Rural Water Supply in Developing Countries

Proceedings of a workshop on held in Zomba, Malawi, August 1980
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Microfiche edition available
Rural Water Supply in Developing Countries

Proceedings of a workshop on training held in Zomba, Malawi, 5–12 August 1980

Sponsored by:
Government of Malawi
International Development Research Centre
Canadian International Development Agency
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Rural water supply development is a field requiring the combined technologies of most disciplines of engineering. Professional personnel such as hydrogeologists, civil engineers, sanitary engineers, mechanical engineers, and electrical engineers are indispensable. At the subprofessional level surveyors, geology assistants, engineering assistants, draftsmen, construction foremen, drillers, mechanics, welders, and electricians are needed.

In economic and social development, the key factors that govern the pace of progress are natural resources, capital, and skilled manpower. In developing countries, where priorities for the allocation of scarce financial resources are based mainly on economic projects that are considered directly and immediately productive, rural water supply development suffers from the chronic problem of lack of financing. As a result, it is difficult for this sector to compete with other sectors to obtain the technical manpower required. Thus, in many cases the sector is forced to develop its own skilled manpower at all levels through training, mostly with external assistance. Training for water supply development, therefore, becomes essential for most countries.

In the case of Ethiopia, two factors may be cited as the major obstacles hindering the natural development of manpower in the water supply sector.

1) General shortage of skilled manpower: The prevailing general shortage of skilled technical manpower in the country makes it difficult to acquire new staff because stiff competition among employers is created. The usual result is that water agencies cannot offer as attractive employment conditions as other similar organizations. This state of affairs is detrimental to the intentions of a water agency to expand its manpower to meet an accelerated program such as the International Drinking Water Supply and Sanitation Decade. To improve this situation, government has started allocating graduates from institutions of higher education to various organizations on the basis of priorities.

2) Less attractive system of employment: The water sector in Ethiopia has less attractive salary scales than most other competing organizations. Furthermore, there is no rational system of promotion as yet. Thus, the water sector has not attracted an adequate number of qualified staff. These factors coupled with others make special training necessary in order to obtain additional manpower.

Prior to deciding on training, a thorough assessment of existing and available manpower should be carried out. The extent of manpower deficiency at all levels and for all categories should be defined. This assessment or survey should aim toward providing knowledge on: (1) type, number, and qualifications of all key personnel at all levels employed in the water development agency; (2) the type and qualifications of skilled manpower available for employ-

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Manpower Surveys in Ethiopia

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ment; (3) the manpower available within the country for further training; and (4) technical training institutions within the country and their capacity.

All information pertaining to the availability of manpower outside the agency is normally established during the search for prospective employees. Where rural water supply and all water-related development are centrally coordinated, which is the case in Ethiopia, information can be obtained easily through the central institution (e.g., in Ethiopia from the Commission for Higher Education and the Ministry of Labour). Upon completion of the manpower survey, deficiencies at the various levels can be determined and planning and organization of training programs to eliminate the deficiencies can begin.

Scope of Survey

The survey should provide adequate information on the number and type of manpower engaged in water-development activities. In assessing available manpower, one should carefully determine the type of staff at all levels, standard of education and training, and current performance. Information on prevailing systems of employment should also be gathered.

Given that a detailed development plan has been prepared and that this plan contains comprehensive information on all the inputs required for its realization, one would then assume that a forecast of skilled manpower requirements at all levels has also been made. A manpower survey would provide information on the availability of manpower from regular sources. The survey would also establish whether or not there is a deficiency of manpower and if so, would supply indications of where these deficiencies lie.

It is not so simple to make an accurate forecast of manpower requirements. At best these forecasts are only guides. Nevertheless, on the basis of acquired experience, and where such experience is lacking on the basis of normal engineering assumptions, standards for manpower requirements must be established. From such standards, and in relation to the targets set in the development plan, the number and categories of personnel required for rural water supply development activities are derived.

The types of activities would vary depending upon the system of water supply selected. The most common systems for rural water supply in Ethiopia are boreholes, hand-dug wells, spring improvements, ponds, and cisterns. The individual components of activities that are carried out at various stages are: siting, surveying, designing, drilling, test pumping, pump installation, construction and distribution of reservoirs, and construction of wells and spring improvements. Also, maintenance and repairs of water supply installations are activities which come at a later stage but for which an estimate of manpower must be made. Projections of manpower requirements are made on the basis of assumed standards for each of these activities.

Future Projections and Training Plans

In Ethiopia, rural water supply, urban water supply, and hydrometeorology are under one authority. Programs of manpower development are centrally carried out for all three subsectors.

Having made projections of manpower requirements to fulfill planned targets for all categories, one must now identify the source from which all the manpower in excess of what can be obtained from known sources should be obtained. An assessment of the capacity of existing national institutions and a forecast of the likely number of new graduates that may be attracted to the water development sector, based on past experiences or extrapolation of experiences, should also be made. The balance of manpower required to implement the plan will have to be obtained through training.

Training may take the form of upgrading the skills of existing staff or training new recruits. For lower level technicians, the type of training needed to upgrade
employees may be different from that required to train new recruits. One can set the minimum academic standard for new recruits but this may not be possible for existing personnel who compensate for their lack of formal education with job-related experience. Generally, upgrading courses for existing personnel may require more of the theoretical aspects, whereas the recruit courses may emphasize practical application. Evidently, priority needs to be given to the more specialized categories such as drillers, pump operators, and hydrometeorology technicians. The requirements of training, duration, and curriculum will change depending upon the type of personnel available within the country for training. The survey should, therefore, attempt to provide as much accurate information as possible on all aspects of available manpower.

Recommendations

Prior to the planning of training programs, a comprehensive survey of manpower in the field of water supply is essential. The manpower survey should provide complete information on all aspects of manpower including: (1) availability of manpower in all categories and at all levels; (2) standards of training and education; (3) conditions of employment and performance; and (4) existing institutions for training within the country. If a water-development plan has been prepared with a manpower-requirement forecast, manpower requirements should be determined by comparing the forecast with available manpower. If there is no long-term development plan, the survey may establish the needs of manpower on the basis of current activities and annual plans.