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# TECH PACK: STEPS FOR IMPLEMENTING RURAL WATER SUPPLY AND SANITATION PROJECTS

Technical Report No. 62  
August 1990

Prepared by  
International Center for  
Rural Water Supply and  
Sanitation (ICRWS)



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WASH Technical Report No. 62

# TECH PACK:

## STEPS FOR IMPLEMENTING RURAL WATER SUPPLY AND SANITATION PROJECTS

Prepared for the Office of Health,  
Bureau for Science and Technology,  
U.S. Agency for International Development  
WASH Activity No. 443 and Task No. 116

by

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# CONTENTS

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Chapter	Page
ACKNOWLEDGMENTS .....	iii
EXECUTIVE SUMMARY .....	v
1. THE FUNCTION OF THIS GUIDE .....	1
2. THE JOB OF THE EXTENSION AGENT .....	5
3. THE STAGES OF A WATER AND SANITATION PROJECT .....	11
4. STAGE ONE: START-UP ACTIVITIES .....	15
5. STAGE TWO: INITIAL SELECTION OF PROJECT COMMUNITIES .....	23
6. STAGE THREE: BEGINNING PROJECT INVOLVEMENT WITH THE COMMUNITY .....	31
7. STAGE FOUR: SET UP A VILLAGE WATER COMMITTEE .....	37
8. STAGE FIVE: PREPARE THE VILLAGE WATER COMMITTEE FOR ITS RESPONSIBILITIES .....	43
9. STAGE SIX: CONSTRUCT THE WATER SYSTEM .....	53
10. STAGE SEVEN: STRENGTHENING OF ENVIRONMENTAL HYGIENE ...	59
11. STAGE EIGHT: OPERATE AND MAINTAIN THE WATER AND SANITATION SYSTEMS .....	65
12. STAGE NINE: MONITOR AND DISENGAGE .....	71
13. EVALUATION .....	73

## FIGURES

1.	Relationship of Four Key Components in the Project . . . . .	3
2.	An Extension Agent's Suggested Monthly Work Timetable . . . . .	7
3.	An Extension Agent's Daily Diary . . . . .	7
4.	Project Cycle and Idealized Time Periods . . . . .	13
5.	Organization of a Typical Project . . . . .	17
6.	Three-stage Review Process for Selecting Communities . . . . .	27
7.	Activities During the Training Phase for the Village Water Committee . . . . .	44

## APPENDICES

A.	ROLE PLAYING: TWO APPROACHES TO TEACHING . . . . .	77
B.	ROLE OF MOTIVATION . . . . .	79
C.	SAMPLE COMMUNITY SELECTION CRITERIA FROM EVALUATION OF CARE/SUDAN INTERIM WATER SUPPLY AND MANAGEMENT PROJECT . . . . .	81
D.	SUGGESTED MEETING PROTOCOL TO INTRODUCE PROJECT WITH MANAGEMENT FOCUS . . . . .	83
E.	EXAMPLE OF TECHNICAL SURVEY . . . . .	85
F.	SUGGESTED BASIC COMMUNITY SURVEY TO BE ADAPTED FOR IMPLEMENTATION BY COMMUNITY . . . . .	87
G.	METHODOLOGY FOR DATA COLLECTION WITH THE COMMUNITY . .	91
H.	GUIDELINES FOR SUCCESSFUL COMMITTEES . . . . .	97
I.	COMMUNITY PROBLEM-SOLVING . . . . .	99
J.	HOW TO SETTLE DISAGREEMENTS AND DISPUTES . . . . .	105
K.	SUSTAINABILITY FACTORS AND CRITERIA FOR EVALUATION OF SUSTAINABILITY . . . . .	107
L.	EVALUATION FRAMEWORK FOR COMMUNITY PARTICIPATION . . . .	109

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## EXECUTIVE SUMMARY

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This guide offers project planners and implementors a plan for achieving sustainable rural water and sanitation projects. The basis for the plan is integrating the four components essential to the success of such projects: the water system, the sanitation system, hygiene education, and community development. The integration of these four components develops the groundwork for a community to take on the management responsibilities of the improved sources. Since the extension agent is a central actor between the project staff and communities, the guide focuses on the interactions that the extension agent has with these two groups.

The four components of the project should be integrated at the managerial as well as the field level at each stage of the project. The plan outlined here coordinates step-by-step progress through nine project stages. At each stage the community develops certain skills and accomplishes certain goals before the project proceeds to the next stage. The guide is intended to correct the common situation in which the water component proceeds too quickly while community development receives little emphasis from managers and donors, to the long-term detriment of the project.

Providing water is the major focus of water and sanitation projects, but installing the water system is only part of the job. Operation and maintenance of the water and sanitation systems is equally important. Because governments usually lack the resources to maintain these systems, particularly those in isolated rural areas, the responsibility falls to the community. In this guide developing community responsibility for the water and sanitation systems is not left until the end but is an important part of the project's start-up phase and all phases of the project.

Installing a water system usually is accomplished much more quickly than organizing a community, so it is important to schedule installations which allow for the formation of functioning community water committees. The guide recommends a minimum of six months of community development and health education before any wells are drilled. However, because conditions vary, instead of dictating set time frames for each stage of the project, the guide discusses the skills that the community should develop and the activities that the community needs to complete at each of the nine stages of the project. What follows in this guide is therefore a model for integrating various water supply and sanitation project activities.

Finally, the guide recommends that donors consider progress in all four components of the project if the goal is funding sustainable water systems and creating the behavioral change necessary to reduce water-related illness.

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# 1

## THE FUNCTION OF THIS GUIDE

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### **The Need for Community Capacity-Building**

Developing country governments today generally do not have the resources to install and maintain water and sanitation systems for all their citizens. Many systems are built using outside resources, and those that have proved most successful often rely heavily on the support and work of village organizations which mobilize villagers to participate in getting the systems built and in managing them after the donor leaves. For this reason, community organizing—building capacity at the community level—has long-term implications for system sustainability. Since community organizing is one of the goals of a water and sanitation project, it is not possible simply to focus on trying to install the system quickly; a longer-term perspective must be adopted.

Even though the importance of community participation is well known, putting the principle of community management into practice often has proved difficult. One of the main problems is that many different individuals and groups are involved in constructing a system, and they are not always aware of all that is involved in launching a water and sanitation/hygiene education project with community capacity-building as a goal. For example, engineers frequently lack the training to execute the behavioral goals of projects for which they are responsible. Likewise, social scientists charged with the community participation component of a project are not able to explain their methods and approaches to the engineers. Sometimes the social scientists do not sufficiently understand the technological requirements of the engineers or the time constraints under which construction projects have to function.

### **The Overall Purpose of the Guide**

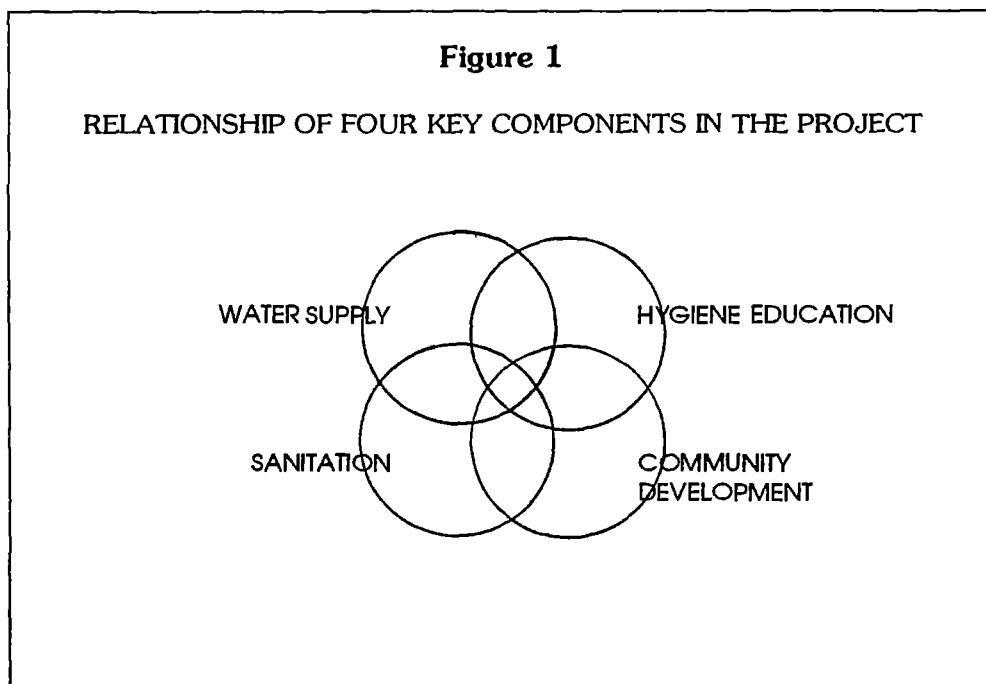
The main purpose of this guide is to build a bridge between the social scientists and the engineers so that they understand and appreciate each other's roles and support each other's activities. The guide divides a typical project into its various stages and describes what should happen in each stage and who should be involved. In this way it delineates for engineers what is involved in carrying out behavioral change programs and describes for social scientists the technical requirements involved in construction activities.

The authors of this guide attempted to make it suitable for use in large rural projects such as those the U.S. Agency for International Development (USAID) has funded in Burkina Faso, Togo, Malawi, Lesotho, Somalia, Guatemala, and Honduras. Each of these projects has constructed hundreds of systems primarily using boreholes with handpumps or springs with piped distribution systems. The choice of technology is important because, to varying degrees, it determines the amount of community participation and the time required for various phases of project implementation.

The approach herein utilizes the USAID project development methodology by assuming that a Project Paper has been completed as a first step. The Project Paper typically describes baseline conditions and problems and establishes goals and objectives to alleviate these problems. A general plan of implementation is described in the Project Paper and requisite funding is provided. Writing a Project Paper requires intensive collaboration with host government agencies and should involve some inputs from communities although, unfortunately, community input is often lacking. In this regard it is important to stress that, ideally, reference should be made in the Project Paper for the project implementation steps discussed in this report.

For purposes of illustration, this guide uses boreholes with handpumps as the technology, but the principles involved apply equally well to other technologies. Many of the principles and approaches described here will also be beneficial to small projects involving only a few villages, if modifications in time and scale are made. This "typical" project has multiple objectives: (1) to provide water supply and sanitation to numerous rural villages, (2) to provide hygiene education, and (3) to build community capacity for long-term management of water points and sanitation facilities. The expectation is that at the end of the project the communities will be capable of managing their own systems and practicing proper hygiene. As a result, they should reap the benefits of improved health.

Maintaining a balance between the four key components—water, sanitation, hygiene education, and community development—is given paramount importance in this guide. The exact overlap and relationship, as shown in Figure 1, varies from project to project but the components are symbiotic and must be blended in a manner that facilitates overall project goals.



### **The Major Actors in a Water and Sanitation Project**

Most water and sanitation guidelines concentrate on community involvement. This guide focuses on the extension agent as the critical link between the project and the community. But the roles of other individuals and groups involved are outlined as well. These are the project management team, the village leaders, the village water committee, the construction crew (skilled laborers normally hired for the duration of the project), and appropriate host country government officials. (Note that with the focus increasingly on sustainability, many projects hire local contractors to do the drilling and construction.)

The project management team normally consists of a project manager (usually an engineer with strong management skills) and a project staff consisting of specialists for each of three technical areas: engineering and operation and maintenance, hygiene education and community participation, and training. These technical specialists have experience working in a multidisciplinary setting. (In some projects there would be no separate training specialist; the community participation/hygiene education specialist would have the training expertise necessary.) The management team also includes appropriate administrative personnel such as accountants and procurement officers. Whenever expatriate specialists are involved, a national counterpart provides back-up at each stage of the project for each area of specialization.

Extension agents are usually drawn from various ministries such as social affairs, community development, agriculture/rural development, or women's affairs and are on the ministry payroll.

## **How the Guide Is Organized**

In keeping with its focus on the extension agent, the guide begins with a chapter on the role of the extension agent, including a description of the training that agents undergo. The guide then moves on through the nine project stages, laying out the information that the project gives to the community through the extension agent and describing the interaction between the extension agent and community members.

Throughout the guide, the pronoun "she" is used instead of the standard "he". This is done intentionally so as to stress the continued need of find, encourage, and train female extension agents. This is also intended to remind us of the central role that women play in this sector.

At the end of each section, relevant documents and manuals prepared by the WASH Project are listed. These can be ordered directly from WASH.\*

\* \* \*

The authors of this guide are cognizant of the environment of financial and time constraints in which most water and sanitation projects operate. Communities have needs and priorities outside the project. The extension agents themselves often have heavy workloads and few resources at their disposal. The project management team must meet its commitment to the government to deliver a certain number of water points in a limited amount of time. Each interaction between the project's multidisciplinary team and the village must be fruitful if all project activities are to come together to launch a community-managed water and sanitation project that will enjoy sustained success.

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Arlington, VA 22209  
USA

# 2

## THE JOB OF THE EXTENSION AGENT

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### CHECKLIST

*Extension agents are the link between the project and the village. To be effective they should . . .*

- ✓ Establish a fixed routine of visits to villages and meetings with supervisors.
- ✓ Keep a record of community meetings.
- ✓ Be assigned between 4 and 10 villages.
- ✓ Provide opportunities for the villages to learn.
- ✓ Develop rapport with villagers and village committees.
- ✓ Provide communication between the project and the village.
- ✓ Understand their role as facilitators, not doers.

### The Critical Role of the Extension Agent

The extension agent is the pivotal figure in a water and sanitation project. As the link between the project and the village, she plays a critical role. Therefore, before discussing the various stages of a water and sanitation project, it is useful to consider in some detail what an effective extension agent does and how she is generally trained.

In most water and sanitation projects, a great deal of time and considerable project resources are spent to train and support extension agents. The extension agent interacts directly with villagers and is responsible for training them so that they will adopt new behaviors and thus derive maximum benefit from water and sanitation projects.

However, in projects in which community management is an objective, a village water committee is set up to manage the water system. The extension agent interacts not with the villagers themselves, but with the members of the water committee. Not only must she train them in the same way she might train the villagers, but she must also give them the skills to

manage their own water and sanitation system. In addition, she is expected to make trainers out of the water committee members, for it is they who will be responsible for training the villagers. In other words, in community management projects, the extension agent is a trainer and a trainer of trainers. She is a facilitator, not a doer.

## **Training, an Ongoing Function**

The extension agent is not trained once and for all when she takes the job. She is initially given an orientation training, but training also takes place continuously throughout the project cycle, in rhythm with project activities in once-a-week sessions with supervisors and project specialists. A well-trained extension agent will be able to transfer specific skills to the water committee members when the project calls for them. She must go back to each of the skills she learned in orientation and teach it to others.

## **The Agent's Main Tasks**

The following sections highlight the important aspects of an extension agent's work.

### **Following a Fixed Schedule**

The agent should meet with village committees on the same day every two weeks at an appointed place in the village. Given the constraints in developing countries that make planning difficult, this approach has many advantages. It develops a routine. There is no need to plan every month. Because of this routine, the village knows when the agent is coming. The supervisor knows where all the agents are on a given day. The extension agent knows when the meetings for training and project business are to be conducted.

At these meetings, the approach used is one of problem-solving, in which the village committee members develop a plan for addressing a problem and the extension agent provides guidance. The extension agent offers the skills and knowledge required for specific activities which will take place during the upcoming two-week period. The agent also reviews what was learned during the previous two weeks, listens to the comments of the committee members, and takes note of problems that arise.

The meetings between the extension agents and their supervisors in a subdistrict or district should also be regularized. Agents should meet with their supervisors for a full day every two weeks to report on progress and problems and to exchange information. The purpose of the meeting is to report, review, and plan. Lesson plans for additional areas also are reviewed at this meeting or at a separate monthly meeting which is held with project specialists in the various content areas. These meetings also are important as vehicles for moving information up the line from the village to the project. An example of an extension agent's monthly work timetable is shown in Figure 2.



**Figure 2**

**AN EXTENSION AGENT'S SUGGESTED MONTHLY WORK TIMETABLE**

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
VISIT VILLAGE COMMITTEE 1	VISIT VILLAGE COMMITTEE 2	VISIT VILLAGE COMMITTEE 3	VISIT VILLAGE COMMITTEE 4	TRAINING BY PROJECT SUBJECT SPECIALIST	MAKE UP ANY MISSED VISITS	
VISIT VILLAGE COMMITTEE 5	VISIT VILLAGE COMMITTEE 6	VISIT VILLAGE COMMITTEE 7	VISIT VILLAGE COMMITTEE 8	TRAINING BY LOCAL GOVT DISTRICT SUPERVISOR	MAKE UP ANY MISSED VISITS	
VISIT VILLAGE COMMITTEE 1	VISIT VILLAGE COMMITTEE 2	VISIT VILLAGE COMMITTEE 3	VISIT VILLAGE COMMITTEE 4	TRAINING BY PROJECT SUBJECT SPECIALIST	MAKE UP ANY MISSED VISITS	
VISIT VILLAGE COMMITTEE 5	VISIT VILLAGE COMMITTEE 6	VISIT VILLAGE COMMITTEE 7	VISIT VILLAGE COMMITTEE 8	TRAINING BY LOCAL GOVT DISTRICT SUPERVISOR	MAKE UP ANY MISSED VISITS	

This system permits improved agent supervision. The project's monitoring and evaluation system specifies what reports and forms should be turned in and reviewed at these meetings. The planning skills that the agents perfect during these meetings can be passed on to the various village committees.

**Keeping Records**

The extension agent should keep a diary of her activities in the villages she is responsible for. An example of a diary entry is shown in Figure 3. The diary enables the agent to keep track of progress in the communities and to provide feedback to the project.

**Figure 3**

**AN EXTENSION AGENT'S DAILY DIARY**

NAME OF VILLAGE:		DATE:
PLACE:		DAY:
NAMES OF COMMITTEE MEMBERS PRESENT	SUBJECT ON WHICH TRAINING TOOK PLACE	PROBLEMS
	<ul style="list-style-type: none"><li>CARE OF EXISTING WATER SOURCE</li><li>HOLDING A MEETING</li><li>NEED FOR WELL CONSTRUCTION</li></ul>	<ul style="list-style-type: none"><li>ELDERS RESISTANT TO LATRINE USE</li></ul>
RECOMMENDATION		
<ul style="list-style-type: none"><li>FIND OUT WHY ELDERS RESISTANT</li></ul>		

## **How Many Villages an Extension Agent Can Serve**

On the average an extension agent can serve eight villages, although the exact number depends on a number of variables. One variable is the density of the population. A large village is one in which more than one ethnic group resides and where each ethnic group has its own residential and governing mechanism. In such villages, the project might decide that the village will best be served by one water and sanitation system for each ethnic neighborhood. Other variables include the accessibility to the village by road and the distance between villages, which translates into the time required for the agent to travel to the villages. The type of system is also a consideration. The more complex the systems, the fewer villages an agent can cover. For example, if gravity-fed systems are being installed, an agent might be able to cover only two to four villages. Finally, if the project is new and is still testing its methodologies, the agent will not be able to cover too many villages.

No rigid rule exists for determining the right number of villages. The right number is that which the extension agent can handle on a regular, long-term basis, given such problems as transportation difficulties and missed meetings which have to be rescheduled. However, evaluations of various water projects have shown that the most effective use of an extension agent's time is covering between six and twelve villages. In Togo, where the systems are handpumps and villages are small, fifteen was found to be on the high side, while in Malawi where the systems are gravity-fed, six was on the low side. Depending on the nature of the visit, it is often possible for an agent to cover several villages in a day. Whatever arrangement is determined to be best for each situation, the matter is one for careful judgment after extensive field visits.

## **Providing Regular Training Sessions**

The fixed visits of an extension agent to a village are important because they serve as regular training sessions for the village committee. During these visits, the committee members learn how to act as trainers to the village.

Generally the extension agent trains two groups of six to twelve village committees per year. This system allows the extension agent to cover up to twenty-four villages in one year, with the possibility of about twenty meetings in each village during the year. Thus, many opportunities are provided for learning to take place.

The training sessions should be keyed to the schedule of well construction and hygiene activities, of course, but this interactive training system should allow for maximum flexibility for meeting the needs of the community, whether that be accommodating farming and trading activities or addressing a health crisis. For example, if the village is preoccupied with a typhoid outbreak, the agent will communicate this to the project staff who will prepare a training session for the agent linking the disease to water and sanitation issues. The extension agent, in turn, will conduct the appropriate hygiene education session at the next meeting with the village committee, perhaps offering instructions on remedies or the treatment of water sources or even arranging for the Ministry of Health staff to make a presentation. The recommendations of the meeting then are disseminated by the village water committees to the villagers they represent.

