

The challenges ahead — water-resources management for the next millennium

by Frances Cleaver and Tom Franks

At the beginning of the 1990s, water-sector 'development' still meant providing physical infrastructure. Now the emphasis is on an integrated approach — but what is the best (and most cost-effective) way of achieving and managing this sustainably?

DESPITE MASSIVE INVESTMENTS over the past two decades, millions of people are still without access to satisfactory supplies of fresh water. In those countries where people *do* have adequate provision, there is growing concern over water quality and a perception that available water resources are being increasingly stretched. There is, therefore, a continuing need for the careful planning and management of water resources, and for projects in the

water sector which translate ideas for improvements into a set of actions with identifiable benefits. Whilst the need for water development remains a constant factor, there have been considerable changes in the framework within which this need is experienced. These changes relate to politics, economics, social structures and the environment, and touch many aspects of human activity. This editorial reviews some of the major changes and assesses their

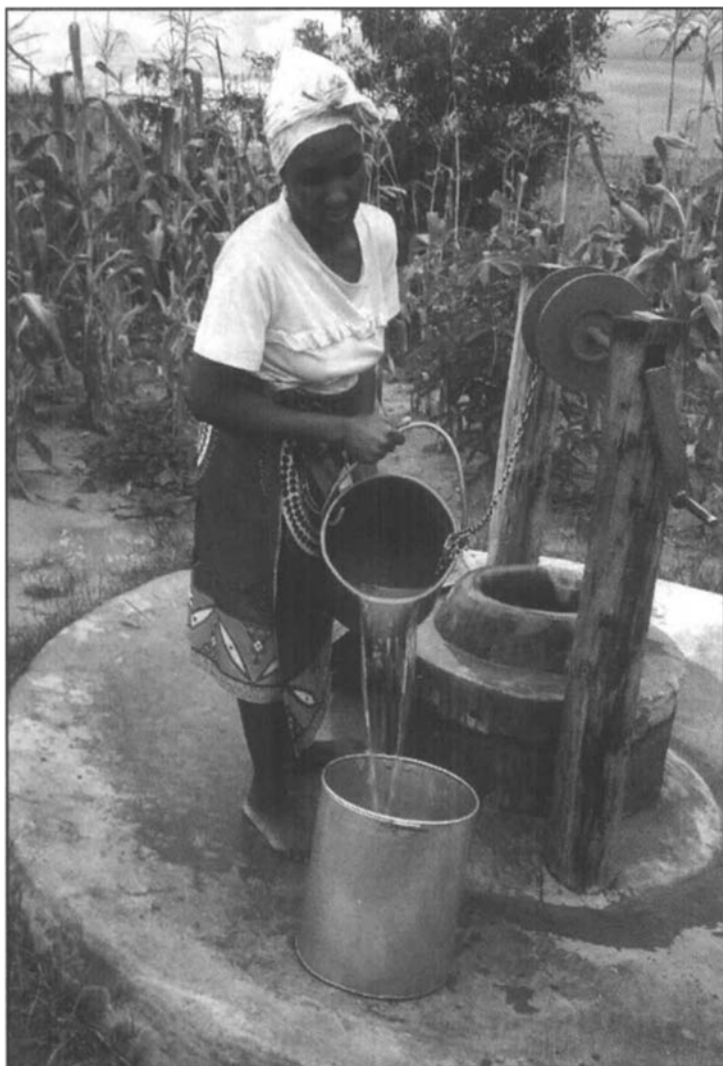
impact on water development.

Two broad disciplinary approaches are possible. One sees water primarily as a natural resource and is particularly concerned with land and water interactions. The other sees water as related to people, their health and well-being. These two approaches coincide with the idea that the planning of water resources can be divided into that intended for 'productive' use (often through irrigation), and that for drinking or other 'domestic' purposes. We suggest that, in the 1990s, the main themes in both approaches overlap; that there are significant cross-cutting issues that produce a complex and changing framework within which the planning and management of projects can take place.

Path to integration

In the 1960s and 70s, projects in the water sector reflected the dominant view of development as primarily a requirement for physical infrastructure. Water projects tended to focus on the provision of facilities within a single sub-sector, such as a dam for irrigation — or an abstraction-and-treatment plant for drinking-water. Typically, the focus was on construction, with little attention paid to either the views of the communities involved, or the needs for long-term management.

