

# books

## The Rainwater Harvesting CD

Hans Hartung (ed.),  
2002, Margraf Publishers, €25  
(Germany), €30 (EU), €34 (non-EU),  
€17 (NGOs),  
ISBN: 3 8236 1384 7

Rainwater harvesting is finally receiving the recognition it deserves. Participants at a joint dialogue session at the World Water Forum in Kyoto last month voted rainwater harvesting as one of the five topics of greatest interest. So the prospects for this particular CD becoming a chart topper look promising. The CD comes packed in an attractive little booklet providing a useful guide and site map. The range and depth of material covered is impressive as are the design and layout, which make the material very accessible. The 'basics' section covers all of the key issues: types of catchments and storage systems, the sizing of tanks, gutters, first flush and filter systems and rainwater quality. For those who require further information, numerous website links are listed and key papers from the last two International Rainwater Catchment Systems Conferences are included.

This very useful resource draws on the long field experience and expertise of several key institutions and individuals from around the world and thus provides an excellent global overview. Case studies are cited from several countries where rainwater harvesting has become widely practised, notably Australia, Brazil, China, Germany, Bangladesh, Japan, Kenya, Sri Lanka and Thailand with updates on many projects covered by *Waterlines* over the years.

While the CD does include some material on rainwater harvesting for agriculture, its main thrust is towards the collection and storage of rainwater for domestic use. Some excellent photo



sequences with accompanying audio captions from Laikipia and Machakos districts in Kenya bring the technology to life and illustrate in considerable detail the construction of ferrocement tanks and *Fanja juu* terracing.

If this resource does have a weakness then it lies in parts of the documentation section where the poor quality of the scanned PDF files makes some of the material hard to read. Apart from this minor technical flaw the CD is to be highly recommended to every library with a section on appropriate technology and every field practitioner involved in promoting this up-and-coming field.

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## Out in the Cold: Emergency water supply and sanitation for cold regions

Mark Buttle and Michael Smith,  
2001, WEDC, £19.95, 120 pages,  
ISBN: 0 906055 62 8

*Out in the Cold* sets out to fill in the gap of technical publications on emergency water supply and sanitation in cold regions. It covers all aspects of water supply and sanitation including solid waste management and disposal of the dead, and has specific sections for mountainous regions. It looks at related issues of construction, logistics, mechanics and shelter. Finally it touches on human issues of health, personal effectiveness and health and safety. It aims to complement a wide range of books on emergency water and sanitation and should be read in conjunction with them.

The authors look at how the properties of water and bacteria are changed by the climate, show how these affect WSS processes, and then suggest solutions. For instance, the viscosity of water increases below 4°C, increasing settling time in sedimentation tanks. Jar tests at

the correct temperature to determine settling velocities would solve this.

They also take into account how the weather affects people's behaviour: freezing temperatures deter hand washing, so they give examples of simple communal water heaters.

The field examples are useful, but the book could do with many more: over the past 10 years humanitarian operations in cold climates must have come across useful local methods and found innovative solutions to problems. Reliable field information is difficult to find, however.

Otherwise I only have minor comments: a smaller, fatter book would be more usable in the field. Poor proofreading has made this edition less reliable than the first. The worst error is in an equation for the time for water to freeze in a pipe where  $\ln$  (one multiplied by  $n$ ) has been substituted for natural logarithm ( $\ln$ ).

This is an important book that adds to the knowledge of humanitarian engineers in a field hardly touched on by other publications. Its main detraction is that the authors were not able to get more working examples from the field.

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## Small Community Water Supplies: Technology, people and partnership

Jo Smet and Christine van Wijk (eds), 2002, IRC International Water and Sanitation Centre, Technical Paper No.40, 585 pages, £34.00, ISBN: 90 6687 035 4

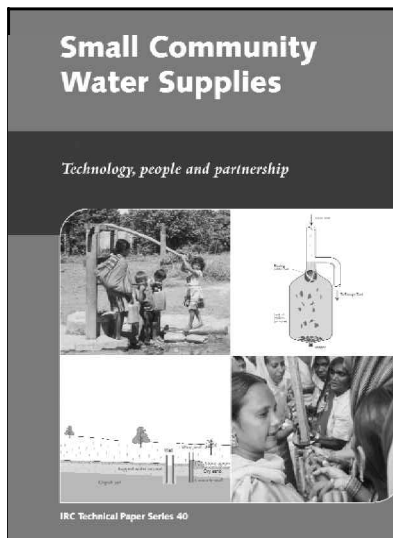
This is a revised and updated edition of a book published by the International Water and Sanitation Centre (IRC) in 1981. It now encompasses a broader range of issues, including the planning, management and social and institutional support structures for the sustainable operation of water-supply services.

