

Rural

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held in Zomba, Malawi,
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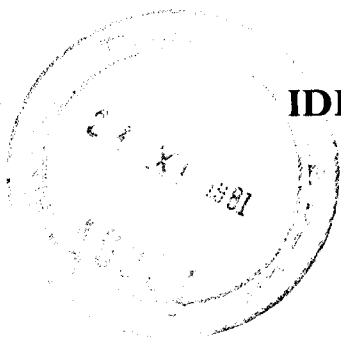
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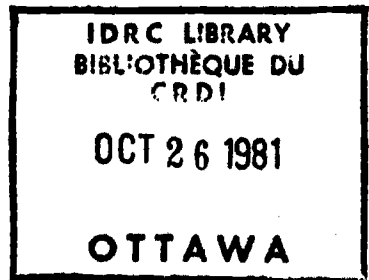
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Rural Water Supply in Developing Countries

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



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Training of Workers for Piped-Water Schemes in Malawi

H.R. Khoviwa¹

Malawi is blessed with abundant water resources. The average rainfall is 1145 mm, ranging from a minimum of 635 mm, to a maximum of 2896 mm. Runoff averages 17 percent, and gross water availability, based on a population of 6.0 million, is estimated at 9000 litres per capita per day. Water supply during the dry season (May–November) is eased by natural storage provided by lakes, swamps, and dambo areas. Several major rivers and numerous mountain streams flow year-round. Malawi is, therefore, in a favourable position, in terms of available water resources, to respond positively to the challenge of providing clean water and adequate sanitation.

Malawi has made remarkable progress during the past several years in providing safe water supplies to the rural population. The sources of supply are piped-water (gravity) systems, protected shallow wells, and boreholes. Piped-water systems offer the most convenient service because water is provided through multiple communal taps.

Organization

The rural piped-water program is administered and technically supported by the Rural Water Supply Section (RWS) of the Department of Lands, Valuation and Water (DLVW). It is implemented by extension workers and self-help labour. The

extension workers consist of 60 water foremen and water operators who are, in turn, supervised by the regionally-based project engineers. The levels of supervision are office staff, headed by the principal water engineer of the RWS; and field staff, consisting of the project engineer, water supervisor, water assistant, water foreman, water operator, and village-level self-help labour.

The actual number of water assistants, foremen, and operators assigned to a region at any one time depends upon the number of rural piped-water subprojects being implemented in that region. The field staff, consequently, is transferred from region to region as required.

Ten trainees are recruited annually, and employed at the lowest level of water operator (ungraded). After an initial interview, trainees are given a combined selection/training course for 2 weeks. Once selected and employed, water operators can be promoted to increasingly higher ranks (up to the rank of water foreman) by completing 1–3 years of on-the-job training and attending upgrading courses offered at the Ministry of Works and Supplies (MWS) training centre at each level. The best and the brightest of water foremen, in turn, can then be promoted to the highest ranks of field and head office staff.

The self-help labour concept advocates that the communities served should be involved at every stage in the development process. The members of the community should regard the project and the resulting

¹Technical Officer, Department of Lands, Valuation and Water, Lilongwe, Malawi.

supply as their own and should be motivated to build and maintain it accordingly.

This is achieved through Malawi Congress Party and government leaders meetings with the prospective users to determine their collective wishes and commitments. Thus, from the time of identification of a suitable project, with respect to the supply areas, the local people participate to the fullest extent of their capabilities until the completion of the project.

Training

Training in the gravity scheme is carried out at three levels: the technician, field assistant, and user levels.

Technician Level

Students graduating at the diploma level of engineering from the Polytechnic, one of the colleges of the University of Malawi, have been trained for 3 years in civil, mechanical, and electrical engineering. Graduates taken into piped-water schemes to fill the position of water supervisor are those who have specialized in civil engineering.

The new graduate undergoes a 2 week induction course and then is sent to supervise an on-going project. Here, the graduate will work closely with the project engineer who designed the project to implement the design. This involves supervising the construction of the intake weirs and the sedimentation and storage tanks, and the laying of the pipeline to the distribution tanks and villages. This requires working closely with the field assistant who translates instructions into a properly constructed design. After 6 months of on-the-job training, the trainee is given a project to design and execute.

Field Assistant Level

The field assistant is taken from the junior certificate level of secondary education, after 10 years of education. His position in the scheme is that of a water operator. Ini-

tially, the field assistant is assigned to an experienced field assistant and only when the trainee proves competent is he given a project to work on independently. If, after independent project work, the trainee continues to exhibit competence, he may be promoted to the position of water foreman or water assistant.

Because the success of the project depends upon community input as well as proper engineering design, the field assistant's role of linking the people to the engineers is one of the most important in the project. The field assistant is trained for 2 weeks in aerial photograph interpretation, map reading, community organization, and leadership in preparation for both the technical and social aspects of the job. In the field, the field assistant is expected to convene meetings for the community, organize the community into action committees, mark out the network of pipelines on the ground, mobilize the community through the action committees to dig trenches for the pipeline, and at the same time supervise the digging itself. Here, the field assistant's job training includes use of various types of tools and how to work with different types of pipes.

User Level

When a project is planned for an area, the local leaders are approached to assess and encourage their willingness to participate in the project to improve their water supply. The leaders approached are the chief and the chairman of the local Malawi Congress Party branch, who are the key people in any village. These leaders work closely with the field assistant who starts teaching them community organization. The leaders are asked to call meetings at which the field assistant can acquaint the community with the aim, scope, and logistics of the project. At this stage, the community must be convinced enough of the ease of water collection and health benefits that the project will bring, that they will be motivated to join in the project work. Village committees and committee leaders are then selected. They decide within the limits imposed by technical needs, the water-

point sites and, hence, the pipe routes, and they provide the unskilled labour, such as pipe trenching and sand collection for the installations.

For the overall project, there is an elected committee which organizes the labour and within this there are area or village groups with their own specific tasks and programs. The work is supervised by trained government officers and assistants.

Upon completion of the project, the committees are instructed in the simple requirements of maintenance and are then expected to carry out their own maintenance, except for occasional visits by the department's area supervisor or when emergency assistance is required (e.g., damaged intake).

Problems and Recommendations

The basic problem with training at all levels, except the users' level, is that too

much must be learned on the job, which reduces both learning and job effectiveness. Formal training by the organizers of the project is quite intensive, but it still does not provide enough time to prepare for the varied roles to be played while in the field. In particular, the field assistant's formal training is inadequate for the technical work given to him by the technician. The field assistant must be able to explain and demonstrate the work to people with absolutely no technical training.

It is recommended that the RWS produce a training manual to expand and standardize training at all levels, as well as to underline the responsibilities of each position.

A group of employees needs to be incorporated into the organization to monitor and assess the effectiveness of the completed scheme on a continuing basis. This would provide more reliable maintenance, repairs, and information for the improvement of future schemes.