Throughout the 1980s, the emphasis began to change as professionals started to gain a greater understanding of the interconnections within the water sector. 'Integrated water development' became a guiding principle, and planners looked for linkages between the different sub-sectors. Irrigation projects were planned to take account of needs for drinking-water; health impacts were identified and mitigation measures included; the potential for water transport was also considered. In the drinking-water sub-sector, ideas about how best to meet basic needs led to an emphasis on universal coverage and access for all through the provision of basic infrastructure. The linkages between water, sanitation, health, and hygiene education were recognized, and attempts were made to incorporate these elements into the planning of water-supply facilities. Nevertheless, the infrastructure approach to water development still tended to dominate, despite numerous policy statements to the contrary.



Frances Cleaver

Water in its 'domestic' context — being drawn from a newly improved well in Zimbabwe.

Inter-sectoral approach

In the 1990s, the emphasis has changed still further with a renewed focus on economic issues and an increasing interest in sustainability and environmentalism. The complexity of poor people's livelihoods is recognized and there is concern about the persistence of poverty. The need to understand the multiple and often competing uses for water — and how actions in one part of a system or catchment may have impacts on the resource in other parts — is acknowledged.

● *Integrated water resource management*

The result is a move towards inter-sectoral development in the water sector, which seeks beneficial and holistic linkages amongst different uses and users. Water consumption for domestic use is a small part of the overall requirement for water, but the new approaches emphasize that domestic demands must be seen within the overall context of the demands of the whole river basin. The same goes for irrigation demands which, globally, make up the largest element of water use. In the case of irrigation, river-basin approaches also require attention to be paid to the management of drainage water, and to environmental factors, such as wetlands maintenance and habitat conservation.

Protection from flooding is sought not from flood control, which results in increased levels of flooding elsewhere, but in flood *proofing*, which seeks to prevent damage and inconvenience without diminishing the necessary and beneficial impacts of flood-waters on flood plains, fisheries, groundwater and other ecosystems. Similarly, there is a concern for balancing 'domestic' with 'productive' uses of water — for example, by recognizing that excessive abstraction of water for irrigation may have negative effects on the quality of drinking-water, or that when providing drinking-water for pastoralists, the needs of their livestock must be taken into account.

● *Institutions*

Approaches to water-resource management in the 1990s reflect an increasingly complex institutional framework which may affect the ways in which projects are planned and implemented. There is, first, a strong belief in the need to increase the involvement of communities in the planning and management of water resources. Community-level institutions are perceived



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Small-scale river-fishing. Increasingly, fishing is becoming an important user of already scarce and declining water resources.

as important in this process and considerable efforts are being made in capacity-building at the local level, from technical training to assistance in the establishment of water users' organizations and in the management of local finances. The need for such community-level capacity-building processes has implications for the phasing, length and resourcing of projects in the sector. Projects incorporating this approach are often still constrained by a three-year project-funding period more suitable to the construction of an infrastructural facility. Project planners and managers will need to be more socially informed, more aware of the costs and benefits of participation to local people, and more knowledgeable about the complexity of

interactions between water resources and what men and women want and need so support their way of life.

Water agencies

Another area of concern regarding the institutional framework is in the management of water agencies. These were, traditionally, large public-sector organizations, well-resourced in financial and human terms, and concerned primarily with the construction of physical facilities to exploit the resource more fully. Engineering has been a dominant discipline in the agencies, and there was, until recently, little experience in other necessary skills such as operational management. The highly educated, well-resourced staff of such agencies were confident in their ability to plan and manage water

In July's very special issue

The July issue of *Waterlines* has a new look, a host of new features and, we believe, a new appeal for fieldworkers and all those actively involved or deeply interested in the water-supply and sanitation sector.

The relaunched *Waterlines* will include:

- a complete overhaul of the page design;
- an enhanced editorial board;
- a more accessible Leader article, drawing together the main points of that issue's theme articles;
- more readers' contributions, reflecting fieldworker activities, innovations, opinions and concerns;

- new features keeping readers up to date with the latest developments on the internet and the conference circuit;
- news from the agencies; and
- a one-page 'beginner's guide to' feature which will complement, not replace, the Technical Brief.

