



# Irrigation Advisory Services and Participatory Extension in Irrigation Management

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TRAINING FOR IRRIGATION  
WATER MANAGEMENT TRANSFER  
A CASE STUDY REVIEW

by  
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# Training for irrigation water management transfer

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A case study review

# Training for irrigation water management transfer

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## 1 Background

Training is recognised as a critical component in the success of irrigation management transfer (IMT) but surprisingly there is a lack of useful, documented information on training initiatives, who undertakes them and how effectively they contributed to the transfer process. So there are few guidelines for others to follow. In 2001 IFAD and FAO instigate a brief review of IMT training undertaken in recent years. From this it was hoped that a number of common issues would emerge that would be of value to others preparing similar training initiatives. This paper presents the results of this review.

## 2 Introduction

In many countries governments have traditionally maintained a strong hold on the development of irrigation. This has often been justified by the strategic importance of water, the high cost of constructing irrigation schemes, which go well beyond the reach of most farmers and farmer groups and the fact that water resources management decisions can affect people and the environment of those outside of irrigation.

But experience in irrigation, as in other sectors of natural resources management have often shown that while government may be good at taking a national planning perspective they are not so good at managing resources at a more localised level. Managing the main canal systems in a country like India, for example, requires major resources and expertise because of the large discharges involved and sophisticated headworks, and government is well placed to provide such expertise. But just how far down the system should such control be exercised? There comes a point when, not only is it prohibitively expensive to maintain such external control but it may also be unnecessary.

The transfer of responsibility for the operation and maintenance of irrigation from government to farmers (referred to as Irrigation Management Transfer – IMT) and the increase in farmer participation in irrigation is part of a worldwide trend that has been gaining momentum over the past decade. A great deal has been written about the success that some countries have experienced in this process including improved productivity, reductions in water wastage and lower operating costs. But there has also been significant institutional change with much effort devoted to reform. Many traditional government structures have been dismantled with large job losses while new associations of water users have been formed by farmers to take over the responsibility of managing irrigation systems. Professional and technical staff as well as farmers have had to learn new skills and adjust their attitudes towards this new socio-economic environment that is so very different from the one in which many have worked for most of their lives.

Capacity building is linked to institutional reform and without doubt training plays a major role in this process of change. Everyone recognises the importance of training but when it comes to investment in training there seems to be a blind spot. There is a preference for concrete infrastructure rather than investment in people. Few planners and project designers know how to set about capacity building in a systematic way and so it is often relegated to a few lines in project proposals and is assigned some modest percentage of the funding available without too much definition as to how it will be spent. It is not so surprising therefore that, in spite of its importance, very little has been written and published on training and what is available tends to be in the form of technical handbooks so geared to a specific locality as to have only limited use elsewhere. This situation has been exacerbated in recent years by the increasing amount of training being undertaken outside the traditional government training centres by NGOs that do not normally have the resources to publicise their experiences. They tend not to collect the data, analyse it and publish it in the same way as governments and international agencies do. The result of this is that many countries, embarking on this process of change, have little or no experience of the training demands that they face and there is a dearth of information available in written form that they might draw upon to see how others have tackled similar problems. They therefore set about re-inventing the wheel and inevitably making the same mistakes that others before them have made.

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### 3 The review

The lack of useful, documented information on training initiatives and the need for new approaches led IFAD and FAO to instigate this review of IMT training undertaken in recent years. From this it was hoped that a number of common issues would emerge that would be of value to others preparing similar training initiatives. It firstly involved a wide trawl for information on training using various contacts known to IFAD, FAO and the consultant. From this a number of case studies emerged with both a geographical spread as well as a spread of different approaches to training.

Approximately 12 training projects were considered in the early trawl from Albania, Bhutan, Ecuador, Egypt, India, Macedonia, Morocco, Pakistan, Peru, Turkey, Vietnam and Zambia. From these 5 have emerged as case studies in this review. These are from Bhutan, Ecuador, Morocco, Peru and Zambia. Each is either on-going or has been completed recently. None of the major IMT programmes in countries such as Mexico, The Philippines and Turkey are included. There is undoubtedly much to learn from them but the information is just not available in the public domain in a way that is accessible for a review of this nature. This is symptomatic of the problem that initiated this review.