## **Developing Rapport with Villagers and Village Committees**

The relationship that the extension agent has with her village committees should be one of open dialogue and respect. This relationship is the basis for the learning processes that take place on both sides. The supervisors and managers observe and evaluate the extension agent's rapport with community members. For example, the director of a private voluntary organization in the Philippines said that he knows that his extension agents have a good relationship with their villages when he hears villagers calling the agents by their nicknames.

## **Providing Communication between the Project and the Village**

The extension agent should learn through the training sessions what to recommend to the committee members in her next visit. The agent also brings the community's concerns to the attention of her own trainers, that is, to the project staff and national or regional level advisors who train the agent for the next step scheduled in the process. This integrated system allows for continuous feedback from community to project and vice versa, which keeps the project staff and extension agent in touch with community issues as they arise. It also allows for clearly structured time for communications *between* extension agents on how they address problems and for sharing experiences.

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# 3

## THE STAGES OF A WATER AND SANITATION PROJECT

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### CHECKLIST

*Engineers and social scientists alike must be aware of each other's efforts at each of the nine stages of a typical water and sanitation project . . .*

- ✓ Start up.
- ✓ Select project communities.
- ✓ Contact community.
- ✓ Set up water committee.
- ✓ Prepare water committee.
- ✓ Construct water system.
- ✓ Strengthen environmental sanitation.
- ✓ Operate and maintain systems.
- ✓ Monitor and disengage.

At each stage of a typical water and sanitation project extension agents help the community to develop certain skills and complete certain activities required for each of the four components of the project—the water system, the sanitation system, hygiene education, and community development. The engineers and the social scientists charged with the success of the project need to be aware of each other's efforts at each stage so that the work of all the project extension agents is coordinated and completed before moving on to the succeeding stage.

Generally it takes at least six months to go through these stages before actual construction begins. That amount of time is needed for the community to develop the necessary skills in management capability, use of system (through hygiene education), and technical maintenance. In fact, experience from various projects suggests that anything less than six months is insufficient preparatory time. This would be the case when, for example, the community is expected to maintain a system which includes pumps and holding tanks, as well as to manage a monthly fee collection for a maintenance fund. A gravity system which requires more complex installation and maintenance might proceed more slowly. As a rule of thumb, the more that people are expected to do to maintain the water and sanitation system, the more attention needs to be given to community capacity-building before the

system is installed. This means developing community-based institutions to care for improved systems and training persons to work in them.

The time periods for each of the nine stages can be programmed depending on the time required for construction. Well drilling often can be completed in a few days, while a pipeline may take many months. Figure 4 provides an idealized project cycle and approximate time periods.

The main activities of each stage are summarized below.

Start Up: Complete the detailed plans for the project, marshal personnel and commodities needed for the project, and develop a work plan.

Select Project Communities: Establish selection criteria, collect information on potential sites, make final selection, and obtain confirmation of community interest.

Contact Community: Meet with large and small groups of villagers to explain the project, carry out a rural household survey, and obtain community's commitment to the project.

Set Up Water Committee: Inform the community about the responsibilities of a water committee, select water committee members, and arrange a contract between the community and the water committee.

Prepare Water Committee: Train the committee in the skills needed and assist the committee to carry out its initial tasks: adopting rules on water use, establishing an O&M fund, preparing for construction, and selecting a pump caretaker.

Construct Water System: Train all personnel involved in construction, assist water committee to supervise construction, and place system in service.

Review and Strengthen Basic Processes of Environmental Sanitation: Train extension agents and water committees for their hygiene education work, hold community meetings on hygiene and environmental sanitation, conduct a health practices survey, and introduce and plan for latrine construction.

Operate and Maintain Systems: Establish routine work patterns for water committees, pump and latrine caretakers, and community members.

Monitor and Disengage: Gradually shift full responsibility for the water and sanitation system to the community.

Figure 4

PROJECT CYCLE AND IDEALIZED TIME PERIODS

STAGE	MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1. START-UP (1-2)		■	■																						
2. IDENTIFY COMMUNITY (3-4)				■	■																				
3. INITIAL CONTACT WITH COMMUNITY (5-6)						■	■																		
4. FORMALIZE CONTRACT WITH COMMUNITY WATER COMMITTEE (6-7)							■	■																	
5. TRAIN COMMUNITY WATER COMMITTEE (8-12)									■	■	■	■	■												
6. CONSTRUCT WATER SYSTEM (13+)														■	■	■									
7. ESTABLISH ENVIRONMENTAL HYGIENE (14-16)														■	■	■									
8. OPERATE AND MAINTAIN WATER AND SANITATION SYSTEMS (13-19)														■	■	■	■	■	■						
9. DISENGAGE FROM COMMUNITY (15-24)																■	■	■	■	■	■	■	■	■	■

## **Relevant WASH Documents**

**The Role of Women as Participants and Beneficiaries in Water Supply and Sanitation Programs.** Technical Report No. 11, 1981.

**Facilitator Guide for Conducting a Team Planning Meeting.** Technical Report No. 32, 1985.

**The Value of Water Supply and Sanitation in Development: An Assessment of Health-Related Interventions.** Technical Report No. 43, 1987.

**New Participatory Frameworks for the Design and Management of Sustainable Water Supply and Sanitation Projects.** Technical Report No. 52, 1987.

**A Facilitator Guide for Conducting a Project Start-Up Workshop.** Technical Report No. 41, 1988.



# 4

## **STAGE ONE: START-UP ACTIVITIES**

---

### **CHECKLIST**

*Tasks for the project management team . . .*

- ✓ Assist in establishing a national coordinating committee.
- ✓ Hire project staff.
- ✓ Develop work plan.
- ✓ Train extension agents.
- ✓ Finalize logistics of procurement.

In the start-up phase, stage one, the project management team has the task of completing the detailed planning of the project. The project manager or donor representative may have to amend project documents and sign an agreement with the national or state government. These documents are to ensure the government's contribution to the project. Depending on the project and institutions involved, some of this work may be completed as part of the pre-project feasibility or design studies before project funds are made available. The management team's work in this stage is to marshal the personnel and commodities needed for the project, starting with putting together a committee to coordinate input from the ministries and bureaus involved.

### **Establish the National Coordination Committee**

The project management team provides the overall expertise needed to manage and administer the project. It may operate within an existing government institution or within a private voluntary organization (PVO). Alternatively, it may be set up separately as a temporary office for the life of the project. Ideally, it would be established within a government institution, which would then be able to replicate the project in other areas.

Normally, projects are organized within one lead institution such as the Ministry of Water.

#### **Who's Involved?**

- Project management team
- Representatives of appropriate ministries

Wherever the project is housed, it requires the full and active collaboration of the other ministries or institutions involved. These may include the ministries or bureaus of health, water, sanitation, social affairs, planning, finance, and local government.

In order to coordinate the needed input from each of these organizations, the management establishes a national or a regional coordinating committee with representation from the various participating ministries and bureaus. The purpose of the national coordinating committee is to assure the full and timely cooperation of the various ministries in approving the project plans. Sometimes, in countries that are decentralized, a regional committee is also needed to coordinate local activities. In both cases, it is the task of the project management team to plan the project activities while the national coordinating committee is responsible for assessing the plans, recommending modifications if needed, and finally giving its approval. The national coordinating committee generally should hold meetings monthly during the project start-up stage and quarterly thereafter.

The national coordinating committee is chaired by the lead institution (the Ministry of Health/Local Government/National Resources, for example). Members of the committee must be sufficiently senior to be able to commit the resources of their respective ministries to the project. Figure 5 shows the organization of a typical project diagrammatically.

### **Identify Staff**

During stage one the project management team must be assembled. Many team members already are working in government jobs, but they must be detailed to the project. The project team consists of a project manager and staff specialists in water and sanitation engineering and operation and maintenance, hygiene education and community participation, training, accounting, and procurement.

- |  |
|--|
| <p><b>Who's Involved?</b></p> <ul style="list-style-type: none"><li>• Project planners</li></ul> |
|--|

Project planners should have the four project components clearly in mind when they are putting together the project staff and when they are allocating budget funds. This way, each component of the project—water systems, sanitation systems, hygiene education, and community development—will be given proper emphasis.

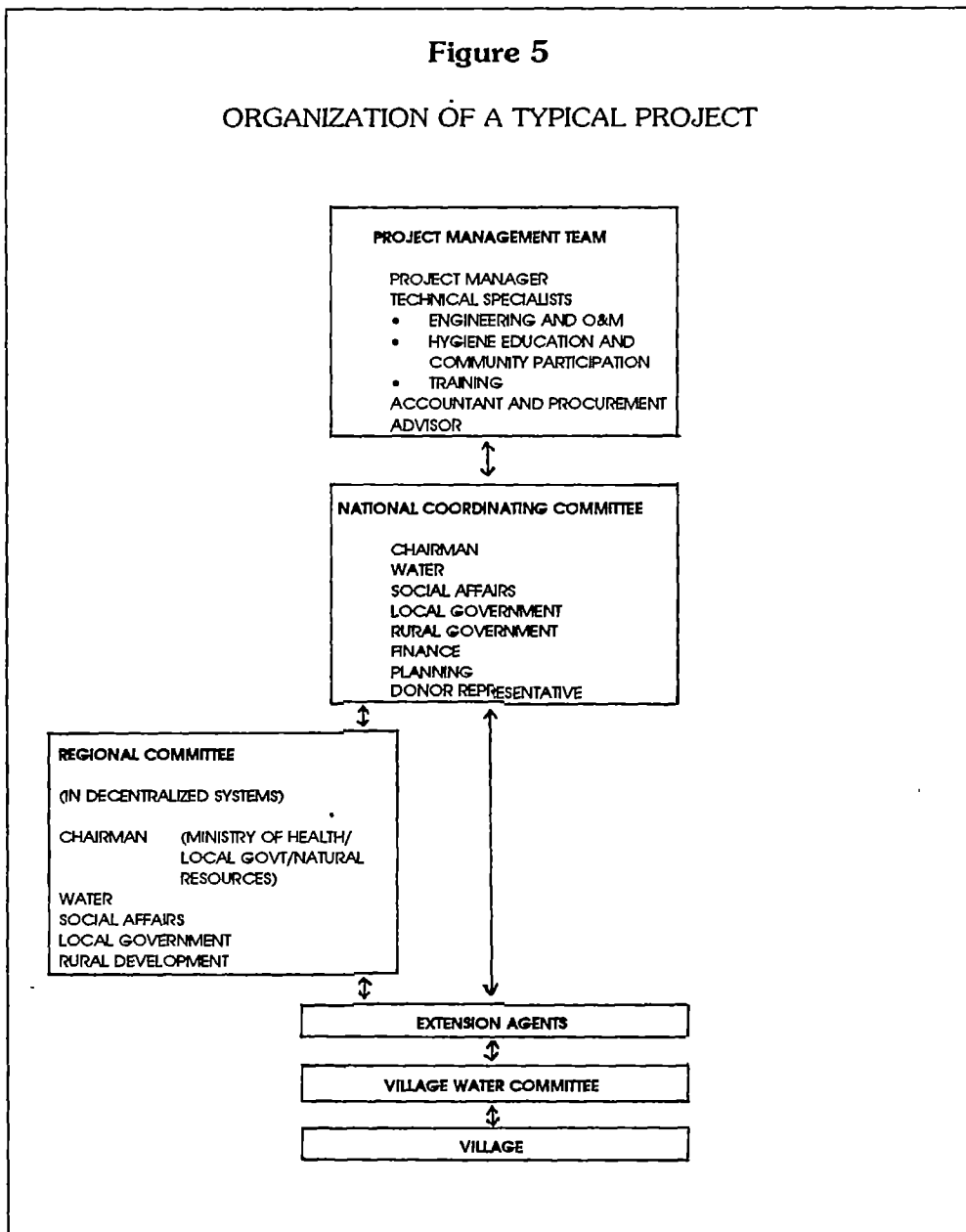
### **Develop Work Plan**

When the staff has been assembled, it needs to spend one week together with the national coordinating committee to develop a work plan for the project. This includes a schedule of meetings and periods for annual or possible quarterly revisions and updating. (WASH Technical Report No. 41, *Facilitator Guide for Conducting a Project Start-up Workshop* will help in this activity).

- |   |
|---|
| <p><b>Who's Involved?</b></p> <ul style="list-style-type: none"><li>• Project management team</li><li>• National coordinating committee</li></ul> |
|---|

**Figure 5**

**ORGANIZATION OF A TYPICAL PROJECT**



**Train Extension Agents**

Before extension agents can be expected to go out to the communities, they will need to be trained in an approach of learning and problem-solving that hitherto they may not have used. These extension agents will be trained by the project staff and later by the national ministry staff.

**Who's Involved?**

- Extension agents
- Project staff
- National ministry staff

The extension agents usually are government employees from various ministries, such as social affairs. They usually are graduates of two- or three-year training programs. The agents most likely will need to supplement the theoretical training they received in these programs with more skill-oriented and operational training. Frequently, they may not be assigned to the project full time.

Special efforts must be made to recruit and train women extension agents. It will not happen by itself. When the project manager is identifying staff from the government, special note must be made to enquire about the availability of women staff and to follow up on their recruitment. Women extension agents also can be recruited from the Ministry of Education or from teachers training colleges. In these cases, the training must be targeted for the type of activities required. Women have an important role to play in forging links with community members, especially village women.

**Who's Involved?**

- Project management team
- National coordinating committee

The key areas with which the extension agents will be helping villagers are installing the village water committee, establishing a system of pump maintenance and repair, teaching the use of water to improve health through general hygiene practices, and developing the capability in the village for managing these systems, resolving problems as they occur, and effectively managing project input. The extension agents will need many skills to do these jobs. (WASH Technical Report No. 33, *A Workshop Design for Community Participation*, Vol. I and II will be helpful in developing extension agents' skills and understanding of this process.)

Above all, the extension agents will need to know how to train trainers for they will be training the village water committees to be village trainers. The extension agents need to know how to train for behavior change and responsibility building, in addition to developing technical knowledge ranging from creating training materials to constructing latrines.

Extension agents' training begins with an orientation workshop to introduce them to the project activities. This workshop should cover the following:

1. The general phases of the project
2. Advantages and disadvantages of various types of water projects
3. Project benefits: Hygiene education and community participation
4. Facing resistance in introducing innovation
5. Levels of village participation
6. Village committees
7. Role and development of village committees
8. Role of the agent

9. Establishing collaboration with village leaders
10. Preparing agreement documents
11. Financial management
12. Village-level maintenance
13. Training
14. Planning meetings
15. Conflict resolution

Given the enormous range of skills required, training cannot be accomplished in just a one-time workshop. In addition to the sessions with their supervisors, which are held one day every week, they will need to participate in specialized training seminars ranging from three to five days which are devoted to a specific skill or topic.

The project staff should travel around the project area to give seminars to extension agents. The seminars will sometimes deal with new learning in preparation for the next phase of the project; other times they will review material covered earlier. The schedule for teaching technical skills on pump maintenance, latrine construction, village hygiene, and water-related diseases will depend on what the community needs to know at a particular stage of the water and sanitation project. The project staff will also teach the extension agents management skills (for example, fee collection, bookkeeping), how to train trainers, conflict resolution in villages, communications techniques, group dynamics, project planning, and making visual aids. (See Appendix A on approaches to teaching and Appendix B on motivation.)

Training in hygiene education activities is vitally important because hygiene education creates a demand for improved facilities and ensures that they are properly used and cared for. A two-week workshop on the general principles of hygiene education (WASH Technical Report No. 60, *A Training Guide on Hygiene Education*) emphasizes:

- establishment of rapport with key actors,
- perceptions and beliefs of community groups regarding the impact of water on health, and safe and unsafe water,
- collection of basic hygiene information from the community,
- learning to identify community program priorities and to design a hygiene education program with the community,
- implementation planning,
- evaluation of behavioral change.

## Finalize the Logistics of Procurement

A water and sanitation project entails the procurement of a vast array of supplies and equipment. While some of the supplies ideally should be purchased after the specific technology has been selected, basic equipment for training, communication, and transportation should be purchased at this point. Some commodities require a long delivery time and must be ordered in the start-up stage of the project. Many projects get off to a slow start because the secretariat did not begin the procurement process early enough. It is essential that the secretariat find out how long it takes to get the equipment and material that the project needs so that they can be ordered in advance.

The proper selection of vehicles for field agents is also important. Most projects rely upon medium-weight motorbikes designed for off-road use and lighter-weight ones for use of women extension staff. Arrangements must also be planned for the maintenance of the project vehicles, whether this is done within the project itself or through contracts with local repair shops. Properly attending to procurement in stage one means, for example, that when the community workers set out to introduce the project to the community, the vehicles they need are available to them.

### Who's Involved?

- Project management team

## **Relevant WASH Documents**

**Training Plan for the Water and Sanitation Component of SANRU II (Rural Health—Zaire).** Field Report No. 160, 1985.

**CARE/Sierra Leone Community Participation Assessment.** Field Report No. 217, 1987.

**Human Resource Development Planning: Guidelines for the Water Supply and Sanitation Sector.** Technical Report No. 20, 1988.

**A Workshop Design for Community Participation, Volume I—Starting Work with Communities, and Volume II—Planning and Implementing Sustainable Projects.** Technical Report No. 33, 1988.

**Guidelines for Institutional Assessment: Water and Wastewater Institutions.** Technical Report No. 37, 1988.

**Facilitator Guide for Conducting a Project Start-Up Workshop.** Technical Report No. 41, 1988.

**Pump Selection: A Field Guide for Developing Countries.** Technical Report No. 61, 1989.

**Guidelines for Conducting a Financial Management Assessment of Water Authorities.** Technical Report No. 53, 1990.

**A Training Guide on Hygiene Education.** Technical Report No. 60, 1990.

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# 5

## STAGE TWO: INITIAL SELECTION OF PROJECT COMMUNITIES

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### CHECKLIST

*Tasks for the national coordinating committee . . .*

- ✓ Establish selection criteria.
- ✓ Prioritize potential communities.
- ✓ Make final selection of communities using data collected by extension agents on site visits.
- ✓ Obtain confirmation of community interest.

In this stage, the national coordinating committee identifies potential communities for project activities and then, on the basis of information collected by extension agents during the site visits, must make the final selection of the communities. At this stage, the project staff works with the community to collect quantitative data to assist in the appropriateness of technology and its adaptation.

Typically, water and sanitation projects are initiated as the result of community demands for improved services which have been expressed to local government representatives. A formal letter from the community to the local government or project is one way in which this contact takes place. Information on these communities is passed on to the project management team. A list of these communities, which is usually very long, comprises the initial list of potential target communities. One of the first activities of the project management team, with the approval of the national coordinating committee, is making the first selection of the communities that might participate in the project from this original list.

## Establish Selection Criteria

Communities are chosen based on which ones will benefit the most and which ones are most likely to sustain project activities and facilities. As a general rule, the villages which are most likely to succeed are given top priority. Projects should begin with the easiest sites, selecting those most likely to succeed first and saving the more difficult ones for last. Early success in a project makes it easier to promote project activities to villages which have a lower likelihood of success but just as great a need for water. An important criteria in selection should include a community's past history in participatory activities. Communities must also be large enough (over 1,200) to ensure that institutional capability and management exists for managing systems.

### Who's Involved?

- Project management team
- National coordinating committee

The first task in selecting project communities is to develop the criteria that will be used in making the selection. To some extent the criteria used will differ from country to country, but certain criteria should be used for all the water and sanitation projects: the community's distance to a source of water, its size, incidence of disease, hydrogeological and climatic factors, accessibility, expression of interest, and socioeconomic patterns compatible with the project. (See Appendix C for sample community selection criteria. The criteria in this appendix differentiate levels of system technology.)

### Size of Community

Project implementors need to have an estimate of the number of people or families in the community. This is not always readily available from government statistics. Other sources may need to be used. In Nigeria, for example, a World Bank project estimated family size by using primary health care and taxation figures for households.

Water projects for larger communities should be undertaken before those for smaller ones. However, a water project for a large village cannot always be treated simply as a larger version of a water project for a small, monoethnic village. Sometimes ethnic, religious, clan, or lineal differences in large villages are striking enough that the project finds that each ethnic or religious neighborhood needs to be treated as a separate village.

In these cases an awareness of the social realities of the large village is critical to the success of the project. The water system, in these circumstances, might be built in one neighborhood for the exclusive use of one ethnic group, with the understanding that the project will be a model for the other neighborhoods which later will build their own water systems at their own expense. Another approach is for the project to build one water system to be used by all the ethnic neighborhoods under agreed-upon conditions. For example, if the project is unable to supply sufficient water for the entire village's needs, the villagers

could agree to use the water for drinking only or assign each neighborhood certain days of the week.

