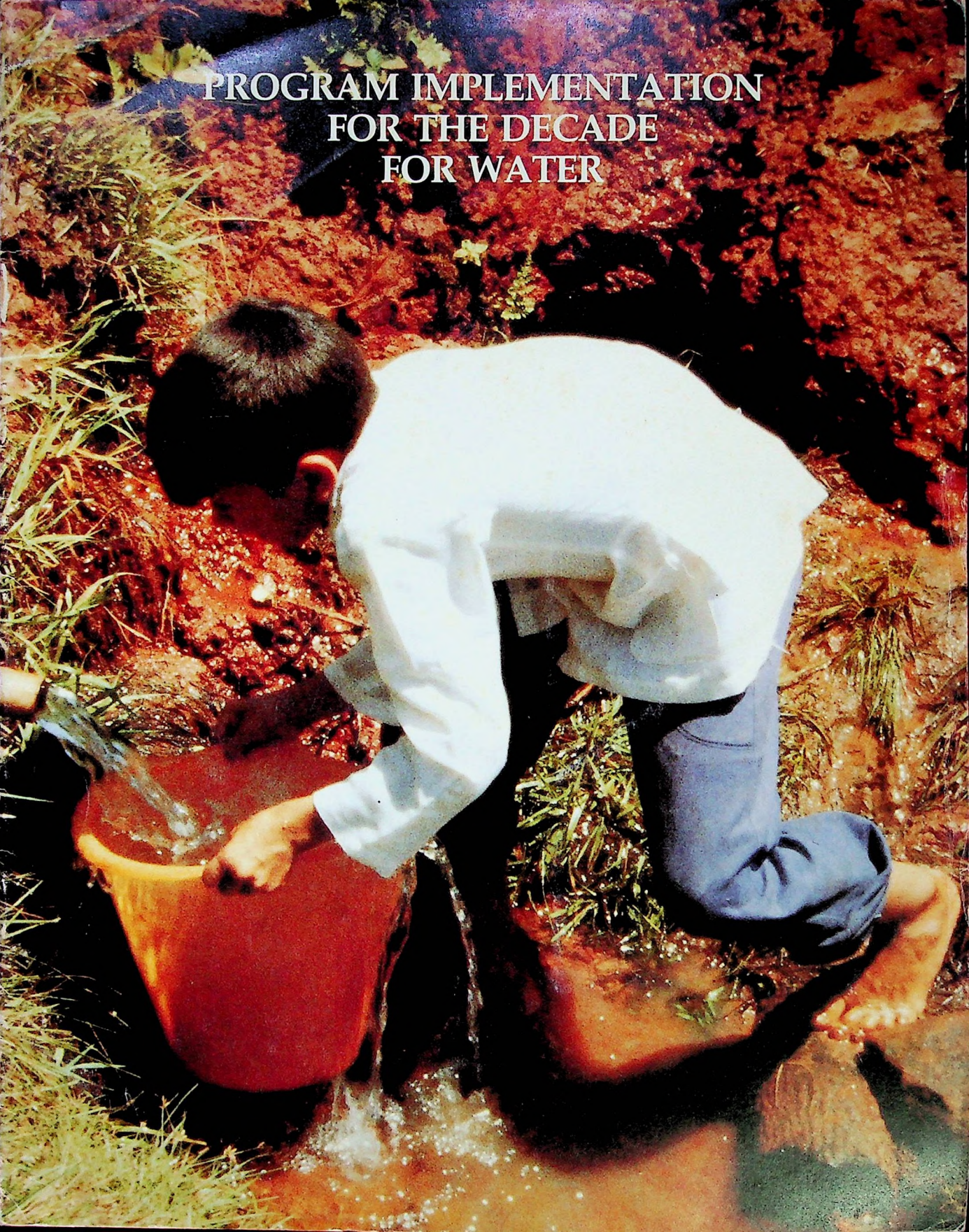
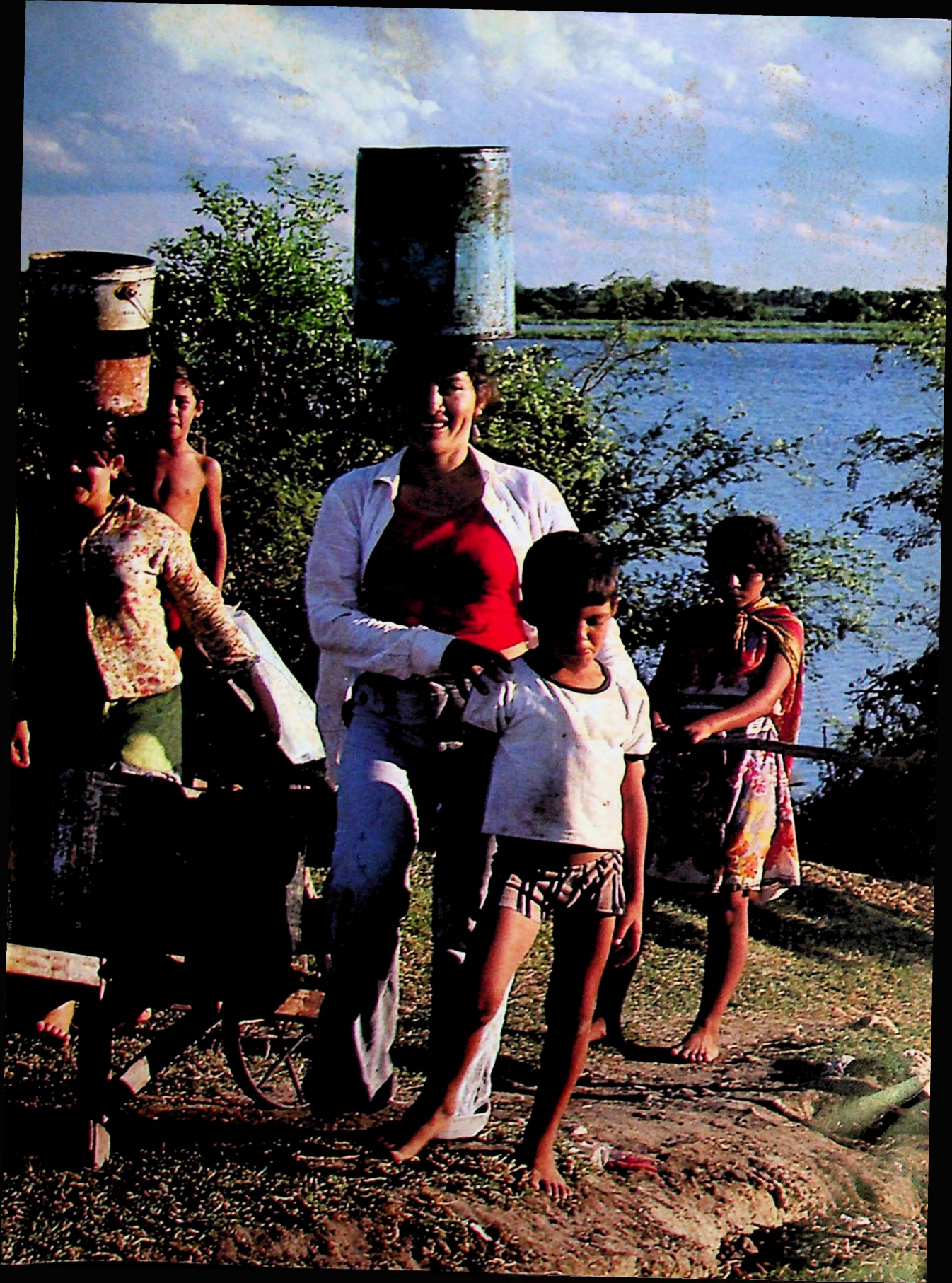
PROGRAM IMPLEMENTATION FOR THE DECADE FOR WATER





