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**LIST OF BASIC PUBLICATIONS  
on  
Community Water Supply and Sanitation**

**A Selected Bibliography and Glossary of Expressions**

October 1987

Prepared for  
The World Health Organization  
and  
United Nations Development Programme  
by



International Reference Centre for Community Water Supply

021-8741-6398

## ADDENDUM

The following publications were no longer available as of June 1988:

- 2.
- 5.
- 18.
- 24.
- 26.
- 36.
- 51.
- 85.

**LIST OF BASIC PUBLICATIONS**  
**on**  
**Community Water Supply and Sanitation**  
**A Selected Bibliography and Glossary of Expressions**

LIBRARY, INTERNATIONAL REFERENCE  
CENTRE FOR COMMUNITY WATER SUPPLY  
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October 1987

Prepared for  
The World Health Organization  
and  
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International Reference Centre for Community Water Supply and Sanitation  
The Hague, The Netherlands



## INTRODUCTION

Over the years and particularly within the framework of the International Drinking Water Supply and Sanitation Decade (IDWSSD) a vast body of technical information on water supply and sanitation has been generated. Unfortunately many professional staff both in the field and behind a desk do not always have ready access to this information. The United Nations Steering Committee on the Decade has expressed a need to develop a list of basic publications and commonly used expressions in community water supply and sanitation.

On behalf of the World Health Organization within the framework of the UNDP Interregional Project INT/86/002/A/01/14, the International Reference Centre for Community Water Supply and Sanitation (IRC), The Hague, The Netherlands, has prepared this list of basic publications. This list of approximately 90 documents is designed to assist professional staff, both generalists and specialists, to retrieve technical information relevant to their needs. The wide range in professional and cultural backgrounds of those involved in the Decade has led to the usage of jargon and terminology which is not readily understood or used in the same way by others. In a move towards improved communications a glossary of commonly used expressions has been prepared and included.

It is inevitable that users will know of valuable and relevant documents, journals and newsletters and also of common expressions which have been omitted. From time to time this list of basic publications will need to be revised and updated. Any comments and suggestions would be welcome, please address them to:

IRC  
P.O. Box 93190  
2509 AD The Hague  
The Netherlands

The Hague, August 1987

**USERS GUIDE**

This list of basic publications in water supply and sanitation has been prepared for ready reference for professional staff working in the sector. The contents are set out as follows:

**SECTION 1: KEY TO DOCUMENTS**

In this section documents are listed per user category; Part A: **Generalists** and Part B: **Specialists**. In both parts the documents are grouped according to subject in seven categories:

- I Policies, Strategies, Planning and Evaluation
- II Health and Hygiene
- III Society/Community, Education and Participation
- IV Organization, Management and Finance
- V Human Resources Development and Information Exchange
- VI Water Supply Technologies
- VII Sanitation Technologies

A detailed list of the topics covered under each of the seven categories has been included (see page v).

In the right-hand column beside each entry there is a cross-reference to Section 2, which gives detailed bibliographic information including an abstract. Each entry of Section 2 is numbered and the corresponding number appears in the right-hand column in Section 1.

**SECTION 2: ANNOTATED BIBLIOGRAPHY**

All documents listed in Section 1 are presented in the annotated bibliography, and are arranged in alphabetical order according to author. The following information is provided for each entry:

Author  
Date of Publication  
Title  
Publisher and Place  
Price  
Availability  
Abstract

Cross-references are made to subject categories and user categories as used in Section 1.

The asterisk by the price in some entries (numbers 19, 26, 27, 41, 44, 45 and 51 - WASH and USAID publications), indicates that the document is in the public domain, or may be obtained through United States missions. These documents can be freely reproduced, modified or translated.

**SECTION 3: ADDRESSES OF PUBLISHERS**

A list of addresses of publishers is presented to simplify ordering.

**SECTION 4: JOURNALS AND NEWSLETTERS**

In this section the major English language journals and newsletters are listed together with the address of the publisher, the frequency of publication, and cost of the annual subscription.

**SECTION 5: GLOSSARY OF COMMONLY USED EXPRESSIONS**

This is a list of commonly used expressions in community water supply and sanitation together with their most widely accepted meaning or interpretation. It should be noted that in some of the publications listed in section 2 these terms may not necessarily have the same meaning.

**ACKNOWLEDGEMENTS**

The International Reference Centre for Community Water Supply and Sanitation acknowledges the contribution and comments of the staff of the following organizations:

- Food and Agricultural Organization of the United Nations (FAO), Rome
- United Nations Centre for Housing and Human Settlements (HABITAT/UNCHS), Nairobi
- International Labour Office (ILO), Geneva
- United Nations Department of Technical Co-operation for Development (UN/DTCD), New York
- United Nations Educational Scientific and Cultural Organization (UNESCO), Paris
- World Health Organization and its Regional Environmental Health Centres: CEHA in Amman en PEPAS in Kuala-Lumpur
- Water and Sanitation for Health Project (WASH), Arlington
- United Nations Development Programme (UNDP), New York.



SUBJECT COVERAGE

- I            POLICIES, STRATEGIES, PLANNING AND EVALUATION
  - Policy development
  - Strategies and approaches
  - Planning and programming
  - Monitoring and evaluation
  
- II           HEALTH AND HYGIENE
  - Health; Hygiene; Environment
  - Community and school hygiene education
  
- III          SOCIETY/COMMUNITY EDUCATION & PARTICIPATION
  - Community involvement (including role of women)
  - Socio-economic aspects (including survey methodology)
  - Institutional aspects and legislation
  
- IV          ORGANIZATION, MANAGEMENT AND FINANCE
  - Administration and organization
  - Management of construction, operation and maintenance
  - Marketing and economics
  - Finance (including external funding, local contributions and revenue collection)
  
- V           HUMAN RESOURCES DEVELOPMENT AND INFORMATION EXCHANGE
  - Selection, mobilization, utilization and management of human resources
  - Training methodologies and curriculum development
  - Communication; information exchange and transfer
  
- VI          WATER SUPPLY TECHNOLOGIES
  - General
  - Water resources and sources of drinking water
  - Collection, lifting and pumping technologies
  - Community water distribution and storage
  - Domestic storage and use of water
  - Water quality and treatment
  
- VII         SANITATION TECHNOLOGIES
  - General
  - On-site sanitation (including on-site treatment and disposal)
  - Off-site treatment and disposal
  - Drainage, vector control, etc.
  - Solid Waste disposal

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**SECTION 1: KEY TO DOCUMENTS****PART A: DOCUMENTS FOR POLICY MAKERS, DECISION MAKERS AND ADMINISTRATORS****(Generalists)**

Bibl.data
Section 2
<u>No.</u>

**I POLICIES, STRATEGIES, PLANNING AND EVALUATION**

<b>Water and sanitation : economic and sociological perspectives.</b>	8
Bourne, Peter G. (1984).	
<b>Evaluating health impact : water supply, sanitation and hygiene education.</b>	10
Briscoe, John; Feachem, Richard G.; Rahaman, M. Mujibur (1986).	
<b>Water, wastes and health in hot climates.</b>	23
Feachem, Richard; McGarry, Michael; Mara, Duncan (1980).	
<b>Practical solutions in drinking water supply and wastes disposal for developing countries.</b>	36
IRC; University of Technology (Loughborough) WEDC Group (1982).	
<b>Appropriate technology for water supply and sanitation : Vol. 1a: a summary of technical and economic options.</b>	38
Kalbermatten, J.M.; Julius, D.S.; Gunnerson, C.G. (1980).	
<b>Drinking water and sanitation 1981-90 : a way to health.</b>	76
WHO (1981).	
<b>Guiding principles for national monitoring of water supply and sanitation.</b>	78
WHO (1983).	
<b>Minimum evaluation procedure (MEP) for water supply and sanitation projects.</b>	79
WHO (1983).	
<b>National and global monitoring of water supply and sanitation.</b>	80
WHO (1982).	
<b>Achieving Success in Community water supply and sanitation projects.</b>	85
WHO; SEARO (1985).	

**II HEALTH AND HYGIENE**

<b>Guide to simple sanitary measures for the control of enteric diseases.</b>	60
Rajagopalan, S.; Shiffman, M.A. (1974).	
(Chapter VI, Community education and behaviour change)	

	Bibl.data Section 2 <u>No.</u>
<b>Where there is no Doctor.</b> Werner, David, (1977).	73
 <b>III SOCIETY/COMMUNITY EDUCATION &amp; PARTICIPATION</b>	
<b>Water and sanitation : economic and sociological perspectives.</b> Bourne, Peter G. (1984). (Chapter IX, Water and Sanitation: Cultural considerations)	8
<b>Water supply and sanitation in developing countries.</b> Dangerfield, Bernard J. (1983).	17
<b>Community participation in water supply and sanitation : concepts, strategies and methods.</b> White, Alastair (1982).	74
<b>Guidelines for planning community participation in water supply.</b> Whyte, A. (1983).	87
<b>Participation of women in water supply and sanitation : Roles and realities.</b> Wijk-Sijbesma, Christine van (1985). (Chapter I, Planning for participation and education in community water supply programmes)	89
 <b>IV ORGANIZATION, MANAGEMENT AND FINANCE</b>	
<b>Water supply and sanitation in developing countries.</b> Dangerfield, Bernard J. (1983).	17
<b>Appropriate technology for water supply and sanitation : Vol. 1: technical and economic options.</b> Kalbermatten, J.M.; Julius, D.S.; Gunnerson, C.G. (1980).	39
<b>Village water supply : economics and policy in the developing world.</b> Saunders, Robert J.; Warford, Jeremy J. (1976).	62
<b>Guiding principles for national monitoring of water supply and sanitation.</b> WHO (1983).	78
<b>Minimum evaluation procedure (MEP) for water supply and sanitation projects.</b> WHO (1983).	79
<b>National and global monitoring of water supply and sanitation.</b> WHO (1982).	80

**V HUMAN RESOURCES DEVELOPMENT AND INFORMATION EXCHANGE**

- Water supply and sanitation in developing countries.** 17  
Dangerfield, Bernard J. (1983).
- Basic Strategy Document.** 75  
WHO (1982).
- Participation of women in water supply and sanitation : Roles and realities.** 89  
Wijk-Sijbesma, Christine van (1985).  
(Chapter III, Information for the community)

**VI WATER SUPPLY TECHNOLOGIES**

- Water supply and sanitation in developing countries.** 17  
Dangerfield, Bernard J. (1983).
- Shallow wells.** 18  
DHV (1978).
- Small community water supplies in developing countries.** 31  
Hofkes, E. (1983).
- Public standpost water supplies.** 34  
IRC (1979).
- Technology for water supply and sanitation in developing countries.** 83  
WHO. Study group on technology for water supply and sanitation in developing countries (1987).

**VII SANITATION TECHNOLOGIES**

- Water supply and sanitation in developing countries.** 17  
Dangerfield, Bernard J. (1983).
- Management of solid wastes in developing countries.** 25  
Flintoff, Frank (1984).
- Appropriate technology for water supply and sanitation : Vol. 2: a planner's guide.** 40  
Kalbermatten, John M.; Julius, DeAnne S.; Mara, D. Duncan; Gunnerson, Charles G. (1980).
- Sanitation without water.** 88  
Winblad, Uno; Kilama, Wen. (1985).



## PART B: DOCUMENTS FOR ENGINEERS, TECHNICIANS AND HEALTH SPECIALISTS

## (Specialists)

	Bibl.data Section 2 <u>No.</u>
<b>I POLICIES, STRATEGIES, PLANNING AND EVALUATION</b>	
<b>Water and sanitation : economic and sociological perspectives.</b> Bourne, Peter G. (1984).	8
<b>Water, wastes and health in hot climates.</b> Feachem, Richard; McGarry, Michael; Mara, Duncan (1980).	23
<b>Practical solutions in drinking water supply and wastes disposal for developing countries.</b> IRC; University of Technology (Loughborough) WEDC Group (1982).	36
<b>Achieving success in community water supply and sanitation projects.</b> WHO; SEARO (1985).	85
<b>II HEALTH AND HYGIENE</b>	
<b>Wastewater treatment and disposal : engineering and ecology in pollution control.</b> Arceivala, S.J. (1981).	2
<b>Making the links : guidelines for hygiene education in community water supply and sanitation.</b> Boot, Marieke T. (1984).	7
<b>Sanitation and disease : health aspects of excreta and wastewater management.</b> Feachem, Richard G.; Bradley, David J.; Garelick, Hemda; Mara, D. Duncan (1983).	21
<b>Water, wastes and health in hot climates.</b> Feachem, Richard; McGarry, Michael; Mara, Duncan (1980).	23
<b>Developing and using audio-visual materials in water supply and sanitation programmes.</b> Karlin, Barry; Isely, Raymond B. (1984).	41
<b>Water and human health.</b> McJunkin, F. Eugene (1983).	51
<b>Health education for tropical schools.</b> McNeil, R.J.; Anderson, M.E. (1986).	52
<b>Guide to simple sanitary measures for the control of enteric diseases.</b> Rajagopalan, S.; Shiffman, M.A. (1974).	60

	Bibl.data Section 2 <u>No.</u>
<b>Using radio for primary health care.</b> Sweeney, W.; Parlato, M. Burns (1982).	66
<b>The control of schistosomiasis : report of a WHO Expert Committee</b> WHO (1985).	82
<b>Helping a billion children learn about health.</b> WHO/UNICEF (1985).	86
 <b>III SOCIETY/COMMUNITY EDUCATION &amp; PARTICIPATION</b>	
<b>Water supply and sanitation in developing countries.</b> Dangerfield, Bernard J. (1983).	17
<b>Planning of communication support (information, motivation and education) in sanitation projects and programs.</b> Perrett, Heli (1983).	55
<b>Involving women in sanitation projects.</b> Perrett, Heli E. (1985).	56
<b>Methods for gathering socio-cultural data for water supply and sanitation projects.</b> Simpson-Hébert, Mayling (1983).	65
 <b>IV ORGANIZATION, MANAGEMENT AND FINANCE</b>	
<b>Evaluation for village water supply planning.</b> Cairncross, S.; Carruthers, I.; Curtis, D.; Feachem, R.; Bradley, D.; Baldwin, G. (1980).	13
<b>Water supply and sanitation in developing countries.</b> Dangerfield, Bernard J. (1983).	17
<b>Minimum evaluation procedure (MEP) for water supply and sanitation projects.</b> WHO (1983).	79
<b>Republic of Terrania, a case study on the economic and financial aspects of programmes and projects in the drinking water supply and sanitation sector.</b> WHO (1980).	81
 <b>V HUMAN RESOURCES DEVELOPMENT AND INFORMATION EXCHANGE</b>	
<b>Instructor's manual and planning guide for training of trainers : a series of three 20-hour workshops.</b> Austin, John H.; Barrow, Jeffrey; Francis, Quincy; Graham, Stanford; Whittington, Dorian (1978).	5



