—about half the country—with a population of 900,000, or about 10% of the total population of Benin. Borgou has four principal sociocultural groups, with Islam being the dominant religion. It is practiced by 63% of the population. The economic base is agriculture, with cotton and peanuts as the dominant crops. Administratively, the département is run by the Préfet, an appointed position. The next level down is an urban district or a sub-préfecture administered by a district leader or a Sub-Préfet. Below that are Communes, overseen by mayors, that when broken down further are composed of neighborhoods and their leaders. There are also mayors and local leaders. Stakeholders on all these levels were engaged in the start-up and selection process of the CIMEP activity.

The following four criteria were used to select of the pilot towns and neighborhoods: (1) prevalence of pollution risk factors, (2) capacity for social and financial mobilization, (3) prevalence of environmentally related diseases, and (4) socioeconomic characteristics of the population. The three towns and nine neighborhoods chosen were as follows:

C     *Parakou*  
Oueze: 245 households; 1,900 inhabitants  
Banikani: n/a  
Zongo-Zenon: 362 households; 3,300 inhabitants

C     *Bembereke*  
Gando: 500 households; 4,100 inhabitants  
West Bembereke: 200 households; 1,600 inhabitants  
Guere: 300 households; 2,400 inhabitants

C     *Banikoara*  
Kokire: 275 households; 955 inhabitants  
Yandikparou: 500 households; 3,500 inhabitants  
Weterou: 300 households; 2,100 inhabitants

The first town, Parakou, is the capital of Borgou and has an estimated 103,000 inhabitants, with roughly 60% living in urban areas. The town is intersected by two major roads running north/south and east/west that are the main thoroughfares for commerce to Cotonou and Nigeria. Although basic infrastructure, such as roads, water sources, and latrines, exists throughout the town, some areas, including the pilot neighborhoods selected, are less served than others. The other two towns are markedly different from Parakou. Bembereke, located 105 kilometers north

of Parakou, has an estimated 60,000 inhabitants, only about 10% of whom live in the urban district. Banikoara, located 282 kilometers north of Parakou, has a little over 10,000 inhabitants, roughly 85% of whom live in the urban areas. Both of these towns have less infrastructure and more rural characteristics than Parakou. These variations among the three towns, however, were useful because they reflected the range of environmental health issues and administrative constraints found in secondary cities and towns in the département and throughout the country.

## 1.4 Technical Team

The team that implemented the CIMEP/Benin activity and their responsibilities are listed below.

- C May Yacoob, EHP Technical Director for Community Participation, conceptualized the project and provided technical oversight and direction.
- C Margo Kelly, EHP technical staff member, managed the overall activity for EHP and was a liaison with local consultants.
- C Salifou Yallou, Local Coordinator and EHP consultant, was responsible for on-the-ground implementation of the activity, including conducting the training workshops, doing follow-up in the field, organizing the policy roundtables, and administering the microproject funds.
- C Habib Khanfir, Lead Trainer and EHP consultant, was involved with much of the start-up, initial selection, and design of the training workshops.

Two other consultants were also important contributors to the project. Dr. Patricia Hibberd, a physician and an epidemiologist, designed the baseline study. David Miller, an anthropologist, analyzed and assessed the governance and democracy indicators for the activity. The overall work and implementation was done by the Local Coordinator, a Beninese, along with the municipal teams and local officials? such as the Préfet? who contributed much time and energy toward making sure the activity succeeded. The ex-patriate U.S. technical assistance was very limited and targeted, and its purpose, which is consistent with the CIMEP philosophy, was to transfer skills and develop local capacity.

## 1.5 The CIMEP Methodology

During the past five years, the USAID-funded Environmental Health Project has developed a methodology to address peri-urban environmental health issues called Community Involvement in the Management of Environmental Pollution. This approach has enabled local governments and communities—especially “secondary” cities and towns—to build the partnerships and trust necessary to identify environmental health problems. These partners then work together to solve problems through improved service delivery and infrastructure, especially to poor, underserved neighborhoods, and through changes in individual and household behavior. CIMEP moves beyond the health facilities (which are used only by a small percentage of the population in Benin) to work with local municipal authorities and community groups to address household and community risk factors and prevent disease. To achieve this objective, CIMEP focuses on community participation and establishing relationships of trust between the state and civil society. This strategy strengthens local governance, helps the decentralization process, and provides a mechanism for transferring resources to local communities.

CIMEP is rooted in the premise that disease prevention ideally comes from local knowledge that is integrated with a baseline assessment of behavioral and environmental risk factors. Disease prevention is the responsibility of many different ministries working in partnership with community stakeholders. Drawing up a program for disease prevention requires that policymakers from health, public works, environmental, and local government organizations work in partnership with the private sector, traditional leaders, and local NGOs to address identified risk factors and then provide the appropriate infrastructure improvements and behavior change interventions. CIMEP gives government officials and communities a way to address the underlying factors responsible for the spread of major diseases by creating a partnership among municipal technical staff, decision makers, and the communities they serve. This goal is accomplished by creating municipal teams who are a central part of an 18-to-24-month process of skill-building workshops; follow-up in the workplace; policymaker roundtables; baseline and follow-up key behavior and health impact surveys; community-implemented solutions to problems, or microprojects; training of trainers; evaluation; and developing scale-up strategies.

CIMEP is not about a single intervention, such as street sweeping, trash collection, or latrine installation. Rather, it is about the definition of local risk factors that affect the prevalence and persistence of disease and about designing interventions that address these risk factors, whether they are related to behavior or infrastructure. In summary, CIMEP is an innovative approach facilitating community participation and effective governance that focuses on the following:

- C How to create trust between government officials and communities.
- C How municipalities can provide more efficient services to the underserved neighborhoods of secondary cities.
- C Individual and household changes in hygiene behavior.
- C How community interventions can be implemented and sustained.

- C How governments can implement decentralization and obtain resources for communities in a “transparent” manner.

After using this methodology in Belize, Ecuador, and Tunisia, EHP supported its application in Benin.

## 1.6 Indicators

### *Basis for Indicators*

An overall project strategy—along with indicators—was developed in collaboration with the Mission and local officials. The health indicators for CIMEP are related to identifying the risk factors responsible for diarrheal disease on two levels: household behaviors and communal behaviors. The baseline survey confirmed that there were significant rates of diarrheal disease: between 35% and 40% in the pilot communities, compared to sketchy clinic data that measured the diarrheal disease rate at only 3% to 5%. Some household indicators identified in the baseline survey were related to household use of latrines, food hygiene of children five years of age and under, use (or non-use) of soap for handwashing, and protection of household water. This baseline data was used along with known risk factors, such as safe disposal of human excreta, effective and timely handwashing, and protected drinking water, for developing behavioral and hygiene education materials.

Although the literature indicates that the greatest impact on health is achieved through changing household behaviors, this was not possible as the starting point in the Benin context because of the lack of basic infrastructure in the pilot communities (90% of the population defecate in the bush and more than 50% lack access to potable water). Given the time frame and limited resources, the local stakeholders, including municipal representatives, decided to focus instead on communal behaviors such as reducing public defecation by protecting public hygiene facilities (in markets, stadiums, and so forth) from fecal contamination and protecting existing sources of water. The necessary infrastructure and community awareness needed to be established before addressing household behavior change. The project focused on first getting local communities to understand and accept what the overall risk factors were and then work on certain communal goals, such as ensuring proper utilization and care of public latrines for children and adults.

Microprojects were then set up to build these communal infrastructures and work on changing public behavior. Indicators of certain improved behaviors were tied to these microprojects. These indicators included the following:

- C Cessation of indiscriminate defecation near food in the marketplace
- C Cessation of indiscriminate defecation in the neighborhood
- C Appropriate handwashing behavior
- C Improved quantity and quality of principal water source
- C Protection of food from flies



C Reduction of flies feeding on wet or rotting garbage

A number of governance indicators were also developed in the following five areas:

? Changing government perceptions

Indicators:

- Number of instances in which a government agent consulted with community members about solutions to specific issues.
- Number of instances a government agent can cite in which community members influenced the implementation of a public work.

? Locus of problem identification

Indicators:

- Percentage of persons in the community who are aware of the problem identification process
- Percentage of persons in the community who demonstrate participation in a problem identification session (as determined by a sample survey of the community)
- Percentage of persons in the community who, when asked to list the three environmental health problems that concern them the most, include at least one problem identified by the activity
- Number of persons attending problem identification sessions
- Number of community leaders attending problem identification sessions
- Number of government representatives attending problem identification sessions

? Locus of solution analysis

(Same indicators as locus of problem identification, above, with obvious modifications)

? Locus of management

Indicators:

- Control over microproject account by community members
- Recognized construction oversight responsibilities held by community members

? Increased government and community communication and collaboration

Indicators:

- Number of times (in the last week) an Equipe Municipale Elargie (EME) member has spoken with a member of the Comité Départemental de Santé Environnementale (CDSE) outside of the roundtable meetings.
- Number of times (in the last week) a community leader has spoken with a member of the EME outside of project community participation sessions (or off the microproject site).

# 2 Description of Activities

The previous chapter outlined the first phase of the activity, the planning and start-up phase. It included an initial assessment; selection of partners, trainers, project sites, and members of municipal teams and the roundtables; and the start-up workshop. This chapter describes the second and third phases: training and scale-up. The training phase is really the heart of the CIMEP process. The main components of this phase are: skill-building workshops, field work and follow-up, policymaker roundtables, a baseline survey, and initiation of microprojects. During a series of workshops, the EME members developed skills to facilitate community participation, work productively with local communities, and learn how they and their organization could contribute to the solution. The training took place in several cycles, each of which was followed by field work. At the skill-building workshops, the EME members gained participatory assessment skills, applicable technical knowledge of environmental health issues including diarrheal disease risk factors, and knowledge of how to set up and administer microprojects with community committees. With the guidance of the CIMEP trainers, EME members then practiced these skills back in their own communities. Much of this process was guided by a baseline survey of risk factors for childhood diarrheal disease that was performed between the second and third skill-building workshops. Through the microprojects, the EME members worked with communities to plan and implement low-cost interventions paid for by the activity and community contributions. During the training phase, regular policy roundtables were held to review the EME teams' progress and the microproject implementation and to address constraints inhibiting the process. The scale-up phase, which includes additional training and adding a fourth EME team, is still evolving as of this writing. A more detailed description of the various training and scale-up components is presented in the following sections.

## 2.1 Skill-Building Workshops

The CIMEP/Benin process, which included a start-up workshop and a series of skill-building workshops, began in October 1997. These skill-building workshops were integral to the success, sustainability, and replicability of the overall approach. They built on the decisions made and the relationships formed during the initial phase and start-up workshop. After each skill-building workshop, follow-up activities in the communities allowed immediate application of skills and plans developed during the workshop. This training played an important part in teaching the team members the CIMEP concepts and process. The baseline survey was conducted between the second and third workshops. The data gathered from the survey was discussed with communities in open meetings before the third workshop and. The survey results and feedback

from the communities were then used in the third workshop for development of the microprojects.

There were approximately 70 participants at the start-up workshop, including donor representatives, national-level and départemental-level stakeholders, pilot town officials, and all municipal team members. The skill-building workshops were attended by 25 to 30 municipal team members. For each town there were four to five local public sector representatives (for example, a civil engineer, geographer, Ministry of Health inspector, and forester), two to three community representatives, and two nongovernmental organization (NGO) representatives.

Table 1 below provides an activities timeline including timing of workshops. A chronological list of the workshops, their objectives, and results are presented in the sections which follow.

**TABLE 1. CIMEP/Benin Activities Summary**

<b>Time Period</b>	<b>Activity</b>
May-August 1997	Site and Participant Selection Revision of Work plan
October 1997	2-day Start-Up Workshop
October 1997	First Skill-Building Workshop
October 1997	First Départemental Roundtable (Parakou)
December 1997	Second Départemental Roundtable (Bembereke)
January 1998	Second Skill-Building Workshop
February 1998	Baseline Survey
April 1998	Third Départemental Roundtable (Banikoara)
May 1998	1-day National Policy Roundtable
May 1998	3-day Regional Workshop
June 1998	Third Skill-Building Workshop
August 1998	Fourth Départemental Roundtable (Parakou)
August 1998-August 1999	Microproject Implementation
October 1998	Fifth Départemental Roundtable (Bembereke)
December 1998	Sixth Départemental Roundtable (Parakou)
March 1999	Seventh Départemental Roundtable (Banikoara)
May 1999	Eight Départemental Roundtable (Parakou)
May 1999	Ninth Départemental Roundtable (Parakou)
July 1999	Fourth Skill-Building Workshop
August 1999	Fifth Skill-Building Workshop
August 1999	10th Départemental Roundtable

### **2.1.1 Start-Up Workshop, October 9-10, 1997-Parakou**

#### *Objectives:*

The overall objective of this workshop was to make an official presentation of the activity to the départemental, local, and national authorities and to secure their commitment to the activity itself and the process. An auxiliary objective was to make the populations in the pilot communities aware of the process through their representatives, i.e., mayors, delegates, and municipal team members who attended the meeting.

