



## SUSTAINABLE GROUNDWATER IRRIGATION TECHNOLOGY MANAGEMENT WITHIN AND BETWEEN THE PUBLIC AND PRIVATE SECTORS

# Guidelines of good practice, based on the experiences of Bangladesh and Pakistan

Principal author:	David Sutherland	[dcsutherland@wsatkins.co.uk]
Project manager:	Peter Howsam	[p.howsam@cranfield.ac.uk]

# **REFERENCE MANUAL ASSOCIATED RURAL DEVELOPMENT**

Findings of DFID funded research project (R6877) on 'Technology Transfer and Sustainable Rural Development' to develop guidelines of good practice for (a) technology transfer in relation to the full or partial transfer of tubewell irrigation from the public to the private sector, and (b) associated rural development, 1997-1999.

### **REFERENCE MANUAL - ASSOCIATED RURAL DEVELOPMENT**

#### TABLE OF CONTENTS

1.	INTRODUCTION			1
2.	ŀ	EXTRA	BENEFITS FROM GROUNDWATER IRRIGATION	1
3.	۷	VOME	N AND GROUNDWATER IRRIGATION	4
	3.1	INTR	ODUCTION	4
	3.2	NATU	JRE OF WOMEN'S WORK IN IRRIGATED AGRICULTURE	5
	3	8.2.1	Women's activities within the crop production process	5
	3	3.2.2	Women's roles within irrigated agriculture	5
	3	3.2.3	Gender-specific production systems	8
	3.3	CONS	STRAINTS TO DEVELOPMENT OF WOMEN IN GROUNDWATER IRRIGATION	8
	3.4	DEVE	ELOPING WOMEN'S ROLE IN GROUNDWATER IRRIGATION	9
	3	8.4.1	General approaches to developing women's role	9
	3	8.4.3	Examples from Pakistan	11
	3.5	SUM	MARY OF KEY ISSUES REGARDING WOMEN IN IRRIGATED AGRICULTURE	13
4.	I	PROJEC	T MANAGEMENT AND ASSOCIATED RURAL DEVELOPMENT	16
5.	(	COMM	UNICATION STRATEGIES	16
	5.1	Proj	ECT /NGO DESIGN CONCEPTS, VALUES AND PRINCIPLES	17
	5.2	MET	HODS OF COMMUNICATION	18

### TABLE OF BOXES

BOX 1:	MAIN POTENTIAL IMPROVEMENTS TO, AND BENEFITS FROM, GROUNDWATER IRRIGATION AND	
	CONSEQUENCES FOR ASSOCIATED RURAL DEVELOPMENT	3
BOX 2:	ACTIVITIES, BY GENDER AND BY EMPLOYMENT STATUS, IN FIELD CROP PRODUCTION	6
BOX 3:	FEATURES OF GKF DEVELOPMENT OF WOMEN IN IRRIGATED AGRICULTURE	10
BOX 4:	FEATURES OF AGA KHAN RURAL SUPPORT PROGRAMME FOR WOMEN	12
BOX 5:	METHODS OF COMMUNICATING TECHNICAL, ECONOMIC AND MANAGEMENT INFORMATION FOR	
	GROUNDWATER IRRIGATION AND ASSOCIATED ISSUES	19

#### **1. INTRODUCTION**

From the research carried out in support of this project, the main priorities in rural development relating to groundwater irrigation technology transfer are:

- the nature of additional benefits which can be derived from improved use and management of the technology, in whichever sector.
- the role of, and benefits to, women involved in groundwater irrigation;
- approaches to associated rural development by projects, in any sector;
- methods by which outside organisations, such as NGOs, can produce improved performance from target groups, looking particularly at attitudes and communication strategies, and

There are other features of rural development which have much in common with groundwater irrigation and these have been covered in the guidelines above. These include particularly the issues of:

- finance, which applies just as much to other rural livelihoods, especially given the cyclical nature of income from irrigated agriculture and the need for other activities to support families between harvests;
- employment in groundwater irrigation and in the supporting services; and
- project management, especially institutional factors, for effective groundwater irrigation management and other supporting and development activities.