	Bibl.data Section 2 <u>No.</u>
<b>A guide to job analysis.</b> Boydell, T.H. (1981).	9
<b>Human resources development handbook : guidelines for ministries and agencies responsible for water supply and sanitation.</b> Carefoot, Neil; Gibson, Howard (1984).	14
<b>Water supply and sanitation in developing countries.</b> Dangerfield, Bernard J. (1983).	17
<b>A guide for training manual developers.</b> Flanagan, Donna R.; Austin, John H.; Francis, Quincy (1980).	24
<b>General introduction to the techniques of information and documentation work.</b> Guinchat, Clare; Menou, Michel (1983).	29
<b>POETRI Reference Manual.</b> IRC (1981).	33
<b>Training for development.</b> Lynton, Rolf E.; Pareek, Udai (1978).	46
<b>Handbook of training evaluation and measurement methods.</b> Phillips, Jack J. (1983).	57
<b>Helping health workers learn.</b> Werner, David; Bower, Bill (1982).	72
 <b>VI WATER SUPPLY TECHNOLOGIES</b>	
<b>Simplified procedures for water examination : including supplement on instrumental methods.</b> American Water Works Association (1977).	1
<b>Community water supply : the handpump option.</b> Arlosoroff, Saul; Tschannerl, Gerhard; Grey, David; Journet, William; Karp, Andrew; Langenegger, Otto; Roch, Robert (1987).	3
<b>Hand drilled wells : a manual on siting, design, construction and maintenance.</b> Blankwaardt, Bob (1984).	6
<b>Wells construction : hand dug and hand drilled.</b> Brush, Richard E. (1979).	11
<b>Small water supplies.</b> Cairncross, Sandy; Feachem, Richard (1978).	12
<b>Modular plants for water treatment.</b> CEPIS (1982).	15

	Bibl.data Section 2 <u>No.</u>
<b>Operation and control of water treatment processes.</b> Cox, C.R. (1964).	16
<b>Water supply and sanitation in developing countries.</b> Dangerfield, Bernard J. (1983).	17
<b>Shallow wells.</b> DHV (1978).	18
<b>A workshop design for rainwater roof catchment systems : a training guide.</b> Edwards, Daniel; Keller, Kent; Yolahem, David (1984).	19
<b>Small wells manual : a manual of location, construction, use and maintenance.</b> Gibson, Ulric P.; Singer, Rexford D. (1969).	26
<b>A workshop design for spring capping : a training guide.</b> Gormley, Wilma; Goff, David; Johnson, Carl (1984).	27
<b>Hydrology and quality of water resources.</b> Hammer, Mark J.; MacKichan, Kenneth A. (1981).	30
<b>Public standpost water supplies : a design and construction manual.</b> IRC (1979).	35
<b>A handbook of gravity-flow water systems for small communities.</b> Jordan Jr., Thomas D. (1984).	37
<b>Solar water pumping : a handbook.</b> Kenna, Jeff; Gillet, Bill (1985).	42
<b>Self-help wells.</b> Koegel, R.G. (1977).	43
<b>A workshop design for handpump installation and maintenance : a training guide.</b> Liebler, Claudia; Pashkevich, Alan (1984).	45
<b>Handpumps for use in drinking water supplies in developing countries.</b> McJunkin, F. Eugene (1983).	50
<b>Surface water treatment for communities in developing countries.</b> Schulz, Christopher R.; Okun, Daniel A. (1984).	63
<b>Guidelines on health aspects of plumbing.</b> Taylor, Floyd B.; Wood, William E. (1982).	68
<b>Slow sand filtration : manual for caretakers.</b> Visscher, J.T.; Veenstra, S. (1985).	69

	Bibl.data Section 2 <u>No.</u>
<b>Hand dug wells and their construction.</b> Watt, S.B.; Wood, W.E. (1977).	71
<b>Guidelines for drinking water quality : vol. 1: Recommendations.</b> WHO (1984).	77/I
<b>Guidelines for drinking water quality : vol. 2: Health criteria and other supporting information.</b> WHO (1984).	77/II
<b>Guidelines for drinking water quality : vol. 3: Drinking water quality control in small-community supplies.</b> WHO (1985).	77/III
<b>Typical designs for engineering components in rural water supply.</b> WHO Regional Office for South-East Asia (1978).	84
 <b>VII SANITATION TECHNOLOGIES</b>	
<b>Wastewater treatment and disposal : engineering and ecology in pollution control.</b> Arceivala, S.J. (1981).	2
<b>Notes on design &amp; operation of waste water stabilization ponds in warm climates of developing countries.</b> Arthur, J.P. (1983).	4
<b>Water supply and sanitation in developing countries.</b> Dangerfield, Bernard J. (1983).	17
<b>Aquaculture : a component of low-cost sanitation technology.</b> Edwards, Peter (1985).	20
<b>Small excreta disposal systems.</b> Feachem, Richard; Cairncross, Sandy (1978).	22
<b>Water, wastes and health in hot climates.</b> Feachem, Richard; McGarry, Michael; Mara, Duncan (1980).	23
<b>Waste stabilization ponds.</b> Gloyna, Earnest F. (1971).	28
<b>Managing solid wastes in developing countries.</b> Holmes, J.R. (1984).	32
<b>Appropriate technology for water supply and sanitation : Vol. 2: a planner's guide.</b> Kalbermatten, John M.; Julius, DeAnne S.; Mara, D. Duncan; Gunnerson, Charles G. (1980).	40
<b>A workshop design for latrine construction : a training guide.</b> LeClere, Maria; Sherer, Keith (1984).	44

	Bibl.data Section 2 <u>No.</u>
<b>The design of ventilated improved pit latrines.</b> Mara, D. Duncan (1984).	47
<b>Ventilated improved pit latrines : guidelines for the selection of design options.</b> Mara, D. Duncan (1985).	48
<b>Sewage treatment in hot climates.</b> Mara, Duncan (1976).	49
<b>The ventilated improved double-pit latrine : a construction manual for Botswana.</b> Nostrand, John van; Wilson, James G. (1983).	53
<b>The design of small-bore sewer systems.</b> Otis, Richard J.; Mara, D. Duncan (1985).	54
<b>Septic tanks and septic systems.</b> Polprasert, Chongrak; Rajput, Vijay S. (1982).	58
<b>Composting of domestic refuse.</b> Rabbani, K.R. et al. (1983).	59
<b>Manual on the design, construction and maintenance of low-cost pour-flush water seal latrines in India.</b> Roy, A.K.; Chatteerjee, P.K.; Gupta, K.N.; Khare, S.T.; Ran, B.B.; Singh, R.S. (1984).	61
<b>Appropriate technology for water supply and sanitation : Vol. 10: Night-soil composting.</b> Shuval, Hillel I.; Gunnerson, C.G.; Julius, DeAnne S. (1981).	64
<b>Biogas technology in developing countries : an overview of perspectives.</b> Tam, D.M.; Thanh, N.C. (1982).	67
<b>Septic tanks and aqua-privies from ferrocement.</b> Watt, S.B. (1984).	70
<b>Sanitation without water.</b> Winblad, Uno; Kilama, Wen (1985).	88

## SECTION 2: ANNOTATED BIBLIOGRAPHY

- |  | User   | Subject   |
|--|--------|-----------|
|  | cat.   |           |
| <p>1. American Water Works Association (1978).<br/> <b>Simplified procedures for water examination : including supplement on instrumental methods.</b> Rev. 1975<br/>           Suppl. added 1978.<br/>           Denver, Colo. : American Water Works Association. IV, 194 p.<br/>           (AWWA Manual ; no. M12)<br/>           ISBN 0-89867-070-5<br/>           Price : Members \$26.50; non-members \$33.00<br/>           Also available in French from IRC, price \$15.00</p> <p>Manual of simplified procedures for water and waste water examination. Practical guidance on selected techniques for water and waste water analysis; basics of chemistry and microbiology of water and waste water.</p>   | B      | VI        |
| <p>2. Arceivala, S.J. (1981).<br/> <b>Wastewater treatment and disposal : engineering and ecology in pollution control.</b><br/>           New York : Marcel Dekker. VIII, 892 p.<br/>           (Pollution engineering and technology ; no. 15)<br/>           Price : \$99.50</p> <p>Textbook on waste water treatment and disposal, for practicing engineers and scientists. Presents ecology and microbiology of waste water, the nature and effects of pollutants, characteristics of wastewaters from different sources. Covers pollution control of lakes, rivers, estuaries, coastal waters, and land use for wastes disposal. Extensive information on various wastewater treatment technologies, including biological treatment, activated sludge, aerobic and anaerobic digestion, mechanically aerated lagoons, waste stabilization ponds, solids settling and disposal.</p> | B<br>B | II<br>VII |
| <p>3. Arlosoroff, Saul; Tschannerl, Gerhard; Grey, David; Journey, William; Karp, Andrew; Langenegger, Otto; Roche, Robert (1987).<br/> <b>Community water supply : the handpump option.</b><br/>           Washington, D.C. : World Bank. 213 p.<br/>           ISBN 0-8213-0850-5<br/>           Price : \$.9.95</p> <p>This report presents the conclusions of five years of work on the assessment of available technology and management options for the wide-scale implementation of rural water supply systems. It includes a methodology for selecting the right technology for any particular project or programme, taking account of economic costs and benefits and of resource constraints. It analyzes the critical elements of handpump-based community water</p>  | B      | VI        |

supply systems: the community, the aquifer, the well, the maintenance system, the handpump and the finance. Data on field monitoring of handpumps in 17 developing countries and laboratory tests in a specially designed test rig are added.

4. Arthur, J.P. (1983). B VII  
**Notes on design and operation of waste stabilization ponds in warm climates of developing countries.**  
 Washington, D.C. : World Bank. VIII, 106 p.  
 (World Bank Technical Paper, ISSN 0253-7494 ; no. 7)  
 (Urban Development Technical Paper, ISSN 0253-3324; no. 6)  
 ISBN 0-8213-0137-3  
 Price : \$5.00

Paper emphasizes need to consider waste stabilization ponds for waste water treatment in developing countries, because of its efficiency and cost-effectiveness in warm climates. Practical design criteria are given for stabilization ponds over a range of conditions, including ambient temperature and use of pond effluent. Start-up and operation procedures are discussed, together with remedial measures for various operating problems. Mainly based on Israeli experience with waste water stabilization and use of pond effluent for irrigation purposes.

5. Austin, John H.; Barrow, Jeffrey; Francis, Quincy; B V  
 Graham, Stanford; Whittington, Dorian (1978).  
**Instructor's manual and planning guide for training of trainers : a series of three 20-hour workshops.**  
 Bridgetown, Barbados : Caribbean Basin Water Management Project/PAHO. 435 p.  
 Price : Fl. 43,50

This manual outlines how to provide utility personnel, already technically trained, with the necessary communication skills and instructional techniques required to assist with instructional programmes in their specialities at other locations. The first workshop deals with: task analysis; performance objectives; presentation techniques. The second with: review of task analysis and performance objectives; presentation skills; instructional media; questioning techniques; presentation preparation; performance evaluation. The third with: review of preparation for presentation; training problems; training delivery system. The outline and timetable of each workshop are given, as well as a critique form and home study assignment for the first two workshops, and the certificate for the first two workshops, and the certificate award criteria, a sample certificate and an aide memoire for the participants of the workshops.

6. Blankewaardt, Bob (1984). B VI  
**Hand drilled wells : a manual on siting, design, construction and maintenance.**  
 Dar es Salaam : Rwegarulila Water Resources Institute.  
 VIII, 132 p.  
 ISBN 9976-936-01-x  
 Price : £6 (ITDG), BF 450 (ATOL), SF 20.00 (SKAT),  
 SC 14.00 (SATIS booktokens, SC i = US\$1)

Based on the author's Tanzanian experience at the Morogoro Wells Construction Project and the Rwegarulila Water Resources Institute, step-by-step procedures, illustrated with many drawings and photographs are given for the most important operations involved in the drilling of wells by hand. The practical part of the manual is preceded by an introductory chapter, followed by basic hydrogeological theory. Site investigation and the criteria for approving a site for construction of a well are then given. The well design is discussed as well as the actual well construction including the installation of a hand pump. A possible approach towards the maintenance of pumps and wells is indicated. Surveying and well drilling equipment are described in separate appendices.

7. Boot, Marieke T. (1984). B II  
**Making the links : guidelines for hygiene education in community water supply and sanitation.**  
 Rijswijk : IRC. 82 p.  
 (Occasional Paper Series; no. 5).  
 Price : \$7.50

Guidelines for integration of a health education component in water supply and sanitation projects. Discusses behavioural change and adoption of hygiene and water use practices. Role of hygiene in the prevention of diseases related to deficiencies in water supply and sanitation. Guidelines for preparation and use of audio-visual aids in hygiene education.

8. Bourne, Peter G. (1984). A I  
A III  
**Water and sanitation : economic and sociological perspectives.**  
 London : Academic Press Inc. VIII, 283 p.  
 Price : £41.50

Book consisting of a compilation of contributions from selected authors. Presents policies, approaches, economic, social, and technological perspectives of water and sanitation development. Relationship of water, sanitation, health, and socio-economic development. The need and benefits of community participation in water supply and sanitation projects. The selection and use of low-cost appropriate technologies. Health aspects of water and sanitation improvements, with comprehensive

information on infections related to water and sanitation deficiencies. Water resources assessment, water requirements, pollution control. Financing of water and sanitation development, pricing and revenue collection policies. Training and manpower development strategies.