#### *Results:*

- C Local départemental and administrative authorities “bought-in” and supported the activity’s objectives.
- C A Memorandum of Understanding outlining the objectives of the activity and the partner responsibilities was signed by the Préfet of Borgou, USAID, and EHP. (See Annex A.)
- C Policy roundtable members were officially introduced to the activity and their public support was secured.

### **2.1.2 First Skill-Building Workshop: EME Skills Development, October 13-16, 1997-Parakou**

#### *Objectives:*

The immediate objective was to reinforce the skills of the EME members for identifying environmental health problems in their communities. That process helps meet the underlying “real” objective—enabling people in the pilot communities to identify their environmental problems in a participatory manner and to decide what priority problems they would concentrate on resolving.

#### *Results:*

- C EME members learned participative techniques, such as community mapping, neighborhood histories, focus groups, and interviewing, to identify the environmental health problems in their neighborhoods.
- C The use of these techniques resulted in the identification of 8 to 10 priority environmental health problems in each pilot neighborhood.
- C Indirectly, these activities have helped create community dialogue and reflection on these environmental health issues.

### **2.1.3 Second Skill-Building Workshop: Researching and Analyzing Solutions to Household and Community Environmental Health Issues, January 12-16, 1998-Parakou**

*Objectives:*

- C Help the EME develop a better understanding of the problems identified during the first phase of CIMEP.
- C Provide the EME members with the necessary research and analysis tools to determine solutions to the environmental health problems identified.
- C Reinforce community animation skills in the EME members.

*Results:*

- C The EME members learned group animation skills.
- C The EME members learned research and analysis skills, such as creating a causality tree, tree of hope, and matrix of solutions.

### **2.1.4. Third Skill-Building Workshop: Microproject Development and Implementation, June 1-5, 1998-Parakou**

*Objective:*

After analyzing the problems and identifying appropriate solutions, the principal objective was to develop the microprojects in a participative manner with the communities. A second objective was to have the EME members understand the behavior change needed to assure the sustainability of the planned interventions.

*Results:*

At the end of the workshop, the EME members had learned how to develop microproject proposals with the communities that could be submitted to the roundtables for technical and financial review and approval. These proposals included the objectives of the microprojects; desired results, including targeted behavior change; work plan and timetable; and budget.

**2.1.5 Fourth Skill-Building Workshop: Developing Communication Strategies for Reinforcing Behavior Change - July 19<sup>th</sup> 23, 1999<sup>th</sup> Parakou (This workshop was attended by more than 70 people, including not only the EME team members but also roundtable members, artists, and journalists.)**

*Objectives:*

The objectives of this workshop were as follows:

- C Assist community management teams who had directed the infrastructure improvement microprojects in understanding the operations and maintenance issues of communal services that had been put in place.
- C Create awareness for behavioral change needed in the use of the infrastructure.

*Results:*

EME members learned how to work with communities to have systems in place for proper care and use of this infrastructure.

**2.1.6 Fifth Skill-Building Workshop: EME Skills Development for Sinende, August 2<sup>nd</sup> 6, 1999<sup>th</sup> Sinende (15 people attended this workshop)**

*Objectives:*

As with the first skill-building workshop in Parakou, the objective was to reinforce the skills of the EME members for identifying environmental health problems in their communities, and to work with community members in accomplishing this goal.

*Results:*

- C EME members learned participative techniques, such as community mapping, neighborhood histories, focus groups, and interviewing, to identify the environmental health problems in their neighborhoods.
- C The use of these techniques resulted in the identification of 8 to 10 priority environmental health problems in each pilot neighborhood.
- C Indirectly these activities have helped create community dialogue and reflection on these environmental health issues.

## 2.2 Policy Roundtables

Municipalities and communities must change how they interact—that is, new policies must be formed and institutional change must occur—to address environmental health issues. This happened as a result of the policy roundtable component of the CIMEP activity. Along with the selection and formation of three EME teams at the start of the activity, a policymakers' roundtable including approximately 15 members was created to oversee and guide the process. This group was referred to as Comité Départemental de Santé Environnementale or CDSE. Attendance at the roundtables included départemental-level officials (for example, the District Health Officer) and district-level officials (e.g. District Representative for Department of Planning and Statistics) and municipal-level (such as mayors), EME coordinators, selected EME members, and the CIMEP Local Coordinator. The Borgou Département head, the Préfet, always chaired and ran the meetings.

To date, 10 roundtables have been held. The meeting site has rotated among the three towns—Parakou, Bembereke, and Banikoara. Varying the meeting place has been an important feature of the roundtables because it has forced départemental officials, who live and work in the départemental capital, Parakou, to travel to outlying towns, see firsthand the conditions there, and interact on a regular basis with the local officials and citizens in those communities. The result has been better knowledge, greater trust, improved working relationships between départemental and local officials, and more understanding of the communities they serve.

The purpose of the CIMEP policy roundtables is to identify and address policy constraints. Municipal team members report on the interactions with the communities (which result from the skill-building workshops) and inform roundtable members of any problems they encounter. The policymaker roundtables then look at these issues and make any necessary policy changes. Being involved in this process also allows officials to develop solutions to any constraints that may hinder the EMEs in their work with the communities. At the same time, the policy roundtables also facilitate synergy between the state and civil society, as policymakers gain a better understanding of what is going on in the client communities they are supposed to serve.

The roundtable members participated in the start-up workshop, and thus they have been included in the process from the beginning. Roundtables have been held approximately every four to six weeks. At first, they were held at about the same time as the skill-building workshops, but later their timing was determined by what was needed for the review and evaluation of the microprojects. The early roundtable meetings focused on creating awareness among members about the concept of environmental health and what issues had been identified by the communities through the qualitative assessment and baseline survey. Once the microprojects geared up, the meetings focused more on addressing resource, policy, and procedural issues that needed to be resolved.



Each microproject was technically reviewed at a roundtable meeting. In one instance, proposed public latrines for markets and stadiums were situated too close to wells and had to be moved to more appropriate spots. In another case, public showers were not built because the proposed site had insufficient drainage. Had they been built where proposed, there would have been standing graywater. Sometimes roundtable members would refer microproject committee members to local technicians for review of specialized issues. Roundtable meetings have included site visits to review microprojects.

Particularly in the Benin context, the roundtables have been important to the government's goal of decentralization of services and funding. The CIMEP process has established structures for the government to transfer and disperse funds on a grassroots level directly to the communities, and for the communities to identify and manage interventions. No other mechanisms like this—with transparency, accountability, and community engagement and support—are in place within the current government structures. Thus, the CIMEP process is a model for the government to achieve its goal of decentralization of services and funds.

In assessing the roundtables, it must be stated that a great deal of energy and resources were expended to set them up and establish the format and process. Although it is difficult to point to specific policies that resulted from roundtables, they did help to identify and resolve daily constraints hindering action. In subsequent stages, these problem-solving mechanisms will need to be institutionalized into *départemental* policies. A good sign, however, is that this policymaking process started in a decentralized manner. For example, the *Sous Préfets* are now institutionalizing the EMEs in their towns?the first step in creating municipal capacity for local-level planning and problem resolution.

The new partnership between local officials and community representatives in Benin was reinforced through the policy roundtables. Government officials—both at the *départemental* and the municipal levels—have become more aware of local problems and more responsive to their client communities. Furthermore, government officials can draw on this partnership to identify and support solutions to environmental health problems that are appropriate in the local context.

Building on the experience in Benin, some characteristics were identified to chart progress in the governance processes:

- ? *Institutional Behavior Change.* This can be seen in how directors responsible for environmental health improvements now define their roles and responsibilities in bringing about a solution to problems emerging from local communities. *Département*-level planning and budgeting will in the future include local, decentralized solutions to problems. Government officials will begin to view communities as sources of knowledge, experience, and rational decision making. Communities are now considered to be their clients.

- ? *Problem Definition.* Problem resolution is based on community institutions defining their problems through the roundtable, thereby enabling implementation of these solutions. This pattern differs from the old paradigm in which outside experts “define” the problem, or donors come in with one type of intervention that they promote and support.
  
- ? *Accepting Variability.* Single-intervention solutions are easy to manage from a policy point of view. Through the roundtables, officials have begun to understand the complex causal factors that can vary from neighborhood to neighborhood. With this new understanding, they can develop policies that are relevant to local conditions and local manifestation of the problems.
  
- ? *Supporting Local Management.* Local management—especially management of infrastructure—requires technical know-how that local communities do not usually have. The policy roundtables, through their review of the microprojects, can provide needed technical expertise and can provide support for community management of local interventions.

## 2.3 Baseline Survey

In February 1998, a baseline survey of the risk factors in the transmission in diarrheal disease of households with children five years of age and younger was conducted in the three pilot neighborhoods. The survey was designed by a U.S. physician and epidemiologist, Dr. Patricia Hibberd, and was conducted with the help of a local epidemiologist, Dr. Leon Kohossi, and in collaboration with Dr. Moussa Yarou from the Ministry of Health. The local trainer, Salifou Yallou, and the lead trainer, Habib Khanfir, oversaw actual process of conducting the survey.

The original intent had been to do a follow-up baseline survey about a year after the baseline survey. This did not happen because of certain factors and the way the activity evolved. First, the baseline survey was conducted in February 1998, which is not diarrheal- disease season in Benin. Dr. Hibberd, who designed the first study, recommended that a follow-up baseline be conducted in May 1999 during the high diarrheal season. However, in January 1999 the Mission awarded its five-year Integrated Family Health Project targeting prevention and household behavior and announced it would conduct its own baseline survey. Subsequently, the Mission felt it was better for EHP not to duplicate these efforts by doing another similar survey in the département. The Integrated Family Health Project is indeed using information from the CIMEP baseline to develop its survey, so there will be some degree of follow up and carryover of findings.

### 2.3.1 Preparation for the Survey

As mentioned in the overview of the skill-building workshops, focus groups were conducted to train the EMEs in recognizing high-risk behaviors. Focus group discussions were then conducted to find out what concerns people in the communities had about their health and environment. A total of 44 concerns were reported by the teams from the three towns. The known risk factors along with these “concerns” were used to prepare a baseline survey to evaluate risk factors for childhood diarrheal disease and to assist in designing the community interventions and microproject phase of CIMEP. The purpose of the survey was to determine the actual and perceived risk factors for diarrheal disease (and related illnesses); these data were then used as input for developing the interventions.

An initial evaluation was made of the information obtained from the focus groups. The 44 concerns that were raised were classified according to risk factors for major childhood diseases. Of the 44, 40 (or 91%) were risk factors for childhood diarrhea. The remaining concerns were risk factors for other diseases, including malaria. The concerns were also classified into community concerns, household concerns, or both. Of the total, 24 were identified as community-level risk factors, 9 as household-level risk factors, and 11 as both community- and household-level risk factors. This breakdown was useful information for designing the survey.

Site visits to all three towns were conducted to evaluate the risk factors and the feasibility of conducting a morbidity or prevalence survey of diarrhea in children under age five. Hospitals or clinics were visited in two of the three towns—Bembereke and Banikoara. The importance of childhood diarrhea was confirmed by these visits, with a peak incidence, according to clinic records, occurring from June to September. Based on household visits that staff in both hospitals had conducted in surrounding communities, only a small proportion of childhood diarrhea cases were treated in the medical facilities. In addition, the number of hospital visits for children fluctuated widely (up to twofold) from year to year, according to hospital statistics. Malaria was also recognized as a major health issue, but concerns were raised about the validity of the diagnosis of malaria. Visits to community sites indicated that communities had already instituted some changes since the focus groups had met (for example, in Bembereke, some garbage sites were being dismantled, and prepared food being sold in the marketplace was often covered). Visits to the community and a random selection of households in each town indicated that there were several other projects focusing on the environment and health—particularly in Bembereke and Banikoara. The pilot survey of households indicated that the respondents understood the term “diarrhea,” when it was described as more than three bowel movements in any day within the previous 14 days. The term was tested in both French and Bariba, as needed in the pilot survey households. (Bariba is the language most widely used in Bourkou.)

