



## HUMAN RESOURCES DEVELOPMENT IN WATER SUPPLY AND SANITATION

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### INTRODUCTION

Human resources development is the heart of the overall development process. It provides the life-blood to all other forms of development, whether they be capital works, agriculture, education, monetary reform, or institutional change.

Developing country governments and donor organizations have had a continuing interest in the human resources development and training aspects of water supply and sanitation projects over the years. This was voiced at the Water for Peace Conference in Washington, D.C. in the mid-1960's, at the UN Water Conference at Mar del Plata in 1977, the WHO/ UNICEF "Health for All by the Year 2000" conference in Alma Alta in 1978 and stated strongly at the opening of the International Water Supply and Sanitation Decade at the UN in November 1980. Although individual projects have addressed the problem, efforts on a national, regional, or global scale have been rare. Today, more so than ever before, developing countries ministries and agencies concerned with water and sanitation are recognizing the need for human resource development and training strategies and programs.

WHO estimates that during the Water Decade (1980-90) the world will have about 2.5 billion persons who have inadequate water supply and sanitation. It is generally agreed that 0.5 to 1.5 staff persons are required per 1000 people served depending upon size and type of facility and program. This means that somewhere between 1,350,000 and 3,750,000 people will be required for all aspects of these programs. Furthermore, the required numbers could be increased because of turnover, new technology or other factors. Using an average figure of two million trained persons means that training systems must produce on the average 200,000 newly trained persons per year, 17,000 per month, 4,000 per week or 550 per day.

Although the time required to prepare a competent worker in a variety of simple tasks related to water supply and sanitation may be several weeks, much more lead time may be required to prepare competent personnel for the roles of engineers, accountants, health educators or administrators at the national level. Only a mechanism which can be sustained by the country itself can make it possible to prepare adequate human resources to manage, operate and maintain the water supply and sanitation facilities and programs needed to serve the 2.5 billion rural and urban people of the developing world. Self-sufficiency in human resources

development and training must be accomplished at the country, regional and local level to meet Water Decade goals.

A major obstacle to meeting human resources needs is the current fragmentation characteristic of water supply and sanitation programs. For the most part such programs are supported by international banking organizations, bilateral organizations, United Nation groups, and private voluntary organizations. Each organization often specializes in one aspect of water and sanitation systems such as village water supply and sanitation, national infrastructure development, peri-urban technical training in water and sanitation and urban water systems or public health education. As a result fragmentation within a single country or region is more common than it should be. Each developing country, and, in some cases region, should have a comprehensive strategy to achieve long term goals in water supply and sanitation. This paper will focus on a systematic approach to human resources development for water supply and sanitation programs ranging from members of local communities to be served in such programs through mid-level national and regional officials and technicians to government leaders.

### THE PLANNING, RESEARCH, EVALUATION AND TRAINING (PRET) MODEL FOR HUMAN RESOURCES DEVELOPMENT

The following assumptions can be made about human resources development for water and sanitation:

- The training and assignment of qualified people can be the major factor in initiating change in the water supply and sanitation sector;
- Water supply and sanitation services must be integrated into rural and peri-urban development;
- The broad-based foundation for water supply and sanitation services consists of a spectrum of personnel trained to perform services in the community and provide support at the regional and national levels; and
- The services provided at the community level must be coordinated with the levels above to ensure adequate two-way communication and continuity.

#### PRET for Developing Human Resources at the Community Level

Because many water and sanitation projects, especially in rural areas, are dependent upon local

participation and support for their proper use and maintenance, local communities, national organizations and donors must work together to solve the problems of improving water supply and sanitation. Characteristic of such task-oriented planning is a holistic approach to meeting basic needs, with attention first to those problems which are perceived as the most important by the community. This requires the following:

- Recognition of active community participation as an essential component;
- Flexibility;
- Continuing vertical and horizontal dialogue;
- A multi-sectoral approach; and
- A decentralized organization and mode of operation.