9. Boydell, T.H. (1981). B V  
**A guide to job analysis.** 5th print.  
 London : British Association for Commercial and Industrial Education. 31 p.  
 Price : £3.90 (reduced price : £2.30)

This short column contains basic and easy-to-understand information and models for one of the first steps in systematic human resources and organization development, the determination of what the job or work actually is. The models are briefly explained and illustrated with flow diagrams, sample forms, and completed analysis. Job analysis is defined and related to "Ten Steps in Systematic Training".

10. Briscoe, John; Feachem, Richard G.; Rahaman, M. Mujibur A I  
 (1986).  
**Evaluating health impact : water supply, sanitation and hygiene education.**  
 Ottawa, Ont. : International Development Research Centre. 80 p. (IDRC 248e)  
 ISBN 0-88936-470-2  
 Price : \$8.00 (IDRC), £4.00 (ITDG)

This monograph summarizes the results of a workshop held in Bangladesh, November 1983, on measuring the health impact of water and sanitation programmes. Four key issues were addressed: which health impact evaluations should be taken; indicators for measuring health impact; study designs which can be used; and, how results can be interpreted. Presented papers on ongoing or completed field studies are given in an annex.

11. Brush, Richard E. (1979). B VI  
**Wells construction : hand dug and hand drilled.**  
 Washington, D.C. : Peace Corps. VIII, 292 p.  
 (Appropriate technologies for development)  
 Price : Free of charge

This manual is for development workers involved in well construction programmes in rural areas. It has been designed to help field workers who have had little or no construction experience to assist communities in: planning and designing a well appropriate to the needs of the local population; assessing the advantages or disadvantages of locally available construction materials; deciding on the most appropriate construction techniques; and constructing the well step-by-step.



12. Cairncross, Sandy; Feachem, Richard (1978). B VI  
**Small water supplies.**  
 London : Ross Institute of Tropical Hygiene,  
 London School of Hygiene and Tropical Medicine. IX, 76 p.  
 (Ross Bulletin ; no. 10).  
 Price : £3.50
- Booklet, introductory text on small-scale water supplies  
 in rural areas of developing countries.  
 Covers: selection of water source, intake and  
 abstraction works, and distribution. Discusses briefly  
 design choices concerning water pumping, treatment,  
 storage, transmission, and distribution. Additional  
 chapter on household devices for water purification.
13. Cairncross, Sandy; Carruthers, Ian; Curtis, Donald; B IV  
 Feachem, Richard; Bradley, David; Baldwin, George  
 (1980).  
**Evaluation for village water supply planning.**  
 London : John Wiley & Sons. XVIII, 179 p.  
 ISBN 0-471-276626  
 Price : £10.90  
 Paperback version IRC 179 p. Technical Paper Series; no.15  
 Price : \$22.00
- Handbook on evaluation of rural water supply projects.  
 Scope and purpose of evaluation, criteria for making  
 assessments, methodology of evaluation, appraisal of  
 level of service, design criteria, and costs.  
 Policies and standards for operation and maintenance;  
 manpower requirements; assessment of water quantity and  
 water quality of supplies; water quality analysis and  
 surveillance. Evaluation of health and hygiene aspects,  
 measurement of health benefits. Options for local  
 organization of water supplies, administrative  
 arrangements.  
 Evaluation of community involvement and participation  
 staff requirements for consultation and co-operation with  
 beneficiary communities; assessment of causes of  
 inequitable service.  
 Evaluation of financing schemes for water supply  
 projects; cost recovery, ability to pay, revenue  
 collection; financial management, accounting procedures;  
 assessment of economic benefits.
14. Carefoot, Neil; Gibson, Howard (1984). B V  
**Human resources development handbook : guidelines for  
 ministries and agencies responsible for water supply and  
 sanitation.**  
 Geneva : World Health Organization. 228 p.  
 Only available from WHO.
- The three dimensional human resources development (HRD)  
 process, which comprises planning, training and  
 management and was presented in the Basic Strategy

Document (WHO, 1982) is expanded in this practical guide. Chapter I is intended to give senior managers and training managers an overview of approaches for strengthening HRD within their agencies. Chapter 2 presents the 11-step HRD planning model for planners and senior managers preparing a manpower development plan. In Chapter 3 the design of training and development plans and programmes is dealt with. Chapter 4 concerns the integration of planning, training and management of HRD by senior operational, personnel and training managers.

15. CEPIS (1982).

B

VI

**Modular plants for water treatment.**

Lima : Centro Panamericano de Ingenieria Sanitaria y Ciencias del Ambiente.

(Technical Document Series; no. 8; CEPIS Publication; no. 44)

Vol.I : text. 52 p. Vol.II : plans. 40 p.

Price : \$28.65

Set of documents containing explanatory text and plans of nine typical (standard) designs for low-cost simplified water treatment plants for small to medium-sized communities (1,000-10,000 inhabitants); for consideration by planning and design engineers.

Criteria for unit process selection based on turbidity and bacterial quality (E.coli) of raw water to be treated; design drawings showing type and configuration of plants; covering: intake works, pre-treatment units, slow sand filtration with variable head, combined with high-rate sedimentation (if required), direct upflow filtration, upflow/down flow filtration, rapid filtration with chemical coagulation and flocculation, disinfection; explanatory text on the limitations of the proposed designs. Classification of the type design plants based on quality of the raw water (turbidity, E.coli content), type of community and its capacity for operation and maintenance of plant, and level of manufacturing infrastructure for pre-fabrication of plant units and equipment.

16. Cox, C.R. (1964).

B

VI

**Operation and control of water treatment processes.**

Geneva : World Health Organization.

(Monograph series ; no. 49)

Price : Sw. fr. 52,00

Textbook giving practical guidelines for operation and control of water treatment plant; for practicing design engineers and plant superintendents. Comprehensive information on operating requirements of various water treatment unit processes; check-lists and data for monitoring of unit processes, key variables, and use of control equipment.

17. Dangerfield, Bernard J. (1983). A III  
**Water supply and sanitation in developing countries.** A IV  
 London : Institution of Water Engineers and Scientists A V  
 XVI, 413 p. (Water practice manuals; 3) A VI  
 ISBN 0-901427-12-8 A VII  
 Price : £.12.00 B III  
B V  
B VI  
B VII
- The target audience of this book are those involved in technical and administrative responsibility for water supply and sanitation projects in developing countries and working with limited resources. Sections included are: economic and social conditions; infections related to water and excreta; the role of development banks in development funding; population and water needs; water resources; water quality and treatment; urban water supply; urban sanitation and surface water drainage; rural water supply and sanitation; operation and maintenance; international requirements; education and training.
18. DHV (1978). A VI  
**Shallow wells.** B VI  
 Amersfoort : DHV Consulting Engineers. 192 p.  
 Out of stock at publishers. Only available in libraries.
- Handbook presenting knowledge and experience generated in Shinyanga Shallow Wells Projects, carried out in Tanzania, 1974-1978.  
 Reference material and practical guidelines for planners, design engineers, and field project staff involved in shallow well construction and handpump installation.  
 Covers: planning and start-up of shallow well construction project, selection of well sites, including geohydrological investigations and surveying; work programme scheduling and execution.  
 Guidance for selection of well construction method; details of various types of wells; construction requirements; pre-fabrication of well rings and aprons. Selection of handpumps design; pumps design improvements; local manufacture of pumps; costs. Maintenance of wells and pumps; organizational arrangements; training of village pump caretakers. Project logistics; administration; budgeting and cost control.
19. Edwards, Daniel; Keller, Kent; Yolahem, David (1984). B VI  
**A workshop design for rainwater roof catchment systems : a training guide.**  
 Arlington, Virg. : WASH. V, 307 p.  
 (WASH Technical Report ; no. 27)  
 Price : \*
- Training guide giving a structured workshop design and guidelines for planning and preparation of workshop on rainwater roof catchment for drinking water supply.

Covers: development of rainwater roof catchment project, social assessment of feasibility and involvement of beneficiary community; resource inventory; choice of appropriate rainwater catchment technology; sizing and design of storage tank; planning and organization of construction; evaluation of functioning and use; monitoring of performance; maintenance.

20. Edwards, Peter (1985). B VII  
**Aquaculture : a component of low-cost sanitation technology.**  
 Washington, D.C. : World Bank : XII, 45 p.  
 (World Bank Technical Paper, ISSN 0253-7494; no. 36)  
 ISBN 0-8213-0527-1  
 Price : token charge

This paper discusses all phases of aquaculture, including commercial viability, sanitary and biological considerations, public health, financial/economic and sociological aspects. Current studies are detailed and options are discussed for their potential applicability to developing countries, considering requirements for capital and labour skills as well as physical needs such as land.

21. Feachem, Richard G.; Bradley, David J.; Garelick, Hemda; Mara, D. Duncan (1983). B II  
**Sanitation and disease : health aspects of excreta and wastewater management.**  
 Chicester (etc.) : Wiley. XXVII, 501 p.  
 (World Bank studies in water supply and sanitation; 3)  
 Price : \$39,50

Intended for the wide spectrum of professionals concerned with sanitation and public health, this book arises out of a World Bank research project in appropriate technology for waste disposal initiated in 1976. The book has two parts. Part one: "The health hazards of excreta: theory and control", presents a distillation of available knowledge about excreta, night soil, and sewage and their effects on health. Part two: "Environmental biology and epidemiology of specific excreted pathogens" contains 28 chapters, each describing the environmental properties of a specific excreted pathogen or group of excreted pathogens and the epidemiology and control of the infections these pathogens cause. Emphasis is placed on the occurrence and survival of the pathogen in the environment and on the efficacy of various waste treatment processes in reducing or eliminating the pathogen. The chapters of part two are grouped by biological class of pathogen in five sections: the excreted viruses, bacteria, protozoa, and helminths, and the excreta-related insect vectors of disease.

22. Feachem, Richard; Cairncross, Sandy (1978). B VII  
**Small excreta disposal systems.**  
 London : Ross Institute of Tropical Hygiene,  
 London School of Hygiene and Tropical Medicine. X, 54 p.  
 (Bulletin; no. 8).  
 ISBN 0-900995-08-4  
 Price : £3.00
- Booklet, introductory text. Presents the need for sanitation improvement, with reference to health considerations and social aspects are briefly introduced; pit latrines, bucket and cartage system, vault and vacuum truck, aqua privy, septic tank, pour-flush toilet with soakaway, waste stabilization ponds. Basic information and guidelines for design and construction of those sanitation systems are given.
23. Feachem, Richard; McGarry, Michael; Mara, Duncan A I  
 (1980). B I  
**Water, wastes and health in hot climates.** B II  
 Repr. Chichester ((etc.)) : John Wiley & Sons, XVI, 399 p. B VII  
 Price : £23.95

Book gives extensive information on relationship between water and sanitation improvement, and the control of water-related infectious diseases. Classification of these diseases in terms of the engineering measures that can be taken to reduce their incidence. Basics of microbiology of water, criteria for water and wastewater quality; need and strategy for water pollution control. Patterns of water use, and the principal factors affecting the required level of water supply. Main factors involved in community participation in planning, implementation, operation, and maintenance of water supply schemes. Economics of community water supplies; benefits and cost-effectiveness. The effect of design criteria adopted and the level of service on the costs involved in providing the supply. Institutional development for water supply and sanitation programmes; manpower development and training; village-level organisation. Basic information on protection of water source, storage, aeration, sedimentation, filtration, disinfection. Presents various sanitation systems, and wastewater collection and disposal; comparison of costs; selection of appropriate technology. Basic information on waste stabilization ponds, aerated lagoons, and oxidation ditches. Brief overview of solid waste; controlled tipping, composting, aquaculture, biogas production.

24. Flanagan, Donna R.; Austin, John H.; Francis, Quincy (1980). B V

**A guide for training manual developers.**

Bridgetown, Barbados : Caribbean Basin Water Management Project/PAHO 196 p.  
Price : Fl. 45,00

The aim of this manual is to teach local water utility personnel to develop a performance-oriented training manual using a systematic approach to instructional design. Each unit in the manual is based upon the previous one. The units are: recognizing a training need; task analysis; performance objectives; evaluation process; course outline; preparing for instruction; media preparation; training manual format.

25. Flintoff, Frank (1984). A VII

**Management of solid wastes in developing countries.**

2nd. ed. New Delhi : WHO. Regional office for South East Asia.

(WHO Regional publications South East Asia Series; no. 1)  
ISBN 92-9022-101-1

Price : Sw.fr. 20,00

Report discusses mainly the management aspects of solid wastes collection and disposal; selection of collection method; including choice of frequency of collection; points of collection and facilities required; economics and costs; treatment and disposal options, including sanitary landfill, controlled tipping, and composting.

26. Gibson, Ulric P.; Singer, Rexford D. (1969). B VI

**Small wells manual : a manual of location, construction, use and maintenance.**

2nd print. Washington, D.C. : U.S. Agency for International Development, Health Services. VI, 156 p.  
Price : \*

Handbook. Sets out the importance of groundwater as a source of water supply for small rural communities. Hydraulics of groundwater flow, basic geohydrology; occurrence of groundwater; different types of waterbearing formations (aquifers). Design of water wells and boreholes; selection of casing and well screen; choice of materials for well and borehole construction; gravel pack; well development. Construction methods for water wells and boreholes; installation of casing and well screen; grouting and sealing; disinfection of wells; maintenance and rehabilitation. Pumping equipment for wells and boreholes; reciprocating plunger pumps, rotary pumps, centrifugal pumps, air-lift pumps, vertical turbine pumps, submersible pumps; various power sources, prime movers, and their characteristics.

27. Gormley, Wilma; Goff, David; Johnson, Carl (1984). B VI  
**A workshop design for spring capping : a training guide.**  
 Arlington, Virg. : WASH. V,351, 125 p.  
 (WASH Technical Report; no. 28).  
 Price ; \*

Guidelines and supporting information for planning and organisation of training workshops on spring captation for small-scale water supply.  
 Covers: basics of spring captation and development, surveying methods, site selection for spring captation structures, layout and excavation, construction of spring box and piping work. Community involvement and decision-making; maintenance of spring captation structure; health education, evaluation of functioning and use.