Household risk factors were classified according to predetermined categories. During the baseline survey, the proportion of households with risk factors was reported by town and by community. The baseline data within each town were used to compare risk factors for diarrhea in households that had children with and without diarrhea. Risk factors between the towns were not compared, as specified by the study design. The prespecified risk factors are presented in Figures 1 through 6 in Annex B and included source of water (probably safe, possibly safe, or

probably unsafe); uncovered drinking water; not washing hands with soap and water before eating, after defecating, and after cleaning children's bowel movements; last meal of youngest child (safe or unsafe); cleanliness of the eating area (garbage present, excrement present); presence of nondomestic animals in the household; lack of rubbish disposal system; lack of a household latrine; inappropriate places of defecation for adults and children; beliefs about diarrhea (preventable or not preventable); and known causes of diarrhea (or do not know causes). Risk factors were compared using either a Fisher's exact test or a chi-squared test, and an odds ratio with a 95% confidence interval was reported.

Annex B of this report contains the major findings of the baseline survey report, including a detailed breakdown of the results by town and neighborhood.

### 2.3.2 Major Findings from the Baseline Survey

The baseline findings were used in the microproject phase. Communities developed proposals that identified not only infrastructure improvements they could implement but also links between the physical improvements and the behavior changes that must accompany them. Throughout the CIMEP process, community-level input was sought and people were given choices on how to spend their resources. Not all the risk factors were addressed in the microprojects. For example, none of the communities opted for soap distribution projects. The range of possible interventions to address diarrheal disease risk factors included improving handwashing practices and latrine use—the latter is where most of the communities targeted their energies.

In each town, the baseline data were used to evaluate risk factors for diarrhea. The potential risk factors included the following:

- ? Household water sources?probably safe, possibly safe, probably unsafe
- ? Household drinking water?covered or uncovered
- ? Self-reported handwashing before eating?soap and water or no soap and water
- ? Self-reported handwashing after defecating?soap and water or no soap and water
- ? Self-reported handwashing after cleaning children's bowel movements?soap and water or no soap and water
- ? Youngest child's last meal—safe or unsafe
- ? Garbage in the eating area—present or absent
- ? Excrement in the eating area—present or absent
- ? Garbage collection bins—present or absent
- ? Household latrine—present or absent
- ? Adult disposal of feces—appropriate or inappropriate
- ? Children's disposal of feces—appropriate or inappropriate
- ? Nondomestic animals in the courtyard—present or absent

- ? Reasons that children get diarrhea—a reason given or responder did not know why
- ? Opinion about whether diarrhea is preventable—preventable or not preventable, or did not think that diarrhea was preventable

In Parakou, none of these household risk factors were associated with children having diarrhea within the last two weeks. In Bembereke, children of respondents were four times more likely to have diarrhea if their mother could not provide any reasons that children had diarrhea (odds ratio 4.1, 95% confidence interval 1.3–12.7,  $p = 0.02$ ). In Banikoara, children of respondents were six times more likely to have diarrhea if soap and water were not used for handwashing after defecation (odds ratio 6.0, 95% confidence interval 1.2–28.7,  $p = 0.02$ ). They were also five times more likely to have diarrhea if their mother did not use soap and water to clean her hands after cleaning up children’s feces (odds ratio 5.4, 95% confidence interval 1.1–26.0,  $p = 0.04$ ). Children of mothers in Banikoara who thought that childhood diarrhea was not preventable were three times more likely to have diarrhea than children of mothers who thought that diarrhea was preventable (odds ratio 3.3, 95% confidence interval 1.1–9.4,  $p=0.04$ ).

These findings resulted in the lessons learned that are detailed below:

*Levels of Infrastructure Coverage and Diarrhea.* Although there was wide variation in risk factors for diarrhea in the three towns, overall the proportion of households with at least one child with diarrhea was similar and higher than had been expected from the pilot survey. Surprisingly, even though Parakou had the best infrastructure, the prevalence of diarrhea there was similar to Bembereke’s and Banikoara’s. As expected, younger children were at the greatest risk for developing diarrhea.

*Locally Perceived Causes and Definitions of Diarrhea.* Diarrhea was not identified as a major health concern by the majority of respondents. There are two possible reasons for this: (1) diarrhea may have been identified as the more frequently reported “abdominal problem” not as diarrhea specifically, and/or (2) the question asked specifically about health concerns of the respondent, not specifically her children. Teething was the most frequently mentioned cause of diarrhea in all three towns, although cleanliness and care and protection of food and water were recognized as important ways to prevent diarrhea. In both Bembereke and Banikoara, children of respondents who had knowledge about causes of diarrhea and its ability to be prevented were less likely to have diarrhea.

*Water Sources.* Use of unsafe sources of water was widespread. Frequently, community and household wells were uncovered, and some were not even protected by a built-up edge. Household drinking water was frequently left uncovered in the communities outside Parakou, and very few households anywhere treated their drinking water.

*Food Hygiene.* Use of unsafe sources of food for children under age five was widespread, including food for children under five months who should be exclusively breast-fed, according to World Health Organization (WHO) guidelines.

*Indiscriminate Defecation.* Defecation in inappropriate places by both children and adults is widespread in all communities and is partly related to lack of household latrines. In addition to improving the availability of both public and household latrines, there is room for improvement in households that already have latrines. This can be done through education about the connection between fecal contamination and diarrhea and by keeping latrines clean, emptying them when full, and promoting use of household latrines by children.

*Domestic Animals and Household Hygiene.* Cohabitation of families with nondomestic and domestic animals is widespread. Alternative locations are needed to house nondomestic animals, or animals need to be corralled to safely contain their excreta. Education on eliminating excreta from places where family members prepare and eat food is also needed.

*Handwashing: Knowledge versus Practice.* Although the belief is widespread that handwashing is an important way to prevent diarrhea, this belief did not result in the use of soap and water to wash hands before eating, after defecation, or after cleaning children's bowel movements. The reasons for not using soap and water may include the cost and unavailability of soap and the lack of education on the importance of using soap and water as compared with using water alone. Since use of water alone for handwashing is widespread, availability of water does not seem to be the limiting factor.

*Solid Waste: Sites for Public Defecation and Flies.* Handling of wastewater and garbage is inadequate in the majority of households. Infrastructure is urgently needed in many locations to eliminate garbage accumulating in the households and in the communities.

From the analysis of the data, a number of possible microprojects, or related components, were identified. These included (1) education about the importance of protecting household wells and water storage vessels as well as treating drinking water, (2) better use of latrines by children, (3) elimination of excreta where family members prepare food, (4) education about the importance of using soap, and (5) education about the appropriate disposal of water and garbage to reduce breeding sites for flies and mosquitos. It is important to point out, however, that there are many risk factors for childhood diarrheal disease identified in the baseline survey. Thus, by moving into the intervention phase and developing the microprojects within the two-year period, only a limited number of these risk factors could be targeted.

## **2.4 Microprojects**

Microprojects were a key component of the CIMEP process in Benin. They enabled community members to take concrete actions regarding an environmental health problem. The purpose of the microprojects was to provide hands-on, experiential learning in implementing a community intervention or solution that includes both a physical improvement and a behavior change aspect to a priority problem. People came together and worked toward a common community vision. At the same time, the microprojects provided a vehicle for strengthening institutions and building trust. Communities learned how to handle accounting and disbursing of funds for microprojects. They also determined what resources—financial, technical, or in-kind—the community could contribute to the process. Thus, microprojects were crucial for building and reinforcing individual and institutional capability and trust.

In June and July 1998, the EME members worked with community committees that had been formed to develop microproject proposals. The EMEs helped the committees incorporate a behavioral component related to the microproject. Each intervention, or microproject, had a cluster of behaviors (such as causal factors related to diarrheal disease) and environmental risk factors associated with it that were drawn from the baseline assessment. The targeted behavior change could take place at the community or household level. Contracts with the communities were set up concerning the behavior changes associated with the microprojects. Each microproject had to meet the following criteria:

- C Addresses behavioral and environmental risk factors for the disease(s) of concern identified in a baseline assessment.
- C Includes community contributions—of both money and labor—to the microprojects.
- C Monitors the specific behavior and environmental changes.
- C Contributes to the community’s common vision for improving environmental health.
- C Involves a community committee in planning and implementation.
- C Is approved by the policy roundtable for appropriateness and technical feasibility.

Table 2 below lists the microprojects by town and neighborhood, giving the physical intervention, the associated communal change which occurred, and benefits of these changes.

**Table 2. Benin Microprojects Implemented, August 1998 to August 1999**

Location	Physical Intervention	Associated Communal Change*	Benefits
Bembereke: West	1. Marketplace latrine repair  2. Repair water source	Cessation of indiscriminate defecation near marketplace food. Introduction of handwashing behavior in marketplace area.  Proper care and maintenance of water source.	Provided the first children's latrine in marketplace. Market women became organized about food protection. Garbage and human waste were removed.
Bembereke: Gando	1. Repair water source  2. Construction of new latrine	Organization of community women to protect the water source. Removal by townspeople of garbage and human waste around the water source.  Cessation of indiscriminate defecation near food in the marketplace. Introduction of handwashing behavior in the market area.	Improved quantity and quality of principal water source.  Better public hygiene at the marketplaces Reduction in spread of disease.
Bembereke: Guere	1. New market shelter and repair of market latrine  2. New latrine	Cessation of indiscriminate defecation near food in the marketplace. Introduction of handwashing behavior in the market area. Protection of food from flies. Removal of garbage and human waste from around latrine.  Cessation of indiscriminate defecation in the neighborhood. Introduction of handwashing behavior.	Provided the first children's latrine in marketplace. Organization of market women for food protection.  Better public hygiene at the markets. Reduction in spread of disease.
Banikoara: Kokire	1. New latrines  2. Covered used-water drainage	Cessation of indiscriminate defecation near food in neighborhood. Introduction of handwashing behavior.  Reduction of mosquito breeding sites. Reduction of flies feeding on wet or rotting garbage.	Provided the first children's latrine in neighborhood. Community-organized maintenance plan.  Better public hygiene. Reduction in spread of disease.



Location	Physical Intervention	Associated Communal Change*	Benefits
Banikoara: Weterou	<p>1. New latrine</p> <p>2. Covered used-water drainage</p> <p>3. Repair of two communal wells and connection to public sewage system</p>	<p>Cessation of indiscriminate defecation near food in neighborhood. Introduction of handwashing behavior.</p> <p>Reduction of mosquito breeding sites. Reduction of flies feeding on wet or rotting garbage.</p> <p>Organization of communal women to project and clean water sources.</p> <p>Organization of communal women to maintain water sources and pay bills with financial resources collected from sale of water.</p>	<p>Provided the first children's latrine in neighborhood. Community-organized maintenance plan.</p> <p>Better public hygiene. Reduction in spread of disease.</p> <p>Improved quantity and quality of water sources in the neighborhood.</p>
Banikoara: Yadikparou	<p>1. Waste disposal</p> <p>2. New latrine</p> <p>3. Covered used-water drainage</p>	<p>Reduction of flies feeding on wet or rotting garbage. Cessation of indiscriminate defecation in unauthorized garbage dumps.</p> <p>Cessation of indiscriminate defecation in neighborhood. Introduction of handwashing behavior.</p> <p>Reduction of mosquito breeding sites. Reduction of flies feeding on wet or rotting garbage</p>	<p>Better public hygiene. Reduction in spread of disease. Community-organized maintenance plan, including transportation fee for garbage removal.</p> <p>Better public hygiene. Reduction in spread of disease Community-organized maintenance plan.</p> <p>Better public hygiene on streets and between houses. Reduction in spread of disease.</p>
Parakou: Zongozenon	<p>1. New latrine</p> <p>2. Covered used-water drainage</p>	<p>Cessation of indiscriminate defecation in neighborhood. Introduction of handwashing behavior.</p> <p>Reduction of mosquito breeding sites. Reduction of flies feeding on wet/rotting garbage.</p>	<p>Better public hygiene. Reduction in spread of disease. Community-organized maintenance plan.</p> <p>Better public hygiene. Reduction in spread of disease.</p>
	<b>Physical</b>	<b>Associated Communal</b>	

Location	Intervention	Change*	Benefits
Parakou: Oueze	1. Covered used-water drainage  2. New latrine	Reduction of mosquito breeding sites. Reduction of flies feeding on wet or rotting garbage.  Cessation of indiscriminate defecation in neighborhood. Introduction of handwashing behavior.	Better public hygiene. Reduction in spread of disease. Community-organized maintenance plan.  Better public hygiene. Reduction in spread of disease.
Parakou: Banikani	1. Road repair and drainage	Building trust in a disenfranchised community.	Better public hygiene and safety.