Planning stage:

Research and data collection including:

RANKING OF INFORMATION REQUIREMENTS

INFORMATION REQUIREMENT	UNITS OF TIME TO COLLECT INFORMATION*											
	1	2	3	4	5	6	7	8	9	10	11	12
1. Titles of all personnel working in fields that are relevant for this particular project, and their duties;	←→											
2. Existing staff patterns in organizations employing such people, numbers per category, assignments, evaluation of workers;	←→											
3. Listing of master performers in each category, that is, persons who are considered to carry out all the tasks and duties of the job category as well as possible (at least five needed in each category, working under different circumstances, different locations, and different supervisors);	←→											
4. Present recruitment methods, interviewing techniques, standards of acceptance;	←→											
5. Source of recruits both from within the present work force and from without;	←→											
6. Effect of competition from other sectors on quality of personnel recruited and retained in system;	←→											
7. Turnover rates for each category;	←→											
8. Reasons for turnover;	←→											
9. Rewards, incentives used to retain personnel;	←→											
10. Current methods for addressing unsatisfactory performance and future of the performer;	←→											
11. Management attitude toward training, time, and money allocated;	←→											
12. Entry level requirements for each category including education and experience and how determined;	←→											
13. Listing of existing education/training institutions, name, location, types of program, facilities, contact person, literature on program, quality of program, success of program graduates;	←→											
14. Listing of needed education/training institutions, name, location, types of program, facilities, contact person, literature on program, quality of program, success of program graduates;	←→											
15. Programs available for training trainers, vocational trainers, instructional technologists, technicians, etc.;	←→											
16. Availability of personnel to do task analysis, develop new methods for on-the-job training, evaluate training effectiveness;	←→											
17. Already existing reports from government, international organizations, academic community of training/educational needs.	←→											

\*Length of time unit will depend on quantity and quality of workforce used to collect information. A unit may be one week or several months.

- Current knowledge, attitudes, and behavior related to water use and excreta disposal in general;
- Attitudes of community members about their present water supply and excreta disposal systems;
- Community member perceptions of their environment and its relationship to their health;
- Their perceived needs and wishes regarding improved water supply and/or sanitation; and
- The incentives and constraints to implementing them as perceived by all community members.

Evaluation methodologies which include:

- Modifying plans to fit users' needs;
- Redesigning when necessary and choosing appropriate technologies;
- Analyzing individual, community, and outside contributions; and
- Designing socially relevant contracts for inside/outside resources through locally organized institutions.

Training programs which include:

- A joint effort of planners and community members in conceiving, planning, developing and implementing new programs;
- Developing appropriate new training techniques;
- Operating the new facilities and/or programs by users;
- Maintaining new installations and/or programs by users; and
- Applying the training effectively within the users perspective.

From this process it will be determined who are the most appropriate people for carrying out specific tasks, who should be trained and how.

#### PRET for Development Human Resources within the Government Hierarchy

##### Planning

All too often in the planning and implementation of large schemes human resource development is not provided for until programs are put into operation. Because of the need for long range and comprehensive planning selected individuals must be adequately trained in decision-making and have a commitment to the effective implementation of such programs.

The complexity of the problems of human resource development for a project which will affect a large segment of the population makes it imperative that proposed solutions be examined for direct and indirect effects on other activities. It is equally important to understand the context in which a problem exists. Projects must first be viewed within the limits of government obligations and resources (people time, money), next within the limits set by project objectives and capabilities, and finally within the larger context of future government goals. Over and over again, the questions must be asked, "Why do it this way?" and "Why

do it at all?" In order to arrive at satisfactory conclusions in the above process, it is necessary to know who will do what, when, where and how.

In establishing the objective for a plan, the following questions must be kept in mind:

- What is the real problem?
- What are the constraints to solutions?
- What is the current situation and what are the assumptions about the future?
- How has the problem been addressed in the past? Is a new approach warranted?
- Who should participate in the decision-making process?
- How will project activities interrelate with the actions of other government agencies, international organizations, the educational community, the recipient community, and other parts of the same project?
- What are the consequences to be expected from actions taken or not taken?