#### 2. EXTRA BENEFITS FROM GROUNDWATER IRRIGATION

Rural development is defined here as an '**improved set of services and infrastructure available to rural people, combined with opportunities to increase their income, so that they can purchase or otherwise access these improved services**'. Some of these services and infrastructure are a necessary condition to get the full range of benefits from irrigation. For example, water supply may well lead to greater production, but benefits only significantly accrue if the excess over subsistence needs can be marketed. Therefore, improvements in market-related facilities are needed.

Box 1 illustrates the reasons for the main direct benefits from improved performance in groundwater irrigation and some of the main implications of this. It

is important to stress again that these are benefits which are achievable so long

as outside factors are the same pre- and post-improvements in irrigation performance, i.e. macro-economic policy and conditions are unchanged. Benefits can be lost immediately if the price of inputs rises sharply or the price of outputs drops sharply.

What should be expected from a more reliable water supply is:

- greater agricultural production, from higher yields and less crop loss, leading to a need for more markets;
- a move into higher value crops, e.g. vegetables, so long as there is good infrastructure, such as market access and roads;
- improved health and diet from farmers' own production and purchased food
- higher farm incomes, leading to
  - higher demand for goods and services, increasing possibilities for non-farm enterprises such as transport, shops, workshops making household goods - the Multiplier effect. This diversification of the economy can be accelerated if there is also rural electricity supply since this facilitates the growth of shops, restaurants, workshops.
  - farmers better able to afford education and health services for their children (boys and girls), provided schools and health clinics are available
- increased demand for agricultural labour, and for labour in the non-farm sector. This should lead to more year-round employment, and higher wages, benefiting the poor and landless.

The actual well itself generates a few localised benefits, which tend to be small compared with the flow of benefits from the greater production. These include

- the possibility of incorporating water supply for other needs, particularly at the design stage. Here it is important to consult other potential users, as well as the farm family heads. For example, the laundry areas in the PATA Project (Reference Manual Section 3.10)
- certain types of management structure can increase farmers' abilities to associate, organise together, form effective lobby groups for other

necessary services.

## Box 1: Main potential improvements to, and benefits from, groundwater irrigation and consequences for associated rural development



• Job creation in connection with the well - but the greater increase in jobs will be in employment as agricultural labourers, or in the stimulated off-farm sector.

To get the greatest benefit from the higher production and higher incomes, complementary services are needed, such as improved roads and market facilities, more schools, and rural electrification. These are generally the responsibility of other central government departments, or of local government. Therefore, projects should incorporate links with the authorities planning local development, and also incorporate this into their training programmes for farmers, so that farmers know to whom they should go, and how to lobby effectively, as new needs arise.

Farmers interviewed informally and through questionnaires all stated that the development of groundwater irrigation had increased their income, both from irrigated agriculture and from non-agricultural sources. The non-agricultural income increased as a consequence of increased confidence and capital to enter other labour and business markets. Other work included an increase in working on other

people's land, shops, transport, handicrafts, crop processing and food

production. The priorities for spending the increased income, according to the farmers themselves, were, in order of preference, clothing, education, housing and investment in small businesses.

The development of irrigated agriculture has led to increased mechanisation of agriculture (power tillers in Bangladesh and tractors in Pakistan) and a consequence dramatic reduction in the number of buffalo. Cows, goats and chickens have increased in number. Many farmers in both countries (30% in Pakistan, 65% in Bangladesh) reported eating more meat, vegetables and fruit in the last ten years, and less milk and pulses. Some of this is due to their increased availability and affordability.

These are indications of what benefits can come out of more efficiently managed groundwater irrigation systems and one of the priorities of any agency working with those involved in groundwater irrigation, or its transfer from one sector to another, is to ensure that these benefits, and their consequences are maximised. *Don't just seek to improve groundwater irrigation systems, but seek to maximise the benefits or potential consequences from improved groundwater irrigation systems.* 

#### 3. WOMEN AND GROUNDWATER IRRIGATION

#### 3.1 Introduction

The role of women in irrigated agriculture can be looked at in several ways:

The major role that women play in irrigated agriculture is becoming increasingly apparent.

- their specific activities within the field crop production process;
  - their status as agricultural workers; and
  - agriculture as made up of gender-specific production systems.

Each of these perspectives aid the development of approaches to assist women in developing their role in, and benefits from irrigated agriculture. The key issue in each approach is where the woman's role is in making decisions about input use and output allocation. In addition to field crop production, women have the major role in smallholder vegetable production for domestic or marketing purposes, poultry and

livestock production, seed and tree nursery production and household management.

