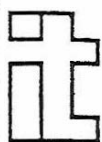


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The publishers gratefully acknowledge the support of those agencies which sponsor the dispatch of regular subscriptions of *Waterlines* to fieldworkers, at our special bulk order rates — including CIDA/CARE; Swiss Development Co-operation/AMREF; Christian Aid; CAFOD; Misereor; WaterAid; World Bank; IMF; Peace Corps; World Lutheran Federation; ActionAid; UNESCO; Oxfam; and IDRC.



ISSN 0262-8104  
 © 1995  
 Intermediate Technology Publications, 103-105 Southampton Row, London WC1B 4HH, UK.  
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# Waterlines

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## centre pages

This issue of *Waterlines* contains the forty-fourth in a series of Technical Briefs (No.44: Emergency water supply) which provide clear and simple introductions to topics of day-to-day interest to fieldworkers and their local counterparts in development work. The first series of Technical Briefs including Nos 1-32 are now available in book form. *The Worth of Water: Technical briefs on health, water and sanitation* (ISBN 1 85339 069 0), is available at £9.95 plus £2.50 post and packing from IT Publications, 103-105 Southampton Row, London, WC1B 4HH, UK.

## subscriptions

Subscription rates are £15 (US\$28) for individuals, £20 (US\$37) for institutions. Subscriptions are available from Intermediate Technology Publications Ltd, at 103-105 Southampton Row, London WC1B 4HH, UK. *Waterlines* is sent overseas by air speeded post where available, surface mail otherwise. For airmail, please add £6 (US\$12).

Subscriptions to India are by registered post. Subscriptions to the USA (USPS 007472) are by second class postage paid at Middlesex, N.J. Postmaster: send address changes to *Waterlines*, c/o C. and C. Mailers Int. Inc., 900 Lincoln Boulevard, P.O. Box 177, Middlesex, N.J. 08846, USA.

## contributions

*Waterlines* is quarterly and welcomes written contributions from its readers. If you have information you feel would be of value and interest to other readers send us your manuscript for approval. Manuscripts should be less than 2000 words long. Photographs and illustrations are very important, and should be black-and-white and captioned. The editor regrets that no responsibility can be accepted for the return of the original manuscript or illustrations, but will try. Where opinions are expressed in *Waterlines* they are those of the authors and not necessarily those of Intermediate Technology. Where technical articles and advertisements from outside sources are published, the details, effectiveness and data on which they are based are assumed to be correct and are taken on good faith to be so.

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Cover: Opening the valves of a dam near Mekele, in Tigray.  
 Credit: Sam Sanyal/Photo Disc

# Freeing the channels — farmer-managed water supply

by Marc Lammerink, Isaack Oenga, and Simon Croxton

How much do we know about the principles or traditional methods of distributing water in the South? Should we accept current orthodoxies about the cultivator and his crops, farmers as a group, and the need for central management of the scheme? Simon Croxton introduces the issues, while Marc Lammerink and Isaack Oenga explain what they mean by community management through partnership.

FARMERS NEED WATER. That is hardly a surprising statement. There are few areas of the tropics where farmers can rely on sufficient rainfall throughout the year: the only way to increase or even permit agricultural production is to try to manage whatever water is available. 'Irrigation' covers a broad spectrum of techniques, ranging from the extremely simple — such as planting on the retreating flood plain of an ephemeral river — to complex systems where water is transported long distances by canals.

Although large-scale irrigation schemes are still favoured in some circles, their damaging effects on the environment, inefficient water use, and inability to meet the needs of disadvantaged communities, have led to increasing interest in small-scale, community-managed schemes.

This edition of *Waterlines* does not dwell on the argument against large irrigation schemes, but starts from the recognition that such criticisms exist and are well substantiated. What we focus on is the argument that smaller-scale, community managed alternatives are viable, and can be the basis for household and wider food security.