##### Research

In addition to the research and information necessary at the planning stage, research is also necessary during implementation, evaluation and training in order to fill gaps in knowledge which are bound to occur in each of these aspects of a program. If any of the information called for in planning is not available (such as present practices and attitudes among recipients of the services, resource constraints, policy of a particular group within government, appropriateness of technologies being considered, etc.) it will be necessary to do research.

##### Evaluation

Once the required information has been assembled, it must be evaluated and packaged to support the above objectives and the overall objectives of the entire effort. The following questions will have to be answered:

- Is the information relevant to the problem?
- How will the information help resolve the problem or allow the government to meet its responsibilities?
- Is it consistent and/or valid? If the validity is questionable, how can this be resolved?
- Must the information be conditioned by assumptions before it can be applied? If so, are the assumptions reasonable, clearly stated, and generally accepted? Under what conditions might they be invalid?
- Can the information be used in other places and circumstances in the future, thus reducing future costs of information collection?

After the information has been evaluated the following questions and suggestions should be considered:

- When considering the full range of possible actions - from the most ambitious to the do noth-

ing - which options appear most reasonable?

- What criteria are appropriate for determining the feasibility and/or desirability of alternative actions?
- What are the benefits, costs, and risks planned as well as secondary, of each alternative?
- Which of the constraints can be influenced by the attitudes, politics, and other characteristics of management, and can they be overcome through the use of authority and assertiveness?
- If no clear choice emerges what suitable techniques can be employed to clarify and justify a decision?

After having reached a decision, the following checks and balances on the choice can be made:

- Have specific contractual, statutory, regulatory and job-related responsibilities been satisfied?
- Is the choice defensible? Would the same choice be made a year from now, given the same limits of knowledge, resources and circumstances?
- Has the decision making process been documented? Did the process lead to a better decision than would have been reached without it?

Evaluation, particularly with participation of users, during implementation will determine what changes are required to make the program more successful and even whether or not the program should continue. The stages at which a program is evaluated should be synchronized with the stages at which critical decisions are made.

The actual evaluation should include:

- Inputs (i.e., people, facilities, financial resources, and technological resources);
- Processes (i.e., training, administrative support, and technical support);
- Outputs (i.e., facilities installed, personnel trained, organizations advised and programs initiated); and
- Effects (i.e., reduced mortality, reduced morbidity, increased work days/year/person, and acceptance).

### Training

Systematic procedures for providing the needed human infrastructure will be required to supply the full range of manpower needs for water supply and sanitation in developing countries as follows:

Manpower Needs Assessment: Determination of the numbers of personnel needed in each job category, the time when each of these persons must be available for their job, the required competence level, and where they will come from is fundamental to any human resource development and training program.

Development of Job Descriptions and Task Analysis: In order to assure that properly prepared persons are placed in positions and/or that proper training can be provided for positions where competent personnel are not available, it is necessary to describe the skills and knowledge required for each task and the tasks that are included in each job.

Determining Resources Available: Wherever possible use should be made of existing resources. Existing institutions, organizations, materials, human resources, trainers, etc. should be identified.

Developing Training Delivery Systems: Because two million water supply and sanitation workers over the next decade will require many kinds of training systems options must be considered which range from traditional formal educational systems to innovative self-teaching programs using various media and in relevant languages. Country workshops should be held to train trainers to go back to their areas to carry out the development of systems for training.

Training of Trainers: The actual training of the two million people will be carried out by thousands of trainers at the village, community, provincial and national level in each developing country. Thus, each workshop in such a program must develop trainers who will return to their home area and train others--to train others--to train others. Therefore, all activities, materials and efforts must be so developed that the transfer of information and skills can occur.

Developing Personnel and Training Strategies: In order to maintain a body of trained personnel and prevent large turnover rates and "brain drain" among water and sanitation professionals, personnel must know where they fit into their own system and know of career opportunities and training available to help them move ahead.

### CONCLUSION

With this systematic approach it is believed effective implementation of a wide variety of programs can be implemented. Constant evaluation, both formative and summative, will be necessary to assure that the intended beneficiaries indeed benefit.