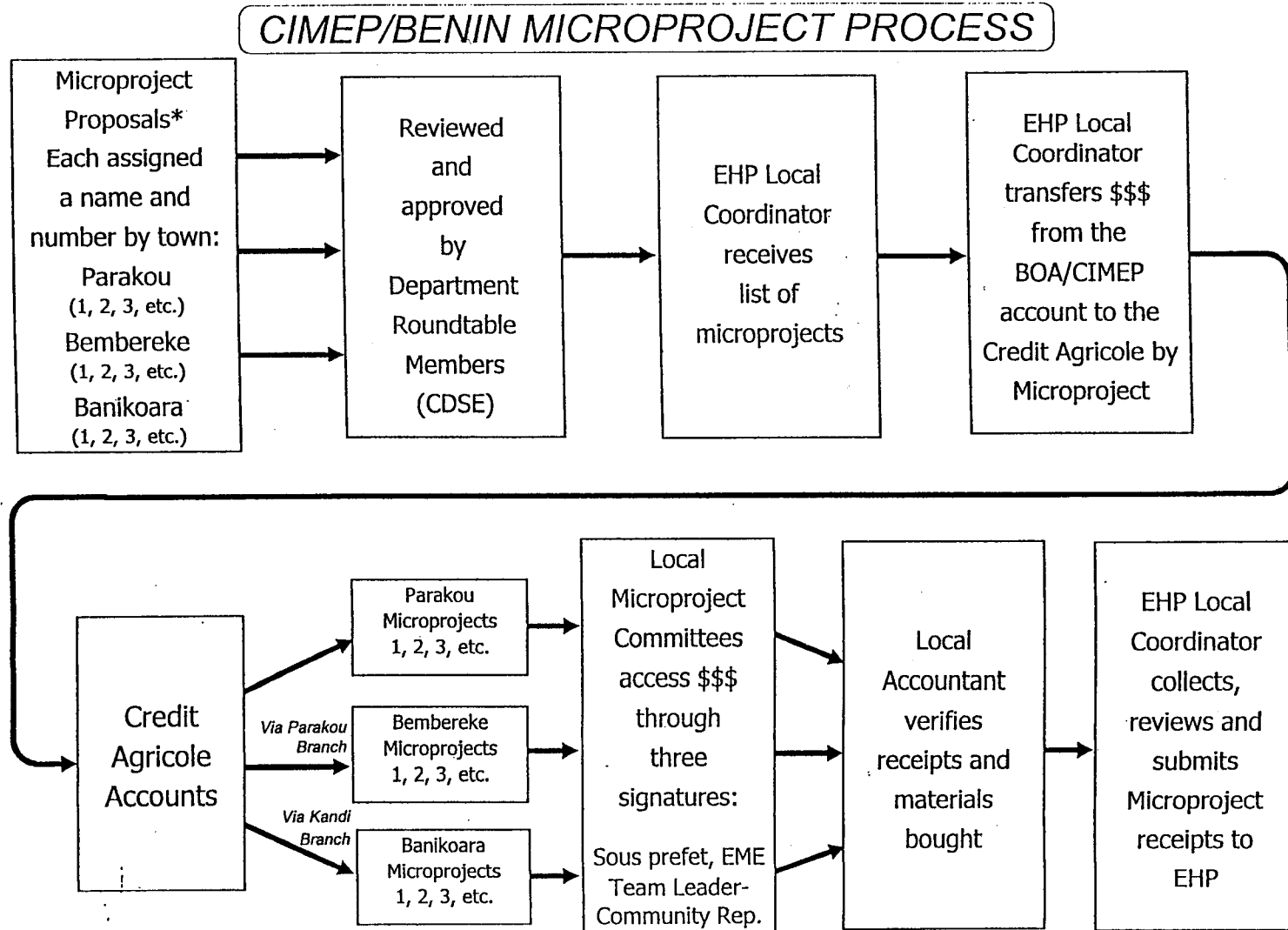
\*Results listed in this column were observed, but not quantified.

In addition to improving communal infrastructure and related health benefits, the microprojects provided experiential learning in that communities themselves collected and managed resources. Doing this in an open and transparent manner was an important part of the process. Given the limited banking infrastructure in Benin, EHP developed the following process, with built-in controls and checks, for transferring and dispersing microproject funds to communities:

1. EHP transferred funds in tranches of \$10,000 to \$15,000 to a CIMEP microproject account at the Bank of Africa (BOA) in Parakou. Only the Local Coordinator has access to the account.
2. The département roundtable members met, reviewed, and approved (or returned for revisions) the microproject proposals submitted from the neighborhood committees in the three towns.
3. The EHP Local Coordinator transferred monies from the BOA account to each microproject account, which was identified by name and number, at the “Crédit Agricole” (Farmers Savings & Loan) in Parakou, Bembereke, and Banikoara.
4. Microproject funds were accessed from the Crédit Agricole by withdrawal requiring signatures of three people: the sous préfet, EME team leader, and the community representative.
5. Each microproject committee organized its receipts, which were reviewed and verified by a local accountant and then submitted to the EHP Local Coordinator. He then reviewed, compiled, and sent the receipts and an accounting summary to EHP.

Figure 7 illustrates the microproject transfer process.

Figure 7



*\*Each microproject will address a cluster of risk behaviors related to diarrheal disease transmission and will include contributions from each community.*

The total amount transferred for the microprojects was \$55,000. The cost of individual microprojects generally ranged from \$500 to \$2,000, with communities contributing labor and a certain percentage of the costs. These monies were sent in tranches; the microproject groups had to meet certain milestones before the next tranche of money would be transferred. This requirement included having the accountant verify all the receipts for the funds that had been spent and having communities contribute a certain percentage in money or in-kind resources to the microprojects. When these requirements were met, the next tranche of funds was then transferred to community committees.

### **Transparency and Decentralization**

The microprojects are experiential learning processes that help develop trust between neighborhoods and the local administration. Unlike the normal practice in Benin of hiring local NGOs to serve as contractors and financial managers, in the CIMEP activity, communities handled the monies themselves. Transparency and decentralization also were part of the microproject process in Benin; their importance is described below.

In developing the microproject process, it is important that transparency—on many different levels—is built in. On the community level, this means that neighborhood groups have helped create, agreed to, and understood the criteria developed for the microprojects and that the criteria were applied and adhered to in each of the project towns. Such involvement ensures that all money and labor that is contributed gets accounted for and controls are in place so that there is no unfair personal gain by any individual(s) administering the microprojects. All funds, materials, and contributions are accounted for by an outside auditor. This transparency must also apply to the way that government decision makers operate. They must meet in a regular and timely fashion, keep minutes of their meetings, and report back to the communities (usually through a municipal team member) on decisions made about approval of the microprojects and any other issues that arise. This transparency in decision making helps people learn to be responsible and to trust each other and their government officials.

Decentralization is also an important element in the microprojects. It strengthens local governance and sets up a mechanism for governments to transfer resources to communities. As national ministries continue to shift decision making and accompanying resources to departmental and municipal levels for distribution, developing the local capacity to handle this responsibility becomes even more urgent. Moreover, this process supports the mechanisms for decentralization by creating a responsive public administration that can work horizontally and respond to community needs in an effective, efficient, and open manner.

The first phase of microprojects was completed by the end of August 1999. Neighborhoods that quickly finished this first phase were given funds to complete a second round of microprojects. After the cycle is completed once and the systems and procedures are in place, implementing successive microprojects becomes easier and quicker.

In conclusion, the interventions by themselves are important in reducing the risk factors for diarrhea disease. Of equal importance are the changes in behavior, including how civil society sees itself and how the administration sees its role. As the country develops decentralization processes, health planning and disease prevention strategies can be the building blocks for that effort. The decentralization process should also include community-based monitoring and evaluation so that community members and officials have the means to assess, chart, and measure progress.

## 2.5 Scale-Up

From the outset of CIMEP implementation, the goal is to scale up the process beyond the initial setting. This was true in Benin, and the three pilot towns—Parakou, Bembereke, and Banikoara—were the springboards for replicating the process. It is important to emphasize “economies of scale” for scale-up. This means that the first phase of implementing CIMEP in the three pilot towns is the most costly (calling for substantial outside technical assistance to set up the process) and time consuming. Once the system is in place and the Local Coordinator and municipal teams have a good understanding of the process, the foundation is laid for expansion and replication.

### *National Level*

As this report is being written (fall 1999), the scale-up process has already begun in Benin. Besides the Local Coordinator, who has thoroughly embraced and mastered the process, five solid co-trainers have emerged from the EMEs. These individuals are now moving from the three pilot neighborhoods to repeat the process in the other neighborhoods of their towns. At the same time, the EME trainers are also bringing the CIMEP process to a fourth town—Sinende. A fourth EME team has been created there, and its members will go through a series of training workshops and will also implement microprojects through community committees. The goal is to expand CIMEP to most of the towns in the département. Once that goal has been accomplished, the best départemental trainers will establish the same system of training workshops in the other five départements in Benin. This expansion will incur relatively modest cost, by relying heavily on in-country technical assistance and resources.

While this scale-up is taking place through the EMEs, the policy roundtable is also evolving and expanding to include representatives from other towns. The Préfet and other roundtable members linked to ministries are strengthening their relations with national-level collaborators to create the necessary policy support for expansion throughout Benin. Ministry of Planning officials have observed the CIMEP process closely and are interested in incorporating it into their decentralization efforts. They view CIMEP as a tool that can be applied to planning not only for environmental health interventions but also for use in other sectors. The processes introduced in this activity can be used for transferring funds to communities and encouraging their effective use in a transparent and accountable manner. The entire CIMEP process expands exponentially the links between the administration (at the départemental level) and its client communities,

thereby resulting in a stronger civil society. USAID and other donors, however, will need to continue to provide modest resources to fund the scale-up of the CIMEP approach, given the resource-poor government. In the initial stage, USAID is continuing to fund the Local Coordinator and some microprojects for the next year (1999-2000).

#### *The National Environmental Health Committee*

A national-level Environmental Health Committee was formed to share with Benin's central ministries the achievements and experiences of the Borgou Département. The groundwork to set up this committee was done entirely by the Préfet of Borgou, who wanted to ensure that the CIMEP experience was shared beyond his département. At the same time that processes for decentralization are being developed in Benin, département directors are trying to define their roles vis-à-vis the national structures and mechanisms. The vertical lines of communication are still very evident because the département-level revenues are not locally generated. The département directors still look to the central government for budget allocations and career moves. Thus, this national-level committee was formed within the formative stages of decentralization.

Although the Environmental Health Committee has met only once—in May 1998 right before the Regional Workshop—important decisions were made at that meeting related to sustaining hygiene and behavior change through communal infrastructure. Borgou officials made it known that the lack of départemental hygiene services and agents was a constraining factor. Consequently, officials decided that agents would be trained in Borgou to help develop and enforce public sanitation. Two EME members were recruited to do the training.

To date, however, the Environmental Health Committee has not taken any actions since this first meeting. That is due in large part to the political changes and turmoil—including shifts in cabinet ministers and elections ousting incumbent mayors—that have gone on during the course of the CIMEP project. Operating such a national-level committee is difficult with so many changes in personnel. It is also difficult to maintain a steady national perspective in a country that is defining and implementing what it wants in terms of decentralization.

## **2.6 Regional Workshop**

From May 18 to 20, 1998, a regional workshop entitled “Community-Based Approaches for Environmental Health in Secondary Cities in West Africa and the Scale-Up Process” was held in Cotonou, Benin. This was undertaken in conjunction with the CIMEP activity in Benin. More than 50 stakeholders working on urban issues and community-based approaches from six Africa countries came together for an intensive period of discussion, reflection, discovery, and networking. During the two-and-a-half-day workshop, government and donor representatives, NGO officials, and community leaders worked together to

- C share experiences and identify lessons learned in environmental health management of secondary cities in West Africa,

- C increase the use and understanding of community-based approaches for improving environmental health,
- C identify the critical components of community-based approaches for effective management of environmental health, and
- C promote the scale-up of the ongoing local initiatives to a regional level.

The workshop also facilitated collaboration among representatives of the African Development Bank (ADB), the United Nations Development Program's Urban Management Program (UMP), and the EHP. Representatives from each of these agencies participated in workshop presentations and discussions, and the workshop and its products were specifically designed to contribute to the programs of EHP, UMP, and ADB.

At the conclusion of the workshop, participants joined sponsors in expressing their desire that there be a series of similar events. They stressed the urgency of expanded international dialogue on urbanization and the power of networking among actors in developing community-based approaches to environmental health. They emphasized the need to reinforce the strengths of West Africa's cities and avert the region's urban crisis, which seemed to be fast approaching.