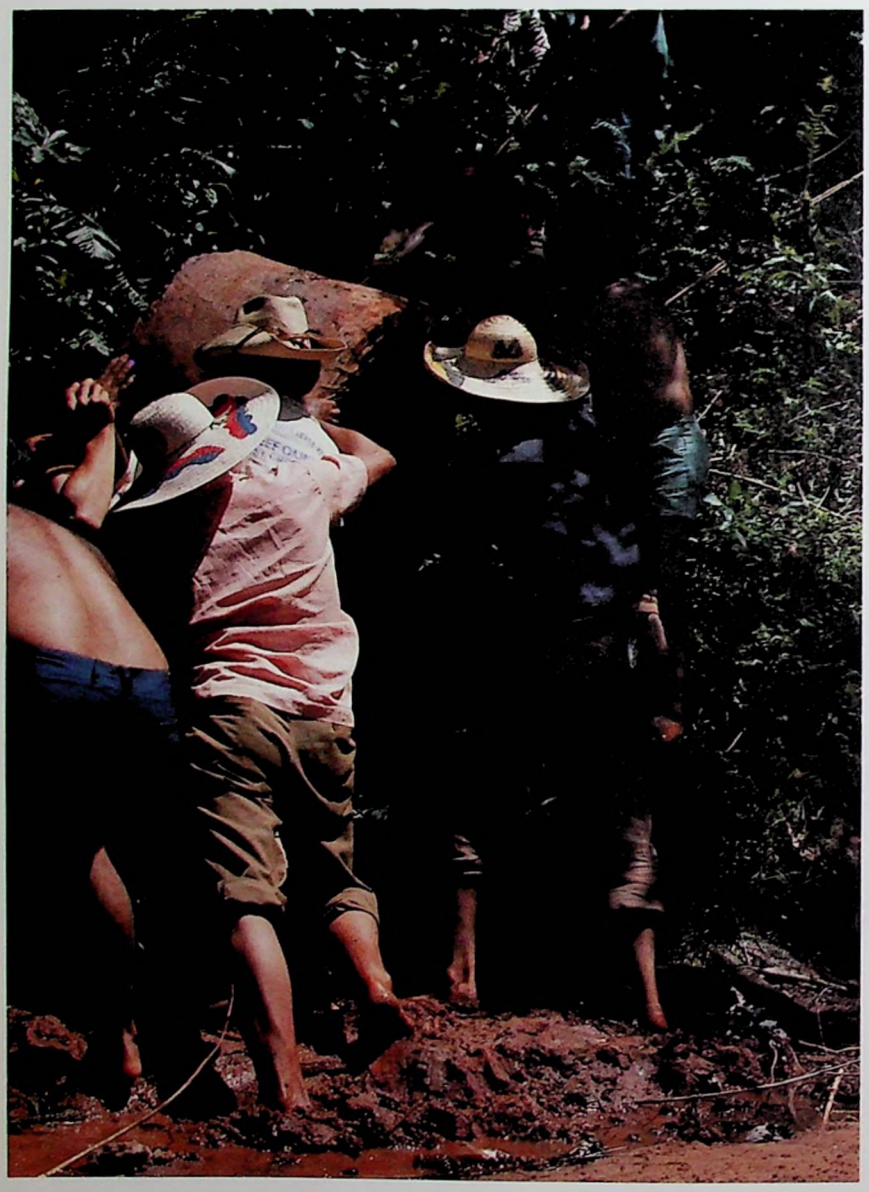
PROGRAM IMPLEMENTATION FOR THE DECADE FOR WATER

Water supply and sanitation problems in the developing nations are not, by and large, technical ones. The technology exists, somewhere and at some price, to provide adequate water and sanitation services to virtually any community under virtually any conditions. The difficulty lies in choosing the best technology, putting it in the context of a planned program, and implementing it. The reason water supply and sanitation systems fail is usually not because the technology is faulty, but because the process of choosing and implementing it is poor.

With the impetus of the International Drinking Water Supply and Sanitation Decade, billions of dollars will be spent during the 1980's on water and sanitation facilities. Effective expenditure of these funds requires that a country's plan for the Decade address technical equipment and human considerations in the right way.

The Need for a Development Approach

A plan for a countrywide program to improve water supply and sanitation facilities must define the approach that will be used to develop those facilities. Not every community nor every water supply problem can or should be treated in exactly the same way. One set of solutions cannot be imposed on every problem with any expectation that it will work. However, the *approach* to development of systems can and should be the same. This development approach—that is, the way in which the government will set about addressing community water supply and sanitation problems—should take into account all phases of project development and how project implementation should proceed in each phase. There are five key elements that the development approach should address: standard system designs, appropriate technology, operation and maintenance requirements, training, and community involvement.



Standardized System Designs

From a purely technical viewpoint, standard designs should be developed with corresponding standard costs. This will reduce both project preparation time and engineering costs. These standard designs must be carefully considered initially so that they take into account the realities of the country's situation, both technically and socially.

Standardized designs should not be used to force square pegs into round holes. Modifications to designs, both for technical and social reasons, will be required to fit the technology to the community. However, there is no reason to approach the technical aspects of water supply and sanitation development as if they were unique; they probably are not. Boxing a spring, for example, requires the same basic design every time it is done. There will be modifications needed depending on the spring's location and quality, but the basic design features will be uniform. If a standard design has already been developed for a spring box, a substantial amount of time and money can be saved

by using it rather than by commissioning a new design for every spring box needed.

