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Martin Burton

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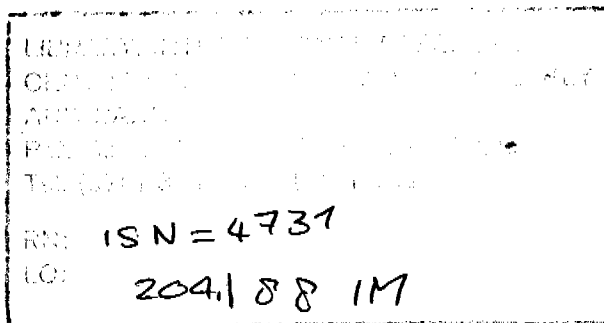
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**IMPROVING WATER MANAGEMENT IN DEVELOPING COUNTRIES:
A QUESTION OF TRAINING**

Martin Burton



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IMPROVING WATER MANAGEMENT IN DEVELOPING COUNTRIES:
A QUESTION OF TRAINING

Martin Burton

1. THE SETTING

This paper is the second in a series summarising the reports presented and the discussions held at the Thirteenth Congress of the International Commission on Irrigation and Drainage, held in Casablanca, Morocco in September 1987. The central theme of the Congress was *Improving water management in developing countries*.

Mary Tiffen has already summarised Question 40, *Rehabilitation and modernisation of irrigation and drainage projects for improving water management*, (ODI-IIMI Irrigation Management Network Paper 87/3b). This paper deals with Question 41: *Improving water management through training*.

It is the intention of this paper briefly to summarise the reports presented at the Thirteenth Congress and to draw the reader's attention to reports which are considered to be of particular interest. This is necessarily a personal view by the author, but is based on the objectives laid down for this Question by the ICID International Executive Committee. It is hoped that the reader may be able to make reference to the reports which are published in the Transactions of the thirteenth ICID Congress, Volume 1-C. These should be available through the various National Committees of the ICID. The address of your National Committee can be obtained from the ICID Central Office, 48 Nyaya Marg, Chanakyapuri, New Delhi 110 021, India.

2. THE QUESTION: IMPROVING WATER MANAGEMENT THROUGH TRAINING

In defining the scope of the question the ICID International Executive Council laid particular emphasis on requesting details of actual training programmes which had been undertaken, not on theoretical treatments of the subject. Authors were requested to provide details of such aspects as the scope and content of the training, the methods used, numbers of participants, and an evaluation of the programme.

Papers were requested on topics which covered all aspects of a project, from water control to marketing, for water users, operation staff and managers. Note was taken that there are two complementary aspects of water management training. Firstly there is training in the scientific knowledge and physical techniques which must always form the basis of efficient management and operation. Secondly there is the development of new managerial skills such as critical path planning, interpretation of available data, organisation, staff motivation and a better understanding of staff motivation and needs.

The main headings under which papers were requested were:

- 41.1 Definition of training, identification of training needs and objectives
- 41.2 Training of water users
- 41.3 Training of operation and maintenance staff in the 'best' supply of water to users
- 41.4 Training of senior project management
- 41.5 Methods of training operators and scheme managers, including on-the-job training, external courses, the use of computers, simulation studies, and role-playing games, audio-visual aids, etc.
- 41.6 Criteria and methods for evaluating training performance

3. THE ANSWERS

There were 33 reports from 21 countries accepted for presentation and discussion at the Congress. Presentation of the reports was limited to a very brief summary and an update on the project since the report was written. Mr H Boumendil, as General Reporter, produced a most comprehensive summary of each report as well as an overall summary of the issues raised (Boumendil 1987).

3.1 Classification of the reports

Mr Boumendil produced a most useful breakdown of the subject areas of each report. They are repeated here for those interested in locating and reading reports on the individual issues. Some reports appear more than once as they cover several topics.

a) General

Identification of training needs and criteria for assessing good water management: R 1, 4, 7, 9, 13, 14, 17, 22

Training for water management (general): R3, 4, 5, 6, 7, 9, 13, 14, 15, 16, 17, 20, 21, 22, 23, 24, 25, 26

Training during thorough project evaluation: R 18

Problems of functional co-ordination: R 1, 2, 15, 19, 21, 23, 26, 28, 33

General status and problems of irrigation and drainage projects: R 26

b) Training of water users

Scope and content of training at field level: R 1, 2, 3, 4, 9, 10, 11, 12, 14, 15, 16, 18, 19, 20, 21, 23, 25, 27, 28, 30, 33

Training of Water Users' Associations: R 2, 3, 10, 11, 19, 21, 23, 30

Training farmers to participate in planning and design: R 33

c) Training of operation and maintenance staff (O&M)