At a 'Workshop on Gender and Water' hosted by IWMI in 1997 (Merrey & Baviskar, 1998) many arguments were made in favour of the view that the **privatisation or transfer of irrigation increases the opportunities for women** to become involved in the ownership and/or management of irrigation. The Water User Associations developed in Pakistan to manage tertiary level irrigation in the major pubic surface irrigation sector have no female members at all (Meinzen-Dick & Zwarteveen, in Merrey & Baviskar, 1998). The opportunities for involvement in the private sector are particularly strong for groundwater irrigation, where influence comes from owning the means to extract water, so long as they have access to, and control over, material and social resources (van Koppen & Mahmud, 1996.

#### 3.2 Nature of women's work in irrigated agriculture

#### 3.2.1 Women's activities within the crop production process

The major role that women play in agriculture, is becoming increasingly apparent. Figures from the questionnaire survey carried out in support of this project (see Box 1) suggest that, on average, in Bangladesh 20% (men's view) to 30% (women's view) of total is carried out by women (range 0-75%). In Pakistan this figure is slightly lower at 10-15% of total activities (range 0-50%). Their main roles are post-harvest, with over 50% of cleaning, drying, processing and storing being done by women. Almost no irrigation of field crops was reportedly done by women. The results indicate that both genders think that their own gender (either themselves or hired labour) do more than the other gender gives credit for.

Work done by Jordans & Zwaterveen (1997) with women in the north-west of Bangladesh suggests that the role of women can be much higher, particularly for irrigation (where 50% of irrigation is reportedly done by women), than the national survey figures in Box 2 indicate. This is attributable mainly to poverty and to a higher presence of tribal and Hindu people in the area. The figures suggest that the key decision-making and revenue earning activities are carried out by men.

#### 3.2.2 Women's roles within irrigated agriculture

A second way of looking at women's involvement in irrigated agriculture is to consider their employment status. The main ways by which women are employed in irrigated agriculture are as:

Employment status important for:

- whose decides

- wages

• co-farmers on family land (owned or share-cropped);

- agricultural wage labourers;
- groups cultivating jointly leased or share-cropped land; and
- female headed households cultivating owned or share-cropped land (Jordans & Zwarteveen, 1997).

Where women are co-farmers they are traditionally managed by their male colleagues and have little say in decisions or in management, and women should be encouraged to develop and share their ideas on crop selection and production.