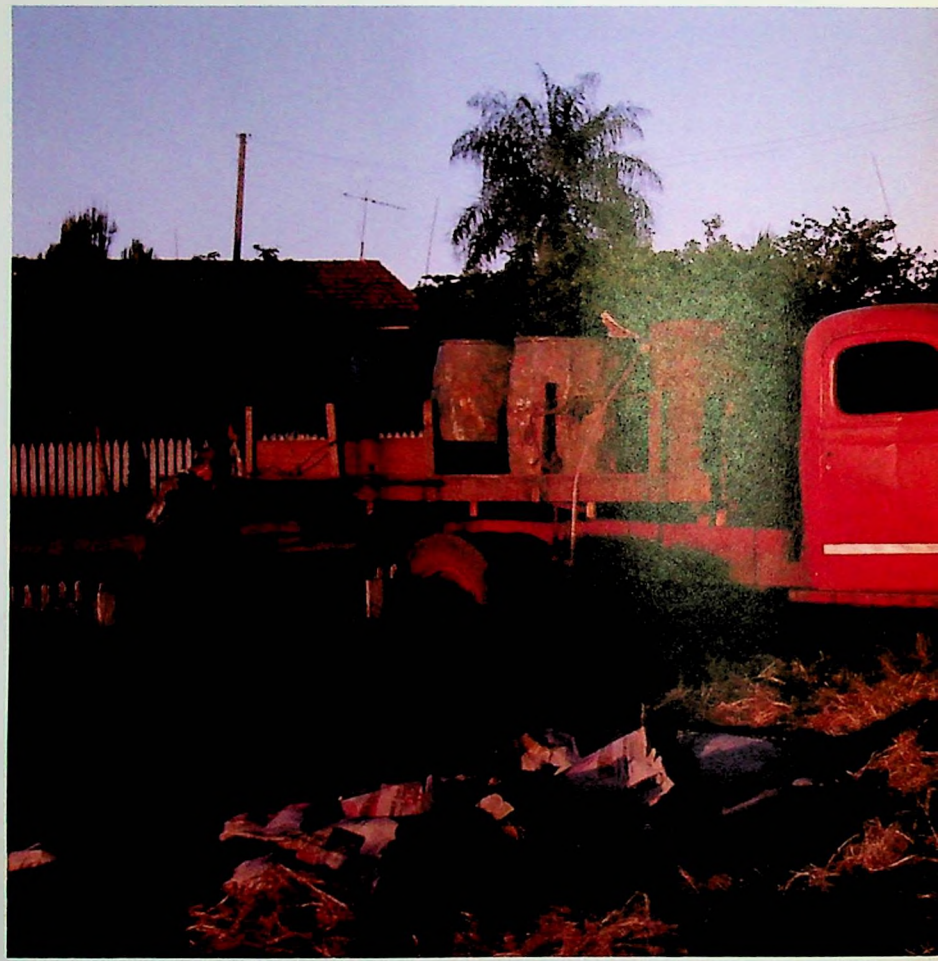
The technologies used should be as simple as possible so that local people can do the operation and maintenance with a minimum of outside assistance. Given cost and reliability problems with energy sources, gravity or water-powered systems should be used wherever possible. The designs must be cost effective in the long run: initial savings realized by using cheap materials will be more than offset by early failure of the system or by its frequently being out of service for repairs. As far as possible, the standard designs should use local materials and technologies and be suited for construction using unskilled local labor.

Standardized designs will allow for routinized operation of the program and for quick start-up and efficient development of each individual project. Further, they will give the program manager the means necessary to ensure quality control in facilities development.

Appropriate Technology

Appropriate technology is a popular concept these days and one that is often misunderstood and misapplied. It does not necessarily mean simple, home-made technology. Rather, it is the technology best suited to solve the problem at hand under existing physical conditions at the lowest initial and operating cost. It is technology specifically designed for the conditions under which it will be used. This does not mean that standardized designs cannot be developed, merely that a great deal of prior study must be devoted to them to ensure that they are the appropriate designs.

In the end, the selection of technologies should be based primarily on the community's social and economic conditions. However, the type and availability of supporting infrastructure must also be taken into account. For example, a project that provides water connections inside the house will lead to an increase in water usage and an increase in the amount of wastewater to be disposed of. If a wastewater disposal system is not planned and cannot be developed, indoor water connections are probably not the most appropriate technical solution. The most appropriate technology is the one that does the job adequately for the least amount of money while pleasing the community and not creating new problems.