Techniques are, therefore, only half the story. Water that is to be used to irrigate must be managed; good timing and calculating the optimum amount can be vitally important. Very often, a limited amount of water has to be shared among many different users, including farms. So farmers need both technical and management skills if they are to succeed in using water effectively for irrigation.

Traditionally, farmers have coped without external intervention. Through a process of trial and error, they have developed a variety of basically simple techniques. Similarly, communities have developed management systems

that enable a rational and effective use of water. But what happens when there are changes within society at large, and in these communities in particular, which weaken or destroy traditional systems? As Kudakwashe Murwira describes in his article on the farmers of Chivi, colonial rule frequently resulted in a disruption or dismantling of traditional systems, and also led to the forcible movement of people into marginal areas.

Increasing populations may also put pressure on scarce resources and require farmers to use new methods of supplying water to their crops. Pastoralists are forced to settle; new markets require new crops. All these events, and a multitude of others in a rapidly changing world, can propel farmers into learning new skills, and irrigation expertise may well be among these. Changes may also result in farmers losing skills, and then being unable to draw upon them when the need arises.

## External input

What should be the role of development agencies and professionals? In the past, the state has often been a key player in providing agricultural services. Nowadays, it is common for the state to retreat: drawing on his experiences in Peru, Gonzalo La Cruz explores some options for an NGO working in such a situation. In theory, NGOs and other external agencies should have a lot to offer. The techniques that underpin irrigation practices are well understood at the theoretical level. It is possible to design systems that optimize water use, and which should support increased production.

Unfortunately, reality does not always live up to expectations. Why is this? Geert Diemer and Frans Huibers suggest that external agents' understanding of what farmers are actually doing is insufficient. There is a tendency to look at the textbook definitions of what signifies 'best' practice; a tendency to be blind to the skills and knowledge of farmers which, as Ian Smout's article illustrates, are in daily evidence in a wide range of basic small-scale irrigation systems.

All the contributors look at what farmers are doing in specific situations, and suggest how external agents might assist them in managing and controlling water more effectively, and in facilitating local management of water resources.



*When water is in short supply, farmers need both technical and management skills to optimize its use.*