Box 2: Activities, by gender and by employment status, in field crop production

	RICI	E - Bang	ladesh (M	en's answ	vers)	RI	CE - Pak	istan (Meı	n's answe	rs)
Activities	Fa	amily labo	our	Hired	ed labour Family labour		ur	Hired labour		
	Male	Female	Children	Male	Female	Male	Female	Children	Male	Female
Selecting seed	72.1	26.0		1.6	0.3	87.4	1.5	0.5	9.7	0.9
Making seedbed	65.6	0.6	0.2	33.4	0.2	73.8	1.8	1.0	22.5	0.9
Uprooting seedlings	79.6	0.1	0.2	20.1		46.8	8.8	2.3	34.9	7.2
Land preparation	42.3	0.1		57.6		69.3	0.3	0.5	27.4	2.5
Transplanting/sowing/weeding	50.3	0.6	0.4	47.1	1.6	26.4	8.6	3.3	43.1	18.6
Fertilising/spraying	80.1	0.3		19.6		71.8	1.5	0.5	26.2	0.0
Irrigating	58.5	0.2	0.2	41.2		75.1	0.0	0.7	24.2	0.0
Harvesting	43.7	0.5	0.7	54.1	1.1	22.3	9.8	2.6	50.4	14.9
Threshing/winnowing	43.9	11.9	3.3	36.5	4.3	29.7	7.9	2.0	46.4	14.1
Cleaning/drying	27.9	46.1	6.2	5.2	14.7	34.3	24.0	6.9	28.0	6.8
Processing	28.3	47.4	3.4	4.9	16.0	48.0	16.3	2.9	21.7	11.1
Marketing	74.9	2.2	0.8	21.9	0.1	89.9	1.0	1.2	7.3	0.6
Storing	46.3	38.4	1.8	9.6	4.0	49.5	40.1	1.2	4.0	5.2
Average	54 9	13.4	17	27 1	4 7	55.7	9.3	2.0	26.6	64
Activities	Fa	amily labo	our	Hired	labour	F	amily labo	our	Hired	labour
	Male	Female	Children	Male	Female	Male	Female	Children	Male	Female
Selecting seed	69.2	6.3	2.5	22.1		91.2	2.4	0.1	4.9	1.5
Making seedbed	46.0	13.7	5.1	35.3		70.0	2.3	1.8	25.7	0.3
Uprooting seedlings	34.2	15.5	5.5	44.8		62.1	6.2	3.5	24.0	4.3
Land preparation	43.8	11.6	6.4	37.9	0.4	68.5	0.3	1.2	29.0	1.0
Transplanting/sowing/weeding	11.5	18.8	8.5	43.1	18.0	60.5	4.6	2.3	29.0	3.6
Fertilising/spraying	46.6	8.6	5.3	38.7	0.9	67.0	2.4	1.5	29.0	0.1
Irrigating	65.0	1.0	7.0	27.0		70.8		1.5	26.9	0.8
Harvesting	9.5	18.7	9.8	40.7	21.4	32.9	12.0	3.7	38.7	12.7
Threshing/winnowing	17.7	18.3	3.8	43.9	16.3	40.6	1.6	1.2	54.4	2.2
Cleaning/drying	7.1	46.8	13.1	3.5	29.5	43.6	19.7	4.3	28.3	4.1
Processing	27.7	17.1	8.0	42.8	4.5	59.0	7.1	0.5	27.1	6.3
Marketing	45.4	10.4	11.5	10.2	22.6	92.3	0.6	0.6	5.9	0.6
Storing	15.7	66.7	13.8	0.7	3.1	59.6	27.1	1.6	8.3	3.4
Average	33.8	19.5	7.7	30.0	12.9	62.9	7.2	1.8	25.5	3.1

Reference Manual - Associated Rural Development

The questionnaire survey carried out suggests that in both Bangladesh and Pakistan, female agricultural labourers are paid less than their male equivalents, mainly because they are perceived as not being able to work as hard as men. Where women are farming jointly leased or share-cropped land then the priority is on making sure they have sufficient land and material and social resources to provide adequate income. The latter also applies where women are farming land belonging or leased to female-headed households.

#### 3.2.3 Gender-specific production systems

The third way is to look at the production system as a whole and identify which gender is running the system and how irrigation can function within these systems. van Koppen and Mahmud (1996) have identified three production systems - the *male production system*, the *female production system* and the *intersect* between the male and female production system. The system is determined on the basis of who makes the decisions about allocation of inputs and use of income. Higher benefits are likely to derive from development of women's irrigation enterprises within the female production system or at the intersect.

#### Constraints:

- attitudes
- safety
- resources
   confidence

#### **3.3** Constraints to development of women in groundwater irrigation

In seeking to develop the role of women in groundwater irrigation and irrigated agriculture, the nature and scale of constraints to that development need to be identified and addressed. The main constraints are:

• attitude of men towards women working outside the home and in positions of responsibility, particularly in Muslim societies. This is a powerful constraint which has led several NGOs to drop irrigation management as an investment option, preferring to concentrate on the 'sewing machine' or 'embroidery' approach, which is generally safer. Attitudes will only be overcome through support for the women over time and in the men seeing the women's success. Success is extremely important and once a project has been embarked upon it should be seen through if possible, even when the going gets tougher, because surveys of empowerment projects suggest that if they fail the status of the women involved is diminished.

· leading on from attitudes is the question of safety of women in field

situations, remote from their homes. This is another factor which has led to NGOs preferring to concentrate upon activities closer to home.

 lack of control of material resources, such as capital, technology, skills and knowledge, and social resources, such as negotiating skills and bargaining strength. Any intervention seeking to develop the role of women in irrigated agriculture must address these issues.

 all of the above can lead to a distinct lack of confidence and it is an important and time consuming process to change this. Once this has been overcome, the benefits appear to increase exponentially, both for the first women involved and in the development of activities of other women in the area.

