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WATER AND SANITATION WHERE THEY COUNT:

The Story of the Wanging'ombe Water Project
by
Lindsey Hilsum, Programme Associate
in UNICEF's Nairobi office

The Wanging'ombe water project in south-eastern Tanzania has been an undoubted success. The new water supply system that taps the Mbukwa river and pipes water to 43 villages in an arid stretch of Tanzanian countryside has transformed the lives of the 80,000 people it serves. In 1980, when all the traditional water sources - wells, shallow pools and water holes - had either dried up or were depleting fast, the Mbukwa water continued to flow.

Community Participation: Key Factor

The people's enthusiasm for the new system was a key to its successful installation. Ivan Blakely, UNICEF Project Officer, who has lived in Wanging'ombe advising and observing since 1977, says: "This huge gravity water project owes its success entirely to the efforts of the 80,000 villagers which it serves and three small teams of technicians". Countless teams of villagers, organized by their village chairmen, gave their labour voluntarily to dig the trenches, carry the pipes to places which could not be reached by truck, lay the pipes, clear the bush, and prepare aggregate for constructing the village storage tanks.

Convenience Is Highly Valued

Women in the villages of Wanging'ombe cite convenience as a major advantage of the new supply. They used to walk up to seven kilometres to fetch their water. At the end of 1983, domestic drawing points were established in all the villages, meeting the Tan-

zanian government target that no one should have to walk further than 400 metres to collect their water.

Health Impact Hard To Pinpoint

If convenience has been the obvious gain as far as the villagers themselves are concerned, local health officials also believe that the Mbukwa water has had some impact on people's health. Dr. Maric George Mvungi, of the Nembula Lutheran Hospital in the centre of the project area, says that the provision of a permanent water supply to the hospital and other local health facilities has improved their standard of care. In addition: "There used to be a lot of scabies around here. Since we got the water, there have been fewer patients coming to the hospital with scabies".



Photo: WHO/ D. Sebina

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The reduction in scabies suggests that people are using more water - washing more often and improving their personal hygiene. However, the waterborne diseases which account for over half of all patient visits to the hospital, and are a major cause of death in the area, have not been eradicated, although Dr. Mvungi thinks their incidence has dropped.

Water Filtration Weakest Link

One reason that the water supply has not made an immediate and dramatic impact on health is that the filtration system is not yet complete, so the water is still "raw" when it reaches the villages. Two of the treatment cells prepared for the filtration system are being used as sedimentation tanks, so the water is cleaner than the water in the streams and pools traditionally used, but is still not pure. And all the exhortations and explanations in the world will never persuade people to boil water regularly when fuel is scarce and expensive.

Sanitation Would Make A Difference

Another problem is that many of the waterborne diseases prevalent in the region such as hookworm and diarrhoea are of fecal origin. Without good sanitation, the water supply project can only have a minimal impact on health.

With this in mind, three years ago local leaders and visiting technicians decided to suggest to four villages a pilot scheme for constructing improved latrines. Accustomed to living at close quarters, the people of Wanging'ombe already had latrines in their houses or nearby. But they were not safe as flies could easily hop from latrine to kitchen. Neither were they secure: the bush holes used as squatting plates were often eaten away by termites and the pit walls caved in when it rained. Children and old people were often afraid to use the latrines so they used the fields.

Ambitious VIP Latrine Project

After an initial hitch in the choice of latrine design, a project to provide villagers with permanent latrines was launched. As with the water supply, everything is being done on a self-help basis. The Ventilated Improved Pit Latrines - known as VIP latrines - consist of a double alternating pit and a privy shelter constructed of locally-made burnt bricks and imported cement. The double alternating pit (when one pit is full, the other is used; and when that is full, the first one is emptied and used again) means that the latrine can be used permanently. The villagers make the bricks themselves and UNICEF supplies each household with two bags of cement. UNICEF is also supporting the manufacture of cement squatting plates locally. So far 500 improved latrines have been constructed towards an ambitious target of 20,000 by 1985.

As yet it is hard to judge if the latrines have had any significant impact on health. Many people who have had an improved latrine for over a year think that their children suffer from diarrhoea less often, but this is only an impression: there is no scientific proof. In the end, however, it will be people's impressions that count, for they must themselves be persuaded of the latrine's health benefits.

Health Education Seen As Crucial

At the moment, when questioned about the

reason for building an improved latrine, most people reply: "to prevent diseases", but cannot explain how or why the latrine will do this. Dr. Mvungi believes that the latrine programme will only have a significant effect once people understand about flies and fecal contamination. "It is no use someone building a good latrine if he is not taught how and why to use it". It's the same with water: people need to understand the connection between drinking water and disease before they appreciate clean drinking water's advantages. Christopher Mgwaeje, Divisional Secretary for Wanging'ombe, agrees: "Once we have built latrines in every house, or maybe before, the major thing we have to do - and we have already started - is health education".

