

Sustainable Irrigation and the Gender Question in Southern Africa

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ABSTRACT

The guidance from the Gender-sensitive Irrigation Design Study provides a range of practical pointers and strategies to improve the quality of participation for men and women in design. It focuses readers' attention on areas of design that are known to have given rise to difficulties for women users. It is hoped that these practical tips will assist implementing agencies to improve gender-awareness in the sub-sector and that the farmer-targeted publicity will raise awareness of gender issues and new possibilities and increase potential benefit from irrigated agriculture. More importantly, the publications aim to stimulate everyone's thought and effort in the struggle to combat poverty and inequity among small-holder irrigators.

INTRODUCTION

Smallholder irrigation is favoured in Southern Africa for a number of reasons: small-scale development is often physically appropriate to the resources available and suits traditional farming practices. Smallholder irrigation, despite its small scale, is complex; success and sustainability demand careful holistic design. Yet in general schemes are imposed on users, sometimes quite overtly, as in the case of resettlement schemes, and sometimes in a well-meaning attempt to reduce poverty and increase production. In either case, design is centred on water and plants and not on the people who will use the system. Now, not surprisingly, much of the complaint that surfaces in dialogue with irrigators relates to the difficulty of handling an irrigation enterprise with the resources available (Ubels & Horst, 1994; Chancellor & Hide, 1997).

Nonetheless, irrigation is rightly perceived as a method of boosting agricultural production (Pinstrup-Anderson & Pandya Lorsch, 1995) and it can make an important contribution to reducing poverty (IPTRID, 1999), but solutions must be found for existing smallholder irrigation schemes in southern Africa that perform poorly. Scheme infrastructure is maintained badly; leaking channels and broken down pumps abound and water distribution is often unreliable and inequitable.



In such circumstances, production levels remain low; thus the impact of projects on poverty alleviation falls below expectations.

The majority of people directly involved in irrigated agriculture in Southern Africa are women and they are involved to the greatest extent at the lowest level. They provide much of the human labour in the fields although they do not usually have either land or water rights. Although they participate in the management of small schemes they are usually outnumbered on committees and take a minimal role in decision-making.

The trend for women to be solely responsible for irrigated farming has increased significantly as urbanisation accelerates and the AIDS pandemic takes effect. This change has not been matched by women's increased control of resources or involvement in management decisions. Yet future development of smallholder irrigation in southern Africa will depend on improved returns to investment in irrigation and more than ever this means that women's needs must be prioritised.

TRYING TO FIND SOME ANSWERS

The Department for International Development (DFID), UK, funded multidisciplinary research carried out by HR Wallingford, UK, together with Silsoe Research Institute, UK, working in partnership with institutions, government departments and NGO staff in each of Zimbabwe, South Africa and Zambia. The study investigated ways

Figure 1
Small irrigation schemes take advantage of small dams and river flows



Figure 2
Women participating without men are uninhibited

in which gender considerations contribute to smallholder irrigation performance and increase positive livelihood impacts of irrigation for women. The objective is to improve southern African smallholder irrigation through greater gender-sensitivity in design and operation (Chancellor *et al.*, 1999). Here the term 'design' is used in a broad sense including various aspects of planning.

Gender-sensitive design refers to design that recognises the different starting points, job-obligations, constraints and aspirations of men and women regarding the use of irrigation facilities. A good gender-sensitive design would be one that maximises sustainability and production, while empowering both men and women to fulfil their objectives for an acceptable level of effort.

Figure 3
Women use the hoe for weeding and levelling



The study provided an interesting range of smallholder irrigation scenario and some variety of institutional arrangements that typified the sub-sector in Southern Africa. In Zambia the study focused on individual adoption of relatively inexpensive low technology for private use; in Zimbabwe, on communal, largely formal, irrigation on government assisted schemes, or NGO garden developments; lastly in South Africa, on regeneration of badly run down schemes and their turnover to farmer management.

An early survey in Zimbabwe answered the 'who does what' questions and looked at the problems particular groups identified in their workload. Analysis of the survey enabled prioritising of issues for further investigation in fieldwork. In-depth interviews and focus group methods were used later to establish understanding of the dynamics of gender-relations in the irrigators' households and in the sub-sector as a whole. Small interventions were used to illustrate the potential of some suggested strategies.

IDENTIFYING SOURCES OF PROBLEMS

Focus group discussions revealed that many difficulties arose from mismatches between design and user needs, largely due to the lack of participation of users at the pre-design and design stages and often causing disparity between men and women. It was already apparent that women are the main users and that men commonly participate in irrigated farming on a part-time or supervisory basis, their main employment being off-farm or in rain-fed and livestock enterprises.