28. Gloyna, Earnest F. (1971). B VII  
**Waste stabilization ponds.**  
 Geneva : World Health Organization. 175 p.  
 (Monograph series; no. 60).  
 Price : Sw.fr. 20,00

Comprehensive textbook on technical aspects of waste stabilization ponds; scope for application for wastewater treatment in tropical countries.  
 Basic microbiology of waste stabilization, and processes involved. Detailed information on different types of stabilization ponds; facultative, anaerobic, aerobic; typical layout of ponds; criteria for selection of location; health aspects and control of disease transmission.

29. Guinchat, Claire; Menou, Michel (1983). B V  
**General introduction to the techniques of information and documentation work.**  
 Paris : UNESCO. XV, 340 p. Also available in French and Spanish.  
 ISBN 92-3-101860-4 ; French ed. ISBN 92-3-201860-8  
 Price : \$30.50

The aim of this manual is to provide a practice on all present day activities connected with information. It deals with : types of documents; bibliographies and reference works; selection and acquisition; the storage of documents; bibliographic description; contents description; documentary languages; classification; indexing; abstracting; catalogues and files; facilities and equipment; computers in information units; information retrieval; evaluation of information storage and retrieval systems; types of information unit and networks; services for the dissemination of information; international information programmes and systems; standardization; the uses; management and policies of an information unit; information management and policies at national and international levels; education and training; the profession; research in information science and technology.

30. Hammer, Mark J.; MacKichan, Kenneth A. (1981). B VI  
**Hydrology and quality of water resources.**  
 London : John Wiley & Son. 496 p.  
 ISBN 0471-02681-6  
 Price : £36.25

Textbook on hydrology and quality assessment of water resources. Hydrology of surface waters; quality assessment; pollution control and management. Hydrology of groundwater; occurrence, flow, recharge, and safe yield; quality of groundwater and sources of pollution. Theory of surface water modelling; measurement of precipitation; stream flow, surface run-off; data collection and recording; unit hydrographs; basin flow modelling. Quality assessment of flowing waters; ecology, sampling and testing of water quality. Quality assessment of impounded waters; ecology, morphology and thermal stratification, eutrophication, allowable nutrient loadings; sampling and testing of water quality.

31. Hofkes, E. (1983). A VI  
**Small community water supplies : Technology of small water supply systems in developing countries.**  
 Enlarged ed. The Hague : IRC, 442 p.  
 (Technical Paper Series; no. 18). Also available in French.  
 Price : (paperback ed.) \$29.00  
 Chichester ((esc.)) : John Wiley & Sons. 442 p.  
 Price : (hardcover ed.) £14.50

Handbook giving a broad introduction into the technology of small water supply systems in developing countries. In particular, directed to engineers and technical staff involved in water supply programmes and projects, as well as the consulting engineers (both expatriate and local) assisting them. Introductory information on planning and management of small-scale water supplies, water requirements, water quality criteria and guidelines, water sources. Comprehensive coverage of groundwater for rural water supply, rainwater harvesting, spring captation, surface water intake, artificial recharge of aquifers; pumps and pumping. Selected information on water treatment unit processes; aeration, coagulation and flocculation, sedimentation, slow sand filtration, rapid filtration, disinfection; basics of water transmission and water distribution. Appendices on sanitary survey, water well drilling, and chemicals for use in water treatment.



32. Holmes, John R. (1984). B VII  
**Managing solid wastes in developing countries.**  
 Chichester (etc.) : John Wiley & Sons. XI, 304 p.  
 ISBN 0-471-90234-9  
 Price : \$50.00

This book addresses solid waste collection, disposal and reclamation problems in developing countries. It demonstrates that Western technology cannot be applied indiscriminately in these countries, but that allowance must be made for differing climatic and socio-economic conditions. Waste composition, refuse storage, collection, transport and disposal are discussed by eighteen acknowledged experts in the field. Composting of waste and the appropriate technology for recycling and recovering solid wastes are reviewed, and practical case studies are included covering work in Turkey, the Middle East and South East Asia.

33. IRC (1981). B V  
**POETRI - Reference Manual.**  
 The Hague : IRC. Loose leaf  
 (Technical Paper Series; no. 16) Also available in French.  
 Price : \$30.00

The Manual is based on the experience gained in the first phase of the POETRI programme (1979-1981). It also draws with experience in the development of information systems and services.

The Manual covers, in a systematic way, the main steps involved in the planning, design, set-up and management of information support services for water supply and sanitation development in developing countries. Although closely interrelated, the different parts of the Manual are so written that they may be studied and used separately, as individual guides.

The Manual is mainly aimed at managers, information officers and documentalists. It should also be useful to government staff and others involved in the decision making for the set-up, staffing and financing of national information systems and services.

34. IRC (1979). A VI  
**Public standpost water supplies.**  
 The Hague : IRC, 104 p.  
 (Technical Paper Series; no. 13)  
 Also available in Spanish (from CEPIS)  
 Price : \$14.00

Paper discusses the approach, planning, and management aspects of projects using public stand-posts for supplying water to user communities; the economics, costs and financing of public standpost water supplies; options for revenue collection; social appropriateness; local organisation and management of the supply; community participation; selection of level of service and technology.

35. IRC (1980).  
**Public standpost water supplies : a design and construction manual.** B VI  
 The Hague : IRC, 91 p.  
 (Technical Paper Series ; no. 14). Also available in Spanish (from CEPIS).  
 Price : \$14.00
- The step-by-step method that forms the basis of this book enables engineers/technicians to design public standpost systems. Drawing and bills of quantities form the largest section and can easily be adapted to suit local conditions.
36. IRC; University of Technology (Loughborough) WEDC Group (1982). A I  
 B I  
**Practical solutions in drinking water supply and wastes disposal for developing countries.**  
 2nd rev. ed.  
 The Hague : IRC, 124 p. (Technical Paper Series ; no.20)  
 ISBN 90-6687-002-8  
 Out of stock at publishers. Only available at libraries.
- Engineers in developing countries are presented with alternative technological solutions for water supply and waste disposal in rural areas. Local materials and skills are promoted and where possible the usefulness, disadvantages, and limitations of the techniques described are discussed.  
 There are sections on:
1. water collection from different sources.
  2. water treatment (coagulation/flocculation, filtration, chemical dosing and iron removal).
  3. water transport and distribution (pipes, simple pumps and waste reduction).
  4. wastewater and solid waste disposal (pit latrines, composting septic tanks and aquaprivies).
37. Jordan Jr., Thomas D. (1984). B VI  
**A handbook of gravity-flow water systems for small communities.**  
 London : Intermediate Technology Publications. 240 p.  
 ISBN 0-946688 -50-8  
 Price : £4.95
- Handbook brings together the technologies, work procedures and experience developed in Nepal for installing gravity-flow water supply systems for small communities.  
 Covers: Surveying and investigating water sources (springs, mountain streams, rivers); water quality assessment, determination of water requirements; selection of design criteria and design period; basic hydraulics and flow measurement for water transmission; different systems of water distribution points; selection

of pipe materials, choice and specification of valves and pipe appurtenances. Examples of water intake structures, transmission pipelines, break-pressure tanks; storage tanks; public standpost designs, valve boxes. Additional information on simple water treatment methods (e.g. sedimentation), construction materials (e.g. cement, concrete, masonry). Various appendices.

38. Kalbermatten, John M.; Julius, DeAnne S.; Gunnerson, Charles. G. (1982). A I

**Appropriate technology for water supply and sanitation : Vol. 1a: a summary of technical and economic options.**  
Washington, D.C. : World Bank. VIII, 36 p.  
Price : \$3.00

Report summarizing the results and findings of a field study and research project on the technical, social and economic attractiveness of various technologies for water supply and sanitation. The field study and research was carried out by the World Bank. The technical feasibility, social and behavioural factors, and economic/financial aspects are assessed on their impact on the overall suitability of the water supply and sanitation options. Report summarizing the results and findings of a field study and research project on the technical, social and economic attractiveness of various technologies for water supply and sanitation. The field study and research was carried out by the World Bank. The technical feasibility, social and behavioural factors, and economic/financial aspects are assessed on their impact on the overall suitability of the water supply and sanitation options reviewed. On this basis, selection criteria and analytical tools are presented for use in programme planning. The desirability of staged development of water supply and sanitation provisions is advocated.

39. Kalbermatten, John M.; Julius, DeAnne S.; Gunnerson, Charles G. (1980). A IV

**Appropriate technology for water supply and sanitation : Vol. 1: technical and economic options.**  
Washington, D.C. : World Bank. III, 124 p.  
Price : \$5.00

This paper reports technical, economic, health, and social findings of Research Project RRPO 671-46, "Appropriate Technology for Water Supply and Waste Disposal in Developing Countries". The project identified a number of technologies less costly than waterborne sewerage, yet able to provide the same health benefits, socially and environmentally acceptable to the user. The project reviewed technologies, social/behavioral factors, economic and financial aspects, suggested technical improvements and new applications for traditional technologies, and developed selection criteria and demonstrated the feasibility of staging sanitation

sequences to match demand for improvements reflecting user aspirations and rise to socio-economic status. This report discusses the programme planning necessary to implement technologies available to provide socially and environmentally acceptable low cost water supply and waste disposal.

40. Kalbermatten, John M.; Julius, DeAnne S.; Mara, D. Duncan; Gunnerson, Charles G. (1980). **Appropriate technology for water supply and sanitation : Vol. 2: a planner's guide.** Washington, D.C.: World Bank. 194 p.  
Price : Unknown
- |  |   |     |
|--|---|-----|
|  | A | VII |
|  | B | VII |

Sanitation technologies are reviewed on their social acceptability, community participation aspects, and cost-effectiveness, to support comparison and selection of technology for sanitation programmes. Basic information on ventilated improved pit latrines, pour-flush toilets, composting toilets, aqua privies, septic tanks; small-bore sewers, bucket latrines, vault and castage systems, communal sanitation facilities; treatment of wastewater and sullage.

41. Karlin, Barry; Isely, Raymond B. (1984). **Developing and using audio-visual materials in water supply and sanitation programmes.** Arlington, Virg. : WASH. 111 p.  
(WASH Technical Report; no.30).  
Price : \*
- |  |   |    |
|--|---|----|
|  | B | II |
|--|---|----|

This paper presents a large number of examples of visual materials, giving particular emphasis to the importance of careful development, pre-testing and evaluation. A number of conceptual educational frameworks are presented which are useful in programme planning. These materials can be used to support communication with user groups and communities on the impact of water and sanitation deficiencies on health and hygiene, promotion of behavioural changes, community participation. Basic principles for design and preparation of audio-visual materials are set out, together with data requirements, problems, and obstacles; procedures for pre-testing of materials, with examples of successful pre-testing in actual situations; training of designers and users of audio-visual aids; training resources; production of audio-visual materials; appendices.

42. Kenna, Jeff; Gillet, Bill (1985). B VI  
**Solar water pumping : a handbook.**  
 London : Intermediate Technology Publications. IV, 123 p.  
 ISBN 0-946688-90-7  
 Price : £12.50
- Handbook giving a step-by-step procedure for assessment of potential of solar-powered water pumping systems under specific conditions.  
 Review of photovoltaic pumping systems, and their main components; operating characteristics. Evaluation of conditions; characteristics of site for solar-powered pumping system; water requirements; availability of solar energy; sizing the system; specifying performance. Evaluation of economic attractiveness; procedure for cost appraisal; estimation of costs; long-term economic viability.  
 Procurement, installation, operation and maintenance; performance monitoring of photovoltaic pumping systems. Appendices; solar radiation data, sizing procedure and data; example tender documents; glossary.
43. Koegel, R.G. (1977). B VI  
**Self-help wells.**  
 Rome : Food and Agriculture Organization of the United Nations, 78 p. (FAO Irrigation and drainage paper; no.30).  
 ISBN 92-5-100398-X  
 Price : \$4.00
- This book reviews methods for well drilling and digging which can be done with local material and by local people. It is intended for engineers, agronomists, health experts, etc. who may wish to help people obtain a better water supply. It aims to provide ideas, some of which may be useful in a specific location. The emphasis is on using and building on resources which are available rather than on importing technologies. Items are groundwater occurrence, small and large diameter wells, hybrid wells, non-vertical wells, the health aspects and the availability of skills and materials.
44. LeClere, Maria; Sherer, Keith (1984). B VII  
**A workshop design for latrine construction : a training guide.**  
 Arlington, Virg : WASH. V, 272, 127 p.  
 (WASH technical report; no. 25)  
 Price : \*
- Report giving practical guidelines and supporting information for planning and organisation of a training workshop on latrine construction.  
 Covers : goals of workshop, training approach, training skills required, number of participants, materials for participants, information on alternative latrine designs. Discusses : preparing the staff to conduct the training programme, preparing specific sessions.

Gives : proposed workshop programme; sanitation, latrines and health; community mobilization, conducting a sanitary survey; selection of type of latrine, latrine construction, community decision-making, repair and maintenance of latrines.

45. Liebler, Claudia; Pashkevich, Alan (1984). B VI  
**A workshop design for handpump installation and maintenance : a training guide.**  
 Arlington, Virg. : WASH V, 397, 188 p.  
 (WASH Technical Report ; no. 26)  
 Price : \*

This report is a trainer's guide for conducting a workshop in 19 sessions, on planning, constructing and maintaining a handpump project in rural areas. Handouts and a participant reference packet are included. The training workshop is appropriate for project promoters, field workers, rural development specialists, and others involved in the promotion of improved community water supply through the installation of handpumps. It focuses on the activities of a handpump project that follows the well's construction and development. It makes use of existing dug or drilled wells and addresses both a shallow well pump and a deep well pump. The content of the workshop includes both:

1. technical areas, including site selection, apron construction, handpump installation, maintenance and repair.
2. community development skills including facilitating village mobilization and decision making, problem solving, user education, planning and strategy development.