The theme of the July 1998 issue is 'Gender and water'. In her 1992 leader article, Borjana Bulajich wrote: 'In the area of water-resource development and environmental protection, women are more often victims than beneficiaries ... by involving women, water and sanitation projects could more effectively achieve the ultimate goals of more and safer water.' Six years on, *Waterlines*, in collaboration with UNIFEM, asks: has anything changed?

resources effectively and, therefore, had little interest or experience in working in partnership with the intended beneficiaries of water schemes.

In the 1990s there has been something of a sea change — at least in the agencies' rhetoric. Their role as the implementors of physical projects has diminished in importance, and they are no longer seen as the sole arbiters of decisions on the planning and management of water resources. Instead, there is a perceived need to build a new type of water agency which works in partnership with others who are also stakeholders in the water resource. Partners may be other agencies concerned with related sectors such as forestry, as well as individuals and groups with a particular interest in the resource. The need to work with all these stakeholders

In line with valuing water as an economic good, the desirability of some sort of cost recovery from users is now accepted wisdom in the water sector. In many projects, the detailed decision-making about the size of contributions from different community members, and the related distribution of water, is being left to the communities themselves. But several questions remain unanswered. User preferences for particular types of water are not well-modelled in such approaches, neither are the choices (or lack of them) available. The implications for families' household budgets, especially of the poorest, are inadequately considered whilst the local institutional mechanisms for revenue management remain, in many cases, undeveloped. Some agencies in the sector are currently

projects often include important non-physical measures such as community development, gender analysis, and the establishment of new administrative systems. All these may well require different time-scales and different management approaches, yet all must be achieved if projects are going to be successful and sustainable. Moreover, such projects have to be planned and implemented within the framework of integrated resource management which requires consideration of a range of impacts, sometimes extending far beyond the immediate hydrological system, and over considerable time periods.

One result of the changing framework for water planning is seen in the recognition of different values for water: environmental, economic and social. Such changes raise a new set of problems for us, however. How can we reconcile a concern with differing individual and household interests with the larger perspective required for river-basin or catchment-area planning? What is the proper level of analysis for the planning of provision and for subsequent management? And what mechanisms do we have for balancing competing needs and priorities?

Many other challenges remain for us as we face the next millennium. How, for example, can the lessons and innovative approaches being tested in small projects in the NGO sector be scaled up to projects that meet the needs of the millions unprovided for? How can the tools of development and the lessons learned from other sectors be put to work in water-resource management?

The articles in this issue of *Waterlines* look at some of these concerns, identifying deficiencies in past approaches, and highlighting new initiatives which seem to have potential for more effective development in the water sector. If successful, these new approaches could help to reduce the large numbers of the world's population who struggle daily for adequate supplies of water, and to promote more equitable and environmentally sound use of the world's water resources.

Note

Gender provides the focus of the next edition of *Waterlines* (July 1998) and is not, therefore, specifically emphasized in this issue, although gender issues are embedded in the individual articles.

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requires a new type of organization which is not autocratic and inflexible, but is open and democratic in its dealings, and able to meet the concerns and needs of all water-users in a way which inspires their confidence.

Cost recovery

Such a transformation of bureaucracies may be rather more theory than practice at the moment, but the driving forces of change are likely to intensify. Increasing pressure on public revenues will mean that the traditional sources of funding for water agencies will be further diminished in the future. Already, financing constraints have been instrumental in institutional change in many situations. This has been most noticeable in the water-supply sector, where public-works departments funded by central sources are increasingly giving way to water companies which have a commercial relationship with their customers. It also extends to the irrigation sector, though there the problems of establishing a new relationship are compounded by difficulties in measuring and paying for water use.

debating the relative merits of subsidy (to reach the poorest) over cost recovery (for sustainability) and it is likely that we will see a mixture of financing approaches in water projects as we move into the next century. As with many other current policy initiatives, the long-term effects of user payments on both water-resource management and on poverty are, as yet, unknown. What is clear is that such approaches increase the complexity of project planning and are not in themselves cost-free.

Complex challenges ahead

The overall result of these changes is an increasingly complex situation for water development, in which the demands made on planners and managers are greater than in the past. At the end of the millennium, typical water projects comprise an intricate mix of physical and institutional measures. They generally include some elements of construction such as abstraction and delivery facilities. These may be intended for both 'productive' and 'domestic' use which complicates their design. In addition,