Women's labour is particularly increased by irrigation because of:

- the year round nature of cultivation
- the extra weed growth resulting from applying water (traditionally, women weed)
- the extra burden of land preparation and levelling (now largely the responsibility of women)

Participation of women at the pre-design stage is important but difficult to achieve. Women are often neglected in the participatory process, often lack confidence and social backing to argue their case, and usually lack the information they need to make participation worthwhile. This crucial point was emphasised time and again and indicates that resources must be specifically devoted to innovative ways to include men and women in design (Figure 2).

The priority concerns were marketing, land preparation and equipment. Smallholders are characteristically widely dispersed and offer small quantities of produce for sale, which puts them at a disadvantage in relation to commercial growers. In irrigation there are additional considerations because, in the drive to grow high value crops (to fund the cost of irrigation), farmers grow vegetables with high perishability and for which local demand is low. Good marketing is essential to profit; it determines the resources available for land preparation and to buy and maintain equipment: more sophisticated planning is needed. Often smallholders have difficulty with formal planning and limited access to the required information. This is particularly the case for women, many of whom are handicapped by illiteracy and unrelenting

work schedules. In all three countries, seasonal glut seriously threatens the smallholder's ability to sell reliably at a profit. Commonly women face greater problems because they market small quantities and have difficulty with cost and logistics of travel. However, women are innovative and readily adopt value-adding activities or barter where cash is a problem for customers.

In land preparation, control of farm power is a critical issue and affects men and women differently. To hire tractors, cash is needed; if oxen or donkeys are mobilised, men control the timing. Women have significant problems with these aspects of land preparation. Their efforts to hire men to do their ploughing for them are sometimes subject to social judgements.

'The lady who has just left this place is one good example of a 'loose widow'. Who can allow her husband to plough for such a person? By allowing him, you will be giving him away for free', said one lady. A Matshalga, 1997.

Design has a direct bearing on land preparation, for example a design that features large plots will increase the users' need for mechanisation and farm power, thereby increasing their production costs. Field application of water, by gravity via long furrows or by pressure delivery through sprinklers, determines user need to level land or plough even furrows. Designers should identify who will be responsible for land preparation and what their access to resources will be and take this into account when considering the type of design that is needed if farmers are to use the available water effectively. Men too have difficulty hiring tractors. Tractors are often in short supply and corruption flourishes in relation to obtaining their services. In South Africa designers and farmers addressed this issue by redesigning for short furrows.

Land preparation affects workloads, especially for women who add land preparation to traditional responsibilities for weeding and watering. When men report that land preparation is not onerous, women say it is hard; work that not only reflects their physical strengths but also that men have tractors or teams of oxen whereas women have hoes (Figure 3).

Sprinklers are often seen as a solution to land levelling problems. On sprinkler schemes other problems arise in relation to technology-use, availability and cost of spare parts. This was of particular importance where pumps are used in conjunction with sprinklers or to feed gravity distribution systems. Reliability of pumps is crucial to smallholder irrigation yet many pumps covered by the study functioned poorly. The cause of this poor performance was generally poor care and operation, rather than the pump in itself. Men are keen to be associated with pump ownership but are often absent at the time of breakdowns (Figure 4).

Training must be targeted at women to help them develop mechanical skills to assist them to deal with routine maintenance, simple breakdowns and avoid slow expensive external repairs that often cause serious interruption, reducing yield and, in the worst cases, causing total crop failure. Training material often lacks appeal for women (Figure 5). Women are highly motivated to undertake technical training and, where it has been possible, they prove to be conscientious and painstaking. The costs associated with pumps and the need for maintenance plans must be made clear to users to overcome problems of poor maintenance and to encourage timely repair and replacement.



Another opportunity to improve performance comes from improving communications and practices, where pumps are operated and maintained by an agency. Poor institutional arrangements make it difficult for users to access responsible departments and request essential repairs. Women, who have difficulty travelling to distant towns to tangle with bureaucracy, suffer disproportionately from poor communication.

Figure 4
Men take pride in pump ownership

In general, maintaining infrastructure or machinery used on a communal basis is problematic: planning, organising contributions and allocating responsibilities is fraught with difficulty. The disparity between men and women in relation to objectives, workloads, resources and access to benefits contributes to the difficulty, as was illustrated at one irrigation scheme by a conflict between men, who wanted to use the tractor for a journey to town, and women who prioritised ploughing; there are many possible examples. Much improvement will result from gender-balanced participation in design.