46. Lynton, Rolf E.; Pareek, Udai (1978). B V  
**Training for development.**  
 West Hartford, CN. : Kumarian Press. 409 p.  
 Price : \$8.95

A comprehensive textbook on the theory and practice of training. Contents include an overview of the training process from pre-training to the back-home application. Organizational training needs are linked to individual motivation. Steps in the design and evaluation of programmes are described. There are also discussions about conducting workshops, the role of the trainer, and the training institution as an organization. Theories and examples are drawn from several countries.

47. Mara, D. Duncan (1984). B VII  
**The design of ventilated improved pit latrines.**  
 Washington, D.C. : World Bank. 69 p.  
 (TAG Technical Note; no.13).  
 Price : unknown

Technical note presenting detailed information and design guidelines for ventilated improved pit (VIP) latrines; the advantages of VIP latrines in terms of user convenience, odour control, and insect control. Single pit latrines; design of pit, cover slab and foundation, super structure, vent pipe; fabrication of vent pipes; emptying and re-location of pits; design of soakaways.

Twin pit (alternating) VIP latrines; design of pit, cover slab, super structure, vent pipe; multi compartment units; emptying of pits. Acceptability and constraints of VIP latrines; housing density, level of water supply service, ground conditions; groundwater level and pollution; socio-cultural factors.

Appendices: case studies on VIP latrines use in Zimbabwe, Botswana, Tanzania, Ghana, Brazil, cost of alternative components.

48. Mara, D. Duncan (1985). B VII  
**Ventilated improved pit latrines : guidelines for the selection of design options.**  
 Washington, D.C. : World Bank. III, 18 p.  
 (TAG Discussion Paper ; no. 4)  
 Price : unknown

In this discussion paper, guidelines are provided that will enable a design engineer to make rational selection of the ventilated improved pit latrine (VIP) design option most appropriate to the community for which he is responsible. The four basic design options considered are:

- (a) non-emptiable/emptiable
- (b) non-alternating (single pit)/alternating (double pits)
- (c) unlined/lined
- (d) not raised/raised

49. Mara, Duncan (1976). B VII  
**Sewage treatment in hot climates.**  
 London : John Wiley & Sons. 168 p.  
 ISBN 0-471-56784-1  
 Price : £16.85 (cloth); £3.60 (ELBS)

Comprehensive textbook on sewage treatment in hot climates, for practicing engineers. Covers : composition and strength of sewage, characterization of sewage; basic microbiology; principles of sewage treatment; biological oxygen demand, removal kinetics. Preliminary treatment, including screening, grit removal, comminution. Secondary treatment (conventional); sedimentation, biofiltration, activated sludge, sludge processing and treatment, design criteria; problems with conventional treatment in hot

climates. Waste stabilization ponds; facultative, aerobic (maturation), anaerobic pre-treatment, high-rate ponds; the advantages of waste stabilization ponds in developing countries with a hot climate; typical pond lay-outs and design criteria.

Design of facultative ponds, anaerobic ponds. Aerated lagoons; aerator performance; construction of lagoon; effluent treatment. Oxidation ditches; design and construction; operation; carousel ditches. High-rate bio-filtration; particularly for strong sewage; design guidelines. Tertiary treatment; removal of suspended solids and faecal bacteria. Septic tanks; design; operation; disposal of effluent. Re-use of treated sewage effluent; aquaculture, agricultural re-use, municipal re-use, industrial re-use.

50. McJunkin, F. Eugene (1983).

B VI

**Handpumps for use in drinking water supplies in developing countries.** 3rd print.

Rijswijk : IRC. 230 p.

(Technical Paper Series; no. 10)

Also available in French and Spanish.

Price : \$15.00

A completely revised version will be issued late 1987

Several hundred million people depend on handpumps for their drinking water. Major programmes installing handpumps are underway or planned in many countries. Handbook provides comprehensive information on handpump technology, design, selection, installation, use and maintenance; separate chapters on research and development on handpumps, and on local manufacture of handpumps.

51. McJunkin, F. Eugene (1983).

B II

**Water and human health.**

2nd print. Washington, D.C. : U.S. Agency for International Development. XI, 113 p.

Price : \*

Book gives information, based on scientific data, on the relationship of water supply, sanitation, and health comprehensive coverage and details of water-related diseases.

Water-borne diseases, including amoebiasis, bacillary dysentery, enteritis, cholera, diarrhoeal diseases, enteric viral diseases, giardiasis, non-cholera vibrios, typhoid and para-typhoid fever, salmonellosis, guinea worm disease (dracunculiasis), leptospirosis, tularemia. Water hygiene diseases, enteric diseases, skin diseases, louse-borne diseases, yaws, pinta, endemic syphilis.

Water contact diseases; schistosomiasis, including effectiveness of water treatment processes in removing cercariae; diseases associated with swimming.

Water-habitat vector-borne diseases; snail vector diseases; mosquito vector diseases, arboviruses, filariasis, malaria, water-related fly vector diseases.

Methods for evaluating drinking water quality on the risk



of transmission of bacterial and viral diseases; water treatment in the protection of public health; excreta disposal and waste water treatment for protection of public health; health impact of community water supplies.

52. McNeil, R.J.; Anderson, M.E. (1986). **Health education for tropical schools.** London : Collins. 64p. ISBN 0-00-319998-3 Price : £1.80

A textbook for children in the upper classes of the Primary school to stimulate a desire for a healthier way of life. The authors explain what causes ill health and diseases and how to prevent them. At the end of each chapter there is a list of "things do do" and several questions, which should help the teacher to make the work practical and relate it to the environment of the pupils. The book is written in simple English using sentence patterns and vocabulary with which the child should be familiar.

53. Nostrand, John van; Wilson, James G. (1983). **The ventilated improved double-pit latrine : a construction manual for Botswana.** Washington, D.C. : World Bank. 47 p. Also available in French. Price : Unknown.

This construction manual has been prepared as a field manual for Self-Help Housing Agency (SHHA) Technical Assistants (TAs) charged with assisting urban householders and contractors in the construction in Botswana of REC II latrines. The REC II is a ventilated improved double-pit latrine, particularly suitable for providing affordable on-site sanitation in urban areas. The booklet sets out current recommended construction procedures and supervision guidelines, and contains extensive construction drawings and details.

54. Otis, Richard J.; Mara, D. Duncan (1985). **The design of small-bore sewer systems.** Washington, D.C. : World Bank. III, 47 p. (TAG Technical Note ; no. 14) Price : unknown

Small-bore sewer systems consist of small-diameter pipes laid at flat gradients to form the waste water collection network. These sewer systems can be quite economical for collection of limited flows of waste water. They are especially appropriate for urban slum areas with a high population density and a flat geography. Covers : design criteria for small-bore sewers, interceptor tank, appurtenances; choice of materials, construction, maintenance; small-bore sewer systems receiving aqua-privy discharge, septic tank effluent. Appendices : interceptor tank design, examples of small-bore sewer designs.

55. Perrett, Heli (1983). B            III  
**Planning of communication support (information, motivation and education) in sanitation projects and programmes.**  
 Washington, D.C. : World Bank. I, 16 p.  
 (TAG Technical Note; No.2).  
 Price : Unknown

Communication support in sanitation projects includes information, motivation and education activities which are specifically designed to promote the participation of the beneficiary community in the project. It is related communication support activities help to avoid problems, such as, low level of interest in sanitation improvements, dissatisfaction with the selected technology, difficulties with required community contributions; poor use of latrines, abuse and poor maintenance.

The communication support package usually includes the involvement of field workers and volunteers, and the use of media, education materials, and demonstration with models of latrines.

56. Perrett, Heli E. (1985). B            III  
**Involving women in sanitation projects.**  
 Washington, D.C. : World Bank, Water Supply and Urban Development Department. III, 27 p.  
 (TAG discussion Paper No.3)  
 Price : unknown

Paper presents the case of involving women in sanitation projects, and the analytical tools to define their role. Covers: data collection in the project identification, pre-feasibility and feasibility stages; assessment of women's interest in sanitation improvements, views about technology option, willingness to contribute labour, materials, existing hygiene practices, siting preferences, and acceptability.

Role of women in community organizations or groups, role of women's organizations; institutional development for sanitation projects.

Design of women's participation in sanitation projects; the social context, mechanisms of participation, extent and potential.

Design of communication activities to reach and influence women; women as participants in communication; mechanisms and strategies.

Monitoring and evaluation of women's participation.

57. Phillips, Jack J. (1983). B            V  
**Handbook of training evaluation and measurement methods.**  
 Houston : Gulf Publishing Company. 316 p.  
 Price : \$21.95
- This text book covers all aspects of HRD programme evaluation and measurement. It is broken into four parts. Part One presents the importance of measurement and the need for evaluation. Part Two discusses the preparation for evaluation including design, strategy, and cost determination. Part Three deals with evaluation methods and mechanics, and Part Four discusses the factors affecting programme results. Although much theory is presented, the text also offers practical methods to evaluate HRD programmes.
58. Polprasert, Chongrak; Rajput, Vijay S. (1982). B            VII  
**Septic tanks and septic systems.**  
 Bangkok : Environmental Sanitation Information Centre.  
 110 p.  
 (Environmental Sanitation Reviews, ISSN 0125-5088;  
 no. 7/8)  
 Price : \$12.00
- A state-of-the-art review on the septic tank and septic tank systems is presented. Information is given on performance, design and construction of septic tanks. Methods of septic tank effluent disposal are described including subsurface soil absorption and evapotranspiration beds and anaerobic upflow filters. In addition, environmental effects of septic tank systems are discussed and some important research needs as reported in the literature are pinpointed. The design information presented is intended solely as technical guidance so that standards or rules and regulations are excluded. A glossary of technical terms is included.
59. Rabbani, K.R. et al. (1983). B            VII  
**Composting of domestic refuse.**  
 Bangkok : Environmental Sanitation Information Centre.  
 100 p.  
 (Environmental Sanitation Reviews, ISSN 0125-5088 ;  
 no. 10/11)  
 Price : \$12.00
- This review deals with the composting of domestic refuse, i.e. solid wastes, other than human and animal excreta, generated from the house. Following an historical review, the microbiological and biochemical principles and kinetics of composting are discussed. This is followed by technical descriptions of both non-reactor and reactor composting systems. The determination of compost maturity is dealt with, together with the final processing and handling of the compost. Finally public health and economic aspects and composting practices in developing countries are dealt with.

60. Rajagopalan, S.; Shiffman, M.A. (1974). A      II  
**Guide to simple sanitary measures for the control of** B      II  
**enteric diseases.**  
 Geneva : World Health Organization. 103 p.  
 ISBN 92-4-154047-8  
 Price : Sw.fr.25,00

The guide provides a compendium of knowledge on simple measures that can be implemented with limited resources to control enteric diseases and cholera epidemics in particular. It is intended for the use of professional personnel responsible for public health and sanitary services at country level in developing countries. The planning and organization of emergency measures for water supply, waste collection and disposal, institutional and camp sanitation and food sanitation are dealt with. Course curricula for training programmes in emergency measures are given in an annex.

61. Roy, A.K.; Chateerjee, P.K.; Gupta, K.N.; Khare, S.T.; B      VII  
 Ran, B.B.; Singh, R.S. (1984).  
**Manual on the design, construction and maintenance of**  
**low-cost pour-flush waterseal latrines in India.**  
 Washington, D.C. : World Bank. 104 p.  
 (TAG Technical Note ; no. 10)  
 Price : unknown.

This manual has been prepared for agencies, contractors and individuals involved in various aspects of the low-cost pour flush waterseal latrine programme in India. The inherent principles are, however, of general application, and, with minor modifications, the technical details can be readily adapted to meet the needs of different areas, particularly where water is used for ablutions. The manual provides the salient features of design, construction and maintenance as well as the administration of low-cost pour-flush waterseal latrines with off-set twin pits. It contains extensive drawings, tables of quantities of materials for different designs as well as standard forms for by-laws and for general project administration and supervision.

62. Saunders, Robert J.; Warford, Jeremy J. (1976). A      IV  
**Village water supply : economics and policy in the**  
**developing world.**  
 Baltimore : John Hopkins University Press.  
 (A World Bank Research Publication)  
 ISBN 0-8018-1876-1; ISBN 0-8018-1877 -X pkb  
 Price : \$29.50

This study focuses on the special problems that must be overcome to achieve rapid improvement in the provision of water supply and sanitation facilities to rural communities. Because the technical issues are fairly straightforward and well understood, the book emphasizes

the health impact, economic, social, financial and administrative issues characteristic of village water supply and sanitation programmes and makes policy recommendations accordingly. The findings are based on a survey of the literature, the authors' personal observations of programmes in about twenty-five countries and contacts with the World Bank and other organizations.

63. Schulz, Christopher R.; Okun, Daniel A. (1984). **Surface water treatment for communities in developing countries.** B VI  
 New York ((etc)) : John Wiley & Sons. 299 p.  
 ISBN 0-471-00261-1  
 Price : £52.00 (cloth) ; £15.25 (Students ed.)

This book presents alternative water treatment practises. It brings together technical information from around the world on appropriate design and construction of surface water treatment plants in developing countries, including hard-to-get information from India, Brazil, Peru, Colombia, the Sudan, and Tanzania. Each unit process in water treatment is covered in a separate chapter. Each process function in the plant is defined, and differences between design approaches in industrialized and developing countries are examined.

It deals with: Pretreatment. Chemicals and Chemical Feeding. Hydraulic Rapid Mixing. Hydraulic Flocculation. Sedimentation. Filtration. Modular and package Designs for Standardized Water Treatment Plants. Costs of Water Treatment Plants in Developing Countries. Human Resources Development, and includes a selected bibliography.

64. Shuval, Hillel I.; Gunnerson, Charles G.; Julius, DeAnne S. (1981). **Appropriate technology for water supply and sanitation : Vol. 10: night-soil composting.** B VII  
 Washington D.C. : World Bank. IV, 81 p.  
 Price : \$3.00

Among the problems facing those who depend on conservancy or other systems disposing separately grey water and night soil is the lack of a safe, inexpensive treatment method for night soil. In Kyoto, for example, night soil is collected hygienically to the satisfaction of users of the system, only to be diluted at a central collection point for discharge to the sewer system and treatment at a conventional sewage treatment plant. This paper reviews the state of the art on night-soil composting. The paper concludes that aerobic composting of night soil represents a method of treatment ideally suited for developing countries because of its simplicity in operation, limited need for mechanical equipment, low

cost and its effectiveness in inactivating pathogens, thus assuring that the compost can be used without causing any public health hazard.