When the water supply project was underway, UNICEF project officer Ivan Blakely commented: "Once a village is committed, there is no turning back". Building the water supply was the first step. Now they are committed, the next step will be an education campaign to help them make the best use possible of the water supply and latrines they have constructed.

Source: UNICEF News, Issue 116/1983/2.

INDIA: WORKSHOP ON GUINEA WORM ERADICATION

A regional workshop to combat guinea worm disease in the most affected southern districts of Rajasthan state in India was organized in October '83 by the Tribal Research Institute, Udaipur, Rajasthan, India. The aim of the workshop was to initiate a process of collective action on the part of several governmental and non-governmental agencies working in five districts of Rajasthan state: Banswara, Bichhiwara, Chittorgarh, Sirohi, Udaipur. These districts have a predominant tribal population. The participants discussed the nature of the physical and social environment of the villages and the problems of access to safe drinking water, the need for preventive, promotional and curative health care, and the organizational means of extending such care to the affected population.

The hope is to tie in the regional effort with the National Guinea Worm Eradication Programme. Representatives of the Rajasthan government's health and development departments, research and educational institutions, and voluntary organizations participated in the workshop.

Further information:

Prof. Ashok Subramanian, Indian Institute of Management, Vastrapur, Ahmedabad-380 015, India.

GUIDELINES FOR SOCIO-BEHAVIOURAL STUDIES ON WATER SUPPLY AND SANITATION

The Centre for Medical Social Science and Social Medicine (India) is releasing a series of Guidelines in small booklets of 30 to 60 pages each, in a limited number, prepared under the sponsorship of the International Development Research Centre (IDRC, Ottawa, Canada). These Guidelines are the result of a careful compilation, design and testing of a

variety of instruments over the past two and a half years. These provide a comprehensive framework for a variety of socio-behavioural studies designed specifically for water supply and sanitation programmes in the developing countries.

These Guidelines will become a handy compilation for quickly selecting, designing and conducting such studies through trained field assistants. The studies will provide a valuable data base for a variety of other programme activities such as designing community education, encouraging community participation, diagnosis of differential progress of the IDWSSD programmes and their impact, evaluation etc.

Some of the Guidelines are:

1. Relevance of water use and sanitation practices.
2. What can be studied?
3. How to study socio-behavioural aspects.
4. Instruments and guidelines for village level investigations.
5. Instruments and guidelines for household level survey on water collection and water use practices.
6. Instruments and guidelines for observational studies on water collection and water use practices, etc.

For copies of this series write to Vijay Kochar, D.Sc., Centre for Medical Social Science, University of Hyderabad, Nampally Station Road, Hyderabad-500 001, Andhra Pradesh, India.

APPROPRIATE TECHNOLOGY MICROFICHE REFERENCE LIBRARY

Volunteers in Asia, publisher of the Appropriate Technology Sourcebook, Volumes One and Two, is now offering microfiche reproductions of its own comprehensive appropriate technology reference library. This collection of 872 practical books and plans includes every page of more than 80% of the publications reviewed in the Sourcebook, plus 125 new titles - a total of more than 112,000 pages of material.

Topic areas include renewable energy sources, agricultural tools and techniques, low cost housing, water supply and sanitation systems, nonformal education, local communications, and small enterprises. You can find, for example, designs for low-cost fuel-conserving cooking stoves, sail windmills for small plot irrigation, microhydroelectric units, improved grain storage bins, bicycle trailers, manuals for village health workers, and innovative new materials for teaching fundamental principles of science.

Readers of the IRC Newsletter will be particularly interested in the 82 title section on water supply and sanitation, with its emphasis on low cost alternatives.

Volunteers in Asia are offering the A.T. Microfiche Reference Library and a portable microfiche reader for a total of US\$ 825 (US\$ 575 without reader). Airfreight delivery to major cities around the world takes seven to fourteen days and costs an additional US\$ 75 to US\$ 150.

If you're interested, please write to:

The Appropriate Technology Project, Volunteers in Asia, P.O. Box 4543, Stanford, California 94305, U.S.A.

CONFERENCES/EXHIBITIONS

Aquatech of the Americas

14-16 March 1984, Long Beach California, USA. International water exhibition and conference. Correspondence address: Max C. Nelson, P.O. Box 721948, Houston, Texas 77272, USA.