The book is written for engineers and practitioners involved in planning, designing and implementing water-supply programmes. It starts by covering the socio-economic, planning and management aspects of water-supply systems, emphasizing the importance of community participation. Water quality and quantity aspects and integrated water resources management (IWRM) are also introduced. The principles of IWRM, based upon the Dublin meeting in 1992, are presented to help water supply and sanitation organizations adopt this new agenda for their own projects and systems.

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Drinking water sources and methods of water abstraction, storage and conservation are presented in six chapters, emphasizing the role of local communities in achieving sustainability. Design and construction aspects are described in detail, as well as the importance of the community members in planning and decision-making. Of specific interest to the reader will be those sections focusing on protection of spring water sources, methods of groundwater withdrawal, pump types to suit different ages and user groups, and the design of small dams and reservoirs.

Physico-chemical processes for water treatment are described extensively in the following eight chapters. The chapter on multi-stage filtration, which is based on the slow sand-filtration process combined with a roughing filter, is particularly relevant for water treatment in low-income communities. Various disinfection methods appropriate at the household level (e.g. boiling and solar disinfection) and for more sophisticated centralized systems (e.g. chlorine gas) are described. The chapter on desalination is more relevant for higher-income countries, although a short section on small-community water-supply applications is provided, for areas with water-scarcity problems. Two chapters on technologies for fluoride and arsenic removal have been included in response to increasing problems in countries such as India and Bangladesh.

Principles of hydraulic design for water transmission and distribution are described, with sections on pumping, pipelines and the detection of leakages, which are a major cause of unaccounted water. The last chapter focuses on the provision of drinking water supplies in emergency situations and suggests immediate and longer-term resource

requirements to be implemented by external agencies or by communities themselves.

One of the strong points about the book is the variety of authors with a wide range of experience from different parts of the world. These experiences are used to illustrate the chapters throughout the book. The clear diagrams and illustrations will be particularly useful for lecturers and trainers. Overall, the book is highly recommended and will be of interest and practical use to engineers throughout the world. The publication is good value for money and is also available as a free download from the IRC website, [www.irc.nl/products/publications/](http://www.irc.nl/products/publications/)

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## The Management of Weeds in Irrigation and Drainage Channels

I.K. Smout, P.M. Wade, P.J. Barker and C.M. Ferguson, 1997, WEDC Report, 193 pages, paperback, ISBN: 0 906055 57 1

This report summarises key findings from a DFID-funded project. Starting with a useful overview of irrigation systems management, the authors introduce a series of case studies, two each from Kenya and Zimbabwe. These describe the physical environment, the irrigation and drainage systems and characteristics of existing approaches to aquatic weed management.

The identification and diagnosis of problems caused by aquatic weeds in irrigation and drainage systems is discussed, and guidelines to identify appropriate means of aquatic weed control presented. Information required in estimating costs associated with differing weed control methods is presented, and an example is given based on existing practice for the main and branch channels at Mwea Irrigation Settlement Scheme, Kenya.

An approach to calculating life cycle costs, based on discounted cash flows, is described, and using this approach, potential costs for alternative maintenance strategy options are compared.

This report is well written and easy to follow. However, poorly reproduced flowcharts are sometimes hard to follow and in practice it would be difficult for irrigation scheme managers to exploit what would otherwise be a useful tool. Although presenting a comprehensive approach to assessing management options for weeds in medium- to large-

scale irrigation systems, further discussion of examples from the four case study sites would have been useful to illustrate common technical and operational constraints, and possibly to identify approaches for the practical implementation of more effective management strategies.

Throughout the report there is an apparent difficulty in discussing the management of 'weeds', when the presence of well-managed aquatic plant communities in canals may be desirable. Potential values of aquatic plants, although mentioned, are not explored in any depth. Further development of the proposed approach, to explore costs and benefits of alternative management options, including biological and ecological based strategies, would have been useful. Despite some minor criticisms, this report provides a useful introduction to the subject. Online publication ([www.lboro.ac.uk/wedc/publications](http://www.lboro.ac.uk/wedc/publications)) makes the report easily accessible.

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