Operation and Maintenance

Operation and maintenance is possibly the most neglected aspect of water and sanitation project development. Designs are often selected and funds allocated for construction with only the most cursory consideration as to how the system will be run once it is completed. Poor or nonexistent system management and operation, including lack of funds for operation and maintenance, are the most frequent causes of system failure. In one case, it was found that village systems were failing almost as fast as new ones were being built. Obviously, this was a waste of resources.

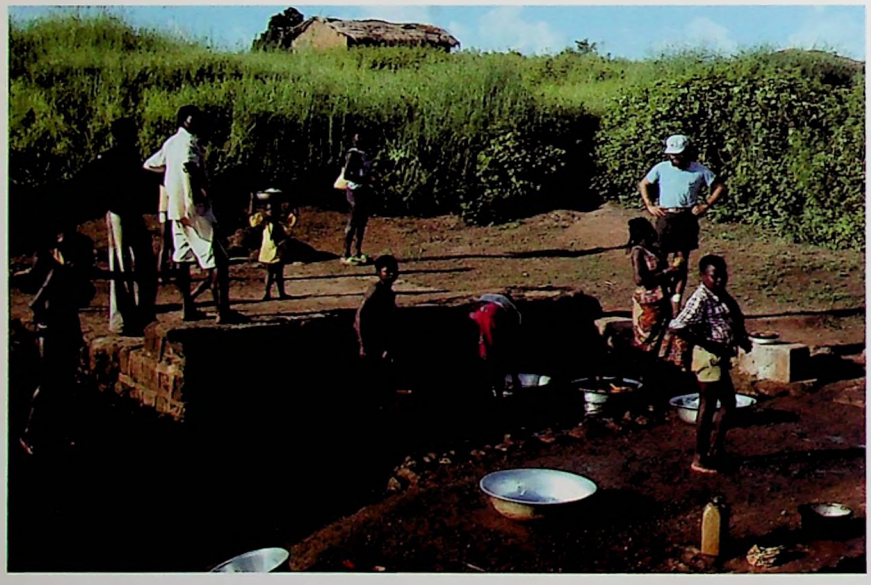
If scarce resources are to be used effectively, a water supply and sanitation program must emphasize operation and maintenance at least as much as, and perhaps more than, construction of facilities. Depending on conditions in the country, it is possible that its water supply and sanitation program should emphasize repair and maintenance of existing systems rather than construction of new ones. At the very least, operation and maintenance needs must be taken into account at the planning stage and when standardized designs are being developed. This does not only mean considering the cost and complexity of maintenance—although these are critically important—but answering the very specific questions of who is going to maintain the system, who is going to train them to do it, and what kinds of technical support are going to be available when they run into problems they cannot solve alone.

The number of new facilities being constructed is not the only way, nor even the best way, to measure the progress of a water supply and sanitation program. A more realistic and more useful measure is the number of people being served by reliable, operative systems.

Training

Training is too often as ignored as operation and maintenance. Even where cost and complexity of operation and maintenance are considered, training often is not. Training needs are not limited to operation and maintenance, though. In assessing training needs, the whole range of skills needed for water and sanitation project development must be taken into account: local staff such as plumbers and operators; tradesmen such as bricklayers and well drillers; supervisory staff such as foremen and sanitary inspectors; technical professionals such as engineers and chemists; and administrative personnel such as planners and community organizers.

A substantial training element should be included in the country's water supply and sanitation program and it should be fully integrated into the overall program. A careful inventory should be made of the skills needed in the program and the extent to which they are already available in-country, although possibly occupied in other fields. Civil engineers, for example, may be working on bridge and road construction because the pay is higher than in the water supply industry. Every reasonable attempt should be made to attract these people to the water and sanitation program.



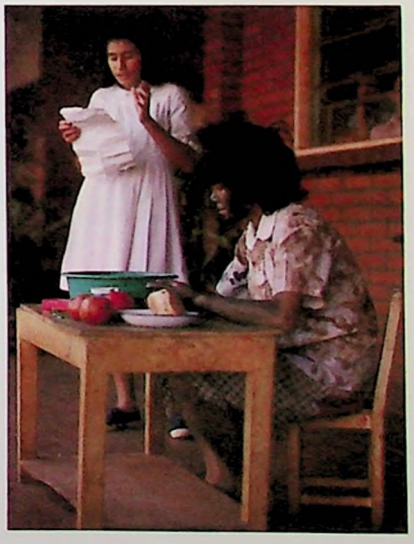
The design of the training component of the program should be tailored to the specific skills to be imparted, the existing levels of capability of the people to be trained, and the resources available for training. Since training program design is itself a fairly specialized skill, the assistance of a specialist in the area may be needed. If at all possible, in-country, local experts should be used because they will find it easier to design training programs that fit local needs and circumstances.