The review does not pretend to be complete. It is more of a first attempt to see what is available. It is biased in that it concentrates on those programmes that have been well reported in the grey literature in terms of planning, design, implementation and particularly evaluation. Equally important, was the availability of the principal instigators of the programmes (from international consultants and NGOs) for interview. With hindsight this was a vital element because without the personal interviews it would not have been possible to draw up the case studies so comprehensively on the literature alone. Visits were made to The Netherlands, Germany, Italy and the UK for the interviews. Unfortunately it was not possible within the scope of this review to visit the countries themselves to obtain an 'insider' perspective.

It is hoped that those who have responsibility for planning and designing projects in irrigation will find this review of benefit as there is always a great deal to be learnt from others who are further down the pathway. The recommendations made are based on the need to bring more information together in a form that can be readily used by those implementing IMT training. It is also intended to initiate further discussions and actions in training.

### 4 Case studies

Based on the information available and the proximity of principal instigators for interview, five case studies were selected for review (sections 2-6). They provide a geographical spread as well as a spread of different ways of approaching training. All deal with smallholder irrigators but under different circumstances. Some have relied heavily in the past on government agencies for inputs (Peru and Bhutan and to some extent Morocco) and are now being encouraged to manage on their own. Others have farmed independently of government (Zambia and to some extent Ecuador) but new linkages are being created with government to help them improve their productivity.

The case study from **Peru** demonstrates how effective training can be when it is planned properly in the same way that other development activities are planned with objectives and outputs in mind. Peru is a country with a large traditional government bureaucracy running most of the smallholder irrigation schemes and so the turnover process was not only large but also complex. Training was the main vehicle used to introduce change. It was implemented by government with the support of an international NGO. Planning was meticulous and well thought through using log-frame analysis that clearly set out the objectives of the training and what was to be achieved. Peru has well entrenched attitudes to irrigation management and so the training was designed to produce major changes in attitude both among the engineers and technician working within the Ministry of Agriculture as well as among the farmers. Three principal training modules were used to train the trainers, who then trained the professionals, who in turn trained the farmer leaders of the WUAs. Participation was at the heart of the training process and each module addressed knowledge, skills and attitudes and recognised the need for their integration.

The case study from **Zambia** is very different to that of Peru in that it addresses a very different irrigation development process. The Zambian government advisory and support services are less well developed

than those in Peru and as a result, smallholder irrigation farmers tend to work on their own and do not rely on this kind of government support. But Zambia wants to help more farmers to take up irrigation and encourage existing farmers to improve their productivity to help solve the country's major food security problem. It sees strengthening its advisory and support services to farmers as central to meeting this objective. An externally funded project was launched to introduce low-cost irrigation technologies to farmers and this provided a useful entry point for training farmers as well as building the capacity to provide support services for them through the traditional government technical and extension services. So this is a case of a government department being strengthened to support farmer independence rather than being dismantled. Participatory training and extension was at the heart of this project that puts farmers in charge of the analysis and definition of constraints, development opportunities and technologies through participatory appraisal of priorities and their potential. Here the activities in Zambia are very similar to those in Peru. Training was done in a very structured way and implemented through a pyramid process of training trainers who then trained technicians who in turn trained the farmers. The methods used were based on the experience of using similar methods, but for differing circumstances, in Nepal, Cambodia, Bangladesh and Indonesia. They have led to the production by FAO of Guidelines on Participatory Training and Extension in Farm Water Management (PT&E-FWM) and a farmers' training manual.

**Ecuador** has similarities with Zambia as it is attempting to build a cadre of trainers within its existing institutions who can train smallholder farmers both on government and privately run communal irrigation schemes. The approach is different in that training was initiated and organised by a strong grouping of national NGOs. They focused on developing trainer training and producing quality training materials. A novel feature was the introduction of a 'mobile' training process, which exposes participants to a wide range of irrigation experiences throughout the country. The case also highlights the problems of setting up new institutions within an NGO framework as a means of ensuring the sustainability of the training and brings into question the role that the State could or should play in this.