Insufficient consideration of the size of a community frequently results in building a system that is too small. The extension agent should find out how many people live in each community (or, in some instances, in each distinct ethnic neighborhood in a large village). The agent also should gather information on whether the population is increasing or decreasing and at what rates so that the project engineer can assess more accurately the amount of water the community will need.

### **Incidence of Disease**

Villages with known incidence of water-related diseases, such as dracunculiasis (guinea worm) or schistosomiasis, or with high gastroenteritis rates deserve high consideration. Typically, hard data on diseases are nonexistent for rural villages, but the extension agent may find that gathering anecdotal information from health centers may be adequate for the purposes of a water project.

### **Hydrogeology and Climate**

The project engineer will need to know the geography of the project area and learn of any special problems that may bear on the development of the water supply system. Often the hydrogeology of an area will determine the suitability of certain sites for water and sanitation projects. Springs are usually the most cost-effective water supply since pumps are not needed. Shallow wells are the next best choice followed by deep wells.

Areas where groundwater is known to be difficult to locate or areas exhibiting water quality problems, such as salinity, should be given low priority. Areas with high water tables or sandy soils that cave in easily may prove to be difficult sites for locating latrines and should also be given a low priority.

The project engineer also needs information on alternative water sources which may affect the community's use of improved systems. Such alternative sources include streams, lakes, irrigation canals, and groundwater. In areas with short dry seasons, roof catchments may offer a reasonable alternative technology and should be compared with other options before making a decision on the suitability of the location for the project. All this information will help the engineer determine the feasibility of providing water to the communities.

### **Accessibility**

Sites which are easily accessible to established roads merit high consideration. Successful projects in communities which are on main highways have the added asset of serving as models to other communities as well as solidifying support for the project. Sometimes a

village is strategically placed vis-à-vis surrounding villages and can provide the extension agent with efficient access to a cluster of villages. If the best site for a well is on private property, provision for right-of-way might be required. In other cases, it may be necessary for the community to build a road to provide access to the water source.

### **Community Interest**

Communities which show great interest in participation should be granted high priority. Often community interest can be gauged by the villagers' expression of their perceived needs or by their positive experiences in other projects or their trust in government interventions. Including community interest as a criterion is one way of structuring the opportunity for the community to say "no" to a project. The criteria that many projects use for assessing interest have to include more than statements of "willingness" of community leaders or members during interviews or meetings. Community willingness and capacity needs to be demonstrated. Willingness-to-pay studies can be important tools in assessing the level of service that people are willing to support. Learning what the community really wants—and what it is willing and able to sustain once it knows what is involved—is important for the project staff to learn as early on as possible.

### **Socioeconomic Patterns**

Social and economic patterns often provide some indication of project sustainability. For example, very poor communities tend to be less able to establish funds to maintain a project. Communities that tend to migrate with cattle herds may be less able to take on the responsibility of a water and sanitation project than non-nomadic farming communities.

### **Prioritize Potential Communities**

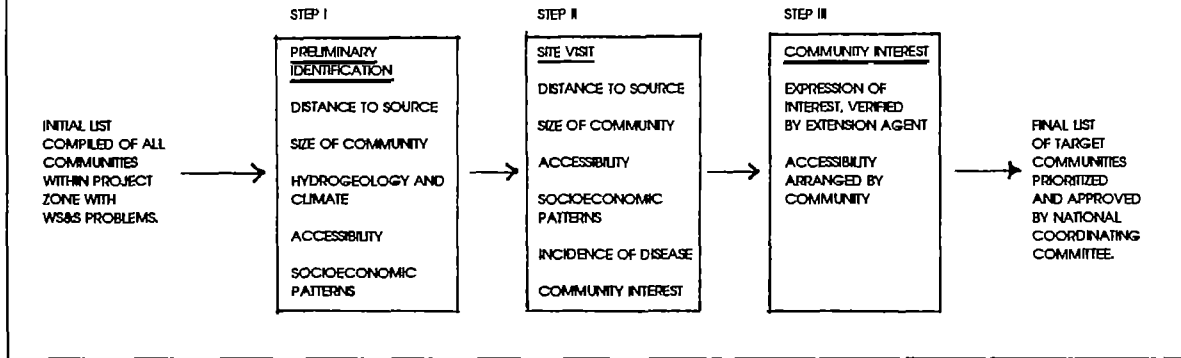
The national coordinating committee uses the selection criteria to prioritize communities for the project. The selection process is conducted in three stages, the first of which is preliminary identification of communities. (Figure 6 shows the three-stage review process, along with the selection criteria which is applied.)

#### **Who's Involved?**

- National coordinating committee
- Project management team

Figure 6

THREE-STAGE REVIEW PROCESS FOR SELECTING COMMUNITIES



The process begins when the project management team creates a portfolio for each target community containing appropriate data which is updated periodically. Communities may be added to the file or removed as appropriate. In the preselection stage the secretariat prioritizes the initial list of communities using the selection criteria. These criteria generally are applied using available information without conducting field surveys. The list of communities is presented to the national coordinating committee for approval with brief explanations of the rankings.

### Visit to Sites

The extension agents make site visits to the communities to collect data for assisting in the selection of the project sites. It is essential that the extension agents be trained to describe concisely and clearly what the project is about but *not* to make any promises to the community.

#### Who's Involved?

- Extension agents
- Project management team
- National coordinating committee

The site visit is intended to refine the information gathered during the preliminary identification stage. For example, the size of the community may be found to be much larger than reported on census data, or the incidence of guinea worm at a particular village may be much higher than national statistics show for the region. Conversely, the village may be much smaller than originally thought because of migration, or the village might have access to a reasonable water source which reduces its need for an improved source. It is also important for extension agents to uncover and analyze major conflicts within a community which could prevent it from participating effectively in the project.

priorities related to water. During their training, extension agents learned to identify formal and informal leaders and to focus in particular on those interested in community health.

There are many reasons which will become apparent as to the relative priority an individual village should be given in determining its suitability for inclusion in the project. The project management team adds this information to the community portfolio and the master list is prioritized again. The revised list is again presented to the national coordinating committee for approval. The extension agents may be asked to defend the rankings.

The inherently sensitive nature of ranking village sites should be mentioned here. Quite frequently, pressure is brought to bear to include one or another village on the prioritized list, even if it does not strictly meet "objective" selection criteria, for example, the inclusion of the home village of the minister of health. Establishing selection criteria and strictly adhering to them will diminish the opportunities for such interference.

### **Obtain the Commitment of the Community**

The third stage, in which community interest in the project is expressed, is a verbal commitment on the part of the village leaders to take responsibility for entering into an agreement to build a water and sanitation system in their village. Any conditions that may be required should be discussed by the extension agent. Conditions may include, for example, establishing a maintenance fund, participating in construction through voluntary village labor, and constructing a road to the well site.

#### **Who's Involved?**

- Community leaders
- Extension agent
- National coordinating committee

It is very rare for everyone in the village to express interest in the project. Therefore, the extension agent must determine *who* is expressing interest and *how* they are related to the entire power structure of the village. Do they speak for the whole village? Do they have leverage over others' behavior? How much? And in what areas? For example, Indonesian villagers respect the village headman, whereas, in more egalitarian communities, authority is less dominating. If the villagers do not express real interest in the project, then their wishes should be respected and their village should no longer be considered.

At this point, there is an informal understanding of what the responsibilities and obligations are between villagers and project. This understanding will be formalized later.

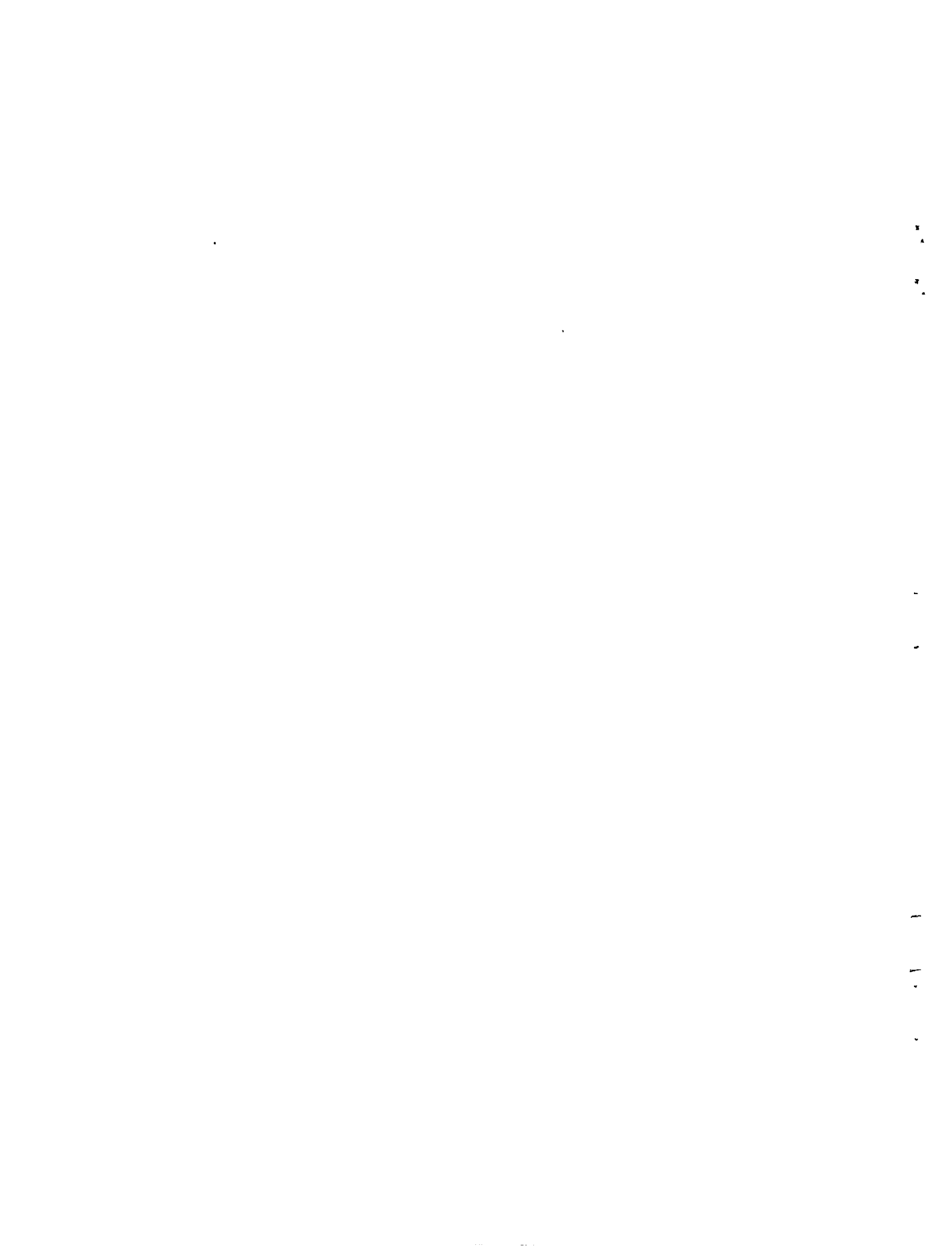
The extension agent verifies to the national coordinating committee the community's expressed interest and its understanding of the approach and conditions. At the end of this stage a list of villages is approved by the coordinating committee for further project activities. It is important to note that this selection is not an obligation on the part of the project to construct water supply and sanitation facilities. This will occur only after other steps are taken by the communities, as explained in subsequent chapters.

## RELEVANT WASH DOCUMENTS

**Facilitation of Community Organization: An Approach to Water and Sanitation Programs in Developing Countries.** Technical Report No. 7, 1981.

**Social and Economic Preconditions for Water Supply and Sanitation Programs.** Technical Report No. 10, 1984.

**A Workshop Design for Community Participation, Volume I—Starting Work with Communities, and Volume II—Planning and Implementing Sustainable Projects.** Technical Report No. 33, 1988.





# 6

## STAGE THREE: BEGINNING PROJECT INVOLVEMENT WITH THE COMMUNITY

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### CHECKLIST

*Before introducing the project to the community, the **extension agents** undergo six days of intensive training in how to plan, prepare, and implement training programs. Then they, with the assistance of the project staff, follow these steps in the community. . .*

- ✓ Meet and establish rapport with the village elders.
- ✓ Hold an initial community meeting to explain the project.
- ✓ Meet with small groups of villagers for a Q and A session.
- ✓ Assist the community to carry out a survey on resources and potential technical feasibility.
- ✓ Hold a second community meeting to explain available water system options and obtain the community's commitment to the project.

In stage three the extension agent undergoes intensive training and then introduces the water and sanitation project to the community through a series of meetings. She first plans a meeting with the village elders to be followed by at least two major meetings with the whole community. In addition she conducts several smaller, informal meetings with different segments of the community.

In the meetings the agent teaches a select group of villagers how to conduct a survey of the village in order to gather information on local water use and needs. In addition, she begins hygiene education to raise community consciousness about water-related illness. At this stage the agent discusses with the community what safe and unsafe water is and how it impacts on illness and health. At the end of stage three, the community decides whether or not to commit itself formally to the project.

## The Training of Extension Agents

At the beginning of stage three the supervisors of the extension agents, working closely with the project staff, meet with the extension agents for an intensive, six-day training session. (This is as long as it is realistic to expect agents to be away from their posts.) This training session offers an overall presentation of all the areas relevant to the implementation of the project. The supervisors and project staff teach the agents how to conduct participatory training sessions based on adult learning theories and how to plan, prepare, and implement training programs themselves.

### Who's Involved?

- Extension agents
- Extension agent supervisors
- Project trainers

During the intensive training session the extension agent learns the correct ways to enter the community and get to know community members. She learns what criteria should be used in selecting a community water committee as well as what role this committee will play, including its role in establishing and sustaining a community fund for maintaining the water and sanitation project. The training session also covers water and health issues, including traditional methods of water purification, the importance of keeping the water source clean, the uses of water in the home for various cures, the transmission of germs, water and disease, personal hygiene, and village sanitation and child health. It is very important to make extension agents aware that sustainability—i.e., long-term use, operations and maintenance—is at the heart of all their efforts. They must recognize that no water system is eternal. The best of them will last 20 to 25 years. Thus, proper management, which includes allowance and planning for replacement of systems, must be built into the communities.

After this intensive training session, further training of the extension agent proceeds throughout each stage of the project. During the life of the project, the extension agent continues to devote one full day a week to her own training, one week with the extension agent supervisor from the local government district and the following week with a subject specialist from the project team. The subject matter specialist may be someone from the project staff or a person whom the project invites from another ministry to provide short-term training sessions on particular subjects.

When the extension agent meets with the subject specialist from the project, the focus of the training session is on skills that the agent will soon be using in the community. For example, shortly before negotiations begin between the community and the project, the agent will be trained in how to handle the contract.

In addition to day-long training sessions, the extension agent also receives one-on-one counseling and advice from various project staff members. The extension agent also shares experiences with her colleagues.

## Steps in Making Contact with the Community

### Meet with Village Elders

The initial meeting between the extension agent and the village elders is to establish rapport. The purpose of the meeting is for the agent to pay her respects to the elders or leaders and to explain the water and sanitation project in as much detail as the elders wish. The agent describes the objectives of the project and the responsibilities that the community will have to shoulder if the project is to be successful. The agent also informs the elders that it will be necessary to have a series of meetings, some for the entire community and some for only specific segments.

#### Who's Involved?

- Extension agents
- Village elders

At the meeting, the extension agent points out that the project is helping many other villages that want to improve their water and sanitation facilities and that each village must do its share in order to be selected as a project site. The agent emphasizes that the village has the responsibility to contribute to the construction of the facilities and afterwards to manage the system with its own resources.

Because radios usually are present in the villages, broadcasts can be extremely helpful at this stage in explaining the objectives of the project. Later in the project, radio broadcasts can be used to explain health benefits and other educational themes. The broadcasts should always be presented in local dialects. For example, in Haiti, the CARE/Water Supply and Sanitation Project used community members to participate in these broadcasts.

The extension agent should reach an agreement with the elders to hold a second meeting about two weeks later with the entire community. Its purpose will be to explain the project in detail so that everyone understands the objectives and benefits of the project and the responsibilities of the community.

### Hold a Community Meeting

The extension agent arranges the first meeting between the technical specialists on the project staff and the entire community. The project staff explains the project to the community at large in the same detail as was offered to the village elders, explaining the importance of the four components of the project pointing out that the purpose of the project is to help the community improve its health and to make water more accessible. (See Appendix D on introducing a project.) In a question and answer period, the villagers are asked whether, for example, diarrhea, guinea worm, or other water-related diseases are problems. Also the women are asked how far they walk to get water and how they use water in their homes. The project staff explains why the answers to these questions are important.

#### Who's Involved?

- Extension agents
- Entire village
- Project staff

The project engineer explains the technology that is appropriate to the village. She also explains the level of service villagers can expect from the system. In discussing the particular technology design, the engineer also presents other options, including the costs and implications for the operation and maintenance of each. This is an important decision for the community to make. The engineer also displays a three-dimensional model of the village made of clay, plastic, or a similar material. The model will include, for example, a fence around the pump. In demonstrating how the water system will work using the model, the engineer is providing a first lesson to all the villagers on why certain behavior is necessary to keep it working in a sanitary way.

The team explains to the villagers that the water and sanitation facilities will be their responsibility to operate and manage and lets them know what they are expected to do, including selecting a water committee to manage the facilities and collecting funds to help pay for part of the construction costs and all of the operation and maintenance costs. (In most rural areas in developing countries full cost recovery of construction costs is not feasible, but a village can usually pay the operation and maintenance costs if an appropriate technology was selected. A technology which is not affordable is by definition not appropriate.)

The project staff then explains the water resources and sanitation survey that the community will conduct and calls for volunteers to carry it out with the help of the extension agent.

The village is also informed that in a subsequent general meeting it will be asked if it wishes to participate in the project.

### **Explain the Project to Small Groups of Villagers**

Before the next general meeting, the project staff holds a series of small-group meetings to explain the project further and answer questions. The dates of the small meetings are agreed to by the appropriate staff person and selected individuals from the community. Small informal meetings should be scheduled with women, potential water committee members, and those who may be helpful in determining what technologies might be appropriate for the village. The small-group meetings also provide the extension agent with another opportunity to learn more about the community.

#### **Who's Involved?**

- Extension agents
- Selected community members

Individuals who show leadership potential should be urged to volunteer for the water committee. Women in particular must be encouraged to make their views known at the meetings and also to volunteer. In some places this may not be possible. In such places, one might need to set up a "women's auxiliary" to deal with women's responsibilities.

Individuals within the community who could be helpful to the engineer in locating springs, borehole sites, and building materials should be identified so that they can provide information to the engineer. (The type of information to be collected is shown in Appendix E.)

### **Conduct a Rural Household Survey**

A group of villagers is selected to conduct a rural household survey. The extension agent guides them in collecting information on the distance to water sources, the village population, incidence of water-related diseases, existing and discarded technologies, and the availability of craftsmen, teachers, mechanics, and other community resources important to the project. They will also gather information on why community members want a new system. The village survey committee, with the help of the project technical staff and the extension agent, will also collect information on the economic conditions of the community (saving and expenditure patterns) and the availability and costs of spare parts. (See Appendix F for a comprehensive rural household survey and Appendix G for information on community data collection.)

#### **Who's Involved?**

- Extension agents
- Selected community members

### **Obtain the Community's Commitment to the Project**

The second general meeting is held three to four weeks after the first one. The engineer and the extension agent participate in this meeting and answer any questions regarding the project that the villagers may have. The results of the community survey also are presented.

#### **Who's Involved?**

- Extension agents
- Engineer
- Entire community

At this time the engineer explains the water system options that are available. This should be done even when one type of technology is imposed by the government or by hydrogeological conditions. To ensure community ownership, it is very important that the community know the options, including the advantages and disadvantages of each design. During this second community meeting the project staff and the extension agent will need to verify that those present represent the community. They will also begin to develop criteria by which the community will evaluate the system (based on data collected for quantity, quality, convenience, and distance). Prior to the final agreement, the community elders or leaders might visit other villages to discuss their experience. The project might facilitate such visits.

After these explanations, the community is given the opportunity to state whether or not it is interested in participating in the project. If the community is interested, it commits itself to the project at this point. Before the meeting ends, the extension agent explains in broad outline the importance of the next step, the village's selection of a water committee. Communities must clearly understand the *time* implication for their training. Again, it is very important at this point to always provide communities with the option of not participating.