65. Simpson-Hébert, Mayling (1983).

B

III

**Methods for gathering socio-cultural data for water supply and sanitation projects.**

Washington, D.C. : World Bank. 23 p.

(TAG Technical Note ; no. 1).

Price : unknown

The technical note is intended primarily to help engineers who need to obtain socio-cultural data in the course of planning and designing low-cost water supply and sanitation projects for small communities. Secondly it is aimed at social scientists who work with engineers and wish to improve mutual communication. It describes data requirements, key data-gathering techniques (observer participation; key informant interviewing; open-ended questionnaires; and surveys), and how these techniques can be modified to suit particular circumstances.

66. Sweeney, W.; Parlato, M. Burns (1982).

B

II

**Using radio for primary health care.**

Washington, D.C. : American Public Health Association, International Health Programmes. 56 p.

(Primary Health Care issues ; ser. 1, no. 1).

ISBN 0-87533-109-1

Price : unknown

This paper examines what is known about the use of radio in development projects, based on an extensive review of the literature in the six areas that have had widespread experience in using radio for educational objectives: agriculture, education, health, nutrition, population, and the general category of development. The literature analysis is the core of the paper.

Key findings on the impact of radio are presented in the first chapter. The focus is on factual information from evaluated projects rather than opinions and suppositions. The first chapter also defines the characteristics of radio and the special qualities that make it particularly suitable for primary health care. It presents a summary of findings about what radio can be expected to accomplish. The chapter concludes with suggestions on how radio might be used in Primary Health Care Programmes.

The second chapter is a guide to developing radio projects. It is based on information gleaned in the literature reviews and on the field experience of specialists working in development and communications.

67. Tam, D.M.; Thanh, N.C. (1982). B VII  
**Biogas technology in developing countries : an overview of perspectives.**

Bangkok : Environmental Sanitation Information Centre.  
 59 p.  
 (Environmental Sanitation Reviews, ISSN 0125-5088 ; no. 9.)  
 Price : \$ 7.50

The scope of the review is the technology of "stand-alone" (i.e. not a component of an integrated waste recycling system) family size biogas systems in developing countries. Subjects covered are: the benefits of biogas technology; economics; socio-economic aspects; problems and constraints; and prospects for improvements. In conclusion the success of biogas technology in China is analyzed.

68. Taylor, Floyd B.; Wood, William E. (1982). B VI  
**Guidelines on health aspects of plumbing.**

Rijswijk : IRC. 168 p.  
 (Technical Paper Series ; no. 19).  
 Price : \$15.00

Relevant to health authorities as well as water supply and sewerage authorities these guidelines provide suggestions to drawing up and administration of a comprehensive code of practice for plumbing systems. The second part contains practical and technical details of plumbing systems. In the third part are some general notes on special problems varying with conditions in different countries.

69. Visscher, J.T.; Veenstra, S. (1985). B VI  
**Slow sand filtration : manual for caretakers.**

The Hague : IRC. VI, 73 p.  
 (Training Series; no. 1).  
 Price : \$7.50

This manual aims to provide caretakers of slow sand filtration plants and their trainers with relevant information. Step-by-step technical aspects, the slow sand filtration process, community involvement, operation and maintenance, cleaning and resanding, record keeping are treated with drawings and limited text.

70. Watt, S.B. (1984). B VII  
**Septic tanks and aqua-privies from ferrocement.**

London : Intermediate Technology Publications Ltd. X.  
 108 p.  
 ISBN 0903031-95-7  
 Price : £4.95

This handbook is a contribution to the steadily increasing literature on low-cost sanitation. Although the ferrocement septic tank described is not itself a low cost option for on-site waste disposal, the techniques

and principles behind the design and construction work will be readily applicable to less expensive options, such as the aqua-privy.

The publication is written for public health engineers, planners and field workers engaged in improving sanitation, and the material has been presented in simple, non-technical language. The book is divided into four chapters. Chapter 1 describes the potential of ferrocement as a construction material, and the problems of design in septic tank and aqua-privy systems. In Chapter 2 the various technical options in low-cost sanitation are contrasted and compared. Chapter 3 gives details of how septic tank and aqua-privy waste treatment and soil disposal systems are designed and constructed, and Chapter 4 gives step by step construction details of a ferrocement septic tank built for the commercial market.

Ferrocement is a proven, low-cost, less capital-intensive structural material. The design and construction methods given in this handbook will, it is hoped, indicate the potential of the material for sanitation development.

71. Watt, S.B.; Wood, W.E. (1977).

B

VI

**Hand dug wells and their construction.**

London : Intermediate Technology Publications Ltd. 234 p.

ISBN 0-903031-27-2

Price : £4.95

This manual of well construction deals in detail with a particular method, the hand dug well, in which the shaft is of sufficient size to enable the diggers to descend as the work progresses down to the water level. The borehole method is not dealt with in this volume.

The methods described in this book have been used traditionally in many parts of the world and the techniques are adapted to incorporate modern methods and materials. In the hand dug well, simple water lifting devices such as bucket and rope can be used and mechanical pumps which require constant maintenance are not necessary.

The first part of the book deals with the general principles of ground water storage, hygienic sources, and some notes on the preparatory work. Part II deals with the actual construction, and Part III with alternative methods and techniques. Part IV details the standard equipment and materials used, and Part V provides additional information and sources.



72. Werner, David; Bower, Bill (1982). B      V  
**Helping health workers learn.**  
 Palo Alto, Ca. : Hesperian Foundation. 632 p.  
 Also available in Spanish and Portugese  
 Price : \$7.50

This book is a collection of methods and aids and "triggers the imagination." The methods can be selected by instructors at the village level and inserted into their programme. Part One addresses the determination of which approaches to learning are most appropriate and discusses the development of training plans, differences in learning/teaching based on location, and the importance of follow-up. Part Two gives ideas for conducting training and focuses on the participants "seeing, thinking and doing". Part Three describes techniques for preparation and use of visual aids. Part Four presents ideas for training to meet the needs of mothers and children. Part Five focuses on ways in which health is influenced by human relationships, the causes of malnutrition, and methods of helping people gain self-confidence to improve health. The final chapter explores the use of theatre to raise people's awareness.

73. Werner, David (1977). A      II  
**Where there is no doctor.**  
 Palo Alto, Ca. : Hesperian Foundation. 409 p.  
 Price : vary according to DC or IC

This book has become one of the most popular of its kind and has been translated into numerous languages. Subtitled, "A Village Health Care Handbook", it presents a sound discussion of ways in which health workers can be effective without creating dependency. While most of the book deals with common medical problems and their treatment, attention is given to disease prevention, including the use of clean water, latrines, personal hygiene and the prevention and treatment of water-related diseases. A useful glossary of words is included as well as address for obtaining teaching materials.

74. White, Alastair (1982). A      III  
**Community participation in water supply and sanitation : concepts, strategies and methods.**  
 The Hague : IRC. 180 p.  
 (Technical Paper Series ; no. 17).  
 Price : \$22.00

A practical monograph presenting options for community participation, the circumstance appropriate to promote them and possible difficulties to be encountered. Topics dealt with include: forms and pros and cons of community participation, formal and informal consultation, community contributions, education and behavioural change, choice of strategy. Also features convenient appendices, checklists, and diagrams which help the reader to again gain a quick overview.

75. WHO (1982). A V  
**Basic strategy document on human resources development.**  
 Geneva : World Health Organization. 68 p. \* Including  
 Briefing notes (separate volume) 61 p.  
 Price : unknown
- The purpose of The Basic Strategy Document is to serve as an outline guide to Decade Human Resources Development strategies and approaches for national and international agencies. On the national level it deals with planning, skill development and training, management of human resources, Institutional Focal Points and funding, on the international level with mechanisms of international collaboration. A two-phase strategy is outlined.
76. WHO (1981). A I  
**Drinking water and sanitation 1981-90 : a way to health.**  
 Geneva : World Health Organization. 56 p.  
 ISBN 92-4-156068-1  
 Price : Sw.fr. 9,00
- This WHO booklet outlines the WHO approach to community water supply and sanitation in the context of the Decade. In line with this approach, the WHO emphasizes within its programme the following activities: national plans and programmes, institutional strengthening, exchange of information on appropriate technology, monitoring and evaluation, and mobilization of external resources for these activities.
77. I. WHO (1984). B VI  
**Guidelines for drinking water quality.**  
 Vol. 1: Recommendations.  
 Geneva : World Health Organization. VI, 130 p.  
 ISBN 92-4-154168-7  
 Price : Sw.fr. 17,00
77. II. WHO (1984). B VI  
**Guidelines for drinking water quality.**  
 Vol. 2: Health criteria and other supporting information.  
 Geneva : World Health Organization. IX, 335 p.  
 ISBN 92-4-15169-5  
 Price : Sw.fr. 35,00
77. III. WHO (1985). B VI  
**Guidelines for drinking water quality.**  
 Vol. 3: Drinking water quality control in small-community supplies.  
 Geneva : World Health. IV, 121 p.  
 ISBN 92-4-154170-9  
 Price : Sw.fr. 17,00

The guidelines are intended for use by countries as a basis for the development of standards which, if properly implemented, will ensure the safety of drinking-water

supplies. Although the main purpose of the guidelines is to provide a basis for the development of standards, they may also assist in developing alternative control procedures where the implementation of drinking water standards is not feasible.

Vol. I. : Recommendations, gives guideline values for various constituents of drinking water

Vol. II. : Health criteria and other supporting information, contains a review of the toxicological, epidemiological, and clinical evidence that was available and used in deriving in the recommended guideline values that are given in Volume I.

Vol. III. : Drinking-water quality control in small-community supplies, deals specifically with drinking-water supplies for small communities, particularly in rural areas, with the main emphasis on microbiological quality. It contains information on surveillance of water-supply systems and the remedial and preventive measures necessary for maintenance of water quality, and gives step-by-step instructions on methods for collection of water samples, bacteriological analysis, and determination of residual chlorine.

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|---|--------|---------|
| 78. WHO (1983).<br><b>Guiding principles for national monitoring of water supply and sanitation.</b><br>Geneva : World Health Organization.<br>Price : Sw.fr. 20,00 | A<br>A | I<br>IV |
|---|--------|---------|

Guiding principles, designed to assist national authorities in creating and maintaining a regular mechanism, for monitoring the water supply and sanitation sector. The suggested guidelines are flexible enough to be applied in the context of a formal sector development plan.

To be relevant for countries at different stages of development, three levels of information detail are proposed.

- |  |             |               |
|--|-------------|---------------|
| 79. WHO (1983).<br><b>Minimum evaluation procedure (MEP) for water supply and sanitation projects.</b><br>Geneva : World Health Organization. 50 p.<br>Only available from WHO | A<br>A<br>B | I<br>IV<br>IV |
|--|-------------|---------------|

This document describes a relatively cheap, simple and quick method of evaluating water supply and sanitation projects which employ simple technologies.

The purpose of evaluation and the purpose of the MEP are discussed and a step-by-step procedure for evaluation is outlined. Indicators for the functioning and the utilization of facilities are discussed, documented

experience from impact evaluation-studies is summarized and information on data gathering techniques is presented.

80. WHO (1982). A I  
**National and global monitoring of water supply and sanitation.** A IV  
 Geneva : World Health Organization. 41 p.  
 Price : Sw. fr. 20,00

This booklet has been written for the use of government officials dealing with overall planning and with the planning and management of water supply and sanitation (WS & S). It describes the main aspects of national monitoring of water supply and sanitation and relates them to the ongoing global monitoring entrusted to WHO. It also contains the guidelines now in use for the preparation of country sector digets which are the basis for global monitoring.

81. WHO (1980). B IV  
**Republic of Terrania : a case study on the economic and financial aspects of programmes and projects in the drinking water supply and sanitation sector.**  
 Geneva : World Health Organization. 60 p.  
 Only available from WHO

Thorough description of water supply and sanitation sector constraints and development in the fictitious Republic of Terrania, this paper sheds light on sector development issues as they are occurring in many countries. Experience from many sector studies by WHO/World Bank is summed up in this paper.

82. WHO (1985). B II  
**The control of schistosomiasis : report of a WHO expert Committee.**  
 Geneva : World Health Organization. 114 p.  
 (WHO technical report series. ISSN 0512-3054; no. 728)  
 ISBN 92-4-120728-0  
 Price : Sw. fr. 10,00

This report stresses the importance and the feasibility of reducing morbidity in schistosomiasis control programmes using available methods and resources. Sections on epidemiology and disease due to schistosomiasis are followed by a review of methods of control. Although intervention measures such as chemotherapy, water supply and sanitation, the use of molluscicides, environmental management and modification all contribute to the control of schistosomiasis, appropriate health education, distribution of health information and community participation are considered essential for a long-term solution. Progress in national

programmes in several countries is briefly reviewed. The strategy for morbidity control is discussed in terms of operational approaches and factors influencing their choice, the operational components (interventions), inclusion in primary health care programmes, and maintenance and evaluation.

83. WHO. Study group on technology for water supply and sanitation in developing countries (1987). A VI  
**Technology for water supply and sanitation in developing countries report of a WHO Study Group.**  
 Geneva : World Health Organization. 38 p.  
 (WHO technical report series, ISSN 0512-3054 ; no. 742)  
 ISBN 92-4-120742-6  
 Price : Sw.fr. 7,00

The WHO Study Group reviews advances in technologies related to urban and rural water supplies and sanitation in developing countries. These developments are appraised in the light of community needs, local conditions and available resources. Constraints that limit the application of appropriate technologies are identified. Gaps in knowledge are also identified and further research and development is suggested. Recommendations are made for improving the exchange of information concerning various technologies.