**Bhutan** is an example of a well-planned and successful turnover process implemented slowly, over a period of 10 years, which carried both the farmers and the government engineers along the pathway of change together. Bhutan is a relatively small country and so the numbers of people involved was considerably less than in most other countries. Smallholders operate relatively independently of government on a day-to-day basis but have relied heavily in the past on government funding of expertise and materials for main canal rehabilitation in the unstable mountainous terrain. Inappropriate and expensive designs led to farmer management problems and so changes in approach needed to be made both by the irrigation engineering department and the farmers. The outcome of this was a successful and well-structured programme of irrigation management transfer over a period of 10 years. It was initiated by government through the development of a new National Irrigation Policy. It involved a process of review of existing management practices, experimentation with new methods, consultation with stakeholders and agreement on the structure of the new policy, the production of good quality training materials and a gradual and well-guided introduction of the policy using participative training methods. An evaluation of the programme demonstrated the benefits of a slow but steady developmental process of change.

The final case study is of a pilot training programme in **Morocco** and demonstrates how effective training can be when it is well planned and implemented, and the socio-economic and political conditions are favourable to change. The government service was not resisting this change and the rural population, experiencing population pressures and water shortages, also appeared ready to take on responsibility for the management of small and medium scale irrigation schemes. Innovative ideas were already being used to integrate both government irrigation technicians and elected farmers in the day to day running of WUAs. Local, private consultants were used to implement the training programme with support from an international consultancy company. Two methods of training lead-farmer groups were tested on a sample of 36 WUAs and both were shown to be very effective in different ways. A useful and practical method of evaluating training was also developed which could have much wider use. The pilot has been judged to be successful and now a larger training programme is being implemented and a training unit within the Ministry of Agriculture is to be established to sustain the training once this next programme has been completed.

An interesting comparison with **Zambia** shows how quite different approaches can be used to meet similar objectives. In **Morocco** the farmers were trained first and once this was underway, attention then turned to setting up a sustainable training structure within the Ministry. Whereas in Zambia the Ministry was strengthened first and then attention focused on the farmers.

Interestingly, the case studies rarely cite documents from other countries and projects which underlines IFAD and FAO's concerns about the dearth of useful knowledge and its availability in this area.

## 5 Conclusions

This limited review of five training activities has, in spite of its bias, produced a useful catalogue of experiences. They represent a wide range of approaches that are generally well adapted to the local circumstances but there are several common elements:

- Training is a traditional and well-accepted aspect of human resource development. But what is less understood, and is clear from the case studies, is the central role it can play in supporting the development process as a whole and the way in which it engenders greater commitment from all the people involved
- Training is also shown to be a key feature in the success of instigating institutional change and institution building
- Each case study demonstrates the importance of proper planning, design and implementation as pre-requisites for training to be an effective component. Log-frame analysis is potentially a useful tool for planning training
- New approaches to training can be very effective in achieving objectives in irrigation development. The importance of participation was emphasised by all, not just of farmers but also government professional and technical staff. Although it is clear that the meaning of participation varies from case to case. Using participative methods was challenging for many traditional trainers who were more used to lecturing
- As part of the process of participation it is essential to allow sufficient time for enlisting broad support. Defining a new policy direction is not a project but a process
- All the training programmes reviewed have received or are still receiving external support. The need for long term sustainability of training is well recognised but as yet there is no certainty about this in any of the programmes
- IMT and training is stressed as a long, slow, steady process of change. The dilemma for outside funding agencies that support this process is that they usually wish to accelerate it to fit with time and budget constraints. But the two approaches are incompatible and often threaten the sustainability of the programme. NGOs are usually more relaxed about timing and inputs, hence the reason why they have been so successful in supporting IMT. NGOs were principal instigators in three of the five case studies (Peru, Ecuador and Bhutan).
- Although NGOs have been central to many IMT initiatives they do not necessarily replace the role of government services, as is often the perception (Zambia and Morocco). Governments are traditionally strong institutions and provided they are properly funded and trained they represent one of the best options for the long term sustainability of training and technical services provision that farmers will need in the long term
- The complex inter-disciplinary nature of irrigation is well recognised as is the important role of both government and NGO based institutions in supporting training
- A period of review and experimentation with new approaches is essential before including them in any new policy
- All the cases looked at the issue of evaluation to justify the need for training. It was difficult to separate out the influence of the training alone but useful attempts were made to establish what farmers had learnt and also what effect it had on increased irrigated area or productivity. Morocco developed an interesting and systematic method of evaluation that is simple to use and to analyse and produces useful results