3rd International Symposium on Land Subsidence

19-24 March 1984, Venice, Italy
Correspondence address: A. Ivan Johnson, 7600 East Orchard Road, Englewood, Colorado 80111, USA.

2nd African Water Technology Exhibition

9-13 April 1984, Nairobi, Kenya
International exhibition and conference. Correspondence address: International Conferences and Exhibitions Ltd., 6 Porter Street, London W1M 1H2, England.

World Pump Expo

24-26 July 1984, Melbourne, Australia
Correspondence address: I.R. Ustick, Rose Exhibitions, 437 St. Kilda Rd., Melbourne, Vic 3004, Australia.

Water Resources Management

30 July - 2 August 1984, Zaria, Nigeria
Correspondence address: Prof. Gunnar Lindh, Department of Water Resources Engineering, Lund Institute of Technology, University of Lund, Box 725, S-22007 Lund, Sweden.

10th WEDC Conference

28-31 August 1984, Singapore
Water and Sanitation in Asia and Pacific. Correspondence address: John Pickford, Department of Civil Engineering, University of Technology, Loughborough, Leics. LE11 3TU, England.

BOOK REVIEW

FUTURE WATER authors John R. Sheaffer and Leonard A. Stevens contend that the water crisis, threateningly real in the United States of America, can be solved. The problem is not water, they say, but its misuse.

Most water in the USA is used once, treated and eventually flushed into the sea, at an estimated cost of US\$ 50 billion since 1972. Recycling this resource, on the other hand, would create an endless chain of water that can be repurified and reused.

FUTURE WATER analyzes the key features of the "flush-hard- it's-a-long-way-to-the-ocean" approach: extravagantly expensive, hopelessly inefficient and carelessly lethal. Powerful vested interests would like to keep it that way.

Numerous alternatives for recycling waste water, albeit on a small and/or pilot scale, have already proven their worth in the USA according to the authors who also cite China's long successful history with excreta for fertilizer and fuel.

Shaeffer and Stevens do not see the choice about the future of water as essentially a technical one but rather as a question of human values. In bringing this debate to a wide readership they hope to stimulate public interest in an issue as significant as the energy crisis and, in the U.S.A., more costly than most public programmes. Their controversial findings and lively style will no doubt

help to focus more attention on a problem that, in varying degrees, is global in scope.

FUTURE WATER

ISBN 0-688-01575-1 269 pages - US Price \$ 14.95 hardcover

Published by:

William Morrow and Company Inc., 105 Madison Avenue, New York, N.Y. 10016, USA

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NEWS FROM IRC IRC IN 1984

The expressed needs and requests of developing countries will continue to guide IRC's information-oriented activities in 1984. Thus far, priorities for action emerging from the Water and Sanitation Decade are:

- application of low cost and maintainable technology;
- involvement of the community and the individual;
- the development of human resources at all levels;
- accessibility of existing knowledge and experience.

In nearly all these areas IRC in 1984 will try to play its role in developing, popularizing and disseminating practical knowledge and experience leading to alleviation of present constraints in rural water supply and sanitation in developing countries.

What we can learn from experiences in various countries to improve maintenance, and how we can achieve women's active involvement in the planning, execution, operation, maintenance and utilization of water supply and sanitation systems, will be two of the vital questions for which IRC is trying to find some innovative answers in 1984. Together with the Tanzanian government alternative approaches and methods for community participation in operation and maintenance of rural water supplies will be field tested in 1984. This will contribute to the development of a community participation component for the national rural water supply programme.

The Tanzanian experience will be of high relevance to IRC's project to develop guidelines on community education and participation for general use. Together with WHO, publication of a guidance document for the training of community motivators is planned this year.

In the National Training Delivery Systems project - for which Indonesia has asked continuation of IRC's involvement - publications in 1984 are planned on training for trainers as well as case studies on human resources development. Other publications will see the light of day on household water and sanitation options aiming at technical information support for village health workers as well as an update on IRC's earlier on-site sanitation options

publication.

IRC in 1984 will pursue the combination of software and hardware components in its two village-level integrated demonstration projects. The first of these, now in its final phase, is the slow sand filtration project, a system that has proven effective for low-cost water purification. The SSF project has generated useful experience on design, construction and operation and maintenance issues as well as on community education and participation. Through various publications in 1984 this experience will be shared with many. Follow up on training is also planned.

The experiences in the SSF project have also been very useful in a second demonstration project on public standposts water supply systems, going full swing in 1984, its second year of operation. Guidelines on organisational, economic, technical and socio-cultural aspects of public standpost supplies are in the pipeline.