# 3 Results

As stated earlier, the Benin context—where basic infrastructure and resources are lacking and the government is in the process of transition and decentralization— influenced the orientation and results of the activity. For example, the activity was placed under the départemental administrative leader, instead of with the ranking Health Officer. With the départemental administration taking the lead, good governance, ownership of the process, and improved services became the focus for creating an “enabling environment” for improved public health. Given this orientation and limited local capacity, local stakeholders chose to focus on improving communal infrastructure and changing behavior in public spaces rather than addressing household behavior change. The latter goal is targeted for the Five-Year Integrated Family Health Project currently under way in Benin.

The results presented in this report are observational and qualitative, not quantitative. As mentioned previously, the CIMEP activity is slated to continue for another year, the end of which would be a more appropriate time for a follow-up evaluation with quantitative results.

## 3.1 Health

Since a follow-up impact survey was not done after the baseline survey, the health results cannot be reported in terms of an actual reduction of diarrheal disease rates. To reiterate, CIMEP’s focus was on building, improving, and sustaining communal infrastructure and creating an enabling environment for both communal and household behavior change. An effort was made, however, to look at some observable changes that could serve as indicators of improved public environmental health conditions. The Local Coordinator, using the baseline observations and directions from the U.S. epidemiologist, observed the following improvements in each of the pilot neighborhoods in the three towns:

- C Domestic water used by communities is cleaner.
- C Water quantity has increased in some neighborhoods.
- C There has been a marked and observed decrease in public defecation.
- C There is marked and observed overall cleanliness in markets, especially market restaurants.
- C There has been marked and observed reduction of flies in markets and public spaces.

These results were achieved through the EME teams’ working with communities and various microprojects that were implemented.

## 3.2 Governance and Democracy

In May 1999, EHP consultant, Dr. David Miller, who looked at the institutional, governance, and democracy issues of the CIMEP process, did a final evaluation. After five days of extensive interviews with local stakeholders, he reported the following changes and results from the activity:

*Changing perceptions:* Government officials have gained a greater appreciation of the capacity of community members to analyze and resolve local environmental health problems. These officials demonstrated their new understanding by lending support to communities that are taking action to resolve locally identified problems.

*Locus of problem definition:* With limited outside input, members of local communities identified, analyzed, and prioritized their public health problems. They also identified the specific sites for solutions.

*Locus of solution definition:* Local communities also defined and implemented solutions, thereby increasing the integration of site- and time-specific information into the technical design of new infrastructures. Although solutions may not have always been well adapted to the local institutional context, local ownership ensured that community institutions were well integrated into infrastructure maintenance plans.

*Locus of management:* Under supervision, community members provided the day-to-day management of the microprojects. Along with the EMEs, they selected and contracted the necessary labor, prepared budgets, kept financial records, paid expenses, and managed the process of community contributions.

*Communication and coordination:* Significant changes in patterns of communication and coordination were created both inside and outside of the formal meeting context. New communication patterns spanned the entire hierarchy, from communities to management committees to EMEs and to the départemental members of the CDSE.

# 4 Lessons Learned

As EHP I's involvement in CIMEP/Benin came to an end in September 1999 (although the CIMEP activity will continue another year under EHP II with additional funding), it is useful to assess the lessons learned from the activities and process, especially since this methodology has evolved from application to application and has received substantial support and resources from USAID. Some basic questions merit reflection:

- C What did we learn in the Benin experience about the design of the CIMEP activities, including the partners, EME team members, and planning?
- C What did we learn about the methodology itself, for example, the workshops, baseline survey, and microprojects? How would we do it differently next time?
- C What issues were faced and what lessons were learned in trying to obtain "measurable" results?
- C How effective was CIMEP when applied to both health and democracy and local governance issues in Benin? Would it work in other contexts?

## 4.1 CIMEP Design

From the Benin experience, it is clear that the design of the project and the key counterparts play an important role in determining how the project evolves. Choosing to partner with the département head and placing the project under his purview, with support from the Départemental Health Officer and Ministry of Health, influenced its orientation and direction. The activity focused more on improved governance, such as municipal and départemental services and process, and less on trying to achieve a measurable health impact. This orientation is not necessarily faulty; it just means that client and partner expectations had to shift. Initial efforts in design of the activity tried to include other donors in funding and implementation. This goal proved to be too difficult in terms of coordination, matching funding cycles, and administration. Although other donors should still be included from the outset, they should be involved to a greater extent in scale-up activities rather than the pilot project.

During implementation of the microproject phase, some of the communities were not able to come up with the 10 to 15% contribution that was part of their microproject contract. It is important to look at the reasons why. In Parakou, a larger, more urban town, the neighborhoods selected to participate in the activity were poorer, with insufficient infrastructure, and with more disease. Most of the residents were renters. This situation is not necessarily a problem, if the landlords also live in the communities and get involved. But if the owners are absentee

landlords, then it is very difficult for renters to feel vested in their communities and to be willing to make financial contributions to a microproject. The lesson here is that these additional factors, such as the presence or absence of homeowners in the community, should be considered when choosing the communities to participate in CIMEP. The timing of the microprojects can also affect whether communities can make their co-payments. Residents who worked in the cotton fields were able to pay only after the crops had been harvested. Therefore, the timing of microprojects and having a longer co-payment period should be considered carefully. Implementers of CIMEP need to be aware of these types of issues and plan accordingly when designing the microproject phase.

## **4.2 Methodology**

The Benin experience demonstrated that the methodology is sound, but, as in prior projects, the sequence and timing of the training, microprojects, and baseline survey vary with the context and particular local constraints. However, in making the methodology more rigorous by adding a baseline survey and trying to obtain measurable results, the process must not veer too far from its participatory roots. That has been its strength and what makes the CIMEP process unique and effective. Government officials, community members, and others who participate in CIMEP must continue to feel ownership, shape the process, and not fall into the trap of relying on “outside” experts to direct them on what to do. These goals can be enhanced by developing country-specific training manuals and neighborhood-specific information, education, and communication (IEC) materials.

## **4.3 Measuring Results**

The basic lesson learned was that monitoring and evaluation efforts need to be closely aligned to the level at which the interventions have occurred—either household or communal level. In Benin, the initial direction and baseline survey focused on household indicators and results. However, a decision was reached to focus the microprojects on communal-level improvements before targeting household behavior change. This decision affected what CIMEP could realistically achieve and what “measurable” results could be obtained, especially within the two-year time frame and with just one year to implement the microprojects.

## **4.4 Integrating Local Governance**

Another lesson from this activity was that democracy and governance goals can be successfully woven into the process. In Benin, where an emerging democracy is trying to “operationalize” decentralization, it was appropriate to integrate the goals of strengthening local governance institutions and improving municipal service delivery into the CIMEP process. Improvements in these areas are clearly evident. Départemental-level officials are working much closer with local

government authorities, and both of these groups have established better relationships with communities. People are finding that the government “system” is working for them. Interest shown at the regional workshop in Cotonou indicates that other countries in Africa, especially those that are also instituting decentralization reforms, could usefully apply and adapt the CIMEP process.



# 5 Recommendations

It is important to emphasize that CIMEP is a participatory process that helps governments and communities work together better. It has proven successful in many different contexts, but achieving participation—both on institutional and individual levels—is not easy or quick. Here are some recommendations for continuing the CIMEP activity in Benin:

- Continue to institutionalize the policy roundtables.
- Continue funding the Local Coordinator and providing him with an office.
- Create another EME team in Kandi and have the EME trainers from the original three towns train its members as well as continue to train the new EME team in Sinende.
- Institutionalize the EME in the municipalities, create a community outreach and local planning unit in each municipality, and coordinate this with other USAID actors in Borgou, especially the five-year Integrated Family Health Project.
- Expand the microprojects throughout other neighborhoods in Bembereke, Banikoara, and Parakou and start microprojects in Sinende.
- Provide training on cost-recovery components that could be added to the microprojects.
- Develop town- and neighborhood-specific hygiene education and IEC materials.
- After another year, conduct an evaluation of the health impact of the microprojects.

These recommendations are deliberately not detailed or extensive. They are meant to give the USAID/Benin and those involved in EHP II some guidance and ideas for shaping the continuation of the CIMEP activity.





# Annex A: Memorandum of Understanding

## MEMORANDUM of UNDERSTANDING

between

the IMPLEMENTING PARTNERS for CIMEP in BENIN:

**USAID/BENIN, the Environmental Health Project, Benin's Ministries of Health, Interior, Agriculture, Environment, and Planning, and the Prefecture of Borgou**

### 1. Background and Purpose

In March 1997 USAID/BENIN, in collaboration with the Government of Benin (GOB-MOH) and the Environmental Health Project (EHP), agreed to implement a Community Involvement in the Management of Environmental Pollution (CIMEP) initiative in Benin. The overall objective of CIMEP is to create effective partnerships between community representatives, municipal/public sector staff, and local NGOs to address environmental health issues, especially in unserved peri-urban communities. This activity contributes to: 1) the USAID/Benin's Family Health Team's improvement of maternal and child health through better access to services; 2) the Democracy and Governance Team's support of decentralization and democratization through improved management and service to the communities at the municipal level; 3) improvement of the effectiveness and efficiency of the Benin Ministry of Health's primary health care strategy through incorporating preventative interventions to change environmental-related behaviors; and 4) strengthening the capabilities of PVOs and NGOs in Benin and the region to address environmental health problems in peri-urban secondary cities.

The purpose of the Memorandum of Understanding (MOU) is to outline the basic agreement for this collaboration and then list the specific roles and responsibilities of each partner for the implementation of CIMEP in Benin. This MOU will be in effect from the signature date for a period of 18 months. In addition to USAID/Benin, EHP, the Ministry of Health (MOH), Ministry of Interior (MOI), Ministry of Environment (MOE), Ministry of Planning, (MOP), the Ministry of Agriculture (MOA), and the Prefecture of Borgou, the other partners who are directly or indirectly involved are: the Agence Beninoise pour L'Environnement (ABE), UNICEF/Benin, and the Red Cross. This project is being financed by USAID/Benin and the USAID Global Bureau (contracted to EHP) with additional financial and in-kind contributions coming from the other partners.

## 2. Objectives

The objectives in implementing the CIMEP program are to:

- < Improve maternal and child health, especially addressing the problem of cholera and other sanitation diseases, which are endemic in certain zones.
- < Address environmental health problems through community-based analysis of the problems and design of solutions.
- < Create a relationship of trust, along with a improved provision of services, between municipalities, the administration and their client communities.
- < Develop a regional initiative with the participation of governments of other countries and USAID collaboration with several other international donors and organizations.

## 3. Partner Responsibilities

### 3.1 EHP will provide the following:

- < Technical input and design of the overall CIMEP/Benin program of workshops, policymaker meetings, follow-up training, and microprojects.
- < Implementation, management, administration—both programmatic and financial—and oversight of the CIMEP program in Benin by EHP staff, local consultants, advisors, and trainers.
- < Coordination among the USAID collaborators (i.e., Global Bureau Office of Health and Nutrition, Global Bureau Environment Center, and Regional Economic Development Office/Abidjan) and other donor/partners.
- < Specific results in Benin (for the three pilot towns in the Borgou) including:
  - i) Improvement in the high-risk behaviors contributing to morbidity of childhood diarrhea, maternal well being, and cholera. This will also be represented in possible morbidity reduction.
  - ii) Development of municipal environmental health improvements with active participation from technical departments of the administration and from client communities, and working in close partnership with PVOs and NGOs. (Comparative cost implications for preventive public health services will also be noted.)

- iii) Training local CIMEP trainers and producing local training materials.
- iv) Development of a strategy and approach for the scaling-up phase.
- v) Development of a Benin-based regional experience for municipal teams from other countries involved in improvements of environmental health of secondary cities in West Africa.

**3.2** USAID/Benin will:

- < Help organize and co-preside over the national-level policy roundtables.
- < Provide necessary liaison with national/local partners in the initial set up of the program and ensure that key partners are involved for sustainability.
- < Provide feedback on the program design, such as recommendations regarding participants and advice on local management structure.
- < Monitor and evaluate the program through review of process, health, and democracy indicators developed by the participants and EHP.

**3.3** USAID/ REDSO/Abidjan will:

- < Participate in formulation of the CIMEP approach and adaptation for West Africa to provide effective communication with other USAID regional partners and donors.
- < Provide technical assistance for sectorial and epidemiological surveys.
- < Help organize the regional workshop.
- < Participate in the evaluation workshop.

**3.4** The MOH will:

- < Appoint a national-level epidemiologist and hygienist who will participate in the CIMEP training and aid in the environmental health assessment in the pilot towns.

- < Support localized interventions (esp. addressing the casual factors of cholera) with the possible addition of WHO funds (allocated to the Ministry) for the CIMEP microprojects.
- < Provide technical input in tracking epidemiological data relevant to the results outlined in 3.1.