## RELEVANT WASH DOCUMENTS

**Framework and Guidelines for CARE Water Supply and Sanitation Projects.**  
Technical Report No. 40, 1986.

**PVO Effectiveness in the Water Supply and Sanitation Sector.** Field Report  
No. 183, 1986.

**A Workshop Design for Community Participation, Volume I—Starting Work with  
Communities, and Volume II—Planning and Implementing Sustainable  
Projects.** Technical Report No. 33, 1988.

**CARE Indonesia: Increasing Community Participation and Developing a Basic  
Strategy for Hygiene Education in Rural Water and Sanitation Programs.**  
Field Report No. 284, 1989.

# 7

## STAGE FOUR: SET UP A VILLAGE WATER COMMITTEE

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### CHECKLIST

*The extension agent assists the community to select a water committee by training the community about . . .*

- √ The **traits** to look for in water committee members.
- √ The **responsibilities** of the water committee.
- √ The **mechanisms** of the water committee.
- √ The purpose of the **contract** that the community signs.

*The signing of the contract between the community and the project should be a festive occasion.*

In order to prepare the village for the project, the extension agent teaches the villagers about the role of the local water committee so that they will be prepared to carry out the sometimes delicate negotiations involved in selecting their own committee. The agent explains how important the selection of this committee is. Meanwhile, in the weeks prior to the community's signing the contract for the project, the agent undergoes training in negotiation techniques and procedures and passes these skills on to the villagers so that they will be able to express their needs and interests more effectively. At the end of this stage, the villagers select their village water committee and sign a contract for the project.

## Prepare the Community to Select a Water Committee

### Traits of Committee Members

#### Who's Involved?

- Extension agents
- Villagers

The extension agent trains the villagers in informal, biweekly meetings about the traits and characteristics to look for in selecting members of the water committee. It is important to note that not all cultures are familiar with the idea of a committee, with its implications of representation, egalitarianism, and consensus-building. Villagers need assistance in reaching an understanding of what the water committee will do and in selecting committee members.

The project staff and the extension agent must take into account and adapt their approach to the individual characteristics of the specific culture of the community. For example, among the Tiv in Nigeria, a society well known for its egalitarianism, "elders" or people of respect are men and women of genuine influence, people who are knowledgeable, not necessarily because of age but rather because of their thinking and experience. The extension agent can recognize them by noting those who speak last at a community gathering.

Sometimes a village may designate an already-functioning committee as the water committee, or some culturally appropriate social groups (a council of elders, representatives of an age-set, or leaders of a civic group) may function as the water committee. Some communities already may have a water or a health committee which has functioned well to meet community needs. These committees can be utilized or built upon by the project. However, sometimes existing community councils are so politicized that it is difficult for them to put aside other issues and focus on water and sanitation. To avoid politicizing the water project, it may be preferable for the community to select a new, nonpartisan group capable of managing the project. Sometimes a village leader may simply "appoint" a water committee. The extension agent will need to negotiate with the leader to assure that the members of the water committee are people who can actually do the work required. These are among the issues that the extension agent must be aware of in order to help the community formulate its water committee.

However the committee is constituted, the interests of all community members should be represented. It is important that at least some of the members be women, preferably about half. Here, again, extension agents play an important role in influencing the choice of committee members so that an effective committee is assembled.



## **Responsibilities of Committee Members**

The villagers must be informed about the responsibilities of the water committee so that they can choose appropriate people for the job. A good committee member must, first, be a known and respected resident of the community. The person must be able to put the interests of the community above personal interests, politics, and private gain and listen to the opinions of others. He or she must be confident in voicing opinions, asking questions, participating in discussions, and also must make an effort to include all community members in project activities. The person must be able to take time away from work and family to participate in meetings and attend training sessions and must take the initiative to visit homes, call meetings, ask for advice, and make decisions.

## **Make-Up and Operating Procedures of the Water Committee**

The water committee usually has five to thirteen members who carry out specific jobs or serve on subcommittees:

- president
- secretary
- treasurer (subcommittee on finance)
- two water-system caretakers (subcommittee on management)
- advisors
- subcommittee for operation and maintenance
- subcommittee for health and hygiene education

Members usually serve without pay, although some villages try to reimburse them for travel expenses or help with their agriculture work if they must be away at critical times in the growing season.

The committee holds regular meetings, keeps minutes of their meetings, and makes all records and accounts available for inspection by all committee members and project staff.

The extension agent should assist the village to devise a mechanism for removing members of the committee if they do not shoulder their share of responsibility. For example, committee members might undergo an annual performance review. (See Appendix H on guidelines for successful committees.)

## The Village Health Subcommittee

A village health subcommittee is established within the water committee. This subcommittee assumes special responsibility for hygiene education activities at later stages in the project.

Experience in the composition of this subcommittee has been varied. Some projects have focused on using volunteers of various kinds (see WASH Technical Report No. 55: *What Makes Hygiene Education Successful?*). In some projects this subcommittee has consisted of critical "gate-keepers," that is, community members with direct access to a specific segment of the community. The village health subcommittee could consist of the best school teacher (he/she can in turn train other teachers who will provide hygiene education messages and lessons to school children), the local preacher (e.g., Moslem "Imam" who is responsible for giving a "talk" to all community members after mosque prayers), the traditional birth attendant, local traditional healer, and the nurse from the local government clinic. (For an interesting case study, see WASH Field Report No. 210, *Hygiene Education Strategies in Thailand* and Field Report No. 39, *Integration of Health Education in the CARE Water and Sanitation Project in Indonesia*.)

### Prepare the Community to Sign a Contract with the Project

The extension agent provides at least one training session on contracts. Experience has shown that a formal written contract between the village and the project is an effective way to clarify responsibilities. The contract should be clear, concise, and written in the local language whenever possible. Traditional forms of contract agreement frequently are included; for example, in some countries it is customary to share a bottle of gin or local wine.

#### Who's Involved?

- Extension agents
- Villagers

The extension agent explains that the contract details the responsibilities of the community and the project, as well as the purpose, method of formation, and duties of the village water committee. It also includes agreements about funds to be raised, labor to be provided, and the operation and maintenance of the water and sanitation project, including an implementation schedule and agreements about how major repairs are to be handled.

The extension agent also explains that the purpose of the contract is to define the expectations of both the community and the project. It puts in writing agreements reached during the planning process. It also gives the community water committee a mandate to organize and represent the community on issues relating to the project. The committee, with the help of the extension agent, must ensure that at least 80 percent of the community members are committed to the project. If not, then project staff must be prepared to delete this community from the project plan and wait until there is greater consensus on the water project.

## Select the Village Water Committee

At a designated day, the villagers meet and choose their village water committee. The committee should be installed shortly after its selection.

### Who's Involved?

- Villagers
- Extension agents

## Sign the Contract and Install the Village Water Committee

A meeting for all villagers is held to install the water committee and sign the contract for the project. This should be planned as a festive occasion in order to solidify the community's commitment. Dancing, music, and the participation of children should be encouraged. The extension agent, the project manager, and as many of the project staff as possible should attend the celebration. This is the project team's third meeting with the whole village. It should be held about three weeks after the second meeting.

### Who's Involved?

- Villagers
- Extension agents
- Water committee
- Project staff

Even more than signing the contract, which signals the official beginning of the project, the installation of the water committee should be duly celebrated. It symbolizes the first official step in the community's taking charge of its own water and sanitation systems and marks a big step toward community management and responsibility. Signing the contract is the first experience of the water committee in identifying local needs and preferences and dealing with external (i.e., implementing agency) representatives to obtain their assistance.

## **RELEVANT WASH DOCUMENTS**

**Integration of Health Education in the CARE Water and Sanitation Project in Indonesia.** Field Report No. 39, 1982.

**Hygiene Education Strategies for Region 1 for the Ministry of Public Health in Thailand.** Field Report No. 210, 1987.

**What Makes Hygiene Education Successful? Experience from Togo, Sri Lanka, and Yemen and Its Relevance for Project Design.** Technical Report No. 55, 1988.

**Community Management of Rural Water Supply and Sanitation Services.** Technical Report No. 67, 1990.

**Models for Institutionalization of Community Participation.** (forthcoming).

# 8

## STAGE FIVE: PREPARE THE VILLAGE WATER COMMITTEE FOR ITS RESPONSIBILITIES

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### CHECKLIST

*First, the extension agent must train the water committee to . . .*

- ✓ Analyze priority community water and sanitation problems.
- ✓ Develop a plan of action.
- ✓ Train subcommittee on health to train others about health and sanitation.
- ✓ Start an O&M fund.

*Second, the water committee will take up responsibility for the project by . . .*

- ✓ Adopting rules on the use of water and sanitation facilities.
- ✓ Managing an O&M fund.
- ✓ Preparing for construction.
- ✓ Arranging for maintenance by selecting a pump caretaker.

*Finally, the project trains the pump caretakers.*

In stage five the extension agent focuses on training the village water committee to prepare to manage the water system, and the water committee begins taking on those responsibilities.

The activities of this stage, which lasts about six to seven months, and their approximate duration are provided in Figure 7.

**Figure 7**

**ACTIVITIES DURING THE TRAINING PHASE  
FOR THE VILLAGE WATER COMMITTEE**

ACTIVITY	WEEKS FROM BEGINNING
DEVELOP PROBLEM-SOLVING SKILLS	1-6
PROVIDE HEALTH AND SANITATION EDUCATION	7-24
RAISE MONEY FOR OPERATION AND MAINTENANCE FUND	7-20
MANAGE OPERATION AND MAINTENANCE FUND	
ARRANGE FOR MAINTENANCE	10-20
DEVELOP GUIDELINES FOR USING WATER AND SANITATION SYSTEMS	20-24
PREPARE FOR CONSTRUCTION	21-24

### **Train the Village Water Committee**

The village water committee needs considerable training before it is able to effectively manage a water system that will ensure proper utilization and sustainability. This training occurs at the regular, appointed time with the extension agent one day every other week. The sessions should emphasize learning by doing, role-playing, demonstrations, and, if possible, visits to communities where projects are more advanced.

**Who's Involved?**

- Extension agents
- Village water committee

At the end of the six months the village water committee should know how to use the problem-solving approach, how to provide the community with hygiene education, and how to set up and manage an operation and maintenance fund.

### **Problem-Solving Skills**

The extension agent trains the water committee in problem-solving skills. The committee, together with the extension agent, analyzes community health priorities and develops an operational plan of action. (See Appendix I.)

Problem-solving skills should not constitute a series of lectures. Instead, each time a problem crops up, the extension agent demonstrates problem-solving skills to the water committee members. First, a "problem" is viewed as "a challenge." Then, the committee members and the extension agent together analyze what resources the village has, what resources it must

obtain, and how it will obtain them to solve the problem. The committee then develops a plan to solve the problem outlining who does what and when. As each "problem" occurs, committee members become more adept at using problem-solving skills.

### **Develop Health Priorities**

The extension agent, together with the village health subcommittee, analyzes the results of the survey (Appendix F) and the "problem areas" from the community map (Appendix G). Together, they discuss why these problems are detrimental to the health of the community and how they are relevant to an overall water and sanitation project. The experiment showing oral-fecal chain (see Appendix D, Item 7) is discussed again, emphasizing the problem areas.

The health subcommittee, with the help of the extension agent, prioritizes the identified behaviors needing action. The ranking for prioritization will depend on how easy it is to implement the remedial action, how quickly results will be evident, etc.

Having identified which behaviors should be tackled first, each of the members of the village health subcommittee develops a plan of action. For example, the subcommittee might have found that mothers are not disposing of children's feces properly. Then the school teacher might have developed a plan to bring messages about this behavior to their homes, and the traditional birth attendant might have instructed mothers what to do.

### **Health and Sanitation Education**

Initially, the extension agent takes primary responsibility for calling meetings and leading discussions about water-related illnesses. In this initial phase, the committee's role is to encourage all community members to attend health training sessions and to help the extension agent make the training activities relevant to local problems.

The educational responsibilities of the water committee increase gradually, and by the time that the water system is ready to be installed, the village water committee should be able to organize and present educational activities without the extension agent. Gradually it will be able to take on more responsibility for scheduling, leading, and carrying out educational activities. This training period focuses on what makes water safe or unsafe and what people's perceptions are about common community diseases.

Towards the end of the training period, the committee members take the initiative in identifying the topics and inviting speakers on other health issues which are relevant to the village. The committee also agrees to share its experiences with other communities when asked.

By the end of its training period and before construction of the water system begins, the water committee must show a clear capability to train community members in the care and uses of existing water sources and in preparing for upcoming construction activities. Further, all members of the committee should act as role models for the village by safely transporting and storing water.

### **Analysis of the Technical Data**

Here the engineer presents the results of the technical data collected with the community and discusses their implications in terms of costs for installation, maintenance, and eventual replacement.

If communities have to provide the materials needed during the construction phase, sometimes committee members might opt for cheaper commodities. They may choose to pay for locally made pipe instead of imported, or to collect more sand rather than buy additional cement bags. The engineer/technician here will need to provide advice on the implications of these trade-offs.

The data collected during the socioeconomic and technical survey will provide the indicators necessary to discuss affordability and maintenance implications with the committee. This can be done with either the whole water committee or with a subcommittee on finance and management. The financial data are collected on the following:

- water availability and consumption;
- the total cost of the system broken down by cash and in-kind costs (e.g., labor, local materials);
- an estimate of community contributions to development or social activities, or any other way to estimate disposable income;
- estimates of what the community is willing to invest in the water and sanitation system (the balance will be either the subsidy from the donor agency or the loan a community might need).

The project engineer here can discuss various technology options and their cost implications to the community. This exercise is very important as it provides the committee with the skills necessary when major breakdown happens or system replacement is needed. Indeed, it is the training in such a step that helps to ensure sustainability.



## **The Operation and Maintenance Fund**

The extension agent provides training to the water committee in establishing and managing an operation and maintenance (O&M) fund. The O&M fund is needed to pay all expenses related to keeping the pump and related accessories in proper working order. Establishing the fund is a contractual prerequisite for construction or drilling to begin.

Several alternative strategies for raising money for the O&M fund have been successfully employed by various communities. Family or household contributions of a fixed amount from all beneficiaries is the most common means of building the fund. Some villages establish a communal garden or field, the profits from which are used for the fund. In some projects people pay by the bucket or unit volume of water consumed. Each community must determine which of these strategies is best for it. It is the committee's role to lead discussions within the village to arrive at a consensus on fund raising and to assure broad support, including agreement on what should be done with non-payers.

The project must establish a specific amount to be raised for the fund, based on the real costs of O&M for the pump or technology chosen. After the means of raising money has been decided, the committee establishes a schedule to collect the money and notifies the extension agent. In some cases, such as using the profits from gardens, it may take many months to build up the necessary fund.

The committee members will need specialized training in managing the fund. The treasurer of the committee is given the responsibility for managing the fund and is usually assisted by the secretary. The treasurer must be trained in bookkeeping and be able to maintain accurate records of who has contributed to the fund and what uses have been made of it. Literacy is obviously required for these positions. In some rural villages this may be a problem, and the agent will need to work out innovative solutions. In most countries it is recommended that a bank account be established for the fund. Where this is not possible, then the funds must be kept in a safe place within the village. In some countries, such as Tunisia, committees have to be legally incorporated to collect fees. This incorporation process sometimes takes months and requires the signature of a government authority.

## **Assist the Water Committee to Assume Control of the Project**

### **Guidelines for Use of the Facilities**

During the training the extension agent provides the water committee with guidelines on such subjects as the importance to health of maintaining the cleanliness of the well area, ensuring that the water is not contaminated by fecal matter, and that gray water is drained, and so forth.

The water committee uses what it learned in training to establish rules on the use of the facilities that are compatible with the community and to stipulate penalties for misuse. Most communities already have established rules and penalties that apply to their existing social organization; it should be the consensus of the villagers as to how these apply to the water system. Women, in particular, should be included in this decision process. The committee must assure that all users are aware of the rules for use of the facilities and know who to turn to for repairs that are beyond village capabilities.

### **Preparation for Construction**

As soon as the O&M fund has been established, the committee notifies the agent, who then places the village on the list of villages slated to receive wells. The project establishes a date for drilling and the agent informs the committee. The committee then must organize work crews to prepare for the drilling operations. Each site varies as to the preparations required. Typically, the area around the site must be cleared of trees and brush, a road constructed which will accommodate the drill rig (these vehicles are heavy and cannot travel over steep or soft terrain), and gravel and sand collected for use in the concrete apron. In some projects food and sometimes lodging are provided by the village to the drilling crews. Again, it is most important that women be involved in these decisions. Appropriate instructions must be provided by the agent to the committee on preparing for construction as well as training and organizing work crews.

In projects which rely on other technologies, such as springs and gravity-fed pipelines, the community may have to contribute a lot more labor. Digging trenches for pipelines and constructing reservoirs, for example, can require long periods of time and extensive community organizational skills. Irrespective of the technology employed, however, the approaches and principles outlined in this guide are essentially the same.

#### **Who's Involved?**

- Extension agents
- Village water committee
- Community members

## Select and Train the Pump Caretakers

O&M of the water system requires a pump caretaker and an assistant. They should be chosen because of their aptitude in mechanics. Most villages have a few individuals skilled in repairing bicycles and mopeds, which is an excellent background for the pump caretaker position.

### Who's Involved?

- Village water committee
- Pump caretaker
- Project staff or extension agents

Training for the caretakers must be provided by the project. The degree and amount of training depends on the type of maintenance system chosen. For projects which rely on complete village responsibility to maintain the pump, the training must be extensive and thorough. The "caretaker" then becomes the pump "caretaker/mechanic." Training may be provided by a qualified extension agent, or the project may set up training sessions in which caretakers from many villages are given instruction by pump maintenance specialists.

In projects which rely on regional mechanics for maintenance, the role of the village caretaker is to provide light preventive maintenance, to assure that the pump is not misused by villagers, and to notify the regional mechanic in the event of a breakdown. If users are charged for water taken from the well, the caretaker may be responsible for collecting money as well. In some societies women are chosen for the caretaker position. Women have a vested interest in keeping the system running and have a closer rapport with other women who are the primary users of the system.

Whatever maintenance system is employed, the caretaker should be trained before the pump is installed so that he or she can take a lead role in assisting the project installation crew in setting the pump.

A system of using regional mechanics to repair pumps is recommended if the pump or technology chosen by the project is beyond the repair capabilities of the village caretaker or if the caretaker does not have ready access to spare parts. Transportation is often a limiting factor.

A regional mechanic system requires that the project provide intensive training to a group of mechanics. The training should provide complete knowledge on repairing or replacing every working part of the type of pump employed in the project. The regional mechanics should be chosen based on their mechanical experience. Individuals who have already established a small business in repairing bicycles, mopeds, or small motors are good choices.

The regional mechanics should be responsible for a fixed number of villages within a certain radius of their home. A typical radius might be fifty kilometers which would encompass 20-30 villages. However, this varies depending on the density and accessibility of the villages. The mechanics must have access to transportation. Ideally, the mechanics would have their

own motorcycle and access to bush taxis as a backup. Some projects have furnished a motorcycle to the regional mechanics on a loan basis or as a grant.

Regional mechanics may be either private entrepreneurs or employees of the government water agency. In recent years most projects are relying increasingly on the private sector to supply regional mechanics. A private mechanic could contract directly with communities, thus improving efficiency and lowering costs. In that case, the project essentially would franchise the regional mechanics to serve as official repair persons for the participating villages.

If a private mechanic is selected, the village water committee needs to negotiate with the entrepreneur and set up a contract. For example, a fixed fee for all work must be established with one fee for repairs to the above-ground portion of the pump, and another for below-ground work. The price of replacing an individual part should be the actual cost of the part. Another fee should be set for preventive maintenance on a periodic basis. Transportation costs must also be established. All estimated fees and costs for labor, parts, and transportation must be established by the project and clearly communicated to the village committees. The O&M fund should be large enough to cover the normal costs of these services.

In either the village caretaker/mechanic or the regional mechanic system of maintenance, a means for procuring spare parts must be established. This is often an undertaking replete with problems. Therefore, projects must carefully consider the options available. Usually spare parts are provided by established stores which add a stock of parts to fit the pumps chosen. When a project introduces a new pump to a region, the store owners must be persuaded to add the new spare parts to their inventory with the expectation that they will market the parts as they do their existing products. Obviously, the law of supply and demand is an uncertain factor in a new project. The project and/or government water agency must provide a continual monitoring service to support and modify the system until it becomes firmly established.