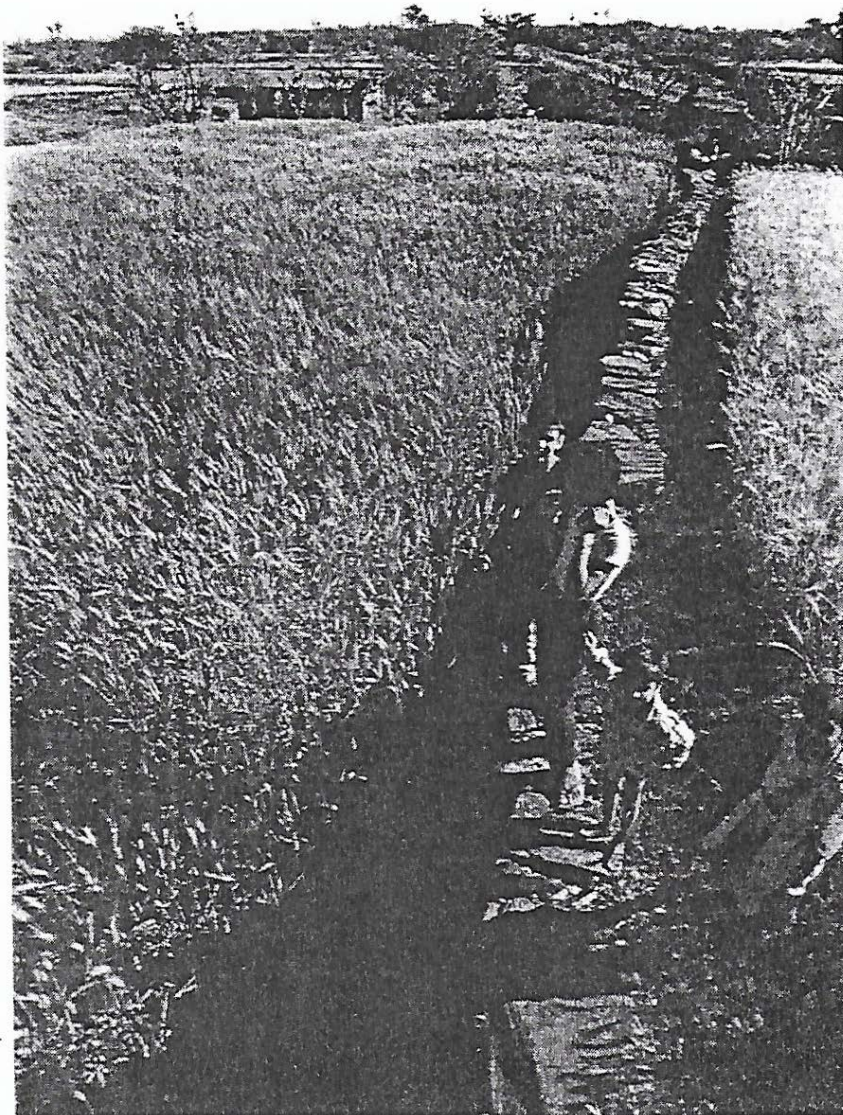
## Community management

Community management as an approach to water supply is still at an initial stage of development. In many cases, communities pay only limited contributions for either construction or upkeep, and have little real control over them. The true potential of communities to take on a higher degree of urgent responsibility for their water supply is not yet sufficiently known. This has been the experience of various international agencies interested in the further development of community input in water programmes on the ground. Current experience suggests that supporting the development of a more prominent role for communities as managers of improved water-supply systems has several advantages. It can lead to greater efficiency in system performance, improve cost-effectiveness for both communities and agencies, and has better prospects for the long-term sustainability of water-supply improvements.

Widespread community participation in water-supply development has revealed a significant potential within user communities to take up management roles. In particular, experience has been gained in rural areas, where a large number of scattered and simpler water-supply systems, such as handpumps and small piped systems, have been introduced. Coupled with the incapacity of the central agencies to maintain and manage these facilities, this introduction has led to the adoption and implementation of policies to hand over the management of these systems to the user communities.

At the same time, many programmes have continued to view rural communities as participants and beneficiaries, rather than as partners and managers. Furthermore, they have often used a blanket approach: one type of water-supply technology and service level is introduced for communities to manage, and one type of community organization and financing system is set up to implement the management. In practice, this has meant that development strategies, and the methods and tools used to implement them, have often been too inflexible and limited in scope to assist communities in developing the management potential they require.<sup>1</sup>

In practice, community management can take many forms. At the one end there is low-cost and voluntary management of simple dug wells and boreholes, followed by more complex management systems taking care of piped schemes with public, group, and private connections. At the other end



Paul Harris

*Many programmes still view rural communities as participants and beneficiaries — not partners and managers.*

of the scale, there are relatively sophisticated community water-supply systems with private connections and water-treatment plants. As development progresses, the form of management can gradually change from voluntary water committees to local water associations which employ several paid staff, and occasionally evolve into a broader community-based enterprise which also provides other environmental services.

Community management does not imply that communities must either take care of everything, or pay the full costs. The idea of partnership allows scope for sharing responsibilities between supporting agencies and communities, ranging from agency back-up to community-managed handpump wells, to a combined management system for a comprehensive piped-water supply, in which a professional agency manages the main works, while

local organizations are responsible for managing service, maintenance, and for financing the recurrent costs of local distribution networks.

## Functions

Local management organizations perform a wide variety of functions, depending on the agreed division of responsibility between the agency and the community. A typical job description covers a range of skills: to negotiate on the community's behalf; to co-ordinate and to administer technical and managerial tasks; to maintain accurate financial and administrative records; to promote good use of the water system; and to communicate regularly and report back to the community.