84. WHO. Regional Office for South East Asia (1978). B VI  
**Typical designs for engineering components in rural water supply.**  
 New Delhi : World Health Organization Regional Office for South East Asia. (WHO regional publications, South East Asia Series ; no. 2)  
 Price : Sw. fr. 30,00

This volume of drawings is a selection of typical designs which have been used in South East Asia for supplying water from a variety of surface and groundwater sources. Included are the designs of: tubewells and handpumps; spring-tapping arrangements; infiltration galleries; motorized pumps and pump houses; iron removal plants; filters; reservoirs; valve chambers and public standposts.

85. WHO. Regional Office for South East Asia (1985). A I  
**Achieving success in community water supply and sanitation projects.** B I  
 New Delhi : World Health Organization Regional Office for South East Asia. (SEARO Regional Health Papers; no. 9)  
 ISBN 92-9022-178X  
 Price : Unknown

This publication sets forth a procedure needed to incorporate software, such as community education and participation, human resources development and

institutional development in water supply and sanitation projects. The six-steps procedure can be used for new projects as well as for the rehabilitation of existing facilities. The procedural guidelines are developed as the result of case studies. Emphasis is placed primarily on projects designed to service rural and urban underserved areas of developing countries.

86. WHO; UNICEF (1985). B      II  
**Helping a billion children learn about health : report of the WHO/Unicef International Consultation on Health Education for school-age children.**  
 Geneva, 30 September - 4 October 1985  
 Price : Unknown
- Report of WHO/UNICEF international consultation on health education for school-age children, held in Geneva, 30 September - 4 October 1985.  
 Sets out scope of problems involved in strengthening the health education of a billion school-age children, half of which are not attending school, nor receiving any other formal education.  
 Discusses factors influencing health behaviour, the role of the education sector, learning mechanisms, integration of health education in school curriculum.  
 Presents selected approaches in health education, some country experiences, the role of mass media; goals, strategies and guidelines.
87. Whyte, A. (1983). A      III  
**Guidelines for planning community participation in water supply and sanitation projects.**  
 Geneva : World Health Organization. 60 p.  
 Price : Sw. fr. 20,00
- This guide is an agenda setting and planning aid, for planners of the community education and participation (CEP) component in drinking-water supply and sanitation projects. A checklist of planning tasks is provided, covering respectively the assessment phase, setting objectives, planning agency support, planning at the community level and finally monitoring and evaluation.
88. Winblad, Uno; Kilama, Wen (1985). A      VII  
B      VII  
**Sanitation without water.**  
 Rev. and enlarged ed.  
 Basingstoke, Hants : Macmillan. XI, 161 p.  
 (Macmillan education).  
 ISBN 0-333-39140-3. (pkb):  
 Price : £2.50

This book gives practical information on design, construction, operation and maintenance of sanitation systems for individual households. The main systems described are pit and compost latrines.

The new edition includes information on pour-flush latrines and on the construction of soakpits. It also contains a bibliography and a glossary. Although the above mentioned latrine types are said to be inexpensive, no specific cost figures were given.

The publication is intended for health officers, nurses, medical auxiliaries and village health workers. It should also be of use to other members of the medical profession and to architects, engineers, physical planners and administrators concerned with appropriate technology.

89. Wijk-Sijbesma, Christine van (1985). A III  
**Participation of women in water supply and sanitation :** A V  
**Roles and realities.**  
 The Hague : IRC. 191 p.  
 (Technical Paper Series ; no. 22).  
 Price : \$20.00

This comprehensive document summarizes present insights in and experiences with involving women in water and sanitation projects. Written with the perspectives, interests and capacities of technical programmes and projects in mind, it provides engineers, planners and managers with information on traditional roles of women in domestic water supply and sanitation, short and long-term benefits of women's project involvement, practical ways of securing this involvement in local planning and implementation, maintenance, financing, health education and evaluation. Special attention is paid to implications for agency staff, training, project preparation, interagency co-operation and research. The document includes several tables and checklists, a selected and annotated bibliography, and convenient country and subject indexes, with both social and technical keywords.





**SECTION 3: ADDRESSES OF PUBLISHERS**

Aangepaste Technologie Ontwikkelingslanden (ATOL)  
Blijde Inkomststraat 9  
3000 Leuven  
Belgium

Academic Press Inc. Ltd.  
24/28 Oval Road  
London NW1 7DX  
England

American Public Health Association  
International Health Programmes  
1015 15th Street, N.W.  
Washington, D.C. 20005

American Water Works Association  
6666 West Quincy Avenue  
Denver, Co. 20433  
U.S.A.

Appropriate Health Resources and Technologies Action Group (AHRTAG)  
85 Marylebone High Street  
London W1M 3DE  
England

British Association for Commercial and Industrial Education  
16 Park Crescent  
London W1N 4AP  
England

CEPIS, Centro Panamericano de Ingenieria Sanitaria y Ciencias del Ambiente  
Cassilla 4337  
Lima 100, Peru

Collins Publishing Co.  
8 Grafton Street  
London W1X 3LA  
England

DHV Consulting Engineers  
P.O. Box 85  
3800 AB Amersfoort  
The Netherlands

Environmental Sanitation Information Centre  
Asian Institute of Technology  
P.O. Box 2754  
Bangkok 10501, Thailand

Hesperian Foundation  
P.O. Box 1692  
Palo Alto, Ca. 94302  
U.S.A.

Intermediate Technology Publications  
9 King Street  
London WC2E 8HW  
England

International Water Supply Association (IWSA)  
1 Queen Anne's Gate  
London, SW1H 9BT  
England

International Reference Centre for Community Water Supply and Sanitation  
(IRC)  
P.O. Box 93190  
2509 AD The Hague  
The Netherlands

The John Hopkins University Press  
Baltimore, Maryland 21218  
U.S.A.

John Wiley & Sons Ltd.  
Baffins Lane  
Chichester, Sussex PO19 1UD  
England

MacMillan Publishers Ltd.  
Little Essex Street  
London WC2R 3LF  
England

Marcel Dekker, Inc.  
270 Madison Avenue  
New York, N.Y. 10016  
U.S.A.

Pergamon Journals  
Headington Hill Hall  
Oxford OX3 0BW  
England

Ross Institute, London School of Hygiene and Tropical Medicine  
Publications Secretary  
Keppel Street  
London WC1E 7HT  
England

SATIS  
P.O. Box 803  
3500 AV Utrecht  
The Netherlands

Swiss Centre for Appropriate Technology (SKAT)  
Varnbuelstrasse 14  
9000 St.-Gallen  
Switzerland

Thomas Telford  
Telford House, P.O. Box 101  
26 Old Street  
London EC1  
England

United Nations Development Programme (UNDP)  
Division of Information  
One UN Plaza  
New York, N.Y 10017  
U.S.A.

UNESCO Press  
7, Place de Fontenoy  
75700 Paris  
France

U.S. Agency for International Development,  
Development Information Center  
Washington, D.C. 20523  
U.S.A.

WASH Information Director  
Room 1002  
1611 North Kent Street  
Arlington, Va. 22209  
U.S.A.

World Bank Publications  
1818 H Street, N.W.  
Washington, D.C. 20433  
U.S.A.

World Health Organization  
Division of Public Information and Education for Health  
Avenue Appia  
1211 Geneva, 27 Switzerland

WHO South East Asia Regional Office  
World Health House  
Indraprastha Estate  
Ring Road,  
New Delhi 110 001, India

WHO International Reference Centre for Wastes Disposal  
Ueberlandstrasse 133  
CH-8600 Duebendorff, Switzerland



**SECTION 4: JOURNALS AND NEWSLETTERS****1. JOURNALS**

**Aqua** : Journal of the International Water Supply Association

Oxford : Pergamon

DM 235.00 \*

Bimonthly

Bilingual, English and French

**Education for Health** : In support of health for all

Geneva : World Health Organization, Division of Public Information and

Education for Health

Free of charge

Bi-yearly

Also published in French and Spanish

**Hygie** : International Journal of Health Education

Paris : International Union for Health Education

FF 135.00 \*

Quarterly

Trilingual, English, Spanish and French

**Journal American Water Works Association**

Denver, Colorado : American Water Works Association.

\$75.00 (\$25.00 for members) \*

Monthly

Includes Spanish abstracts

**Water Supply** : The Review Journal of the International Water Supply Association

Oxford : Pergamon Journals

DM 750.00 (\$60.00 for members) \*

Quarterly

**Waterlines** : The Journal of Appropriate Water Supply and Sanitation Technologies

London : Intermediate Technology Publications.

\$14.00 (individuals), \$18.00 (institutions) \*

Quarterly

**World Water**

London : Thomas Telford

\$ 85.00 (industrial countries), \$ 40.00 (developing countries) \*

Monthly

\* Annual subscription rates

2. NEWSLETTERS**Decade Watch**

New York: United Nations Development Programme, Division of Information  
Also published in French, Spanish and Arabic

Free of charge

Quarterly

**Dialogue on Diarrhoea** : The International Newsletter on the Control of  
Diarrhoeal Diseases

London : Appropriate Health Resources & Technologies Action Group  
(AHRTAG)

Free of charge

Quarterly

Also published in French

**ENFO**

Bangkok : Asian Institute of Technology (AIT). Environmental Sanitation  
Information Centre (ENSIC)

Through membership only \*\*

Quarterly

**IRC Newsletter**

The Hague : International Reference Centre for Community Water Supply and  
Sanitation.

Free of Charge

8-10 issues per year

Also published in French

**"IRCWD News"** Duebendorf: Swiss Federal Institution for Water Resources  
and Water Pollution Control (EAWAG)

Free of Charge

Quarterly

3. ABSTRACTS BULLETINS**Aqualine Abstracts**

Oxford : Pergamon

DM 695.00 \*

Biweekly

**Environment Sanitation Abstracts** : Low Cost Options

Bangkok : Environmental Sanitation Information Center, Asian Institute of  
Technology

Through membership only \*\*

3 issues per year

\*\* ENSIC membership fees:

Industrialized countries; Developing countries

\$ 45.00 (individuals), \$ 25.00 (individuals)

\$ 85.00 (institutional) \$ 45.00 (institutional)

**SECTION 5: GLOSSARY OF COMMONLY USED EXPRESSIONS**

<b>WORDS AND EXPRESSIONS</b>	<b>EXPLANATION</b>
<b>ABSORPTION CAPACITY</b>	- The ability of a country or institution to fully utilize allocated resources, within a specific programme period.
<b>ADEQUATE WATER SUPPLY</b>	- A facility that provides safe water in quantities sufficient for drinking, culinary and other household purposes so as to make possible the personal hygiene of members of the household. It should provide this in sufficient quantity on a reliable, year-round basis and should be near to or within the household where the water is to be used. - Can also refer to acceptable water quality.
<b>AFFORDABLE</b>	- Services obtainable within the financial means of the community.
<b>APPROPRIATE TECHNOLOGY</b>	To be appropriate, a technology should: - be as inexpensive as possible without jeopardizing the effectiveness of the improvements sought; - be easy to operate and maintain at the village, community, or municipal level, and not demand a high level of technical skill or require a massive deployment of professional engineers; - rely on locally-produced materials rather than on externally provided equipment and spare parts, where this is practicable; - make effective use of local labour, especially in areas where there is a surplus of labour; - facilitate and encourage the local manufacture of equipment and parts under the leadership of entrepreneurs; - facilitate the participation of village communities in its operation, and maintenance; and; - be compatible with local values and preferences.
<b>BASELINE SURVEY</b>	- Use of survey information to measure conditions before stimulating change or introducing a programme so as to permit later comparisons.
<b>BASIC HUMAN NEEDS STRATEGY</b>	- It is a way of enabling low income beneficiaries to obtain adequate water supply and sanitation at affordable prices.

- CASE STUDY** - A practical presentation of a specific situation or project experience as an example or illustration of a situation which may be applicable elsewhere and from which others can learn.
- CLEARING HOUSE** - An independent unit, or a department within an information unit, providing a single point of access to documents originating from a number of different places. In international systems, they help to provide access to non-conventional documents and, at the national level, to bring together documents produced by the various branches of public administration and decentralized bodies.
- COMMUNITY INVOLVEMENT & COMMUNITY PARTICIPATION** - Organized local commitment to and participation in planning, implementing, operating, maintaining, and assessing water supply and sanitation systems. Usually implies a degree of local responsibility and authority for such systems.
- COST BENEFIT ANALYSIS** - A way of establishing project viability by comparing the present worth values (i.e. discounted costs) with the present worth values of the benefits expressed in monetary terms. The value of this tool depends on whether all benefit and costs can be adequately measured quantitatively which is often not possible.
- COST EFFECTIVENESS** - It is a quantitative measure of comparing the efficiency of attaining project objectives through one alternative solution in comparison with other alternatives. For example rehabilitation may be more cost effective than the construction of an entirely new systems.
- COST-RECOVERY** - The application and collection of charges equivalent to the full costs for the provision of services, (both capital and operational) either directly from the recipients or otherwise (e.g. through subsidies).
- COUNTRY SECTOR DIGEST** - A brief description of the situation in the (water supply and sanitation) sector of a specific country, at a given time.
- DEBT SERVICE** - The repayment, of borrowed capital, composed of interest and amortization of principle.  
- In that context, full cost recovery (operation and maintenance, depreciation of equipment and interests) is a long-term objective in many utilities.



- DECADE** - IDWSSD = the International Drinking Water Supply and Sanitation Decade (1981-1990).
- DECADE APPROACHES**
- Strategic ways and means of attaining the project objectives through:
    - complementarity (mutual support) of sanitation with water supply development;
    - focus on both rural and urban underserved populations in policies and programmes;
    - achievement of full coverage through replicable, self-reliant and self-sustaining programmes;
    - use of socially relevant systems applying an appropriate technology;
    - association of the community with all stages of programmes and projects;
    - close relation of water supply and sanitation programmes with those in other sectors;
    - association of water supply and sanitation with other health programmes.
- DECADE CONSULTATIVE MEETING** - A recipient-country initiated meeting, at which the National Water Supply and Sanitation sector authorities present government policies, plans and priorities to external support agencies for the promotion and co-ordination of resource activities.
- DECADE PLANS** - National sector plans describing ways and means of reaching national Decade objectives and targets.
- DECENTRALIZATION**
- Transfer of authority or functions from a central (e.g. national) to a regional level.
  - It is recommended to use decentralization as a general term, and use other terms (e.g. deconcentration, devolution, etc) for specific forms of decentralization, as explained below.
- DECONCENTRATION** - Specific form of decentralization where a central agency entrusts parts of its authority and responsibilities to its own field offices at lower levels.
- DEVOLUTION**
- The gradual transfer of power from one authority (e.g. central government) to another (e.g. a semi-autonomous local authority like a village council).
  - Devolution is in most cases a prerequisite to community involvement.
- DUAL FOCUS** - An approach by which solutions to performance problems are sought by focussing on both the individual and on the system within which that individual works.
- EXCRETA** - Human faeces and urine, i.e. both solid and liquid waste products.