## RELEVANT WASH DOCUMENTS

**Assessment of the Operations and Maintenance Component of Water Supply Projects.** Technical Report No. 35, 1986.

**Guidelines for Designing a Hygiene Education Program in Water Supply and Sanitation for Regional/District Level Personnel.** Field Report No. 218, 1987.

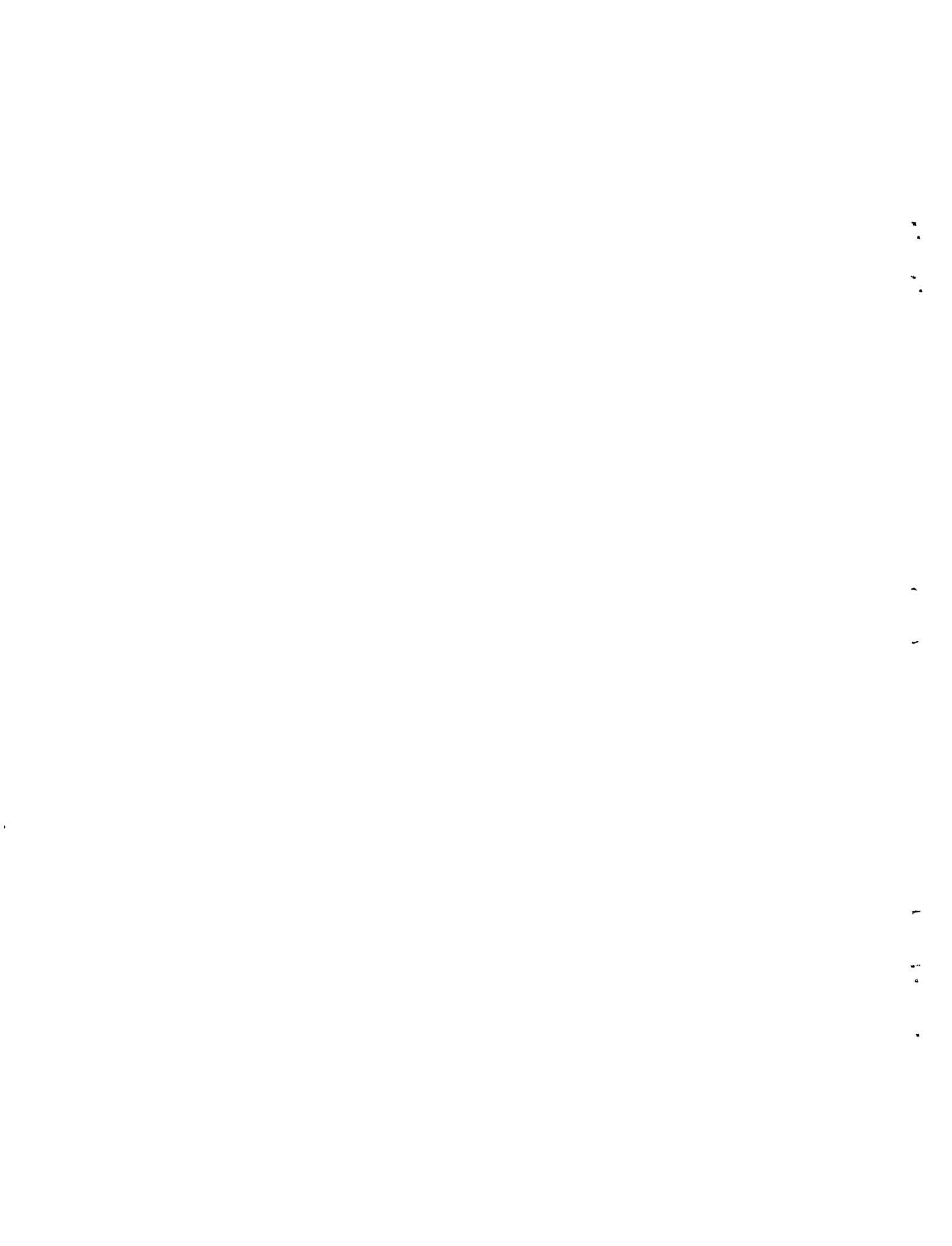
**What Makes Hygiene Education Successful? Experience from Togo, Sri Lanka, and Yemen and Its Relevance for Project Design.** Technical Report No. 55, 1988.

**Estimating Operations and Maintenance Costs for Water Supply Systems in Developing Countries.** Technical Report No. 48, 1989.

**Developing Sustainable Community Water Supply Systems: Key Questions for African Development Foundation Applicants.** Field Report No. 270, 1989.

**Health Benefits from Improvements in Water Supply and Sanitation: A Survey and Analysis of the Literature on Selected Diseases.** Technical Report No. 66, 1990.

**A Training Guide on Hygiene Education.** Technical Report No. 60, 1990.



# 9

## STAGE SIX: CONSTRUCT THE WATER SYSTEM

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### CHECKLIST

*Before construction can begin, all decisions about the choice of technology will have been made.*

*When construction is about to begin the **extension agent** . . .*

- ✓ Trains the village water committee to supervise construction.
- ✓ Orients the drillers and rig operators to the project.
- ✓ Provides liaison between the village water committee and the engineer.

*When the construction stage actually begins, the **project engineer** . . .*

- ✓ Assists the village water committee to lay out labor requirements and scheduling.
- ✓ Delegates the village leaders authority over the work crews,
- ✓ Arranges for quality control of construction.
- ✓ Ensures that persons responsible for O&M are involved in construction.

*This stage is complete when the system is tested, disinfected, and placed in service.*

The water system is installed in stage six, which may last a few days if a well is being drilled, or many months if a pipeline system is being installed. (At this stage, WASH Technical Report No. 26, *A Workshop Design for Handpump Installation and Maintenance, A Training Guide*, will be useful.)

## Preliminary Activities

Before the construction stage begins, the project engineer will have completed a number of activities to ensure that the technology and level of service are appropriate. *In stage two*, he inspected the site and reviewed the options for siting systems based on local hydrogeology, topography, water quality, and convenience for the villagers. (Village extension agents helped by drawing a map to show the possible location of latrines, the road, and existing sources of water.) *In stage three*, he estimated the possible demand profile over time, making assumptions about village population growth and per capita demand growth based on discussions with villagers and the results of the household and technical surveys. He reviewed locally available equipment options to see what was most appropriate for that site. This decision was made after discussions with villagers and identification of village-based skills and resources. In addition, the local infrastructure for providing O&M services was reviewed. Again, this review included discussions with villagers as well as potential local providers of these services.

### Who's Involved?

- Project engineers
- Villagers
- Local providers of O&M services

*During stage five* the engineer selected equipment and recommended O&M procedures based on the review with local participants. He estimated O&M costs and discussed with extension agents whether the village water committee could realistically generate and manage the O&M fund.

Just prior to construction, the engineer contracts with drillers, installers, and labor crews for actually providing the services necessary to install the system, and, if possible, with local providers of O&M service to make sure they will be available (at fixed, negotiated rates per category repair) when their services are required. At this point, the design of the system, based on both qualitative and quantitative data, adapted to include community preferences, is complete.

## Orient the Drillers and Rig Operators

As mentioned above, over a six-month period, the extension agent trains the village water committee, which in turn trains the community at large in all four components of the water project. Supervising construction is part of that training. Here again, the extension agent's role is to provide liaison between the committee and the project engineer.

### Who's Involved?

- Extension agent
- Village water committee
- Engineer
- Drillers and rig operators

At this point, drillers and rig operators, who most likely are not part of the village, are brought into the community for the first time. Like everyone else involved, they need to be given a brief overview of the project.



Drillers and rig operators will have had experience in well drilling before they are hired by the project. However, they usually have little if any concept of the overall planning and organizing of the project. They have no notion of the work the project staff has done before their arrival. As a result, conflict between drillers and the extension agent or the village water committee frequently is a source of problems in water projects. These problems may be minimized if drill crews are introduced to all project personnel and given a day's training to explain the four components and the overall objectives of the project, the importance of working together with the extension agent and the committee, and the standards of conduct expected of them while they are in the community (including respectful treatment of community members, particularly women).

The drillers should be aware in particular of the damage they could do to the project by changing schedules or drill sites without collaborating with the village water committee. They need a clear understanding of the village's input in labor and materials, as well as the arrangements for lodging and food that the village may be providing. Normally the drilling team will remain in the village for only a few days, but occasionally difficult drilling conditions or breakdowns may require a longer stay.

The rig operators need to be conscious of safe operating practices for both the laborers and spectators from the village.

## **Supervise Construction**

The engineer has the predominant role in this stage, which begins only after the community has been fully prepared. The engineer organizes a pre-drilling/construction meeting with the village water committee to lay out labor requirements and scheduling. This is done about two to three weeks before the crew arrives. A second preparatory meeting is scheduled immediately prior to the arrival of the drilling crew to make sure everybody is going to be available and have the necessary tools. By working out the schedule ahead of time with the village water committee the engineer assures that the rig is not idle and that construction will take place at a time agreeable to the community. In some areas this necessitates preparing a number of nearby communities which are also participating in the water project before the drillers come to the village.

### **Who's Involved?**

- Project engineer
- Village water committee
- Drillers and rig operators
- Village leaders
- Pump caretaker

The engineer delegates to the village leaders the authority over work crew recruitment and management as well as the supervision during the actual job. The serviceability and sustainability of the water system depends in large measure on the quality of the construction work. The engineer must insist on qualified inspections for all phases of the installation process. An extra effort during construction will result in many rewards in the performance of the system.

An engineering inspection should be undertaken, followed by testing and disinfecting before the system is placed in service.

The engineer needs to be sure that operation and maintenance mechanics are involved in the drilling and pump installation so that they know how the system is put together in order to make any necessary repairs later. It is of greatest importance that the pump caretaker in particular be closely involved in the construction process in order to do a better job at maintaining the system. Stage six is complete when the water system functions as designed.

After the borehole is completed it is certified by an engineer. Pump tests of the well are run by the drilling team and water quality samples are taken. Certification requires meeting country standards as to minimum acceptable yield and water quality. Upon approval, a concrete apron is poured and a pump installed. The borehole is finally disinfected before being placed in service. Please note, the construction of the well does not have to be done by engineers and drillers. Community people should be trained in these skills. Many projects have also succeeded in training extension agents to do these tasks. Finally, it is important to remember that the more communities are active participants in this process of construction, the more their sense of ownership of the improved facilities. For this reason, their participation in actual construction is important. Such community tasks can include the construction of the drainage gutter and soakaway, and the design and construction of the apron of the well.

## RELEVANT WASH DOCUMENTS

**A Workshop Design for Handpump Installation and Maintenance: A Training Guide.** Technical Report No. 26, 1984.

**Development of an Operation and Maintenance System for Shaba Refugee Water Supply Project—Zaire.** Field Report No. 170, 1986.

**A Workshop Design for Well Improvement: Protecting Open Wells.** Technical Report No. 34, 1988.

**Pump Selection: A Field Guide for Developing Countries.** Technical Report No. 61, 1989.

**Training Guide for Operations and Maintenance Supervisors of Rural Water Systems.** (in draft)



# 10

## STAGE SEVEN: STRENGTHENING OF ENVIRONMENTAL HYGIENE

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### CHECKLIST

*The water project should be presented as a **health**—not a construction—project. Construction is only one step. The following activities take place once the water system is completed . . .*

- ✓ The extension agent and the village health subcommittee are trained in the elements of environmental hygiene
- ✓ Community meetings are held to introduce beneficial hygiene practices and devices.
- ✓ Demonstrations of environmental improvement are built and plans made for providing the village with individual or community latrines.
- ✓ A survey of health practices is conducted and used as baseline data for planning hygiene education activities.
- ✓ The extension agent, the village health subcommittee, and other community leaders provide ongoing hygiene education in the village.

After the water system has been constructed, the focus shifts to environmental hygiene and the village health subcommittee becomes active. However, by this time, considerable preparatory work has been done. In stage five the extension agent and the village health subcommittee conducted health education sessions on why safe water is important, water-borne diseases, care of a well, and the safe transport, storage, and use of water. In stage three the subcommittee on health was trained in how to collect data on water use and sanitation practices. They learned how to solve problems; how to set priorities and identify feasible actions on hygiene behaviors; and how to work together as the village health team. In this stage, hygiene education is broadened to include sanitation and environmental improvements.

When a water and sanitation project is viewed as a health rather than a construction project, the well-construction process is treated as one intervention in a whole series of interventions. The next logical step after constructing a well may be the appropriate disposal of feces through the construction of latrines and the disposal of solid wastes in designated pits.

The village first demonstrates improvements in community hygiene resulting from simple, inexpensive devices and practices, based on a supply of clean water. The extension agent assists the village water committee to use the experience it gained in building the water system as its model for coordinating latrine construction and other environmental sanitation improvements.

In this stage, the village water committee plays a much larger role, and the project staff and extension agent smaller ones, as may be seen from the basic activities described under the subheadings below. (Review of WASH Technical Report No. 60, *A Training Guide on Hygiene Education*, is helpful at this point.)

### **Strengthen Training of the Subcommittee on Health**

This step is not easy. Frequently one finds that in village communities knowledge is power and privilege. The subcommittee on health, throughout the previous stages, was trained in some necessary skills relevant to the utilization of water. They identified priority areas and plans for implementation. Now begins the step of ensuring that this implementation plan is carried out.

#### **Who's Involved?**

- Project staff
- Engineer
- Extension agents

The project staff reviews training of the extension agents in the elements of hygiene education which the agent has been introducing to the village water committee. The training should emphasize sensitivity in dealing with villagers about their hygiene practices. The hygiene education materials used should feature pictures or examples using typical local dress, hair styles, bathing habits, etc. Teaching techniques should include a variety of activities, such as demonstrations, role-playing, and field trips. When processes such as fecal-oral disease transmission or dehydration are explained, local examples of folk concepts should be used. These are areas that project staff should assist in.

In addition to the health education session, the extension agents are also trained in latrine construction and construction of other environmental interventions by attending a workshop organized by the project engineer.

### **Assist Subcommittee on Health in Implementation of Plans**

The subcommittee on health has been trained in the identification of detrimental behaviors around water use and sanitation practices. It is important to remember that, while the total package of environmental sanitation interventions remains the same, the order with which they are implemented is dependent on what the subcommittee on health identifies as a priority. The proper disposal of feces may or may not result in construction of latrines. The subcommittee on health may decide to improve the latrines they currently have, or, they may decide to build latrines. They may identify handwashing or soap-making as appropriate interventions.

#### **Who's Involved?**

- Village water committee
- Extension agents
- Local hygiene educators

At this point, the extension agent reviews with the subcommittee how the implementation of their plans is coming along. Problems will arise that may have priority over the environmental sanitation improvements. Extension agents and project staff must be prepared to provide support on an as-needed basis. For example, the local *Imam*, Moslem religious leader, might need help in developing appropriate materials for his sermons. Teachers will need ideas for sanitation activities, etc.

The subjects covered include the benefits of using dish racks, clotheslines, animal enclosures, garbage pits, and other devices and practices to improve sanitation. Handwashing is stressed. Agents also show the community the safe use of alternative water sources, such as collecting and storing rainwater and using water from streams to clean the house. In addition, they teach safe practices in disposing of waste, especially fecal matter.

## **Building Demonstration Environmental Sanitation Interventions**

The extension agent, possibly with the project engineer, calls a meeting of village leaders to discuss the construction of demonstration latrines. The main purpose of the meeting is to decide where to build the latrines, but the meeting will also provide a forum for discussing the importance of the safe disposal of excrement. Ideally, at least three demonstration latrines should be built: one near the health clinic, another by the market, and a third near a church, mosque, temple or other important center, although in some cultures it may not be acceptable to place a latrine close to a place of worship.

### **Who's Involved?**

- **Engineer**
- **Village leaders**
- **Volunteers to construct latrines**

The extension agent reports to the engineer what she has learned about the community through her periodic visits that may have a bearing on the kind of latrines appropriate for the village. The advantages, disadvantages, and levels of acceptability of communal versus household latrines need to be carefully assessed. The care for each of these types of latrines is different, as is the organizational structure at the community level. The engineer makes any structural or design changes necessary based on particular cultural or religious requirements or beliefs. For example, the project may need to provide Moslem villagers with a small sand and gravel area just outside the latrines to absorb water from ablutions.

At the meeting, a number of volunteers are identified to work with the engineer in constructing the demonstration latrines. What is most important is that the construction of these improved facilities should not be viewed as an end in themselves. They must be used and used properly and must be combined with other sanitation interventions to be effective.

As soon as the demonstration latrines have been completed, the subcommittee on health calls a meeting of the whole village. Some project staff, including the engineer, make presentations explaining the importance of hygiene and the relationship between water and sanitation and hygiene and health. The hygiene education devices and practices mentioned above are introduced and demonstrated to the villagers. Villagers may be asked to dig garbage pits. The extension agent may build an animal pen as a model for the villagers.

The engineer shows the villagers the demonstration latrines, explaining how they are constructed and outlining how a latrine may be obtained. In most instances the project provides technical help to the villagers to build their own latrines with materials they purchase themselves.

The subcommittee on health briefly explains the community survey on hygiene and asks for volunteers to conduct it.

### **Assess How Well We're Doing**

When the project team first came to the village, it asked the village water committee to carry out a rural household survey. That survey included information on the community's health and hygiene practices, as well as information on population and water sources. In this stage, the subcommittee on health conducts another survey. This one focuses solely on how well we're doing. Information that needs to be gathered includes how the villagers dispose of their own wastes, how mothers dispose of their babies' fecal matter, the defecation habits of children, practices and customs regarding defecation, what opposition exists to using a latrine, folk treatments for diarrhea, customs regarding personal hygiene and bathing, and customs regarding the penning of animals and disposing of garbage. It is important to know, for example, if men and women of the same family would agree to use one latrine. Equally important are religious or cultural beliefs regarding cleaning after defecation (for example, the Moslem requirement to use water when possible). The extension agent and the subcommittee on health decide on a plan of how their successes and areas for improvement are determined.

#### **Who's Involved?**

- Subcommittee on health
- Volunteers to conduct survey
- Villagers

### **Periodic Meetings on Hygiene Education**

At regular intervals meetings are held with the village health subcommittee. The first item on the agenda of this meeting is a follow-up discussion of the hygiene devices and practices introduced in the first meeting. The testimony of villagers who adopted the new devices or have changed their behavior is encouraged, particularly if they have any evidence of improved health. An example would be the elimination of a skin disease after regular bathing and using a clothes-line instead of laying the clothes on the ground where animals roam freely. Another example is that of the villagers who found that using latrines means that the surrounding compounds were no longer smelly and infested by flies.

#### **Who's Involved?**

- Village water committee
- Entire village



## Provide On-Going Health and Hygiene Education

Health messages must be repeated many times and in many ways and through many channels before behavior changes. Following up on the earlier work of the extension agent and the village water committee, other community members—teachers, leaders in women's groups—should make presentations and carry out creative community activities with a health theme. They should call on representatives from local government and nongovernmental health organizations and the ministry of health to speak on topics of special interest. School teachers and schoolchildren play a very important role and must be included.

### Who's Involved?

- Village water committee
- Village leaders
- Teachers

The village water committee must work to be sure that the health messages are put into practice. Clear goals to help measure and evaluate accomplishments are important. For example, uncovered water containers are identified as a health risk. The subcommittee on health should count the number of households with uncovered water containers. After the villagers have been educated on the hazards of this practice, the subcommittee will recount the households a year later. The goal is to be able to demonstrate that, for example, 90 percent of the village households cover their domestic storage containers, whereas only 35 percent did so the previous year. This should be correlated to health improvements. Similarly, the subcommittee should survey the village before and after latrines are built, keep track of the number of villagers using them, and also note health improvements. The same should be done before and after the introduction of washing with soap before touching food. The process should be repeated for other health interventions.

## RELEVANT WASH DOCUMENTS

**A Workshop Design for Latrine Construction: A Training Guide.** Technical Report No. 25, 1984.

**Developing and Using Audio-Visual Materials in Water Supply and Sanitation Programs.** Technical Report No. 30, 1984.

**Pretesting and Revising Visual Materials for Water Supply and Sanitation Programs.** Technical Report No. 24, 1984.

**Hygiene Education Strategies for Region 1 the Ministry of Public Health in Thailand.** Field Report No. 210, 1987.

**Social Marketing in Water Supply and Sanitation: An Integrated Approach.** Field Report No. 221, 1988.

**A Training Guide on Hygiene Education.** Technical Report No. 60, 1990.

## **STAGE EIGHT: OPERATE AND MAINTAIN THE WATER AND SANITATION SYSTEMS**

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### **CHECKLIST**

#### *Tasks for water committees . . .*

- ✓ Manage the maintenance fund.
- ✓ Enforce rules on use of the facilities and environmental hygiene.
- ✓ Inspect facilities on a regular basis.