#### 3.4 Developing women's role in groundwater irrigation

#### 3.4.1 General approaches to developing women's role

Surveys of NGO involvement in women's irrigated agriculture such four key approaches to development (van Koppen & Mahmud, 1996). These approaches have different aims and priorities but all seek the common goal of improving the social and economic status of women. These approaches are:

- *Household* approach where the household as a whole is the central focus. The approach seeks to improve the standard of life of the whole household and, by default, the standards for women
- Empowerment approach where the improvement in the status of women is the critical goal and this is achieved through promoting economic independence. Income generating schemes are offered exclusively to women.
- Profitability the goal
   Poverty alleviation approach where profitability is the prime goal and this is achieved irrespective of gender.
- Shareholders approach where the shareholders are primarily responsible for taking out and repaying loans to fund enterprises, which they do not necessarily run themselves.

The approach taken may often depend upon the freedom of women to take part in the enterprise, so whilst the empowerment approach is often seen as the most effective in developing women's role in groundwater irrigation. This is primarily in the cases where *purdah* is not so strictly observed, or where poorer women are the target, and are more likely to be allowed to work in the field than richer women.

Evolutionary process

'Mainstreaming' through resource provision

#### 3.4.2 An example from Bangladesh

GKF is a sister organisation of the Grameen Bank, which adopts the poverty alleviation approach to development. However, in the case of GKF, they have decided to develop the role of women through evolutionary and flexible development by coming to see women as "farmers and providers", rather than "mothers and domestic caretakers" (Jordans & Zwarteveen, 1997). They have adopted a process of 'mainstreaming' women by increasing access to land, credit, seeds, fertilizers, technical information and marketing.

GKF (Jordans & Zwarteveen ,1997) have produced guidelines which include group/centre discussions, access to land, crop selection, irrigation equipment selection, preparation of loan proposal, distribution of loan/inputs, monitoring crop production and general performance, data recording, assistance to marketing and following season discussions. Some of the main features of the programme are summarised below in Box 3.

Further development of women's agriculture is still constrained by a lack of control over marketing, a lack of long term access to land and by a lack of basic education. The lack of literacy among the women hampers them in dealing with players outside of the household.

#### Box 3: Features of GKF development of women in irrigated agriculture

- 1. A *broad approach*, recognising that irrigation is just one of many activities in irrigated agriculture that need support.
  - where land is required, GKF negotiate on behalf of women to acquire leased land. At present this is on a seasonal basis but they are moving towards finding long-term leases.
  - GKF provide credit, inputs and support for marketing (sometimes buying direct from women farmers under contract)
  - also supporting more traditional enterprises, and encouraging innovation in traditional enterprises, such as vegetable seed production, tree nurseries and livestock.
  - alongside agricultural support activities, also providing information on sanitation and basic health care through the Women's Support Programme.
- 2. *Flexibility and continuous presence* of field staff through their Farm Manager system (see section 3.3 of Reference manual Manageability), enabling:
  - effective communication and monitoring
  - building close working relationships with women (many Farm Managers seen as 'brother' or 'sister')
  - keeping close relations with wealthier farmers who may provide land for lease or who may be affected by loss of labourers following the development of women's own irrigated agriculture and the shift in power relations.

GKF have produced 'Practical guidelines for successful implementation of activities supporting women farmers in irrigated agriculture' (Jordans & Zwarteveen ,1997)

Constraints seen as:

- lack of (i) control over marketing, and (ii) long term access to land

- education

Also employ women

In addition to the support given to women's irrigated agriculture, GKF also directly employ women within their organisation, either full-time or on contract.

Parallel men and women meetings → intra-household discussion It should be noted that this project is taking place in an area with a relatively high non-Muslim population and with a relatively high number of people in the poorest bracket of rural society.

#### 3.4.3 Examples from Pakistan

The development of women's role in groundwater irrigation is not so advanced in Pakistan, although attempts are being made by some of the larger NGOs, particularly the Rural Support Programmes, to address this issue. The examples from Pakistan which contribute to the guidelines on the development of women's roles in groundwater irrigation are (i) from the PATA Project in the North West Frontier Province, and (ii) from the activities of the Aga Khan Rural Support Programme in Northern Pakistan.