Community Participation

The ultimate test of the success of any water supply and sanitation project is whether or not people use the facilities. However efficient the program, however appropriate the technology, however superb the construction, and however smooth the operation and maintenance, it will all go for naught if the community ignores the new system. There is no way to absolutely guarantee that this will not happen but a strong community participation element from the outset of project develoment will surely help.

Community involvement should begin at the point at which communities to receive new facilities are selected. Experience in many countries indicates that villages that express a strong interest in having a new or improved system will maintain it better, abuse it less, and give it greater financial support than communities whose need may be greater but whose interest is weaker. The best indication of strong interest is the willingness of community residents to contribute to construction costs, either with money or free labor, and to pay a reasonable fee for service once the system is operational.

The system design for each project should be selected in consultation with the villagers who should be told about the alternative designs available and the costs of each. This increases the chances of selecting the "right" system for each community and, by increasing the participation of the villagers, increases their sense of responsibility for the system.



Successful community involvement takes time and effort and planning. It will not happen naturally and it cannot be done as an afterthought or treated as a burdensome duty grudgingly performed. Community participation is at least as important as facility design. No responsible program would be inattentive to the latter; it should not be inattentive to the former, either.

Putting Together the Development Approach

"I agree," the reader may be saying at this point. "We will use a development approach that addresses all of these factors to implement our plan for the Decade. But how, exactly, do we set about it?" The United States Agency for International Development has developed a set of materials called "Water for the World" that provides many of the answers.

There are two kinds of materials in the "Water for the World" series. First, there is a volume titled *Safe Water and Waste Disposal for Rural Health: A Program Guide*. This book was written for people in the developing nations who have or are interested in having the responsibility for developing a countrywide rural water supply and sanitation program. It is not primarily a technical manual. Although it gives an overview of water supply and sanitation technologies, other "Water for the World" materials contain far more comprehensive information

on technologies. The *Program Guide* is written for the program manager and includes advice on almost every aspect of setting up a program—technology, planning, community participation, training and economics.

The second part of "Water for the World" is a set of about 160 technical notes which describe in detail water and sanitation technologies, their planning, design, construction, and operation and maintenance. There are also technical notes on involving the community and on training for operation and maintenance. These technical notes will be invaluable in putting together a standardized development approach. They take each technology from start to finish and explain how to select a method of water supply or sanitation, how to plan the system, how to design it, construct it, and operate and maintain it. There are technical notes, for example, on springs, surface water intakes, roof catchments, dams, all types of wells, water treatment methods, water distribution and storage, privies, cesspools, septic tanks and sewer systems.

Virtually any technology that would be suitable for a rural village is covered and in enough detail so that with appropriate modifications for local conditions, the technical notes can be used as standardized designs. In addition, the technical notes on community involvement and training—together with chapters on those subjects in the *Program Guide*—contain the information needed to weave these elements into the development approach.

Begin putting together your approach to facilities development by reading these materials, especially the technical notes. Study them, give them to other people who are interested in the program: to engineers, training specialists, planners and community organizers. Discuss them, select the ones that are most appropriate for your country, and modify them to fit your needs. Then use them as the basis for building a development approach that will result in a successful and efficient water supply and sanitation program.

Prepared by
National Demonstration Water Project
for
U.S. Agency for International Development
under
Contract Number AID/DSAN-C-0063
Knowledge Synthesis Project
Environmental Health Information Activity

This document is a summary of a book entitled *Safe Water and Waste Disposal for Rural Health: A Program Guide* published as a part of "Water for the World" materials prepared under contract to the U.S. Agency for International Development. Other parts of "Water for the World" include about 160 technical notes on narrowly-defined technical topics and two documents similar in length to this one entitled *Executive Summary, Safe Water and Waste Disposal for Rural Health: A Program Guide* and *Program Planning for the Decade for Water.*

The views expressed in this document are the responsibility of National Demonstration Water Project and do not in any way represent the policy of the U.S. Agency for International Development. Information on this and other "Water for the World" materials may be obtained from the Development Information Center, Agency for International Development, Washington, D.C., 20523, U.S.A.

July, 1982