#### *Tasks for pump and latrine caretakers . . .*

- ✓ Complete routine maintenance.
- ✓ Make repairs (or report malfunctions) in a timely manner.

#### *Tasks at the regional level*

- ✓ Preventive maintenance by regional repairperson.
- ✓ Monitoring of spare parts by regional agency.
- ✓ Major repairs by regional repairperson.

#### *Tasks at the national level*

- ✓ Monitoring overall stability of water systems.
- ✓ Announcing pertinent news to communities.

### **O&M Management**

The management of O&M is based on several fundamental premises. The first premise is that the responsibility for O&M should be in the hands of the community whenever feasible. Since the community directly benefits from the water supply and sanitation (WS&S) facilities, they have an inherent interest in keeping the system operating. For many rural WS&S developments, which depend upon relatively simple technologies such as handpumps or springs with gravity-fed systems, communities are capable of undertaking all O&M. Progress

continues to be made in producing pumps that are truly maintainable at the village level and which allow communities a large amount of sovereignty over their WS&S systems.

In other cases the complexity of pumps (including some hand, solar, wind and diesel pumps) may be beyond the technical capacity of village repairpersons. Further, some pumps require relatively expensive equipment or spare parts to complete repairs that are not immediately available near the village.

In such cases a repair capacity outside of the community is needed. Regional repairpersons, either as private entrepreneurs or from a government agency, will need to be trained by the project in the specific technologies involved and a system established for the provision and distribution of spare parts.

It is further necessary that a government agency, usually a water agency, be responsible for monitoring the overall O&M system and facilitate the importation of spare parts whenever they are not manufactured locally. In some cases market mechanisms of supply and demand may be sufficient to assure the availability of spare parts, but this is not often the case in developing countries and must be carefully monitored. The government agency also has the responsibility of undertaking emergency repairs which result from a major disaster that is beyond the means of the community and places the community at risk.

Finally, the government has the responsibility of keeping the public informed on issues impacting on the communities' management decisions. This is an important element in assuring that communities uphold their responsibilities in O&M.

The various organizations involved in O&M are frequently referred to as tiers of decentralization with the community as the third tier; the regional entity, whether private or government related, as the second tier; and the national level governmental organization as a first tier. The decision of how much responsibility should be accorded to each of the tiers is dependent upon a range of factors. In spite of this, the community should be empowered as the responsible decision maker to determine when outside assistance is needed. This empowerment will have been built by requiring community involvement and decisions at each stage of the project cycle.

## **Tasks of the Water Committee**

The water committee provides overall management of the WS&S systems. Its tasks include managing the O&M fund by authorizing expenditures for repairs, keeping financial records, signing checks and maintaining a bank account or some other means of safely holding money. The committee leads the process of replenishing the fund through community contributions whenever it falls below a specified level. Records are kept to determine who has paid into the fund. For those who are unable or unwilling to pay, the committee determines what actions are to be taken in compensation. Upon notification by the pump caretaker of an inoperable pump the committee determines who to call for the repairs. If the repairs are within the capability of the village pump caretaker, she makes them. Otherwise a regional repairperson must be notified. In either case the committee then authorizes funds

and transportation for the repair to be made. The committee keeps abreast of current costs for spare parts and enters into appropriate agreements with the repairpersons.

At this stage the committee should also strictly enforce the rules on water use and environmental sanitation, including the disposal of garbage, the penning of animals, the use of latrines, and the removal of breeding areas for vermin and other disease carriers. The committee must assure that the well or pump area is not used for laundry or watering animals.

In addition, the committee conducts a formal inspection, about every six months, of all WS&S facilities. This includes pumps, pipes, reservoirs, water taps, water troughs, latrines, and garbage disposal sites. As a result of this inspection plans are made to repair or restore any systems that are particularly worn or approaching breakdowns. If systems need expansion or are under used then appropriate actions are authorized by the committee.

### **Tasks of the Pump and Latrine Caretakers**

The pump caretaker was trained during the construction phase and was furnished with a basic set of tools and spare parts. A schedule of preventive maintenance is established which dictates a regular series of activities depending on the technology involved. The caretaker monitors the use of the facilities and explains the proper use, particularly to children who are apt to see the pump as something to play on. The drainage around the pump is important to keep in proper order and the caretaker, usually by enlisting village help, assures a clean environment. In the event of a breakdown or other dysfunction the caretaker notifies the water committee. She is then authorized to purchase the needed spare part and make the repair or, if it is beyond her capacity, she is sent to notify the regional repairperson.

### **Tasks at the Regional Level**

If a regional repairperson is involved, he or she must be prepared, upon request, to immediately make repairs to village pumps. To do so he maintains an appropriate set of tools and keeps abreast of the availability of spare parts. Spare parts may be available for sale from private entrepreneurs at regional stores or may be supplied by government agencies. An established price list for each part should be established and monitored by the concerned agency.

In order to assure spare parts from private stores there must necessarily be sufficient demand to justify the stocking of parts by store owners. Demand is proportional to the concentration of pumps in the vicinity and will grow as the project expands but must be closely monitored in the beginning by the regional repairperson and the government agency.

The regional repairperson also performs preventive maintenance in accordance with agreements established with the communities. Preventive maintenance is dependent on the technology involved. The frequency of maintenance, level of effort, and the fees for the regional repairperson will have been established by the project.

## **Tasks at the National Level**

At the national level the water agency has several important functions related to O&M. The agency broadly monitors the overall functioning of the water systems throughout the country to assure that needs are being met. Spare parts which are not manufactured in country should receive favorable importation arrangements.

Finally, policies, events, and other news items impacting on the communities abilities to manage their systems is communicated to the villages. Updated prices for spare parts, for example, must be announced to the villages. This is done via radio, posters at health clinics, or through periodic visits by extension agents.

## **Tasks of the Pump and Latrine Caretakers**

Caretakers for latrines are needed if communal systems are built. Communal latrines are often built to serve about 30 people. Some communities may suggest having a caretaker for community latrines. There should be a caretaker for each latrine to assure its proper use and cleanliness. If family latrines are built, then the individual families are responsible for their upkeep.

## RELEVANT WASH DOCUMENTS

**A Workshop Design for Handpump Installation and Maintenance: A Training Guide.** Technical Report No. 26, 1984.

**Assessment of the Operations and Maintenance Component of Water Supply Projects.** Technical Report No. 35, 1986.

**Estimating Operations and Maintenance Costs for Water Supply Systems in Developing Countries.** Technical Report No. 48, 1989.

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# 12

## **STAGE NINE: MONITOR AND DISENGAGE**

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### **CHECKLIST**

*Before disengaging from the village, the extension agent should . . .*

- ✓ Gradually cut back visits.
- ✓ Reassure the community that it can solve problems on its own.
- ✓ Provide auxiliary training support to the village water committee as needed.
- ✓ Help the water committee to evaluate and improve its performance.

This stage provides for a period in which the project staff monitors and then gradually disengages from the project. The staff corrects any deficiencies in the community's ability to properly operate and maintain the water and sanitation systems and also makes certain that the community is using the systems in a safe and sanitary way so that the desired health benefits result. This stage can take anywhere from four to five months to more than two years.

Only after the village water committee and the village have shown that they have developed the necessary skills for operating and maintaining both systems does the project enter the disengagement stage. It is important for the extension agent not to leave the community in an abrupt manner. At the beginning of this stage, the extension agent informs the community that she will be cutting down on her visits, perhaps to just once a month. Meanwhile, the agent is preparing to begin the project cycle in another community. Problems inevitably occur, and it is important in this final stage that the agent and the project staff be available to help the community recognize that it can solve most problems on its own.

The village water committee was trained in the necessary skills to manage the water and sanitation systems at the time they were installed, but this was done with the project team close at hand to offer advice. As the committee actually begins to manage the systems on its own, it may need additional short training sessions, reviews of lessons learned earlier, or moral support. Experience in water projects around the world reveals that conflict in the

community is a major cause of the neglect of the systems. The role of the agent in on-going conflict resolution support is very important (see Appendix J).

After the system has been in operation for four or five months, the extension agent should lead the village water committee through a self-evaluation to see how it can improve its management. It may be clear that some members should be changed or additional skills further developed, such as bookkeeping. This evaluation, which could be based on criteria decided on by the committee, might include the length of system downtime, the care of the source, and the numbers of people/families installing latrines and practicing improved hygiene behavior. One useful tool is a map showing the village households and the improvements each made.

# 13

## EVALUATION

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### CHECKLIST

#### *Signs of success . . .*

- ✓ A high quality water supply that is reliable and adequate.
- ✓ Reduction of the incidence of water-related diseases and other health benefits.
- ✓ The establishment of small businesses which rely on a dependable water supply.
- ✓ Increased community self-confidence.
- ✓ Additional community health activities.

Projects should be evaluated both from the community's perspective and the project donor's perspective.

### **Community Self-Evaluation**

At the end of the first year after the completion of the water system the village water committee organizes a new community survey. The results should be presented at a community meeting to discuss the goals set the first year, changes that have occurred, and goals for the next year. Some useful evaluation indicators that the community can help to calculate include: the numbers of breakdowns, breakdown repair time, the number of families paying, the amount of operating reserve (which will consist of the average bank balance divided by total expenditure), the number of days each year with water, reduction of certain diseases (especially where identified by the community members themselves), use of hygiene practices and devices, etc.

Although the community may need some advice and assistance from the village water committee, it is important that the community carry out its own evaluation. It is sometimes effective when people tell anecdotes about how the new water system and health education information have changed their lives or reduced illness. The community may want to have a small party to celebrate having reached its goals and to generate interest in the next year's activities.

## **Preparing for Donor Evaluation**

Most donors require mid-term and final evaluations of the project. All project team members should document their activities and collect data on indicators of progress in their component so that the evaluators will have actual data for an accurate evaluation.

Projects often focus on the number of wells drilled or other construction activities because those structures are easily identifiable and quantified. To have donors accept progress in community development and hygiene education during the early part of the project as equally important indicators of success, data on these activities must be monitored and documented.

The staff should anticipate outside evaluations and have available for the evaluators the records of activities, copies of training curricula, and collections of materials (for example, maps, statements of goals, and water use guidelines) that were developed by the village water committee.

Changes in incidents of water-related illness should also be monitored throughout the program. Children's growth charts or local clinic records can be used if other measures are not available.

## **Signs of Success**

### **Sustainability**

The ultimate objective of development is sustainability. Sustainability may be defined as a condition under which benefits continue to accrue to the intended beneficiaries after the completion of project activities. A sustainable condition is dependent on several key factors including an effective institution which assures operation and maintenance. The responsible institution may be the community alone, or the community may be assisted by government agencies or private entrepreneurs. Assuring financial assets is an important role of the institution. The most important factor, however, is an interest and ability within the community to solve problems as they occur. Self evaluation is required. Instilling these abilities is, of course, the object of development activities which, in turn, raises confidence within the institutions to take on new projects. Initial successes are then replicated either through rehabilitation of worn systems or through the construction of new ones. (Appendix K provides a check list of factors involved in sustainability.)

### **Community Takes Responsibility for the System**

In successful projects the community has taken on increased responsibility for the water and sanitation facilities, and the village water committee has been trained and is working together on all four components of the project.

The successful completion of a water project is, and should be, a source of great pride to the community, for it teaches the community the important lesson that it can work together to improve itself. The self-confidence and organizational skills which are engendered by working together on the water and sanitation project often lead to other projects.

These improvements in the management skills of communities may be evaluated using a framework elaborated in Appendix L.

### **Income Generation**

The availability of water in the community may lead to the stimulation of small businesses which rely on a dependable supply of water. The community itself may wish to start such a business to generate funds for operating and maintaining the water system. Such businesses might include raising small animals (for example, poultry, rabbits, or fish), restaurants or hotels, construction, agroforestry, and fruit and vegetable production.

### **Other Health Projects**

A logical extension of a water and sanitation project is other community health activities such as maternal and child health programs, vaccination campaigns, mothers' clubs, growth monitoring for children under five, and AIDS education.

In some communities these activities may already be in progress under the sponsorship of other organizations or agencies. If so, then it is important to coordinate with those organizations for mutual reinforcement and maximum use of resources such as staff, educational materials, and vehicles.

## RELEVANT WASH DOCUMENTS

**Malawi Self-Help Rural Water Supply Program: A Mid-Term Evaluation.**  
Field Report No. 105, 1983.

**Malawi Self-Help Rural Water Supply Program: Final Evaluation.** Field  
Report No. 186, 1986.

**Final Evaluation of the USAID/Togo Rural Water Supply and Sanitation  
Project.** Field Report No. 228, 1988.

**Evaluation Guidelines for Community-Based Water and Sanitation  
Programs.** Technical Report No. 64, 1990.

## Appendix A

### **ROLE PLAYING: TWO APPROACHES TO TEACHING**

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The objective of this activity was for the participants to experience the conventional lecture-style education versus non-formal education as learners. This was done by the consultant playing these two role types without the knowledge of the participants. This role-playing activity was adapted from a similar exercise in Helping Health Workers Learn (David Warner and Bill Bowes, Hesperian Foundation, 1982). The health topic chosen was "Danger Signs During Pregnancy."

The first role play was given in a very technical, complicated manner in an undecipherable French. The chairs were arranged in typical classroom style, with the teacher at the front. The participants were pulled out of a break, given a lecture for not being on time, and made to sit in total silence. Any student who was not paying attention or caught talking was scolded. Certain students were called to stand and repeat parts of the lecture. Notes were written sloppily on the chalkboard with a warning of an exam on Friday. Repetition was used as a teaching method. Careful consideration was given not to exaggerate too much.

In the middle of the first role play, a small break was called, and upon its completion, the second role play started. The chairs were put in a circle. The students were greeted warmly. The teacher gave an introduction of herself which included both professional and personal background. The participants were taught the song entitled, "Danger Signs of Pregnancy" and a discussion followed. The class was dismissed after 20 minutes.

After the role plays were complete, the leader led a discussion to answer the following questions:

1. What did you think of the two classes?
2. From which class did you learn more?
3. From which class can you remember more? Is this important?

An analysis of the two role plays ensued, leading the participants to discover that no matter what or how much we teach, if the learners don't learn, then we as teachers have accomplished nothing. Thus, we must change our teaching approach so that the learners can learn.

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*Source: CARE/Haiti: Rural Water Supply and Development Project Manual.*

To facilitate learning, the following three principles for effective teaching were established:

1. Not more than 15 people present
2. Lessons given in less than 30 minutes
3. Learning is made active (as opposed to passive)

Comments by the participants with regard to this exercise:

1. They were ready to go as a group to ask the HES for their removal from the seminar at the lunch break.
2. They thought the second role play was hypocritical, since they so thoroughly believed the first role play.
3. They bought the idea that education can be short and still valuable.
4. They discovered that learners cannot learn various, complicated health messages in one sitting.

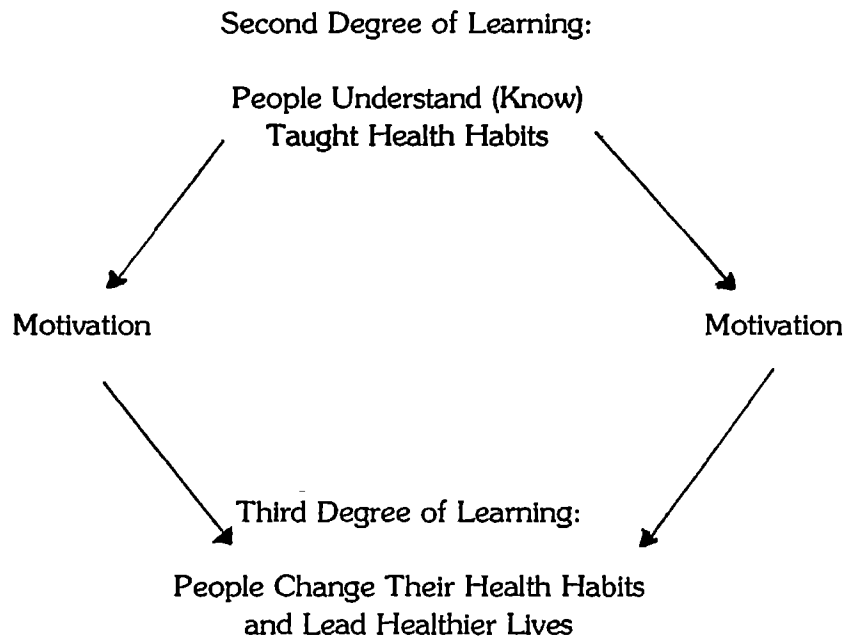


## Appendix B

### ROLE OF MOTIVATION

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Motivation and the idea "to motivate people" is a concept which is currently given a lot of lip service among the health promoters and mason/promoters. Prior to this training seminar, motivation was viewed as the incentive to get people to work on latrines, fountains, etc. This session was to introduce the concept that the primary role of motivation should be to encourage people to lead healthier lives and change their health habits. Thus, it was discovered that to move learners from the second degree of learning to the third, motivation is the key, and often missing, element.



As teachers, it is our responsibility to manipulate information into a form that enables learners to learn. But to move them to the third degree of learning, we must motivate them also.

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*This session clarifies the frequently used term "motivation." It has been used for the training of extension workers in CARE/Haiti Water and Sanitation Project.*

The participants were divided into three groups and asked to respond to four questions. Under the questions are summaries of their responses.

1. Why is it necessary to motivate people?
  - to change health habits
  - to adopt new health principles
  - people must be internally motivated already
  
2. What do you think motivates people?
  - when they realize how it affects their health
  - when they see advantages in it for themselves
  - education methods: songs, skits, etc.
  
3. How do you know when a person is motivated?
  - see changes
  - shares new knowledge with neighbors
  
4. To what degree of learning do people need to arrive at to change old health habits?

## Appendix C

### **SAMPLE COMMUNITY SELECTION CRITERIA FROM EVALUATION OF CARE/SUDAN INTERIM WATER SUPPLY AND MANAGEMENT PROJECT**

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The criteria for selecting sites were determined by CARE prior to the visits and included socioeconomic, environmental, and technical factors. Each site was evaluated with respect to current and potential water quality, accessibility, reliability, and quantity (QARQ). Socioeconomic and environmental factors included:

- identification of tribes, clans, population, and social relations;
- presence of settlements, transhumance, and nomadism;
- presence of routes of migration and history of land ownership;
- indications of social stability and community aspirations;
- assessment of alternative water sources within the area, their type, reliability, and distance;
- economic activities, including off-season economic pursuits;
- existence of available approved social overhead capital, especially government institutions;
- assessment of the ecosystem, extent of denudation, and environmental hazards;
- identification of possible linkages with other agencies and other CARE projects; and
- determination of community understanding of equity regarding the new water system and review of the community's history of self-help projects.

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*Excerpt from WASH Field Report No. 227, May 1988, pp. 16-19.*

CARE/technical criteria for site selection were as follows:

- borehole should provide standard and acceptable range of water quality;
- chemical quality test should be certified by the Ministry of Health;
- borehole should provide standard and acceptable range of water quality;
- chemical quality test should be certified by the Ministry of Health;
- borehole should provide a quantity of 900 to 1,200 gallons per hour (gph), or borehole yield should show a decline in productivity through the past years of operation;
- water-yard should be accessible to water-deficient villages with no (explicit) limitation on quantity drawn; and
- water-yard should be the only reliable and appropriate source of water in the vicinity.

## Appendix D

### **SUGGESTED MEETING PROTOCOL TO INTRODUCE PROJECT WITH MANAGEMENT FOCUS**

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1. Attendance: Project staff including local engineer, CP/hygiene education staff, and extension agent likely to work in that community.
2. Team leader introduces those present. Explains that the purpose of the visit is to find out about water and sanitation projects. Always care must be taken not to promise anything.
3. Find out about existing water sources and what went wrong.
4. Give analogy of home and its need for care and maintenance. Return to the question of water points. Find out what people think could have been done so that existing water sources are still working. Or, if this is the first improved source, find out what community members consider important to keep system operating.
5. Using analogy of dwelling, outline issues relating to responsibility, learning about skills and the benefits accruing from well-maintained shelter. Find out what community members consider to be the benefits they will have from improved water system. (Issues of health and convenience might be brought up).
6. Explain how water alone without sanitation (appropriate disposal of fecal matter) will help very little in improving health.
7. A demonstration showing the relationship of environmental sanitation to illness and the oral/fecal chain can be very effective at this point. Fecal matter spread on the ground can be represented by white powder or in red paint. As people step on this paint or powder without washing the spoon or their hands the audience sees fecal matter clearly going into the mouth. Similarly, dippers and utensils falling on the floor in the kitchen and coming into contact with fecal matter can be seen how people inadvertently use them to eat.
8. If community women are not present, emphasize their role in health of the community and care of water sources. Suggest their presence. Repeat the demonstration and summarize what was discussed.