Building the capacity of communities to undertake these responsibilities is seen by many as a major task for

## Pakistan — village planning improves system design

Village water committees play a significant role in the detailed design of gravity water schemes in northern Pakistan, where they are assisted by engineers from the Aga Khan Rural Support Programme (AKRSP). In the village of Gulkin, the water committee opted for a gravity scheme, with a yard tap for all 102 households. As well as deciding on the service level, the water committee also prepared plans showing the desired routes for pipelines.

The water committee and AKRSP engineers prepared a detailed design, and submitted a joint project proposal to the Canadian High Commission, securing a grant to build the scheme. Construction was carried out almost exclusively by the community, with local plumbers hired by the water committee. AKRSP made periodic site-inspection visits to check on the quality of the work.

The new scheme was completed in a year, replacing a poorly built system — installed with donor assistance — which did not provide a full service, and which broke down when the pipes, in shallow trenches, froze and cracked. AKRSP's technical advice enabled the villagers to build their own supply to a much higher standard, and achieve a service level which matched community needs.

supporting agencies. In providing this support, many water agencies create new forms of local organization to manage the water-supply system. More can be achieved, however, by building on experience with locally developed management patterns for traditional water sources. The overall water-resource management may still require government co-ordination and support.

Whereas community management focuses on poorer rural areas, the richer urban residents continue to receive highly subsidized water services.



D. Deiraz/WFHO

*Age shall not wither thee . . . ancient methods must never be discounted.*

## Women — a decisive role

Water collection and use are often regulated by explicit or implicit agreements which define uses (drinking, livestock watering, clothes and body washing, and irrigation) for water from different sources (wells, springs, streams, rivers, and dams), or at

different locations at the same source (along a riverbank, or on a lake shore). Many of these decisions are made by women, who have long played a crucial role in the traditional management of water sources.

Women are central to the success of water-improvement programmes. They are capable of taking responsibility for complex technologies, as well as managing the basic care of water points. The relationship between management authority and control over resources may help to further strengthen the role of women, but it may also mean that even greater efforts must be made to ensure that they are properly represented in the management process. In many societies, authority positions are reserved for men; as community involvement increases, therefore, gender issues must be considered to prevent a situation in which men are in a controlling, managerial role, while women are relegated to a passive role in an area in which they formerly enjoyed considerable independence and responsibility.

Flexible and gender-specific strategies which strengthen community-management capacities must be established, and allowed to develop at an appropriate pace, making full use of indigenous knowledge. Experience shows that 'when change is limited to shifting responsibilities to local authorities and users, without working methods and means to match, community management will make little or no difference to sustained functioning, use and hygiene'.<sup>2</sup>

## Lessons learned

A number of key lessons have emerged recently from IRC's analysis of experience in community-managed water-

## Planes and boats and electronic mail

Our special thanks go to Simon Croxton and Andrew Graham who, despite Simon's long-haul trips to IT projects in South Asia — and house-moving traumas — jointly co-ordinated this issue. Andrew is a freelance consultant specializing in small-scale water supplies, sanitation, irrigation, and community participation. He is currently looking for an overseas assignment; interested parties can contact him direct at: Heasewood Farmhouse, Isaacs Lane, Haywards Heath, W. Sussex RH16 4RZ, UK. Tel: +44 1444 440794.

## Correction

Dr Astier Almedom has asked us to correct the following errors which crept into her article, co-written with Christian Odhiambo, which appeared in Vol.13, No.2. On page 26: under the sub-heading **Questions**, villagers were not asked questions directly; they were involved in addressing the questions asked. On pages 26 and 31, the illustrations should have been attributed to the SHEWAS Project; and on page 29, the pocket-chart drawings should have been credited to Tom Mboya.

On page 6 of the Almedom/Chatterjoe article featured in Vol.13, No.3, paragraph 3, line 3, should have read 'East African regions of Siaya and Dodoma . . .': Siaya is not in Tanzania; and the drawing featured on the same page — although an original by Juliet Waterkeyn — was 'translated' to suit a Rangi setting by Peter Chewa.