GENDER ASPECTS OF TREADLE PUMPS

In Zambia, where shallow groundwater is widely available, there is relatively little formal irrigation and government and NGO staff actively promote the sale of treadle pumps to raise irrigation water for individual use. Treadle pumps rely on the operator for power and are an attractive, low cost technology common in Asia. They

Figure 5
Training materials may not appeal to women



Figure 6
This pump had a seat added so
the wife can use it when he is
marketing



are relatively simple and cheap to manufacture, they are affordable to farmers, they are cheap to operate and maintain, relatively easy to repair, spare parts are readily available and improvisation is possible. As a result they are increasingly popular in development circles and are seen as a route by which African smallholders can access the benefits of small-scale irrigation (Figure 6).

In contrast to smallholder schemes that rely on farmers' ability to co-operate, the treadle pump can be owned, controlled, operated and managed by a household or individual. It does, however, require that water is accessible and the required lift is relatively small. It also requires substantial input of human energy (Figure 7).

Claims are made that the treadle pump empowers women and will have a positive impact on poverty reduction by assisting them at a level that matches their resources. Whilst these attributes are valid, the study revealed that other aspects should be taken into consideration and performance of current treadle pump users should be monitored to provide information to feed the participatory processes between designers and users. Although information is limited, the study revealed the following points:

- In Zambia treadle pumps market at around \$US 67 without the hoses. This is a reasonable price for a locally manufactured pump with a guarantee, but it is still more than most rural women can afford. Hoses are expensive and may cost as much as the pump; thus less than 1% of direct buyers are women.
- Treadle users are able to grow more and better vegetables through reliable access water and increasing the area of land irrigated (land is not in short supply in Zambia). This increases the labour required to weed, both because more land is irrigated and because more water is applied.

- Women are able to do the extra weeding and transplanting as they no longer have to carry water by bucket and usually they do not operate the treadle pump because the work is too hard. Men and young boys operate the pumps; sometimes women pay the young boys to do the job.
- Previously, women marketed a wide range but small amounts of vegetables cheaply and locally. Because of the individual nature of treadle pumps and the access to shallow groundwater, growers are widely dispersed and may be far from market. Now the increase in volume of a limited range of vegetables (rape is very popular because it is easy to cultivate and matures quickly) make it necessary to market at greater distances. Little is known about how this impacts on the distribution of benefits within families or family decisions on crops; thus sustainability is questionable.

A number of issues arise from these observations:

Firstly, the cost of pumps needs to be low enough for women to buy, otherwise the extent to which women will benefit will be limited.

Secondly, if women are to be empowered, treadle pumps must be redesigned taking account of ergonomic and social needs of women.

Thirdly, to sustain treadle pump-use, the support necessary to develop new market strategies and environmentally and socially acceptable practices must be identified (in hand in Zambia through training programmes).

Lastly, attention must be given to evaluating different adoption patterns for treadle pumps and the associated links with the other livelihood activities of the users.

In addition it is crucial to consider the impact on poor people by monitoring non-users' access to shallow groundwater and the impact of increased production on market prices and the impact this has on poor buyers and producers.

IMPROVING GENDER AWARENESS

Studies that provide information on the dynamics between men and women and changes that result from new technology are urgently needed. The design of projects and developments, institutional arrangements, essential support services and related training all need to be considered in design of infrastructure and equipment. Although only one example of treadle pumps in Zambia was used for illustration, interventions to redress gender balance are complex in all situations. Participation of men and women separately and together is crucial to determine ways forward. There is no single solution; site-specific aspects of cultivation, land, resources, markets and social and cultural traditions dictate the options. More grassroots intervention is needed to ensure appropriate solutions are adopted.

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Part I, Guidance for Smallholder Irrigation Development, offers guidance on participation, specific aspects of scheme design, training and considerations for future development, distilled from all three country experiences that are detailed in the remaining five Parts.

Part 2, Group-based irrigation schemes in Zimbabwe, provides an account of the gender issues that are common to this type of development taking into consideration the different management scenarios found among the schemes studied.

Part 3, Gender considerations relating to treadle pump adoption: experiences from Zambia, provides a brief overview of the situation of individual families who invest in treadle pumps and the impact on workloads, productivity and incomes.

Part 4, Gender issues in smallholder irrigation rehabilitation: cases from South Africa, looks at the special problems that arise for men, women and agencies that already have a vested interest in an existing, failing scheme and are faced with the challenge of turning it around.

Part 5, An assessment of the implications of pump breakdown and community participation in irrigation schemes, Masvingo Province, Zimbabwe, provides a rough costing of pump failure and draws attention to the gender impacts that were evident in the Province.

Part 6, Consultation on gender issues in smallholder irrigation, prepared by Zimbabwean sociologists, provides insights into the views and concerns of men and women on irrigation schemes in Zimbabwe.

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Figure 7
Women often find treadle pumps hard work

IF YOU HAVE ANY ENQUIRIES REGARDING THE CONTENT OF THIS ARTICLE, PLEASE CONTACT:

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ABOUT THE AUTHOR

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