---

*Adapted from "Interim Report on Socio-economic Survey, Rusafiya Project," RTI, September 1988 under Contract to UNDP/World Bank Project No. 3/23.*

9. Find out if there are any questions. Find out points of resistance; for example, the elders refuse to use latrines, or latrines are too expensive.
10. Emphasize that this is not a government or a donor project; it is the community's project. The project is there to help train community members to take care of improved systems.
11. If community members are not interested, allow them the opportunity to decide they do not want the projects. The following process is intended to allow community members to discuss what has taken place, research it, and respond if they so wish:
  - a. Select a committee or if you have one that you think is suitable, use it. The committee should be made up of from 8 to 13 members, both men and women who are interested in the health and the water and latrines of the community. They must also be people interested in teaching others what they have learned. They can be mothers and people interested in the repair of the system. We will be back to review and discuss this committee and its responsibilities.
  - b. Decide on one evening every two weeks to receive the extension agent and learn from him/her for at least six months. If during the six months the meeting time is not kept, then the extension agent will stop his/her work there.
  - c. In case the extension agent needs a place to stay, be prepared to find him/her a place to sleep and be responsible for providing food.
  - d. Send a letter or message to project office/local government office, with all the information.
  - e. In case the community decides to work with us, try to set a date to come back. (Choose more than one date and don't insist on a date immediately.)

## Appendix E

### EXAMPLE OF TECHNICAL SURVEY

---

1. Project Location  
Rehabilitation, new system, expansion
2. Total number of users  
Household:  
Individuals:
3. Source to be used:  
Spring:  
Borehole:  
Water catchment:
4. Soil Conditions  
Limestone  
Rocks  
Cultivated Field  
Swamp
5. Is source in the village?
6. Who owns land of source?
7. What is rainfall?
8. Length of rainy season.
9. Materials available: stone, sand, concrete, bamboo.

---

*Adapted from CARE/Indonesia Community Water Project.*

10. Skilled laborers: brick layers, pipe fillers, plumbers.

11. Types of systems possible:

pipe

rainwater

hand-dug well

deep-well handpump

diesel

other \_\_\_\_\_



## Appendix F

### **SUGGESTED BASIC COMMUNITY SURVEY TO BE ADAPTED FOR IMPLEMENTATION BY COMMUNITY**

---

1. Distance from project/local government: \_\_\_\_\_ km
  
2. Ethnic Group(s): \_\_\_\_\_  
Which languages are spoken here? \_\_\_\_\_  
\_\_\_\_\_
  
3. Religion:  
What religions are here? \_\_\_\_\_  
\_\_\_\_\_
  
4. Previous external support:  
Any project undertaken by State Government/Local Government/Mission in this Community?  
\_\_\_\_\_  
\_\_\_\_\_
  
5. Men, community leader and decision makers:  
Who is the community leader(s) \_\_\_\_\_  
How long has he been the leader? \_\_\_\_\_  
How are male leaders selected? \_\_\_\_\_  
\_\_\_\_\_
  
6. Women's leaders:  
Who is the women's leader? \_\_\_\_\_  
How long has she been the leader? \_\_\_\_\_  
How are women leaders selected? \_\_\_\_\_  
\_\_\_\_\_
  
7. Youth groups:  
Do you have youth associations? \_\_\_\_\_  
How many? \_\_\_\_\_  
How were the groups formed? \_\_\_\_\_  
What activities have they done? \_\_\_\_\_

---

*Adapted from Rusafliya Questionnaire.*

8. Previous experience working together:  
Have you ever undertaken communal activities together?

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Who initiated those activities?

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If yes, what activities have been done by men?

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What activities have been done by women? \_\_\_\_\_

---

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How?

9. Decision-making processes:  
How are decisions made about bush clearing, deepening of walls, drainage, mosque, school, or other examples?

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10. Finance and economic activities:  
Are there any savings clubs? \_\_\_\_\_  
Are there any cooperative societies (farmers, women's)? \_\_\_\_\_

What has been your experience with cooperative societies? \_\_\_\_\_

---

How much money do you contribute? \_\_\_\_\_

What do you do with it? \_\_\_\_\_

---

11. Human resources:

Artisans? \_\_\_\_\_

Carpenters? \_\_\_\_\_

Masons? \_\_\_\_\_

Motorbike mechanics? \_\_\_\_\_

Blacksmiths? \_\_\_\_\_

Primary school teachers? \_\_\_\_\_

Religious teachers? \_\_\_\_\_

Secondary school graduates? \_\_\_\_\_

Traditional healers, herbalists? \_\_\_\_\_

12. Perceptions of health:  
What diseases are common in your community? \_\_\_\_\_  
Where do you think they come from? \_\_\_\_\_

13. Existing water sources:  
Who fetches water? \_\_\_\_\_  
Where do you get your water? \_\_\_\_\_  
in dry season? \_\_\_\_\_  
in rainy season? \_\_\_\_\_

Does anybody regulate water use? \_\_\_\_\_

Does anybody regulate the amount of water collected? \_\_\_\_\_

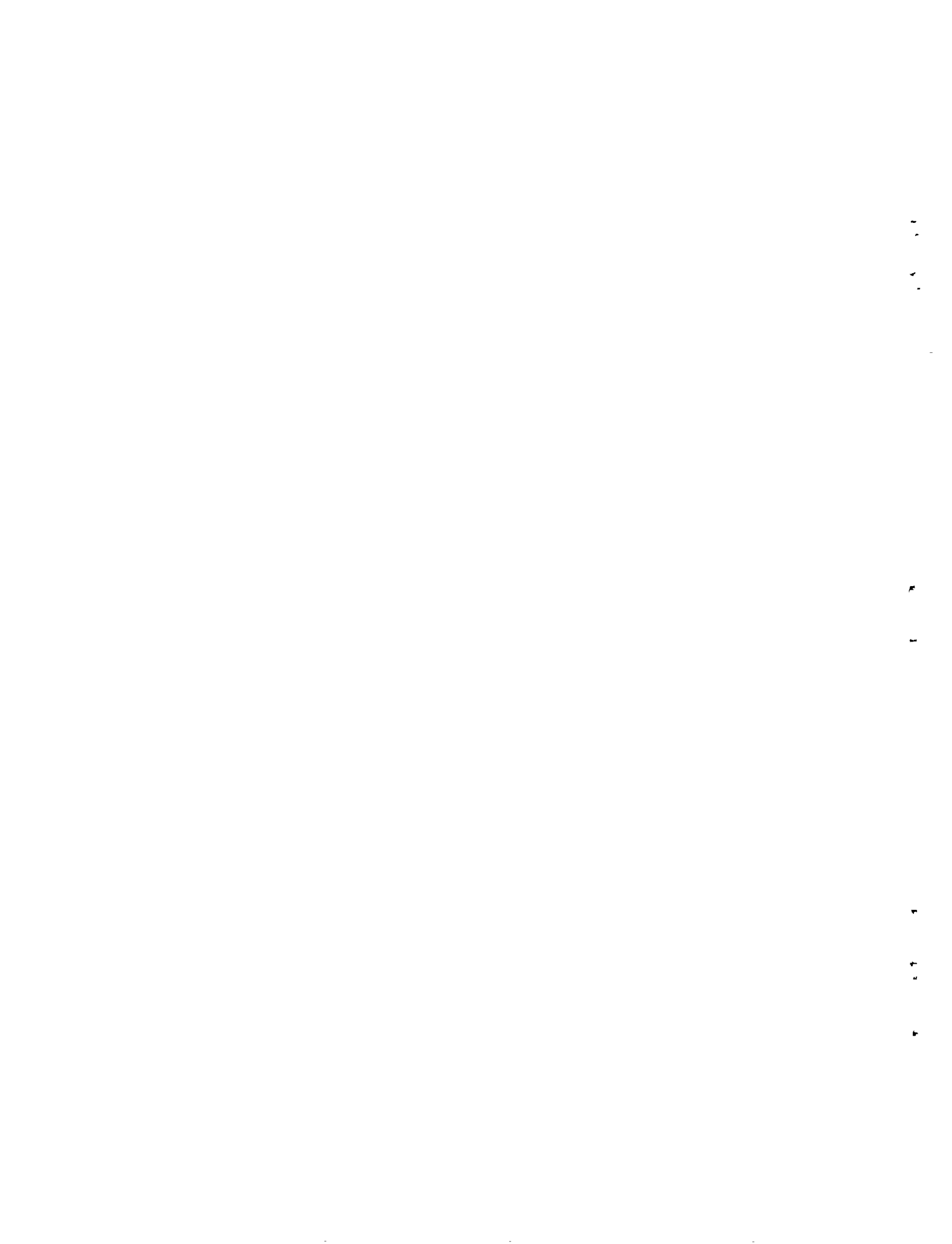
What is the water allowance? \_\_\_\_\_  
Do you buy water from vendors? \_\_\_\_\_  
If so, how much do you pay? \_\_\_\_\_  
Type of source? \_\_\_\_\_  
Distance? (one way) \_\_\_\_\_  
Time to and fro? \_\_\_\_\_  
Reliability: Rainy season only? \_\_\_\_\_  
Dry and rainy season? \_\_\_\_\_

Usage: drinking \_\_\_\_\_ washing \_\_\_\_\_  
bathing \_\_\_\_\_ animals \_\_\_\_\_

Kind of containers used to carry water? \_\_\_\_\_

Cost per container (each kind)? \_\_\_\_\_

How many containers per day used by family? \_\_\_\_\_



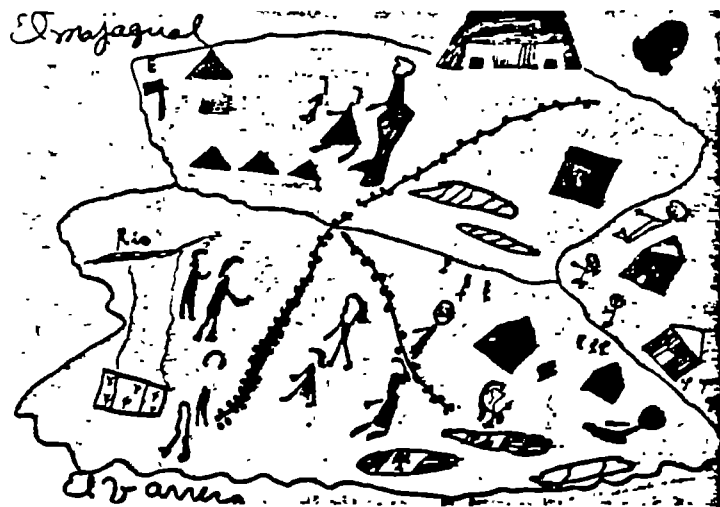
## METHODOLOGY FOR DATA COLLECTION WITH THE COMMUNITY

### Community Map

**Purpose:** To develop with community members the physical characteristics relevant to water resources and environmental health issues as perceived by the community.

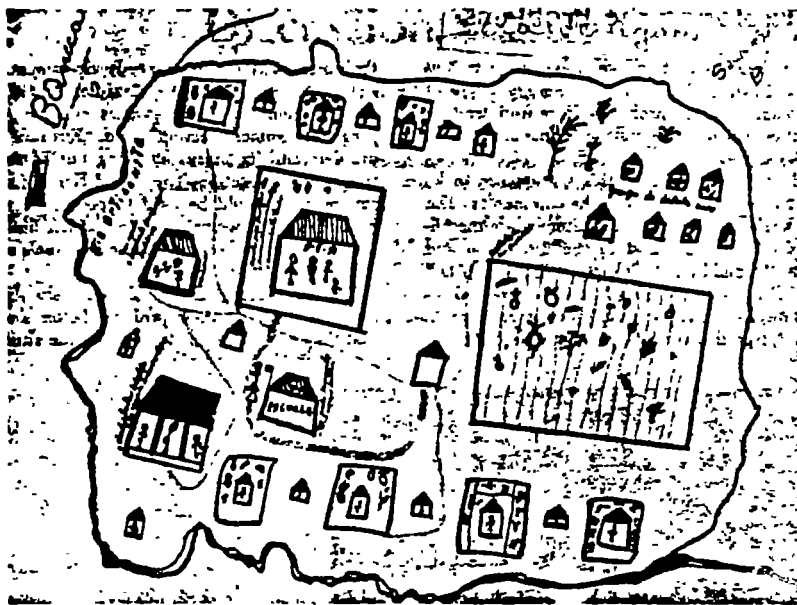
**Preparation:** The extension agent will need to prepare newsprint paper, marker and pencil.

**Procedure:** Prepare a basic map with the basic features of the community—road, meeting place, etc., so that community people can orient themselves.



Community map, Dominican Republic.

1. Ask the community to think about what resources they have in their community that could be drawn on the map. These would include existing schools, mosques, clinic, gardens, rivers. These can be drawn by different people.
2. Ask community members to think about the problems that exist and either draw them on the map or ask someone to draw them. These might include contaminated water source, dry land, even burial grounds that are too far.
3. Discuss what has been depicted on the map and what people perceive might be the causes of the problem. You may want to return to any points made about water and sanitation and its health/illness effects.



Community map, Dominican Republic.

Adapted from "Bridging the Gap: A Participatory Approach to Health and Nutrition Education." Save the Children. 1982.

## Sample of Filled-Out Work Sheet for Data Collection with the Communities<sup>1</sup>

What Information to Collect	From Whom/Where	How to Collect It	Data Collected
<b>1. WATER</b> a. What sources exist? b. Which are safe, unsafe? c. How much is available? d. How is area around source sustained? e. What do people use to drink? f. How is water stored? g. What is considered "good, clean" water? h. What is considered "good, clean" water?	<b>1. WATER</b> a. women, leaders b. water sources c. women d. water sources e. adults and children f. women g. adults h. adults, religious leaders	<b>1. WATER</b> a. observe, ask b. observe c. ask, observe d. observe e. ask f. observe, ask g. observe h. ask	<b>1. WATER</b> a. river, 2 dug wells b. both unsafe c. scarce during dry season d. no drainage or protection from animals and puddles e. river water f. basins and buckets—lie on the ground g. open clay jars in homes—dipped with cup or hand h. river water because it is sacred
<b>2. ENVIRONMENT</b> a. What sanitation systems exist? b. What solid waste disposal systems exist? c. How are animals managed?	<b>2. ENVIRONMENT</b> a. heads of households b. village leaders, heads of households c. households, village	<b>2. ENVIRONMENT</b> a. observe, ask b. observe, ask c. observe	<b>2. ENVIRONMENT</b> a. no latrines b. designated garbage disposal but not well used c. animals roam freely

<sup>1</sup> Source: WASH Technical Report No. 60. *A Training Guide on Hygiene Education.*

What Information to Collect	From Whom/Where	How to Collect It	Data Collected
d. Where do adults defecate?	d. adult men, women	d. ask	d. In special areas near river
e. Where do children/ Infants defecate?	e. mothers	e. ask	e. In the courtyard (Infants) In trash heaps (children)
f. What do people believe regarding danger of adults' / children's feces?	f. mothers, men, adolescents	f. ask	f. men and women must use separate areas; children's, babies' feces are harmless
g. How is water disposed of?	g. women	g. observe, ask	g. thrown out into the street to run off
<b>3. PERSONAL HYGIENE</b>	<b>3. PERSONAL HYGIENE</b>	<b>3. PERSONAL HYGIENE</b>	<b>3. PERSONAL HYGIENE</b>
a. What are water use priorities?	a. adult men and women	a. ask	a. drinking and cooking
b. When do people wash hands?	b. mothers, adult men and women	b. ask, observe	b. when coming back from fields
c. Do they use soap?	c. adult men and women	c. ask, observe	c. only when returning from the fields
d. Is bathing frequent, infrequent?	d. adult men and women, mothers of young children	d. ask	d. not frequent, especially in dry season and especially children
e. Do people think bathing/handwashing is important?	e. adult men and women, mothers of young children	e. ask	e. not really—dangerous for children to bathe too much

## Work Sheet for Data Collection with the Communities

What Information to Collect	From Whom/Where	How to Collect It	Data Collected
<p><b>1. WATER</b></p> <p>a. What sources exist?</p> <p>b. Which are safe, unsafe?</p> <p>c. How much is available?</p> <p>d. How is area around source sustained?</p> <p>e. What do people use to drink?</p> <p>f. How is water stored?</p> <p>g. What is considered "good, clean" water?</p> <p>h. What is considered "good, clean" water?</p>	<p><b>1. WATER</b></p>	<p><b>1. WATER</b></p>	<p><b>1. WATER</b></p>
<p><b>2. ENVIRONMENT</b></p> <p>a. What sanitation systems exist?</p> <p>b. What solid waste disposal systems exist?</p> <p>c. How are animals managed?</p> <p>d. Where do adults defecate?</p>	<p><b>2. ENVIRONMENT</b></p>	<p><b>2. ENVIRONMENT</b></p>	<p><b>2. ENVIRONMENT</b></p>



What Information to Collect	From Whom/Where	How to Collect It	Data Collected
<ul style="list-style-type: none"> <li>e. Where do children/infants defecate?</li> <li>f. What do people believe regarding danger of adults'/children's feces?</li> <li>g. How is water disposed of?</li> </ul>			
<p><b>3. PERSONAL HYGIENE</b></p>	<p><b>3. PERSONAL HYGIENE</b></p>	<p><b>3. PERSONAL HYGIENE</b></p>	<p><b>3. PERSONAL HYGIENE</b></p>
<ul style="list-style-type: none"> <li>a. What are water use priorities?</li> <li>b. When do people wash hands?</li> <li>c. Do they use soap?</li> <li>d. Is bathing frequent, infrequent?</li> <li>e. Do people think bathing/hand-washing is important?</li> </ul>			

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## Appendix H

### **GUIDELINES FOR SUCCESSFUL COMMITTEES**

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The following points will help a group or committee to be effective in promoting health and well-being in the community.

1. Elect a chairman to organize and lead the meetings.
2. Get someone to record the minutes and agreements made by the group.
3. Get the support of the community leaders.
4. Involve important community groups in the area, such as women, youth, church, etc.
5. Meet often enough to keep people interested.
6. Meetings should be supported by and occasionally attended by health staff or other extension workers.
7. Members should get the community to actively participate in all development projects.
8. Before closing each meeting, set a date for the next meeting.
9. See that meetings are well-planned:
  - have a prepared agenda
  - do not try to cover too much material.
10. Develop a democratic way of discussion in the meeting.
11. Any committee member who misses at least three meetings should be replaced by a newly elected or newly chosen member.
12. A health or other extension worker might take the role as facilitator at each meeting. They are a good resource and can help to promote discussion and action.
13. Try to plan your first project so that there is a good chance of success. That way, people will be more willing to take on other projects the next time.

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(Source: *Leader's Handbook*. Department of Health Boroko, Papua New Guinea).

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## Appendix I

### COMMUNITY PROBLEM-SOLVING

---

#### PARTICIPATORY COMMUNITY MAPPING

SETTING: A village gathering

TIME: 1-2 hours

PURPOSE: To depict community problems and resources in an illustrated form.

MATERIALS: Large sheets of paper, colored markers, or felt-tipped pens.

- PROCEDURE:
- (1) Divide gathering into groups of five to eight people.
  - (2) Request that each group draw a map of their community, depicting problems, dramatic situations, and resources.
  - (3) Have each group present its map to the other groups in plenary.
  - (4) After the individual presentations, have all the maps placed side by side on a wall or blackboard.
  - (5) Have participants compare and discuss the pictures.
  - (6) Make separate lists of the problems and the resources

---

*Exercises in this Appendix are derived from a workshop by UNDP/Prowess and from Technical Report No. 33, A Workshop Design for Community Participation, Volume I—Starting Work with Communities, and Volume II—Planning and Implementing Sustainable Projects.*

## PARTICIPATORY PROBLEM ANALYSIS

**SETTING:** A village gathering

**TIME:** 1 hour

**PURPOSE:** To enable participants to analyze factors causing a particular problem confronting the community.

- PREPARATION:**
1. Select a topic which represents a problem expressed by the community.
  2. The facilitator should make in advance a possible list of all factors which cause or contribute to the problem.
  3. Another list of the factors which contribute to the prevention and control of the problem should also be made. Factors should be written out on small pieces of cardboard.
  4. Prepare cut pictures illustrating all the various factors on both lists.