## Protection rather than cure

In the July issue of *Waterlines*, we examine practical ways to prevent and control pollution in the South. Protection has never been so important, as many countries face increasingly competitive demands for water.

How can existing monitoring and pollution-control techniques help to protect and manage water resources; and what are the latest methods and approaches being tested in the field?

**Sibekile Michael Mtetwa** looks at the action taken by governments on pollution control, with special reference to Zimbabwe. **Oliver Carr** examines the water quality on mining sites in Ghana: just how great are the groundwater-pollution risks, and what are the subsequent effects on the local community's water supply? **Ken Iwugo** describes some appropriate technologies for pollution control and waste treatment being practised in Asia and Africa. **Guy Howard** and **Alice Simonds** propose a pollution risk-assessment methodology for fieldworkers in Africa.

supply systems, which will be verified in a participatory action research project — in which local men and women in selected communities assess problems — already underway in Cameroon, Colombia, Guatemala, Kenya, Nepal, and Pakistan.<sup>3</sup> It was found that community management:

- ▷ goes beyond community participation, and equips communities to take charge of their own water-supply improvements;
- ▷ involves a long-term and changing partnership between communities and supporting agencies. It strengthens the capacity of each partner, and enables their combined resources to be used more effectively;
- ▷ can mean more widespread implementation of sustainable water-supply systems;
- ▷ allows support agencies to act as facilitators, rather than as providers, demanding new skills and offering greater opportunities;
- ▷ brings benefits which can extend beyond water into other development activities;
- ▷ extends its scope beyond rural water supplies to peri-urban supply; and
- ▷ can be monitored and evaluated using (slightly adjusted) conventional progress indicators, as capacity building is a major component.



Jorgen Schyite/Still Pictures

*Water-improvement programmes will fail unless women are properly represented at all levels.*

Between now and 1998, the field research will also aim to fill in the continuing gaps in our knowledge, as well as to improve practical guidance on how to promote and implement successful community management. In particular, research will concentrate on time costs and improved cost-effectiveness; replicability and moving

to scale; community management's impact on the poor; the financial burden on the community (and establishing who pays the rest); and defining the limits of community management. ●

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### From supply to demand — KFWWSP

Kenya provides a clear example of the contradictions inherent in the change from a demand-driven to a supply-driven approach. The Kenya Finland Western Water Supply Programme (KFWWSP) is funded by the Finnish and Kenyan Governments, with KEFINCO (Kenya Finland Company) acting as an implementing agency. The programme, launched in 1984, operates in Western Province and in parts of Siaya District in Nyanza Province.

The fourth and final phase of KFWWSP began in 1993, and will be completed in 1995. A demand-driven approach has been adopted, in contrast to phases 1 to 3 when the supply-driven approach was favoured, with the emphasis on physical outputs.

The supply-driven approach involves service delivery by providers upon whom communities depend and who are unable to meet their needs. These people became partners in service delivery. They will bring their own resources — knowledge, finance, organization — into play.

In this approach, the authorities become advisers, facilitators, and overseers. This demand-driven approach requires ongoing learning by, and flexibility from, agency staff.

Some of the contradictions KFWWSP is trying to overcome include:

- ▷ mobilization takes a lot of agency time, while the evaluation of the agency's performance is usually still based on output;
- ▷ other implementing agencies are still using the supply-driven approach, causing confusion and frustration;
- ▷ conflicts between different interest groups — such as politicians — who still expect free services;
- ▷ earlier, unsuccessful experiences have discouraged the communities from paying for more water points;<sup>4</sup>
- ▷ unrealistic target-setting: one community was asked to provide KSh. 240 000 within one month, at a time when families were short of food; and
- ▷ poor communities are left out, as they are less likely to take the initiative to obtain an improved water supply.

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