**EXTERNAL SUPPORT  
AGENCIES (ESA)**

- International, multilateral, or non-governmental voluntary bi-lateral organizations providing technical or financial support to development programmes and projects. These are sometimes referred to as Donor Agencies.

**FEASIBILITY  
STUDIES**

- These are carried out in conjunction with preliminary engineering studies to determine for immediate or short term needs. The most technically sound, economically, socially and financially viable development scheme. Such studies are essential for project appraisal prior to decisions on financing. As such they present all the merits and justification project underlay.

**GUIDELINES**

- A set of guiding principals, rules or procedures setting out the steps to be taken in performing a task or implementing a policy and the manner of doing so. In contrast standards are more precise than guidelines.

**HARDWARE**

- These are the physical elements or systems. Components to provide water supply and or sanitation.
- See **SOFTWARE** for constrasting definition.

**HEALTH**

- The preamble of The World Health Organization's Constitution defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."

**HYGIENE**

- Cleanly practices which promote health, including hand-washing, bathing, brushing teeth, food handling and maintaining a clean household environment, including the safe disposal of human and animal wastes.

**HUMAN RESOURCES**

- The term "human resources" is intended to include youth, adults, men and women who are paid employees or volunteers, inclusive of skilled and unskilled personnel who are collectively engaged in planning, managing, operating and maintaining the water supply and or sanitation services.

**HUMAN RESOURCES  
DEVELOPMENT (HRD)**

- Building up potential human resources by focusing on job requirements as well as institutional and human needs. These may comprise specific training activities, managerial, organizational and adjustments and the introduction of incentives including correct enhancements. Thus HRD process should embrace planning, skill development and training, and human resource management, with all three harmoniously geared to the achievement of specified goals.

- INSTITUTION BUILDING** - Actions leading to the establishment or strengthening of organizations or authorities responsible for planning, managing, operating and maintaining water supply and sanitation activities.
- INTEGRATED RURAL DEVELOPMENT** - Interdependent and interdisciplinary multi-sectoral (e.g. water supply, irrigation, sanitation, roads) co-operative developmental activities, often including local community participation and the contributions of a variety of specialists. The term "integrated approach" is used to refer to means or methods or coordinating attainment of various individual objectives under one common overall objective, e.g. an integrated approach to delivering services to low-income populations.
- LEAST DEVELOPED COUNTRIES (LDC)** - In the UN these are the group of countries with the lowest per GNP capita income. As originally defined it includes countries with less than \$300 US dollars GNP per capita.
- MAR DE PLATA ACTION PLAN** - The recommendations of the UN water conference held in Mar de Plata, Argentina in March 1977 initiating promotion of the ISWSSD.
- MASTER PLAN** - Relatively long range plans for implementing a phased development programme for services that, for practical and economic reasons, cannot be accomplished in a single stage.
- MINIMUM EVALUATION PROCEDURE** - In accordance with WHO a relatively rapid and systematic method of evaluating newly constructed and old water supply and sanitation facility.
- MONITORING** - The measurement, collecting, recording and transmission of relevant data concerning activities, to ensure that they are proceeding according to plan.
- NATIONAL ACTION COMMITTEE** - An inter-departmental or inter-agency committee within a country responsible for conceiving and implementing the national action plan, and for evaluating and coordinating the integral sector development process.  
- See **TECHNICAL SUPPORT TEAM**
- NIGHTSOIL** - An accumulation of human excreta usually collected at night without dilution by large volumes of water; nightsoil is generally "carted" and will not flow by gravity in pipes.

**NON-GOVERNMENTAL ORGANIZATION (NGO)**

- Any organization which is not part of a formal government structure, including charitable groups, for-profit companies, private universities, professional associations, and so forth.
- NGO's also include private voluntary organizations (PVO's).

**PRE-FEASIBILITY REPORT**

- Although basically "pre-feasibility report" contents as referred to in the World Bank's Project Preparation Handbook are similar to those of master plans, the former implies less elaboration and rigidity and a nearer planning horizon.

**POLICY**

- High level sometimes political decisions setting up service coverages, priorities, standards and levels of services as well as levels of borrowing and cost recovery.

**POTABLE WATER**

- Water which is safe to drink, i.e. which does not contain harmful chemical substances or micro-organisms in concentrations that could cause illness in any form.

**PRE-INVESTMENT PROJECTS**

- The UNDP governing council in consultation with the specialized UN Agencies define such projects as those "That clearly identify as an objective the task of collecting, analysing and presenting economic, financial, technical, institutional and social data in any development sector in a form which facilitates decision-making concerning the feasibility of committing an amount of capital for the creation of physical assets, production of GNP, and services or the development of human and natural resources".

**PREVENTIVE MAINTENANCE**

- A systematized and periodic maintenance procedure applied to the components of a system in order to minimize breakdowns, ensure their efficient working, and prolong their respective lives.

**PRIMARY HEALTH CARE (PHC)**

- Essential health care made accessible at a cost the country and community can afford, with methods that are practical, scientifically sound and socially acceptable. It is the central function and main focus of a country's health system, the principal vehicle for the delivery of health care, the most peripheral level in a health system stretching from the periphery to the centre, and an integral part of the social and economic development of a country. The elements of PHC are education of the community on prevalent health problems and on methods of preventing these problems from arising or of controlling them; the promotion of adequate supplies of food and of

proper nutrition; sufficient safe water and basic sanitation; maternal and child health care, including family planning; the prevention and control of locally endemic diseases; immunization against the main infectious diseases; appropriate treatment of common diseases and injuries; and the provision of essential drugs.

- PRIVATISATION** - Transfer of responsibilities for services through the sale of assets, previously held by government to the private sector.
- PROJECT APPRAISAL** - A procedure for ascertainable technical, financial, economic, and institutional feasibility and social acceptability of the project scheme.
- PROJECT CYCLE** - Various stages of project development such as formulation, pre-preparation appraisal, negotiation, financing, implementation, and evaluation.
- PROJECT FORMULATION DOCUMENT OR PROJECT DOCUMENT** - An informative and logical presentation of project objectives, services to be provided, anticipated outputs, and pre- investment studies required.
- PROJECT IDENTIFICATION REPORT** - An overview of existing water supply and sanitation systems, the need and justification for a new project, its characteristics, alternatives and order-of-magnitude costs.  
- Identification and preparation comprise the pre-investment planning stages.  
- The project identification report often precedes the pre-feasibility report.
- QUALITY OF SERVICES** - A measure of adequacy of the services relating to their functioning and their reliability, ways they fulfill the needs and ways they are delivered.
- RAPID ASSESSMENT** - An accelerated limited sector survey used in conjunction with the IDWSSD as to determine the status of service in the sector and the degree of preparedness to undertake an accelerated development programme.
- REVOLVING FUND** - Resources which are earmarked (set aside) for specific purposes with the proviso that repayments into the fund may be used again for the same purposes.
- SAFE SANITATION** - The means of collecting and disposing excreta and community liquid wastes in a hygienic way so as not to endanger the health of individuals and the community.

- SAFE WATER** - See **POTABLE WATER**
- SANITATION SYSTEM, (ON-SITE SANITATION)** - A sanitation system in which excreta are deposited, stored or treated and disposed of (e.g. pit latrine and septic tank).
- SEWERAGE SYSTEM, (OFF-SITE SANITATION)** - A sanitation system by which liquid waste and excreta are disposed of through a water carried sewerage system transported offsite through a sewerage network.
- SECTOR STUDY** - A broad and thorough examination of a country's water and sanitation status to assist in formulating long-range strategies and policy decisions, and to provide investment forecasts on a national or provincial scale.
- SECTORAL PLAN** - An action plan for the development of the water supply and sanitation based on approved targets of service conditions as developed in a sector study.
- SERVICE COST** - The number or proportion of people who receive adequate water supply and sanitation services.  
- The overall level of urban service coverage.
- SERVICE LEVEL** - Degree of convenience and accessibility of the water supply and sanitation services provided under minimum requirements for health and well-being.
- SOFTWARE** - All programme or project related support activities or information that are planned to ensure safe operations, minimum interruption of services through preventive maintenance, public acceptance and support as well as overall achievement of objectives with due attention to the health benefits.  
- All components needed to support installation, proper use, operation and maintenance of equipment (hardware), such as communications, education, information, community organization, skills training and staff development.  
- Donor support of "software" or technical co-operation to promote health education; community involvement, including the role of women; operation and maintenance, as individual projects/programmes or components of investment projects.  
- See **HARDWARE** for contrasting definition.
- STANDARD DESIGN** - A set of replicable detailed designs and construction specifications.

**STANDPOST**

- A tap or taps and supporting structure designed for use by a number of families for domestic water supply, (usually a concrete, masonry, metal or timber post) equipped with a standpipe (vertical pipe) and one or more taps.
  1. In order to avoid confusion, other expressions such as "(public) standpipe" (used in World Bank publications), "(public) fountain" should consistently be replaced by standpost.
  2. The term "public standpost" should be limited to those standposts where use is not restricted in any way to a particular group or community.
  3. The term "neighbourhood standpost or community standpost" are to be preferred where use of the standpost is limited to a more specific user-group.
- See also **YARD TAP**.

**STEERING COMMITTEE**

- **IDWSSD Steering Committee for Co-operative Action of the International Drinking Water Supply and Sanitation Decade** is a committee composed of representatives of UN Agencies involved in the sector; it deals with priorities and with broad issues associated with achieving Decade goals.

**STRATEGY, WHO DECADE**

- The WHO strategy for the Decade identifies six priority areas for WHO's technical co-operation and support as follows:
  - promotion of the Decade;
  - national institution development;
  - development of human resources;
  - information exchange and technology development;
  - mobilization of financial resources;
  - co-ordination with other agencies.
- See **DECADE APPROACHES**.

**TARGET**

- Measurable and attainable aims directed towards certain objectives, usually expressed in quantitative terms for specific populations or conditions.
- It is more specific than an objective and the period within which it is to be attained is usually specified; it also lends itself more readily to being expressed in quantitative terms.
- "Provision of safe drinking water for 60% of (a specified) population by 1985".

**TECHNICAL SUPPORT TEAM**

- A group of technical external support agencies personnel in a country which supports Decade activities. The TST works closely with National Action Committee.
- See **NATIONAL ACTION COMMITTEE**.

- TECHNOLOGY, TRANSFER OF** - Process of making technical knowledge, techniques and equipment more widely available. Implies a sharing of existing technology rather than its re-invention.
- UNACCOUNTED FOR WATER** - The difference between total water volume produced before entering the distribution system and the accounted for volume used by the consumers. This main difference is due to leakages through the distribution system and opened unrefined taps and the undetected amounts of water consumed as a result of faulty meters as well as illegal (illicit) connections.
- URBAN FRINGE** - Urban settlement areas, usually of squatters but not necessarily peripheral, which receive inadequate or disproportionally fewer services.  
 - Emphasis on rural and urban fringe population.  
 - "Fringe" is not only a geographical but also a socio-economic concept, as some urban fringe areas are located at or near the city centres. The urban fringe (or under-served area) encompasses slums, shanties and squatter areas.
- WASTEWATER** - Spent water of a community. It may be a combination of liquid and water-carried wastes from residences, commercial buildings, industrial plants and institutions, together with any groundwater, surface water and stormwater that may be present.
- WATER-BASED DISEASE** - Illness caused by bacteria, virus and paracitic disease-causing organisms (i.e pathogen) which spends a part of its life cycle in another organisms which lives in water, such as a snail or mosquito. These include schistosomiasis and guinea worms.
- WATER-BORNE DISEASE** - Illness caused by the drinking of water containing disease-causing organisms (i.e pathogens), examples include cholera, typhoid.  
 - This term has been, and still is, greatly abused so that it has become almost synonymous with water related disease. It is essential to use the term water-borne only in the strict sense defined here.
- WATER HARVESTING** - Any of a number of techniques for collecting rainwater such as through roof gutters and storage tanks, or small dams to prevent excessive runoff of rainwater.



- WATER-RELATED DISEASE** - Illness which is in any way related to water or to impurities in water. This includes water-based, water-borne and water-washed disease as well as disease related to chemical contamination.
- WATERSHED** - A drainage basin, or catchment area having a common outlet for its surface runoff.
- WATER-WASHED DISEASE** - Illness whose transmission will be reduced following an increase in the volume of water used for hygienic purposes, like infections of the skin (e.g. diarrhoea, certain skin and eye diseases, and diseases transmitted by lice). Also called, "water hygiene disease".
- There are four categories of water related diseases:
    - \* water-borne diseases (e.g. cholera)
    - \* water-washed diseases (e.g. scabies)
    - \* water-based diseases (e.g. schistosomiasis)
    - \* diseases transmitted by water related insect vectors (e.g. malaria).
 The term water-associated is sometimes used as synonym to water-related.
  - See **WATER RELATED DISEASE**.
- WATER POINT** - See **STANDPOST**, and **YARD TAP**.
- WATER-SEAL LATRINE** - A toilet in which the defecation bowl is connected to a built-in water trap to prevent the escape of foul odours and to minimize access to insects.
- WATER QUALITY STANDARDS** - Established quantitative measures and testing procedures concerning chemical, biological and physical characteristics of water to guarantee the safety of water available to consumers. They are more rigid than guidelines.
- YARD TAP** - A tap or standpost located in a courtyard and serving a family living together on one homestead, or a group of family units located around a common courtyard.