**3.5** The MOI, directly and/or through the Prefecture of Borgou, will:

- < Lead or chair the policymaker roundtables.
- < Help introduce change in institutional practices to increase the impact of the project.
- < Facilitate the organization of the skill-building workshops and community meetings.
- < Provide technical and financial support to the community initiatives developed through CIMEP.
- < Assist in tracking of municipal costs related to environmental improvements.
- < Eventually take a leading role in organizing the round tables.

**3.6** The MOE, MOP and MOA will:

- < Send representatives to participate in the start-up workshop and national conferences.
- < Help in dissemination of the project results at the local and regional levels.
- < Participate in the evaluation workshop

**3.7** Other donors, such as the ABE, Red Cross or UNICEF/Benin, will:

- < Participate in the start-up and evaluation workshops.
- < Possibly mobilize resources to support participant and microproject costs.
- < Be key partners and contributors in the scaling-up strategy and institutionalization at the national level.

#### **4. Program Design/Implementation/Communication**

**4.1** The overall CIMEP/Benin program will begin in October 1997 and include the following activities:

- Start-Up Workshop
- Up to Four Skill-Building Workshops
- Four to Six Roundtable Meetings for the Borgou Department
- Up to Four National-level Policymaker Roundtables  
(As part of the existing consultative council)
- Microprojects
- Evaluation Workshop
- Training-of-Trainers Workshop
- Regional Workshop

CIMEP/Benin will be implemented in the three pilot towns of Parakou, Bembereke, and Banikouara in the department of Borgou. Each town will have teams of up to eight people who will participate in the training. In Parakou and Banikouara, the teams will each have one member from the Red Cross. The teams will include municipal staff, community members, and representatives from NGOs.

**4.2** EHP will revise the draft workplan into a more detailed program implementation report. This document will be reviewed by the USAID collaborators and then circulated among the other CIMEP/Benin partners.

As part of the CIMEP program, a procedures guide, workshop manuals, conference and roundtable meeting reports, etc., will be circulated among the interested parties.

**4.3** Among the government partners, issues of implementation should be dealt with at the department level and directed to the Borgou Prefet.

**4.4** In terms of setting up a local management structure (through hiring a local manager/co-trainer and furnishing an office), EHP's approach is to start modestly and expand as the demand for CIMEP increases the necessary support evolves from local officials and USAID/Benin.

A local manager/co-trainer will be hired by EHP for on-the-ground implementation of CIMEP and a local office will be set up with the following conditions:

- < The local manager/co-trainer will report to the EHP CIMEP managers.
- < The local manager/co-trainer will share an office with another USAID contractor (MCDI). EHP will pay an agreed upon percentage of the costs for use of their office, telephone, fax, and computer for CIMEP activities.

- < The Department of Borgou will appoint and pay the salary of a local counterpart to work and collaborate on CIMEP activities with the local manager/co-trainer.

Given continued interest and support by USAID, EHP may request to move its CIMEP local manager/co-trainer into the Borgou prefecture offices and pay certain agreed upon expenses. This would be done in collaboration with the USAID/Benin and the Prefet.

**5. Other**

This MOU may be amended at any time during its period of application if all partners agreed to do so. Support of other donors, not yet confirmed at this time, may be added to the MOU through an amendment.

For USAID/Benin

For EHP

For GOB

Thomas Park  
Mission Director

May Yacoob  
CIMEP Project Director

Date: \_\_\_\_\_  
\_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_

## Annex B: Benin Baseline Survey Data

### *Water Sources and Protection*

Sources of water varied from town to town and also within communities in each town. In Parakou, 53% of households obtained water from more than one source, while 41% and 30% of households in Bembereke and Banikoara, respectively, used more than one source ( $p = 0.023$ ). The predominant sources of water in Parakou were as follows: pump – 53%, household well – 46%, and household running water – 43%. (The total is greater than 100% because multiple sources of water were used.) In Bembereke, the predominant sources of water were as follows: pump – 56%; community river, lake, or reservoir – 34%; community well – 27%; and household well – 21%. In Banikoara, most households used household wells – 46%, community wells – 44%, or pumps – 27%.

Community wells were used by only 13% of households in Parakou; 22% of these wells were uncovered, although all had a built-up edge. In Bembereke, where community wells were used by twice as many households as in Parakou, 84% of the wells were uncovered and 16% did not have built-up edges. In Banikoara, community wells were a major source of water (44% of households), but 71% of the wells were uncovered and 7% did not have a built-up edge.

Household wells were a major source of water in all towns except Bembereke. Almost all wells were uncovered: 83% in Parakou, 85% in Bembereke, and 100% in Banikoara. Several household wells did not have built-up edges: 7%, 17%, and 12% in Parakou, Bembereke, and Banikoara, respectively. Almost all household wells were untreated: 91% in Parakou, 93% in Bembereke, but only 69% in Banikoara ( $p = 0.038$ ). Almost all households treated their wells once a month or less frequently with “eau javelle.”

As a site-specific initiative for the Benin study, the study team classified sources of water before the study started as probably safe – running water, water tank, and bottled water only; possibly safe – pump or community well only; and probably unsafe – all other combinations (see Figure 1). Figure 1 indicates the estimated safety of water sources among the three towns ( $p = 0.001$ ) and shows the differences among the three study communities in each of the three towns. In Parakou, use of probably safe water varied from 11% in Zongo Zenon to 47% in Banikani, while use of probably unsafe water varied from 38% in Oueze to 74% in Zongo Zenon. In Bembereke, use of probably unsafe water varied from 24% in Guere to 85% in Gando, while in Banikoara, use of probably unsafe water varied from 35% in Weterou to 63% in Kokere.

Almost all households stored water for drinking. In Parakou, only 18% of these storage vessels were not completely covered or were uncovered, while 51% and 67% of storage vessels were inadequately covered in Bembereke and Banikoara, respectively ( $p < 0.001$ ). Drinking water was stored in a room in 88% of households in Parakou, but only 54% and 51% in Bembereke and Banikoara, respectively ( $p < 0.001$ ). The respondents in all households (in all towns) reported

that the storage vessel had been cleaned within the last week. None of the stored water in Parakou or Bembereke was treated, and only 9% of households treated water in Banikoara, mostly with “eau javelle.”

### *Personal Hygiene*

All respondents were asked whether they usually washed their hands with either water or soap and water before and after eating, after defecating, and after cleaning a child who had a bowel movement. All respondents (100%) stated that they washed their hands before and after eating, but less than 20% used both soap and water (see Figure 2). Between 9 and 26% of respondents in the three towns used soap and water after defecating, and similar proportions used soap and water after cleaning children’s bowel movements. There was also some variation in self-reported handwashing in the three communities, and this was particularly evident in Parakou. These results were consistent with those from a similar question asked later in the interview. This later question asked respondents what they usually did to clean a child’s bottom after a bowel movement. Unlike the first question, the respondent was not offered possible answers, but the interviewer coded the respondent’s spontaneous response in predefined categories. In response to this later question, a small percentage of respondents spontaneously reported that they used both soap and water to clean children after defecation (7% in Parakou and 3% in both Bembereke and Banikoara).

Based on responses to questions about attitudes towards handwashing, washing hands with water alone may result from lack of knowledge although the cost of soap may be prohibitive. Almost all respondents stated that handwashing was an important way to prevent diarrhea, particularly before eating, after going to the bathroom, and after cleaning a child’s bowel movements. Only a small percentage (20 to 36% of respondents in the three towns) thought that it was very important to wash their hands before breast-feeding.

### *Solid Waste and Wastewater Disposal*

There were major differences in the handling of household garbage among the three towns. Most Parakou respondents used a garbage disposal system (91%), while 0% and 29% of the respondents in Bembereke and Banikoara, respectively, used this system ( $p < 0.001$ ). In Parakou, 91% of households had a garbage bin (although only 9% kept the bin covered), while only 24% and 41% of households in Bembereke and Banikoara, respectively, had garbage bins ( $p = 0.002$ ). The main method of garbage disposal in the latter two towns was to deposit it outside the fence surrounding the household.

Similarly, there were major differences in ways to dispose of wastewater among the towns. In Parakou, 32% of households had a wastewater system (drainage well or septic system), while only 7% and 30% of households in Bembereke and Banikoara, respectively, had systems for disposing of wastewater ( $p = 0.001$ ). If the household had a system for wastewater disposal, the majority of the systems were functional. The majority of the households in Parakou (62%) threw kitchen wastewater in the street, while the majority of households in Bembereke and Banikoara threw wastewater in the courtyard (44% and 39%, respectively).



### *Food and Its Preparation*

The survey revealed major differences among the towns in the storage of kitchen utensils and the cleanliness of the household eating area. The majority of households in all of the towns did not use the kitchen to store kitchen utensils. This question was site-specific, based on an observation during the pilot survey that many households stored kitchen utensils outside buildings in areas where fecal material was present. In addition, 8%, 14%, and 14% of households in Parakou, Bembereke, and Banikoara, respectively, stored utensils outside all buildings.

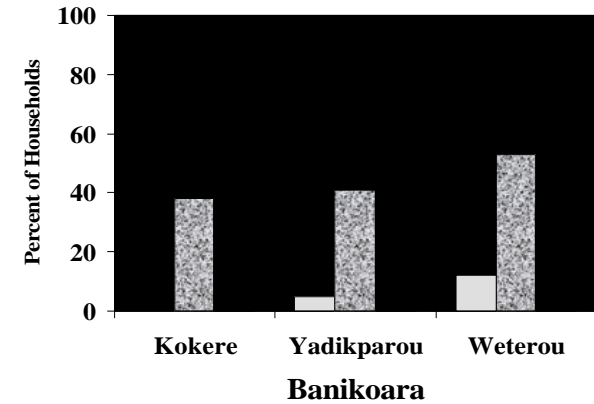
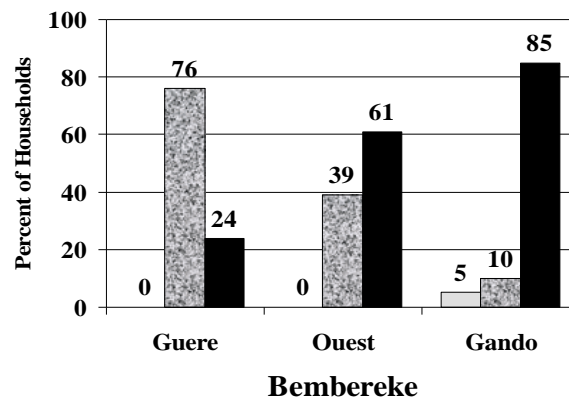
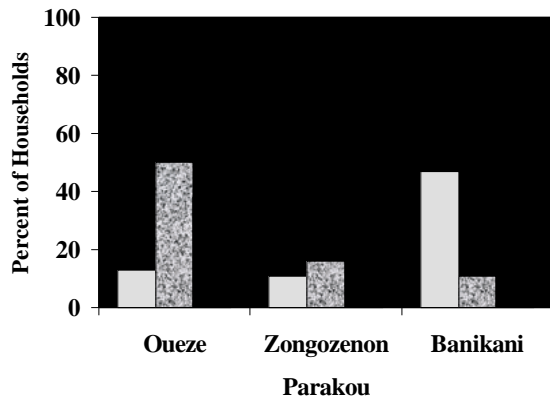
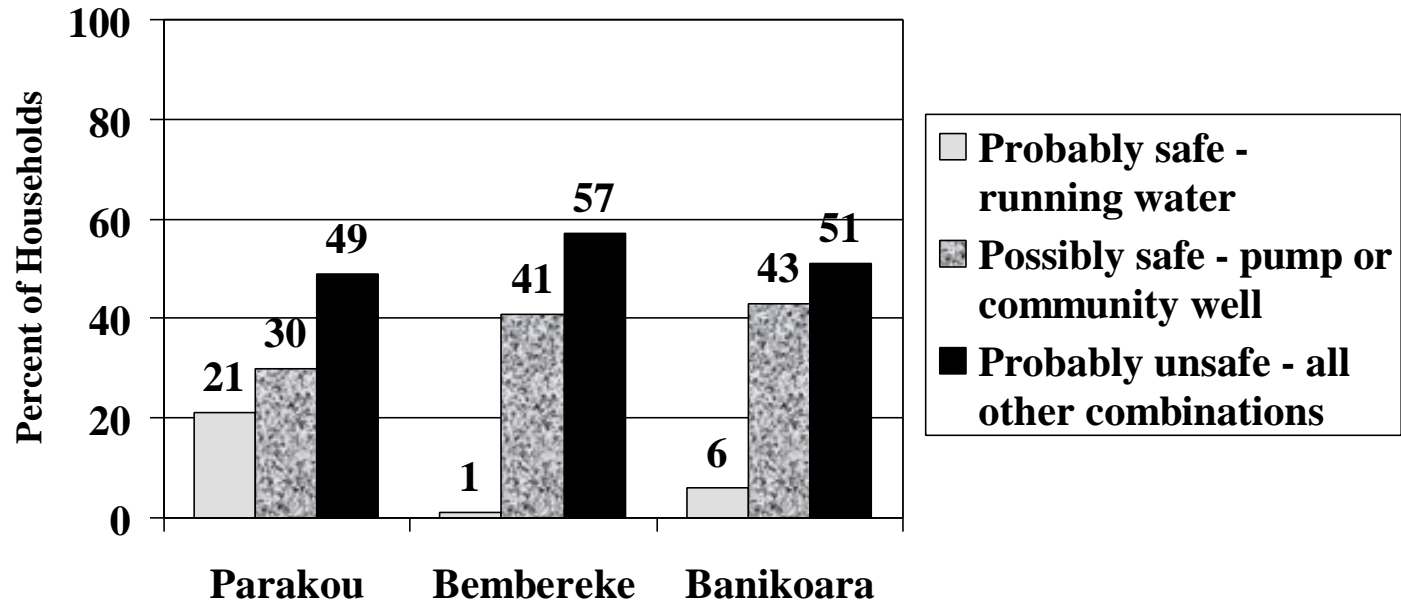
Figure 3 shows the presence of garbage and excrement in eating areas. Again, major differences existed among the towns regarding the presence of garbage and excrement ( $p = 0.003$  and  $p = 0.002$ , respectively), and differences existed among the communities within the towns. There were also differences in the proportion of households that had domestic and nondomestic animals living in the courtyard ( $p = 0.002$ ). Domestic animals were defined as dogs, cats, and poultry. The nondomestic animals were predominantly goats and sheep. In Parakou, 49% of households had domestic animals only, 27% had both domestic and nondomestic animals, and 13% had nondomestic animals only. In Bembereke, 26% had domestic animals only, 10% had nondomestic only, and 51% had both. Banikoara was similar to Bembereke: 23% of households had domestic only, 27% had nondomestic, and 41% had both.