#### PATA Project

In the development of new command areas for groundwater irrigation the men and women were consulted simultaneously during the consultation, selection and system design process. At all times women were kept informed of what the men were discussing and vice versa. This promoted informal intra-household discussion about priorities for the household's new irrigated land and enabled formal presentation of the features of the system which women wanted included or adapted. The most popular feature was a clean communal area, at a place desirable for the women, for washing clothes. Whilst there was no formal inclusion of women as farmers within meetings (although in this area women are less involved in field crop agriculture) the point to note is that women were involved and their ideas accepted by the men, and taken on board during design of the scheme.

#### Aga Khan Rural Support Programme (AKRSP)

AKRSP has developed an "integrated strategy of human resource development, collective capital formulation, and practical techno-economic interventions to raise local farm productivity". They operate through Village Organisations (VOs), which must contain 75% of the village households. Development projects are identified by the VOs. Women were frustrated at the lack of representation and support for their ideas and so AKRSP set up independent Women's Organisations (WO), operating on a similar basis but for women only. The operation of these systems is described

WOs started after frustration at lack of representation and support in VOs in detail by Malik and Kallender (in Carr et al, 1996). Some of the key points relating to these guidelines are summarised in Box 4 below.

#### Box 4: Features of Aga Khan Rural Support Programme for women

- 1. A variety of credit 'windows' to suit the needs of the borrower:
  - short-term loans
  - medium-term loans
  - WO Credit Programme loans (1 year loans secured against savings of the WO)
  - micro-enterprise credit programme (MECP) individual loans for working capital, payable 6 months to 1 year after disbursement
- 2. A variety of 'production packages' within agriculture to suit the desires of the individual or groups of women, which come complete with basic infrastructure and a set training and after-care programme.
- 3. Packages take the form of subsistence packages (concentrating on basic practical needs) and of graduated packages with lead towards greater commercial activity.
- 4. Women are not only invited to raise their voices at meetings but are expected to do so.
- 5. AKRSP do not directly interfere with the evolution of the structure of the group.
- 6. Women are reported to be more interested in increased productivity and income than any concern about increased workload.
- 7. The initial meetings are about capital accumulation by contributions at meetings. This provides equity that drives the loans and savings programmes. Successful groups may end up providing loans to men in the village.
- 8. All decisions about loans are made by the WO themselves.
- 9. As a consequence of increased provision of income to the household, women are having greater say in determining household expenditure.
- 10. Women are increasingly keen to participate in decision-making processes on issues which affect them or their family.

#### 3.5 Summary of key issues regarding women in irrigated agriculture

The research has identified key points when seeking to improve the situation for women in irrigated agriculture. The first points are summarised by van Koppen (in Merrey & Baviskar, 1998):

- explicit targeting of individuals, not households (the empowerment approach);
- protection against expropriation without compensation and aiming at more equality in resource rights;
- improvement of access to all inputs, markets and relevant institutions;
- link water rights to land user and strengthen rights to irrigated land;
- link water rights to investments and, in private sector irrigation, provision of appropriate equipment, financing facilities and training; and
- inclusion in planning procedures from the start of any programme.

Reference Manual - Associated Rural Development

Other factors which should be considered in the empowerment of women in the management and operation of groundwater irrigation facilities include:

- only those women who actively want to be involved in irrigation should be supported. This is a high risk strategy which must succeed or women will be worse off economically and, more importantly, in social status.
- work, to start with, with strong groups of women. Strong groups are those which are cohesive, active, effective in decision-making and problem solving, able to mobilise their own funds and labour and which have well developed external linkages;
- technical and managerial skills are often less developed amongst women and more care and time should be given to these than for men;
- accounting and book-keeping skills (and the literacy required to perform these) are extremely important factors in enhancing the performance of women in the market place in many aspects of their working life and should be given high priority;
- if groups are being created to manage a well, screening should be carried out to ensure that the groups are not too financially diverse, as this can lead to conflict over money and labour;
- if a group is being formed to run a well, try and take over an existing command area (which has maybe suffered from a well going out of use), rather then developing a new command area. Farmers used to receiving water are more welcoming towards water sellers whereas new areas tend to be more marginal.

Two other important points refer to the roles of outside agencies in their attitude to women and in their emphasis on the roles of women:

- agencies involved in irrigated agriculture, in whatever sector, should seek to positively discriminate in favour of women in employment wherever appropriate, be it as extension workers, well operators, tree nursery staff or seed producers.
- when survey work is carried out in monitoring or researching issues relating to groundwater irrigation, gender specific data should be collected and statistics published.