- PROCEDURE:**
1. Mix the cut up pictures in a central pool. In another pool place all the cardboard pieces referring to the factors.
  2. Make two broad headings on a large board.

**Cause**

**Prevention & Control**

_____	_____
_____	_____
_____	_____

Have the participants place the cardboard pieces representing the various factors under the main (broad) headings.

3. Participants should then separate and categorize the pictures under the various cardboard pieces (subheadings) under the main headings.
4. Discuss the factors in plenary. Participants should attempt to give reasons why they think those factors influence the problem.

## PARTICIPATORY PROBLEM CLASSIFICATION

SETTING: A village gathering

TIME: 2-3 hours

PURPOSE: To analyze community expressed needs with a view to classifying and prioritizing them and also to differentiate problems from needs.

- PROCEDURE:
1. Divide gathering into small groups of 6-8 people.
  2. Have each group draw a map of their community indicating problems and resources (see Participatory Community Mapping above).
  3. Request each group to list community problems.

NO.	PROBLEM

4. Each group should differentiate problems according to those that could be solved:
  - a. By the communities themselves.
  - b. By the communities with some external assistance.
  - c. Only with external resources.

PROBLEM REQUIRING SOLUTION	AMOUNT OF EXTERNAL ASSISTANCE COMMUNITIES REQUIRE TO RESOLVE PROBLEMS		
	NONE	SOME	MAXIMUM

5. Have groups prioritize the problems as differentiated. Questions participants should ask themselves include:
- which problems affect the majority of the people?
  - which problems cause severe ill health?
  - which groups in one community are more affected?
  - which problems can be resolved and with what kind of resources?
6. Each group should then make a list showing various actions required at individual, family, and community levels to resolve problems.

PROBLEM	SOLUTIONS (action required at level)		
	Individual	Family	Community



## STEPS IN COMMUNITY PROBLEM-SOLVING

Field-workers can help a community learn how to solve its problems on its own by training community members to take the following four steps in community problem-solving. They are written to describe solving health problems.

### Step 1: Determining the Community Health Situation

The community must first find out what its health situation is. It can conduct a health survey similar to the one used in the health survey field exercise. It needs to know what diseases and conditions are common in the community, how many people suffer from them, how often they are sick, and how sick they get.

### Step 2: Identifying the Community's Health Problems and Choosing One to Solve

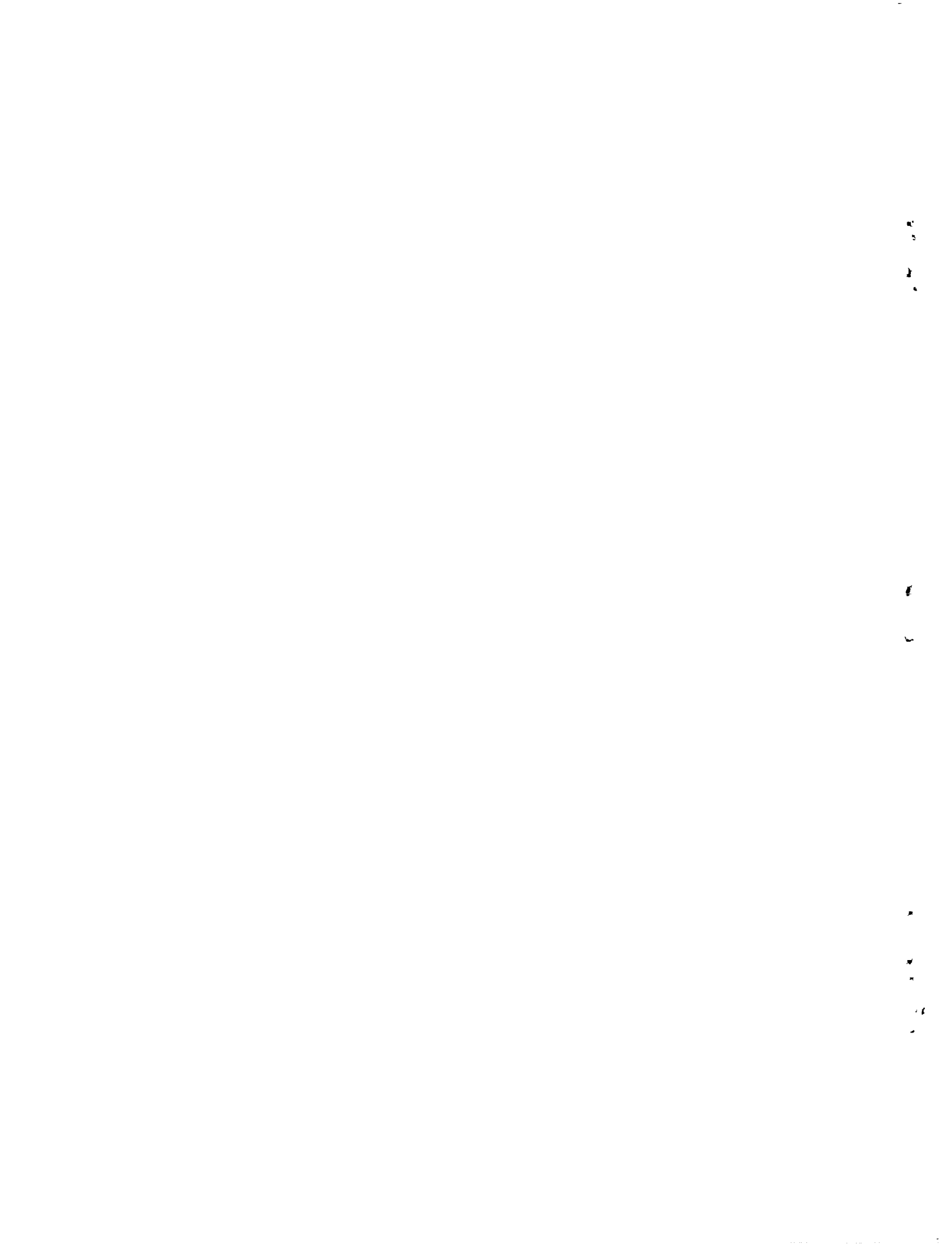
The community must make a list of all its health problems. Community members will be able to identify some problems right away and can review the health survey to identify others they might not have thought of. They need to know the difference between a problem and a need so that their list contains only problems. When the list is complete, each problem should be described in detail so that community members can decide what problems are most important to them and list them in order of importance. They can then choose to work on one of the most important problems.

### Step 3: Analyzing the Problem to Determine What Can Be Done to Solve It

When a problem has been chosen, community members should look at it as carefully as possible to find out what can be done about it. They should review their description of the nature of the problem before starting. Next, they should identify everything that has an effect on the problem—what causes it, what makes it worse, and what keeps it from getting worse. Then they have to decide which of these things they can do something about and which they cannot. Finally, they can decide what actions they can take that will help to solve the problem.

### Step 4: Selecting a Plan of Action

Once community members have identified all the actions the community can take that will help solve the problem, they have to choose which actions to take and in what order. A community cannot do everything to solve a problem at one time. It has to develop a plan based on all the specific actions that it is capable of carrying out and can afford that will have the biggest impact on the problem. The plan may consist of a series of actions that the community can take over several months.



## Appendix J

### **HOW TO SETTLE DISAGREEMENTS AND DISPUTES**

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The important thing for settling disputes and conflicts is to get the people involved (2 or more people):

- To listen to and understand each other's situation;
- To express their feelings about the conflict;
- To negotiate and work out an agreement to resolve the conflict.

A leader can be very effective in helping people resolve their conflicts by following these suggestions:

1. Create a friendly atmosphere.  
"Would you like to talk about the problems you are having? Is this a good time to talk? Could I ask you a few questions?"
2. Get the people to talk about their problems and needs.  
"What things are you having trouble with? How are you feeling?"
3. Find out what people want to do.  
"What do you think should be done? What would you like to do about it?"
4. Find out what difficulties are getting in the way of reaching their goal.  
"What is getting in the way? What prevents you from getting what you need?"
5. Explore different solutions to the problem.  
"What things could you do? Who else could help you?"
6. Find something the person is willing to do.  
"What would you be willing to do? When could you start?"
7. Find out what assistance and resources the people need.  
"What help do you need? Who else could help you? Can your friends or other people in the village help you?"
8. Follow up on agreements made.  
"I will talk to you again to see how you are doing."

---

*Excerpted from WASH Technical Report No. 33.*

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## Appendix K

### **SUSTAINABILITY FACTORS AND CRITERIA FOR EVALUATION OF SUSTAINABILITY**

---

#### Sustainability Factors

#### Criteria for Evaluation of Sustainability

Who needs to be involved?

##### Quantitative

- # of local management groups
- # of men and women in each group
- # of water committees formed

##### Qualitative

- definition of responsibilities of both genders in local management groups

How is the process of involvement managed?

##### Quantitative

- # of meetings needed to effect adequate exchange of information

##### Qualitative

- description of local management organization and decision-making process

What is the outcome of the involvement?

##### Quantitative

- # of discrete points of information gained by communities
- # of discrete points of information gained by project
- # of changes in perception by community and project because of new information

---

*Adapted from WASH Field Report No. 52 "New Participatory Frameworks for the Design and Management of Sustainable Water Supply and Sanitation Projects" November 1987.*

### Qualitative

- description of acceptable criteria for service of water point
- understanding on both sides of social, economic, and management implications of technologies under consideration
- negotiation and agreement as to responsibilities and control
- ongoing maintenance and responsibility of water point

How is the process of evaluation conceptualized?

- Qualitative measurement is accomplished by documenting learning process through people's changing perceptions of problems and solutions.
- Quantitative measurement is accomplished by measuring both anticipated and unanticipated project outcomes.
- Assessment and evaluation begins at planning stage when design and management plans are begun.

## Appendix L

### **EVALUATION FRAMEWORK FOR COMMUNITY PARTICIPATION**

The evaluation for community management capability was built in the process of developing the various project outputs. These outputs have consisted of the following:

- The formation of the committee
- The construction of facilities
- Fee collection and financial management
- The daily functions of caretaker of the source
- Regular maintenance
- Environmental hygiene improvements

The project's inputs into achieving these outputs have consisted of:

- Training hours for extension agents
- Materials developed for training
- Resources allocated for extension
- Institutional support and strengthening
- Training capability of community committees

The community participation "behaviors" that have been developed would consist of:

- Membership/participation
- Decision-making capability
- Leadership
- Knowledge and support.

In evaluating these community participation "behaviors," the following indicators can be used:

1. Membership/participation

- composition
- tenure
- representativeness
- selection/recruitment

2. Decision-making

- Agenda setting
- Who makes decisions
- Who participates in decision-making
- How are decisions made

3. Leadership

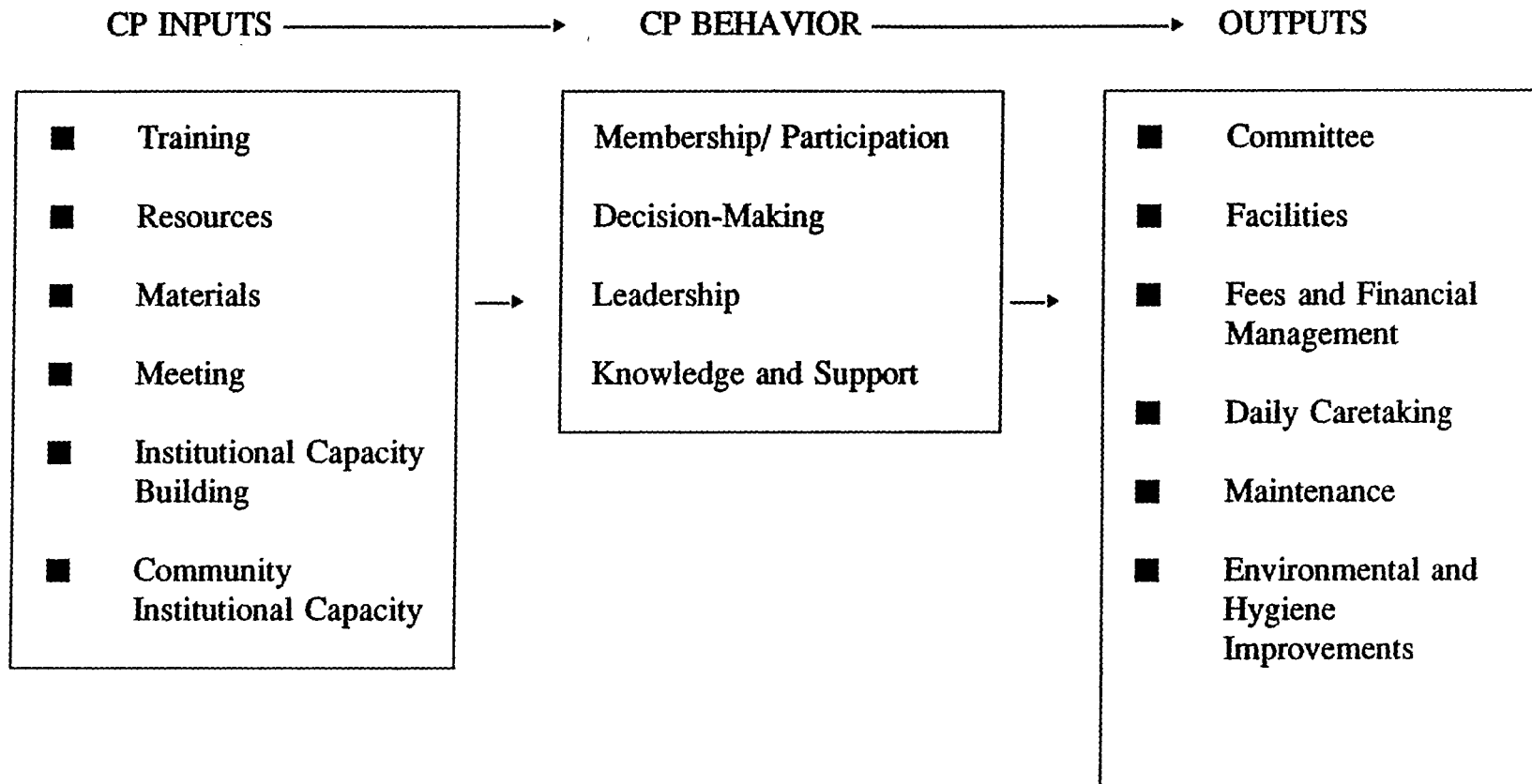
- How are they selected
- How representative are they
- How long do they stay (tenure)

4. Knowledge and support

- Level of awareness of what has gone on in the community
- Level of expression of agreement/disagreement
- Attitudes
- Willingness to participate in WS&S functions

In summary, the following conceptual model might be used (see next page).



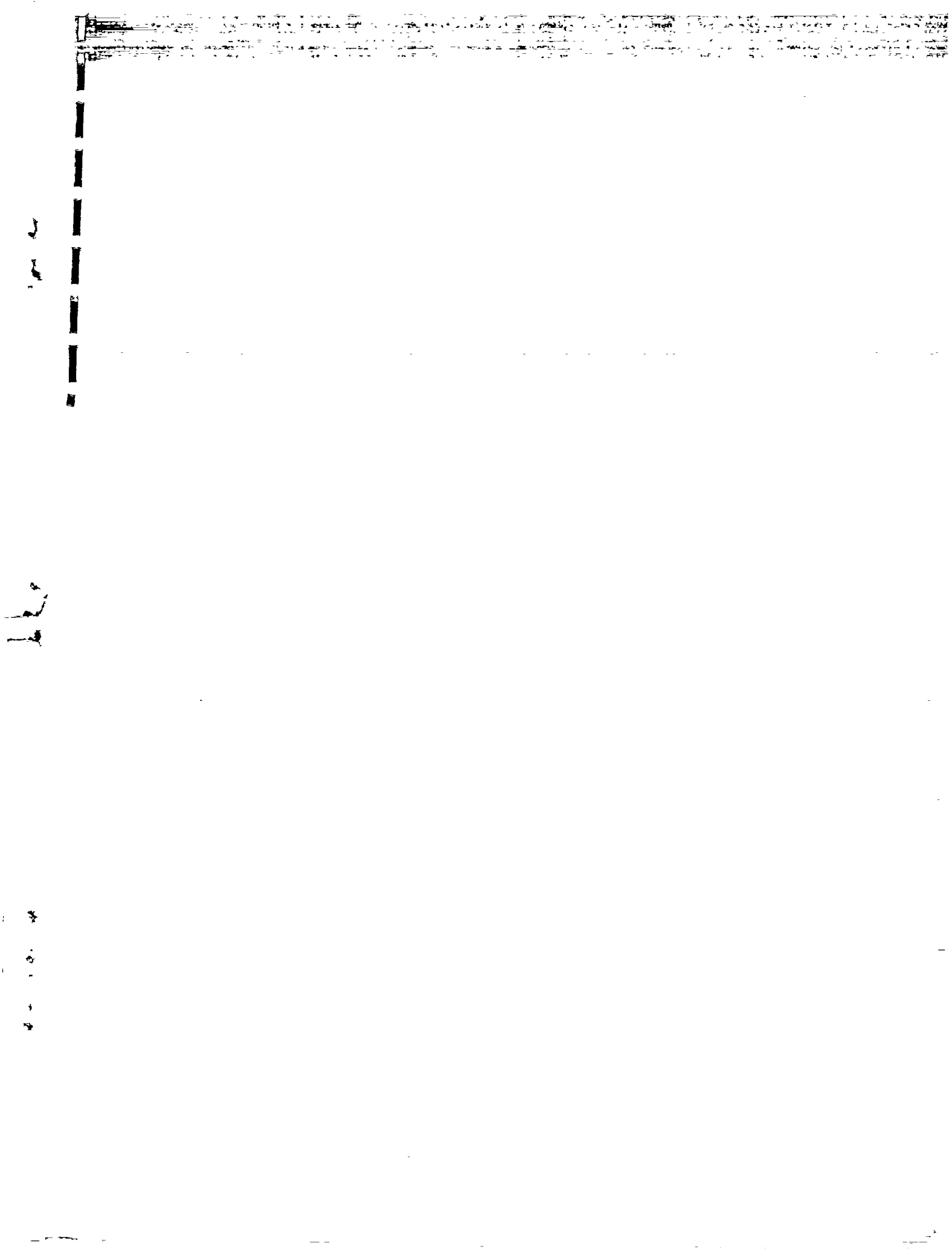


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**Camp Dresser & McKee International Inc.**  
Associates in Rural Development, Inc.  
International Science and Technology Institute  
Research Triangle Institute  
University Research Corporation  
Training Resources Group  
University of North Carolina at Chapel Hill

**WASH Operations Center**  
1611 N. Kent St., Room 1001  
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Telex: WUI 64552  
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## THE WASH PROJECT

With the launching of the United Nations International Drinking Water Supply and Sanitation Decade in 1979, the United States Agency for International Development (A.I.D.) decided to augment and streamline its technical assistance capability in water and sanitation and, in 1980, funded the Water and Sanitation for Health Project (WASH). The funding mechanism was a multi-year, multi-million dollar contract, secured through competitive bidding. The first WASH contract was awarded to a consortium of organizations headed by Camp Dresser & McKee International Inc. (CDM), an international consulting firm specializing in environmental engineering services. Through two other bid proceedings since then, CDM has continued as the prime contractor.

Working under the close direction of A.I.D.'s Bureau for Science and Technology, Office of Health, the WASH Project provides technical assistance to A.I.D. missions or bureaus, other U.S. agencies (such as the Peace Corps), host governments, and non-governmental organizations to provide a wide range of technical assistance that includes the design, implementation, and evaluation of water and sanitation projects, to troubleshoot on-going projects, and to assist in disaster relief operations. WASH technical assistance is multi-disciplinary, drawing on experts in public health, training, financing, epidemiology, anthropology, management, engineering, community organization, environmental protection, and other subspecialties.

The WASH Information Center serves as a clearinghouse in water and sanitation, providing networking on guinea worm disease, rainwater harvesting, and peri-urban issues as well as technical information backstopping for most WASH assignments.

The WASH Project issues about thirty or forty reports a year. *WASH Field Reports* relate to specific assignments in specific countries; they articulate the findings of the consultancy. The more widely applicable *Technical Reports* consist of guidelines or "how-to" manuals on topics such as pump selection, detailed training workshop designs, and state-of-the-art information on finance, community organization, and many other topics of vital interest to the water and sanitation sector. In addition, WASH occasionally publishes special reports to synthesize the lessons it has learned from its wide field experience.

For more information about the WASH Project or to request a WASH report, contact the WASH Operations Center at the above address.