Respondents were asked about preparation of their youngest children's last meal (see Figure 4). Food preparation was classified as *safe* (see the first three bars on each town's or community's graph) if the child was exclusively breast-fed or the food was prepared at home and either eaten within 30 minutes or covered and eaten within three hours and *probably unsafe* (fourth bar on each town's or community's graph) if food was prepared or bought at market or elsewhere and given to children without any further preparation. The differences among the towns were not statistically significant, although there was some variation in the proportion of households that fed their children probably unsafe meals. In 22 of the total households, the youngest child was under five months of age. These children are expected to be exclusively breast-fed, based on WHO guidelines. In Parakou, five of the six children under five months were exclusively breast-fed (83%), while the proportion in Bembereke was six of the nine children (67%) and in Banikoara five of the seven children (71%). Overall six of these 22 children (27%) under five months of age were fed probably unsafe food.

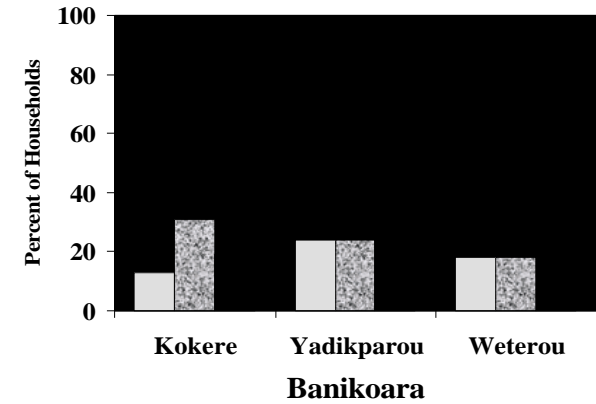
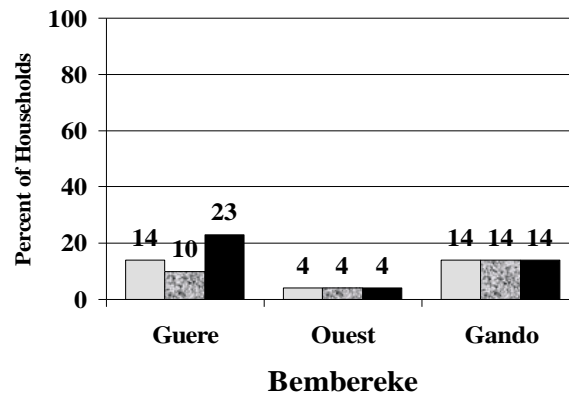
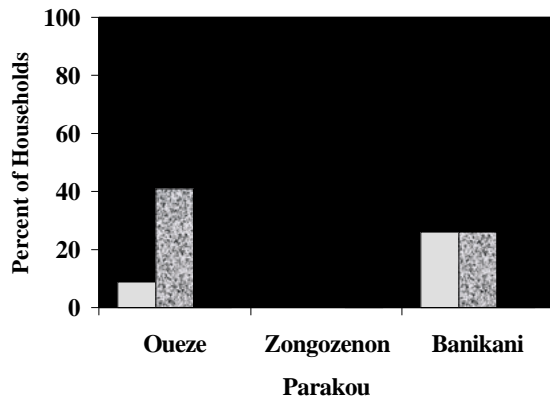
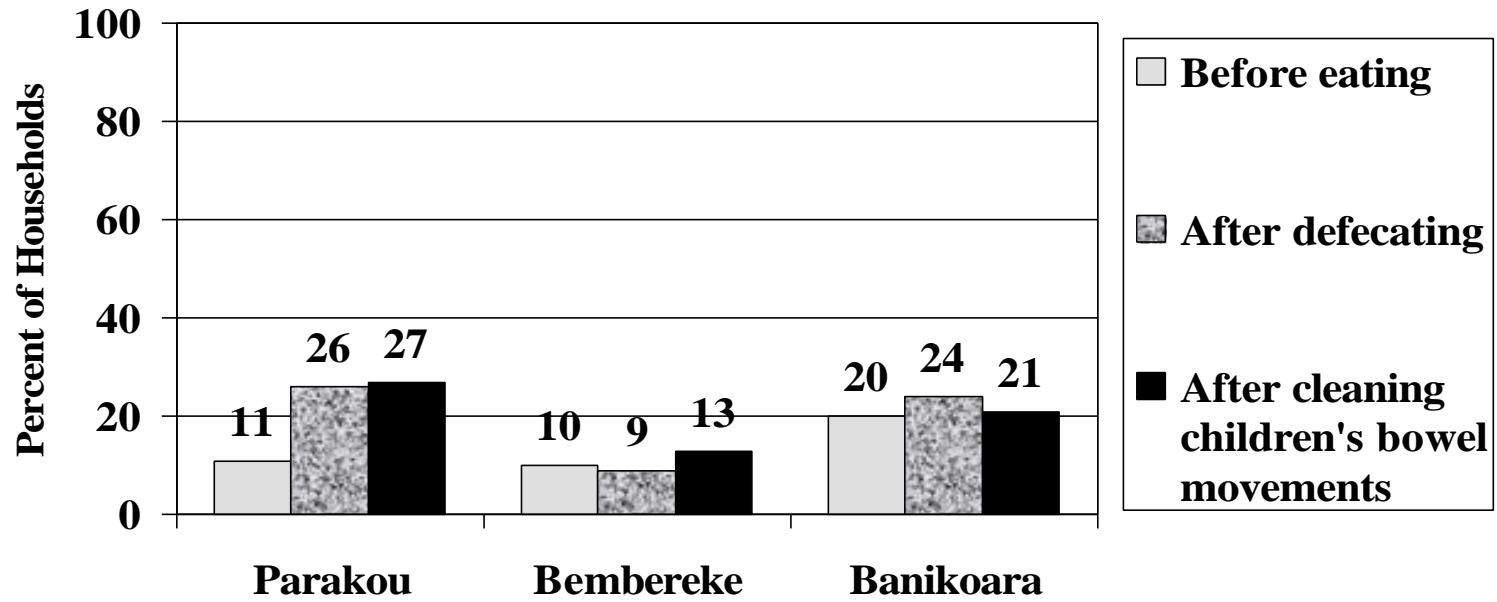
### *Use of Latrines*

There was a marked difference in the presence of household latrines in the three towns, ranging from 54% of households in Parakou with latrines to 23% in Bembereke and 16% in Banikoara ( $p < 0.001$ ). Latrines were used only by adults (not children) in 41% of households in Parakou and 94% and 75% of households in Bembereke and Banikoara, respectively. Approximately half of the latrines were either dirty or full – 60% in Parakou, 43% in Bembereke, and 42% in Banikoara. Respondents were asked where adults and children defecated at night and during the day. Public or household latrines (both day and night) for adults and latrines or pots (both day and night) for children were classified as appropriate places of defecation. Use of any other location was classified as inappropriate. The use of inappropriate places of defecation varied from town to town ( $p < 0.001$ ) for both adults and children (see Figure 5). Not surprisingly, the appropriate use of latrines was associated mostly with availability of household latrine

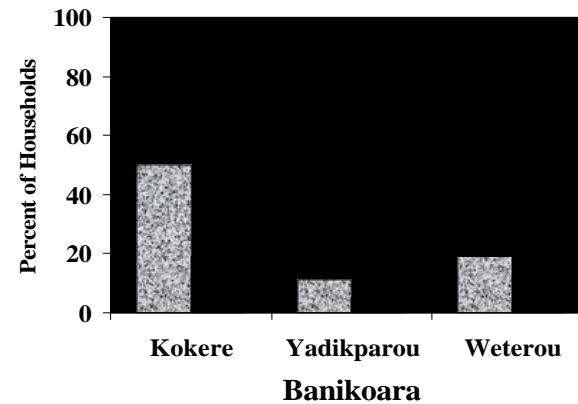
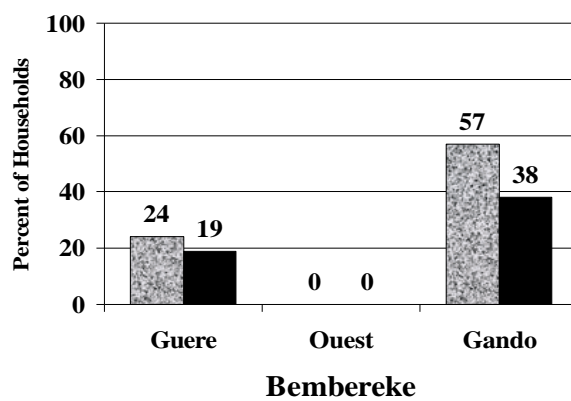
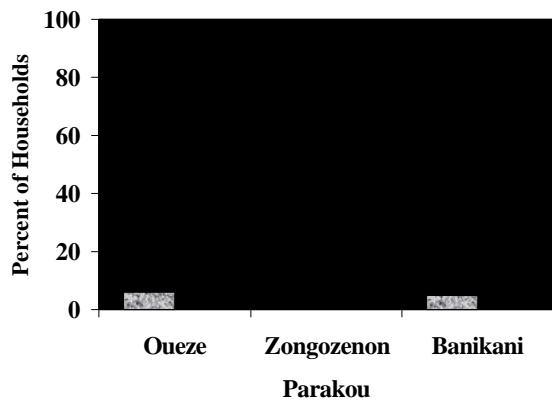
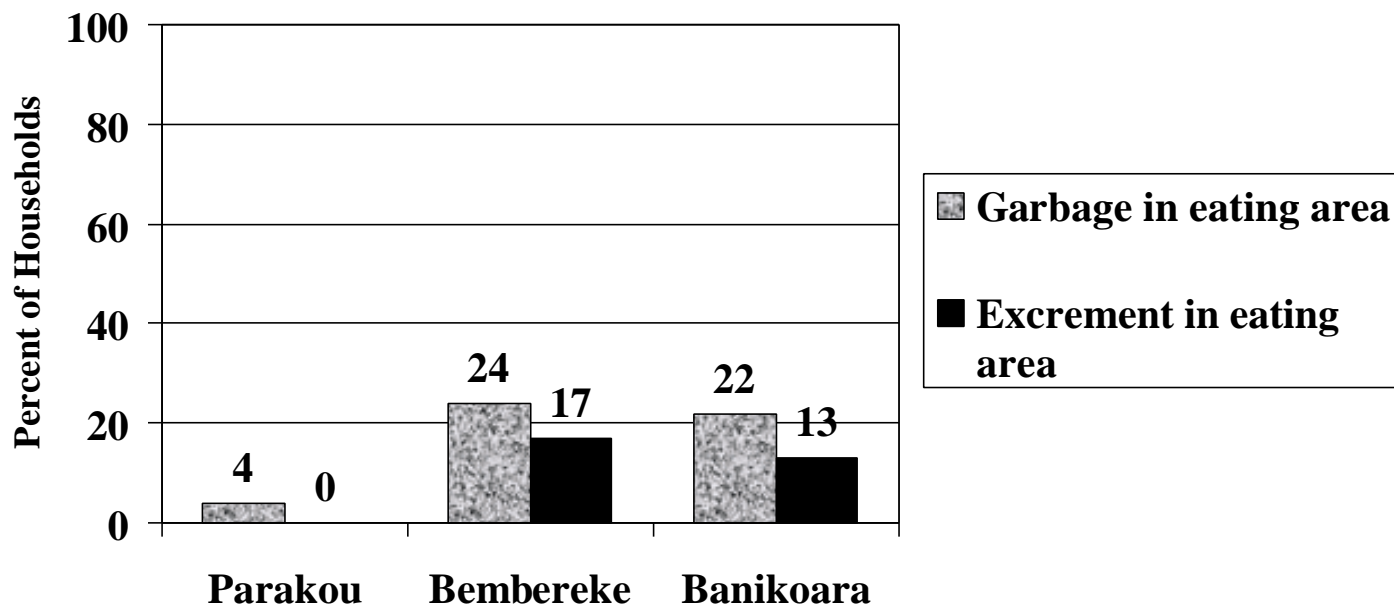
# Figure 1. Household Water Sources