Those projects which look after more than just the supply of water for irrigation perform better both in terms of increasing productivity and in cost-recovery

4.

## PROJECT MANAGEMENT AND ASSOCIATED RURAL DEVELOPMENT

Many points have been made in the Manageability Reference Manual and Guidelines about project management and getting the best out groundwater irrigation. It is clear from the evidence that those projects which look after more than just the supply of water for irrigation perform better, both in terms of increasing productivity and farmer's income and in cost-recovery.

Integrated development projects are sometimes criticised for being too broad in approach, lacking focus and, hence, direction. However:

- projects should seek to integrate all support functions for specific tasks, such as groundwater irrigation;
- thought should be given to all stages of production in irrigated agriculture, all active players in production and all external linkages required for production;
- infrastructure, inputs and marketing arrangements should be such that they are accessible to all;
- pricing policies should reflect the diverse financial and resource composition of the water users;
- other important information, such as sanitation and basic health information, which could be communicated to water users by project staff should be actively disseminated. Many projects have staff who are high profile in local areas and to whom water users turn to for support. These are people well placed to pass on important information.

#### 5. COMMUNICATION STRATEGIES

• For any organisation working with farmers in groundwater irrigation in any sector, although more perhaps when starting with the farmers for the first time, communication strategies are an extremely important issue. After talking to many farmers and water users, it appears that this is an issue which has not always been given the amount of consideration that it deserves.

Relationships between outside agencies and farmers are often such that impacts are shortlived and not replicable, however, 'noble and unique' the outside agency's values may be.

#### 5.1 Project/NGO design concepts, values and principles

Particularly in the case of NGOs or temporary projects, Shah and Bhattacharya (1996), the relationship between advising or development agencies and the farmers can be such that the impacts are short-lived and not replicable. They praise NGOs for the 'noble and unique' values on which a design concept may be made, but suggest that there are very important short-comings which prevent up-scaling, replicability and/or sustainability. They state that the reasons for this included:

- many of the experimental projects began to decay after a decade;
- the core values and normative principles of the outside agent eroded rapidly after the departure of the agency;
- given the emphasis placed on core values and normative principles, many recipient groups did not invest sufficiently in establishing widely accepted rules and procedures. The operating efficiency of the groups therefore declined rapidly;
- replicas of the original did not appear on their own. Some did with some coaxing, but without the presence of a 'conscience-keeper' they fell far short of the original.

Shah and Bhattacharya go on to suggest that conclusions from early success should not be drawn from projects in which outside agencies are involved, but that they should study the rules and procedures that people have developed over time and consider design concepts which have stood the test of time. They illustrate this by comparing two groundwater irrigation organisations in Gujarat, India - lift irrigation co-operatives operating under external patronage, and tubewell companies that have developed with no outside input at all. Tubewell companies were considerably more successful in all areas and were considerably more sustainable. These organisations are described and evaluated in more detail in the Manageability Reference Manual and Guidelines.

More consideration to be given to 'needs assessment'

Most methods are described and evaluated in a 'Guidance Manual on Water Supply and Sanitation Programmes' (DFID, 1998). The message is one of care in, and reinforcing the need for, thorough evaluation of needs assessment methods. Many methods have been developed for needs assessment, including participatory rural appraisal (internally and/or externally facilitated), revealed preference surveys, contingent valuation methods and consideration and selection of options by community groups or ballot. Some of these have been thoroughly described in the literature and all are described and evaluated

in a UK Department for International Development 'Guidance Manual on Water Supply and Sanitation Programmes' (1998).

The emphasis should not just to prioritise needs of the host community but to study and evaluate the way that host communities operate, and the rules and principles that determine the way individuals function in the workplace and socially.

If a project is seen as successful (or even if it is not) by an external agency it is important to identify in the clearest way possible why the project was successful, or otherwise, through thorough and continuous monitoring.

#### 5.2 Methods of communication

The most successful methods of communication depend on the nature of the information to be transferred to the users. The three main approaches that have been adopted by these guidelines are technical, economic and management. For each these there are different ways of effectively communicating information. A summary of the approaches and the most effective means of communication are shown in Box 6, along with examples of current or potential use.