R 1, 2, 3, 4, 7, 9, 11, 12, 13, 15, 16, 17, 18, 19, 21, 23, 25, 31, 32,

d) Training of senior project management staff

R 1, 4, 5, 6, 8, 10, 11, 13, 15, 16, 17, 21, 22, 24, 25, 29, 33

e) Use and application of micro-computers

For improving water management of the systems: R 2, 3, 8, 10, 12, 26,

For improving irrigation at farm level: R 2, 27, 28

f) Costs of training

R 6, 13, 19, 30, 31

g) Criteria and methods for evaluating training performance

R 3, 4, 7, 9, 12, 13, 17, 20, 22, 32

3.2 Reports of particular interest

Most of the reports were informative and interesting, though one or two had little to do with the Question. Several of the reports were of particular interest, as they described actual training programmes and gave very detailed accounts of how the training was done, who was trained, what techniques were used, and what the outcome of the programme was. The reports were:

R 5 W G Matlock. Training to improve productivity in arid and semi arid lands

R 9 Chan Choong Cheong. Water management training in Malaysia

R 12 D J Bandaragoda, J J Enneking, J W Jayawardene and L C Wattel. Micro-computer modelling: A powerful aid in improved water management

R 16 P Santosa. Water management training in Citagampor, Central Java, Indonesia

R 19 A E M Van Vilsteren and Poolsawat Duanduan. Training of O&M staff water users' groups by task force

R 30 N A N'Diaye, G K Faye, N H Degboue, M Seck and F Conac. Training in irrigation at Caritas, Senegal

Report R 5 by W G Matlock argues the case for the development of appropriate training courses for irrigation staff and water users on small-scale irrigation systems in developing countries. He comments that traditional water management training programmes provided by universities

In developed countries such as the USA lack relevance to developing country problems in content and method, partly because of their emphasis on large system and high technology, and partly because they ignore the difference in the agronomic, social and economic environment. He goes on to outline how such deficiencies can be resolved. The report is well written, well argued and detailed.

Report R 9, by Chan Choong Cheong, gives a detailed and well written account of developments in water management in Malaysia. The report gives a brief introductory background to irrigation in Malaysia and the problems that are being encountered in water management. Malaysia is undertaking a number of upgrading programmes for its existing irrigation schemes, which are dominated by field to field cultivation of rice. The programmes include the provision of additional irrigation, drainage, and road infrastructure, at both scheme and farm level. However, it is recognised that attainment of 200 per cent cropping also depends on increased co-operation between farmers and increased farmer understanding of the implications, advantages and constraints of new structures and different scheduling systems. The report then goes on to details the training in water management that is given at the National Water Management Training Centre (NWMTC), giving information on organisation, types of training courses, curriculum and methodologies. Most of the courses are for personnel at different levels involved in planning and operating projects, but there are also courses for farmer leaders. The Centre developed its training materials in association with a 4.6 ha demonstration farm on the campus and 4 pilot farms in a nearby irrigation scheme. The report would provide useful guidelines for any organisation considering setting up a similar training centre.

Report R 12 by D J Bandaragoda, J J Enneking, J W Jayewardene and L C Wattel, gives a good account of the development and use of a computer model to assist the relevant government agency in resources planning and water management of a 50,000 ha irrigation system in Sri Lanka. The report gives brief background information of the irrigation network and model, together with details of the data collection and processing required. It outlines the implementation and use of the package during the 1983-84 Maha season and the staff training that was necessary. In the conclusions,

the authors give some useful recommendations for training of staff in the use of such packages.

Report R 16, by P Santoso, gives detailed outlines of training courses for all levels of irrigation service staff as well as for water users' associations and farmers. The particular problem that the courses seek to address is that in Indonesia, many different bodies are involved in irrigation. These include planning and design by the Directorate General of Water Resources Development, the irrigation branch of the Provincial Public Works departments for construction and O&M of the main system, the Water Users' Association for construction and O&M of tertiary system, guidance on water utilisation from the District Agricultural Service extension offices, and development and guidance of water user associations through the various levels of the Local Government system. The local government also co-ordinates all agencies involved in irrigation. There is a tendency for each of these bodies to look at irrigation from its own point of view, and to blame one or more of the others for deficiencies and illegal breaking of the rules. The objective of training is, therefore, to bring people together from the various institutions and to promote common understanding as well as to increase the knowledge and skill of the personnel. The report is of practical use to others involved in setting up such training programmes, providing details of course syllabi and training techniques. Mr Santoso usefully qualifies the benefit of the training programme by pointing out that their success in implementation is limited by a lack of facilities, such as current meters for discharge measurement and power in enforcing the water law.