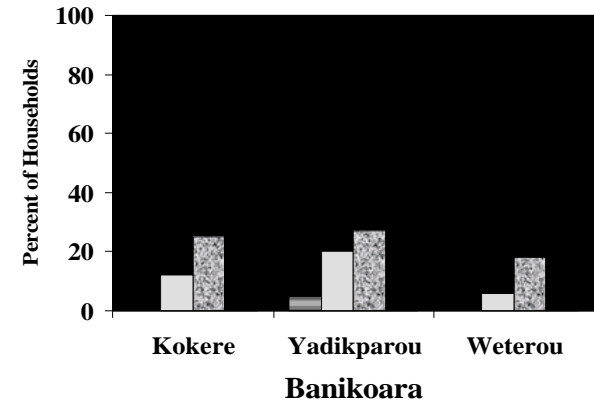
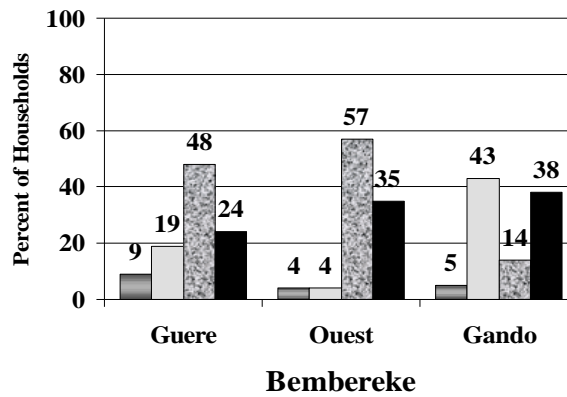
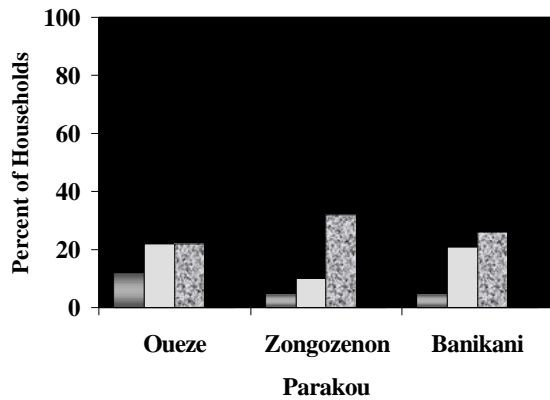
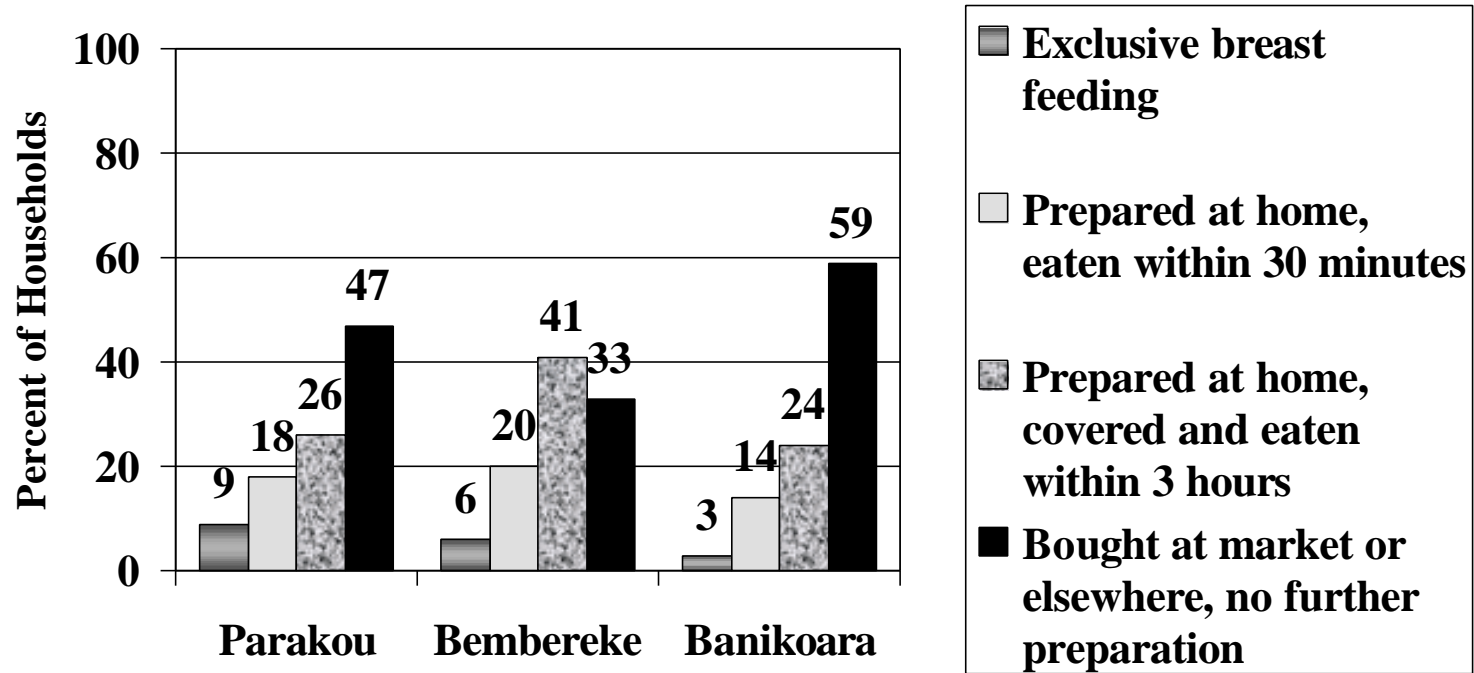
**Figure 2. Self-Reported Use of Soap and Water for Handwashing**



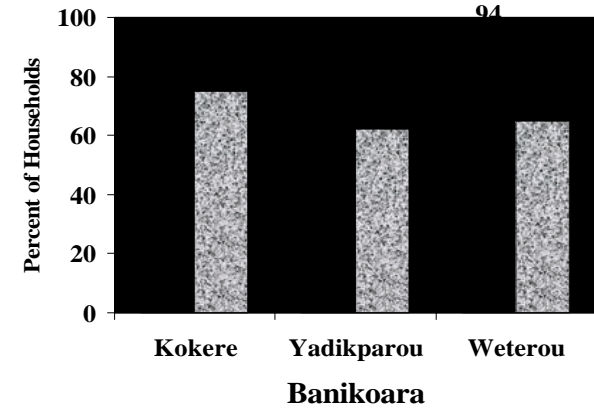
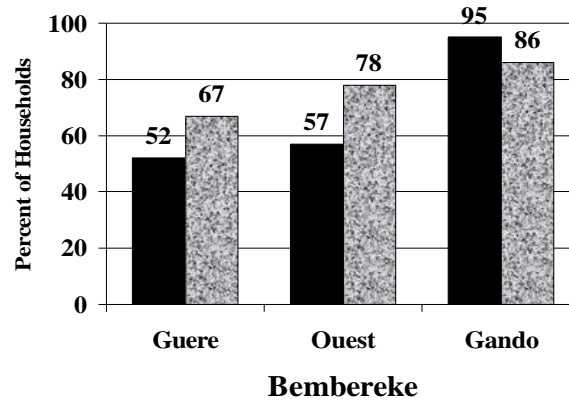
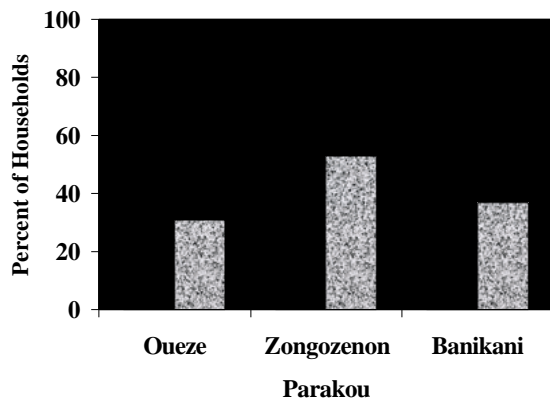
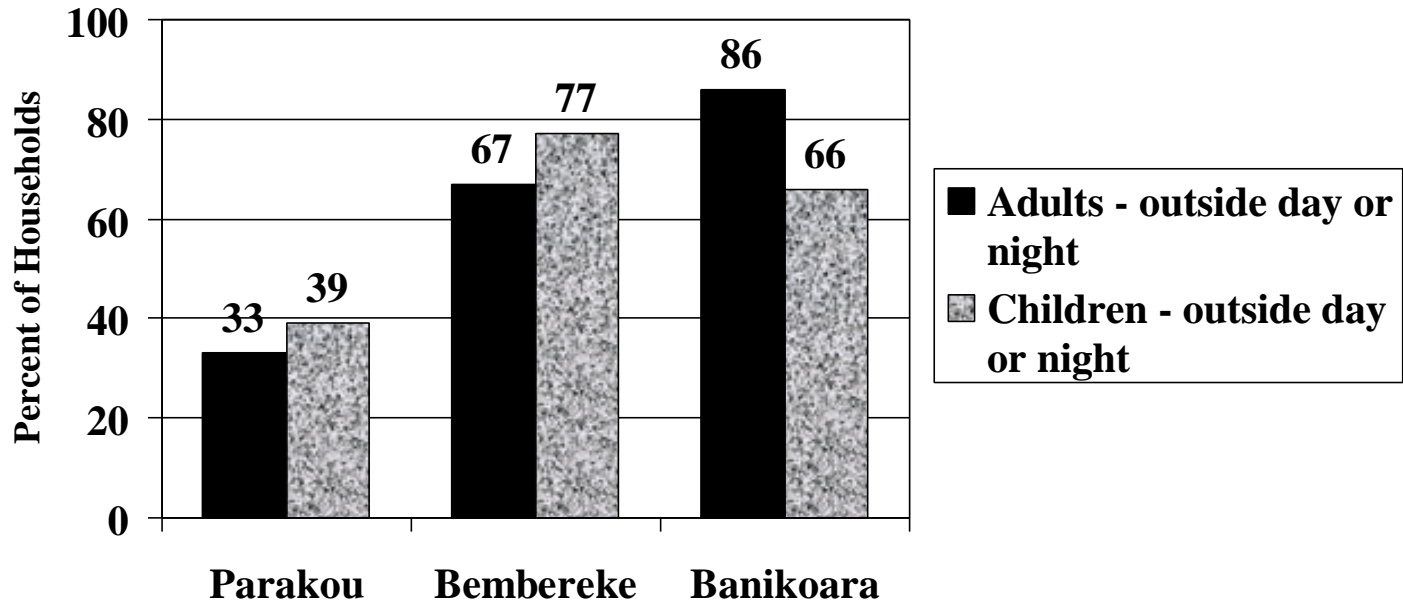
### Figure 3. Cleanliness of the Eating Area



### Figure 4. Preparation of Children's Meals



# Figure 5. Inappropriate Places of Defecation



**Figure 6. Diarrhea in Children under Age 5**