These methods have either been observed in action during the course of this study or have been proposed by people involved in research, development or communication development work met during the study. In the case of the technical approach, practical demonstration is far and away the most effective tool, based on the premise that 'seeing is believing'. For economics of technology options, then demonstration is also effective, both for showing economic savings from technology selection and from technology operation. Simple accounting and economic decisionmaking training can be done through spoken explanation using examples familiar to the host. Investment decision-making faces many problems in financing and these should be addressed at the earliest possible moment.

In the case of the broader issues of management, the methods of communication can range from simple explanation for small issues, to broad and comprehensive 'packages' of communication around a common theme for larger scale projects.

INFORMATION	TECHNICAL	ECONOMIC	MANAGEMENT		
Examples of information to be communicated	<ol> <li>Good practice in choice of equipment</li> <li>Good practice in equipment operating methods</li> <li>Good practice in distribution channel selection and maintenance</li> </ol>	<ol> <li>Good practice in evaluating cheapest total costs and selection and operation of equipment based on economic criteria</li> <li>Good practice in investment decision- making</li> <li>Good practice in financial planning and sourcing</li> </ol>	<ol> <li>Good practice in day-to-day management of wells</li> <li>Good practice in payment and accountancy systems</li> <li>Good practice in management of system maintenance</li> </ol>		
Methods of communication	<ol> <li>Demonstration of technical features</li> <li>Directly compare different equipment and relative performance</li> <li>Measure and show performance using easily understood variables</li> <li>Show performance of different distribution systems</li> </ol>	<ol> <li>Whilst showing technical features, stress the financial implications of differences in equipment quality and performance</li> <li>Directly compare costs of differences in equipment quality and performance</li> <li>Publicise differences in total costs for equipment, e.g. by placing boards by wells with higher quality performance and lower running costs.</li> </ol>	<ol> <li>Use a variety of messages with a common theme and characters to get across ideas, such as:         <ul> <li>maps</li> <li>videos</li> <li>field visits</li> <li>cartoons/leaflets</li> <li>radio dramas</li> </ul> </li> <li>Use materials and characters immediately identifiable to local people</li> </ol>		
Examples of methods of communication	See Box 6 of 'Conclusions and Recommendations'	See Box 8 of 'Conclusions and Recommendations'	<ol> <li>Drainage Advisory Service (DAS) of the Left Bank Outfall Drain (LBOD) Project, Sindh, Pakistan</li> <li>Project covering a large geographical area. Used few staff to communicate with many farmers encouraged to take over maintenance of irrigation and drainage channels of 'scavenger' wells. Field visits were backed up with all of the above methods. Used drawings painted in local style and with a cast of characters common through all media and who became familiar to farmers.</li> <li>PATA Project, NWFP, Pakistan 150 new wells sunk for farmers to be managed by farmers. Higher staff density than DAS. Used maps as basis for well site selection and location of distribution system. Maps</li> </ol>		

# Box 5: Methods of communicating technical, economic and management information for groundwater irrigation and associated issues

	desig	ned by	loca	l truck
	deco	ators and	l using	features
	famili	ar to all.		

To get a message across when developing new groundwater irrigation projects, or transferring projects, the likelihood of success can be increased by the following:

- the new or changed management system should not only be easy to administer, but it should be a system which is easy to communicate to those who have to work with it;
- the hardest aim to achieve is that of replication. Effective communication of ideas and concepts to recipients appears to come from intensive and repeated communication, usually involving a great deal of staff time and large numbers of staff. The most effective method of communication, in terms of cost and of chances of success, is to transfer the responsibility of communication to the farmers themselves. This responsibility should be implied rather than explicit. For example, if one farmer can be:

- convinced that a particular combination of equipment, and/or particular methods of installation and operation will result in lower total costs over a short period of time, and

- persuaded to place a board near his well showing the technical data and breakdown of costs, then other farmers walking past will be intrigued by the improved cost figures and will talk to the owner of well about how he has reduced costs. There is no requirement on the part of the initial farmer to 'preach' about his well. This approach has been very successful in Dapoli, Maharashtra, India, where new agronomy techniques have been introduced by the local University.

- if an idea is good, the farmers like it, and it is affordable, then the farmers will be very quick to take on the idea. This is how the growth in private sector tubewells occurred in the first place.

A management system should not only be easy to administer but to communicate to those who work within it.

The most effective method of training is farmer to farmer.