Report R 19, by A E M van Vilsteren and Poolsawat Duanduan gives a most comprehensive outline of the training programmes established by a special "Task Force" training team set up by the Royal Irrigation Department for the Male Klong Irrigation Scheme. The report details concisely the programme followed for the training of the Task Force team and the subsequent training of irrigation staff, water user groups and farmers. The report provides information lacking in many other reports on evaluation of the training programme. Though it acknowledges difficulty in attribution of the improvement of the project irrigation efficiency to the training programme, and to other aspects of scheme development, the survey detailing the positive change in farmers' attitudes to the Agricultural

Extension Department before and after the project is excellent. This was a most valuable contribution to the Congress.

Report R 30, by N A N'Diaye, G K Faye, N H Degboue, M Seck, and F Conac, details training programmes for farmers and agricultural extension staff in Senegal. The report makes the case for the training of farmers in matters of irrigation, in rural centres, by Africans. It details some exciting programmes ranging from long term courses of two years for village secondary school leavers to training of rural school teachers in irrigated and rainfed agriculture. A novel summer holidays camp where urban schoolchildren are placed with rural schoolchildren to learn about elements of agriculture is described. The training is organised by a non-governmental organisation, Caritas-Senegal. It utilises cost-effective methods well adapted to the needs of the participants. The original paper is in French. As one example of financial training for illiterate leaders of farmer groups it quotes the paper by Guy Belloncle. An English version of this is available from ODI (Irrigation Management Network paper 9c, 1984).

In addition, reference is made to report R 4 by M A Burton, Ir Darsun Kartodirendjo, Arief Effendi, Ir Tjajo Santoso and I K Smout entitled *Training in water management: A practical approach for managers and operators in East Java, Indonesia*. This report is similar to R 15 and R 19 in detailing training programmes established for both water users and irrigation service staff. The report provides a detailed account of procedures and timetables followed in setting up the training programmes. M Boumendil describes it as a "very comprehensive report". Versions of this paper are available from ODI (ODI-IIMI Irrigation Management Network Papers 86/1d and 86/1e. The first refers to training of irrigation staff and the second to training for farmers).

4. CONCLUSIONS

The 33 reports covered many aspects of training in water management, from Master of Science courses to the training of Senegalese schoolchildren. Approximately 6 per cent of the reports dealt with training of farmers, 12 per cent with the training of O&M staff, and some 40 per cent with both.

Some 30 per cent of the papers dealt in general terms with training in water management in either educational and training institutions, or for a particular country.

One interesting point that comes out of the reports is whether training programmes should be held at specially constructed and equipped central water management training centres or whether they should be mobile. In the first instance, the trainees are away from home in (possibly) an urban or alien environment, whilst the trainers are 'at home'. In the case of mobile training units, the roles are reversed. It is the trainers who have to adjust. There is probably the need for a mixture of the two, a central training centre with adequate demonstration facilities for training programmes for more senior staff, and mobile units for irrigation service field staff, water users and their associations. The greatest benefit will be derived from such a mixture where the training staff are involved in both types of training.

The conclusions and recommendations issued by ICID following the Congress in respect of Question 41 are reproduced below:

"Congress participants agreed that it is possible to improve water management through training.

Training should be considered part of the 'business' of managing an effective organisation.

Major recommendations are:

1. Initial training of project operational and maintenance staff should be completed by the time of the project commissioning. Such specific training costs should be part of project development costs.
2. In developing training strategies and programmes for improving water management in existing schemes the following key requirements should be borne in mind:

- 2.1 Programmes should be developed to provide for long term needs by an effective training needs analysis, related to clearly stated and agreed organisational objectives.
 - 2.2 Parallel programmes for management, operation, maintenance and administrative staff should be implemented.
 - 2.3 Water users and their associations should be involved in developing training strategies and receiving complementary training.
 - 2.4 Such training should generally be as close to the field and canal systems as possible, to ensure practical orientation.
3. ICID should develop strategies for improving institutional management processes to develop and implement effective training programmes."

Training in water management and related issues is essential for all concerned if the best use is to be made of the available resources. The reports to the Thirteenth ICID Congress have made a valuable contribution to the state of knowledge in this key subject area, and have provided some useful reference works for those involved in establishing such training programmes.

5. REFERENCES

The full set of reports detailed above can be found in the Transactions of the Thirteenth ICID Congress, Volume I-C, published by the International Commission on Irrigation and Drainage, 48 Nyaya Marg, Chanakyapuri, New Delhi 110 021, India. The summary is available from the same office, the English version being:

Boumendil, H. (1987) Improving water management through training, General Report, Question 41, Thirteenth ICID Congress, Casablanca, Morocco.



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