- The production of quality training materials is a useful and tangible output of training that is then available to support future training
- All the case studies had strong individual elements. This may be a result of the very different circumstances of each but there was also an element of needing to 'invent' approaches and systems from scratch. This may stem from a lack of information on what others have done before. The lack of references from other countries in published reports was marked.
- Only very limited information was available and compiled on the costs of training. Although not included in this review, estimates from some irrigation developments in Asia indicate that rehabilitation of irrigation schemes costs between US\$200-500/ha whereas training is a one off cost of US\$50-100/ha. If investment in training is to increase then more information like this is needed so that investment can be made on a sound financial basis. The next step would then be to assess the benefits.

More individual points of particular note included:

- Introducing new irrigation technologies can provide an entry point for training farmers and government professional and technical staff (Zambia)
- The 'mobile' training aspect of the course in Ecuador exposed participants to a wide range of experiences and water management issues. This is a novel feature that could have significant benefits
- Morocco has developed a novel way of integrating government technicians with farmer WUAs by having a technician as the 7<sup>th</sup> member of each Water User Board
- Building new institutions to ensure the sustainability of training can be fraught with difficulties (Ecuador)
- Zambia shows how 'private' smallholder farmers can be supported by existing government services provided they are strengthened
- NGOs, both national and international do played a significant part in IMT training in some countries and are likely to continue to do so, but their structures are sometimes fragile (Ecuador)
- Morocco has developed an interesting and systematic way of evaluating training which is simple to use and to analyse.

## 5.1 Recommendations

The general outcome of this review has shown that there is a significant amount of knowledge and experience available from which others can benefit but it is not easily accessible. The recommendations therefore address this issue of knowledge management.

Many countries now recognise the need for a more systematic and long-term programme to develop national capacity for IMT. They ask questions such as what are the components of such programmes? How can they best be planned? What are the target groups and the best methodologies to use? How can this be implemented and evaluated? How can it be built into the institutional training structures to make it sustainable?

The small number of case studies reviewed here demonstrate that there is a great deal of useful information available that can provide answers to many of these questions but it is poorly disseminated. There is a need to manage this information in a way that it becomes more accessible, particularly to the developing countries, so that they can rapidly benefit from others rather than having to re-invent the wheel.

To achieve this it is recommended that a set of guidelines for training in IMT be developed based on the experience so far. Additional case studies will be needed so that a more comprehensive analysis can be

made of training experiences. Suggesting that people write and publish is one way of getting the information but for various reasons it is unlikely to yield useful results, at least in the short term. This review has demonstrated that personal interviews with those involved is an effective way of obtaining the 'real story' about training. So a most appropriate way would be to bring a group of such people together for a short (3 days) period in a structured consultation process so that the information can be properly gleaned. In some cases such persons may be difficult to locate and in the larger turnover projects there may be too many involved and the 'story' complex. There may thus be a role for a number of carefully chosen visits to projects by a training consultant to synthesise the information and to bring this to the consultation.

The objective of the consultation would be to:

- Obtain information on a range of recent training initiatives in a structured format based on the experience of this review
- Formulate the contents of training guidelines to include planning, design, implementation, evaluation, types of training material
- Examine ways of managing this new knowledge to improve its accessibility. One suitable vehicle is the new WCA-infonet knowledge management system<sup>2</sup> set up recently by IPTRID/FAO. In addition to this is a new FAO website devoted to participative training in water management<sup>3</sup>.

The outcome of the consultation would be:

- Guidelines for the planning, design, implementation and evaluation of IMT training initiatives
- Information on a wide range of country and project experiences published in electronic format in a knowledge management system.

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<sup>2</sup> [www.wca-infonet.org](http://www.wca-infonet.org) is recent addition to IPTRID/FAO networking activities and comprises a state-of-the-art Internet-based knowledge management system on water use in agriculture. It provides direct access to a wide range of information in many different countries. It is not just another website with connections to other sites – it contains only documents that have been approved by specialist editors. It has a section on capacity building and training and the author of this review is currently the editor of this section.

<sup>3</sup>The address of the FAO website devoted to Participatory Training and Extension in Farmers' Water Management is [www.fao.org/landandwater/aglw/farmerwatertraining/](http://www.fao.org/landandwater/aglw/farmerwatertraining/)