In the Appropriate Technology area, information exchange on handpumps, one of IRC's earlier fields of work, will be stepped up, again on the software side. For early 1984 a publication is planned on organization of handpump maintenance systems based on 11 case studies.

Rainwater harvesting, standard designs and alternative energy utilization in water pumping are three other appropriate technology projects for which primarily available information will be compiled, condensed and disseminated this year.

The outputs from these funded projects will also support the Programme on Exchange and Transfer of Information. Designed for the Decade to assist developing countries in establishing and strengthening of systems providing technological information support to their community water supply programmes, POETRI in 1984 will deliver information products and stage a number of workshops. Programme evaluation and planning is another subject for increased priority in the rest of the Decade. With UNICEF and the Royal Tropical Institute in The Netherlands, IRC will co-publish a set of training modules on evaluation for field staff. Also in 1984 a document will be published to popularize evaluation. This is in support of the Minimum Evaluation Procedures as developed by WHO.

Other 1984 plans for information generation and dissemination include subjects like environmental sanitation management, ground-water development, human resources development and training materials. The extent to which IRC will be able to develop and share relevant knowledge on these activities in 1984 will depend on the availability of extra-budgetary resources from bilateral and multi-lateral donors.

We'll try to keep you posted how things develop.

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THIS NEWSLETTER IS ISSUED BY IRC, AND DOES NOT NECESSARILY REFLECT THE VIEWS AND POLICIES OF WHO, OR ANY OTHER ORGANIZATION CITED.

With its partners in developing countries and with United Nations agencies and donor organizations, IRC assists in the generation, transfer, and application of relevant knowledge through programmes for water and sanitation improvement.

These information-oriented programmes include: 1. Information Support and Services; 2. Technology Development and Transfer; 3. Manpower Development and Training; 4. Community Education and Participation; and 5. Programme Evaluation and Planning.

Support is provided by means of publications and training material, seminars and courses, research and demonstration projects, as well as by general support to the development of national capacities.

Requests for information on IRC should be addressed to IRC, P.O. Box 5500, 2280 HM Rijswijk, The Netherlands.



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WATER AND SANITATION PROGRESS REPORT: THE WORLD BANK

This article summarizes the present status of the World Bank's efforts in support of the International Drinking Water Supply and Sanitation Decade. These efforts fall into two broad categories: special projects executed by the Bank and the Bank's lending programme.

The World Bank sees the linkage between the special projects and the lending programme growing more important. Given the current worldwide economic constraints, it is unlikely that there will be any significant expansion of investment funds for water supply projects during the 1980's. At the same time, the numbers of people requiring drinking water and sanitation will increase substantially over this period. The challenge thus becomes how to serve more people with less, i.e. how to use limited resources most efficiently. By advancing the state of lower-cost water supply and sanitation technologies and by promoting their use, the special projects are contributing to the efficiency with which scarce investment funds are used, both by the Bank and, it is hoped, by other lenders and donors.

I. SPECIAL PROJECTS

With core funding from the United Nations Development Programme, the Bank continues to execute special Water Decade projects in five general areas.

1. Development and Implementation of Low-cost Sanitation Investment Projects: UNDP Project INT/81/047

The primary objectives of this project are to assist governments to identify and implement sanitation investment projects, to promote appropriate low-cost sanitation technologies, and to train and support national sector personnel. The basic project is now completing the second year of its second three-year funding cycle; it is executed by

the World Bank through the Technology Advisory Group (TAG). Spin-off country projects which are directly involved in institution building, policy formulation and the construction of latrines through sanitation project implementation have been developed in Botswana (BOT/79/003), India (IND/81/014), Indonesia (INS/81/002), Lesotho (LES/80/002 and LES/82/007), and Tanzania (URT/80/019). A total of 20 full-time advisers, actively supported by TAG, is stationed in these five countries and in Brazil, the Philippines and Nepal. Plans are in hand to expand this number by up to a further ten posts over the next two years.

The project is presently active in 14 countries. In ten of these it is engaged in preparing or supporting low-cost sanitation investment projects with an estimated value of more than US\$ 130 million. In cooperation with a number of donors and agencies, the project is conducting applied investigations into key issues in low-cost sanitation, among them the field testing of latrine-emptying equipment, assessing the extent of ground-water pollution hazards from on-site sanitation, developing and testing low-volume flush toilets; and assessing the problems of insect breeding in latrines. TAG has prepared a series of Working Papers and Technical Notes to disseminate current experience and thinking in affordable on-site sanitation; the series is expanding. In addition, the project is assisting with the preparation of materials for the information and training programme described below (INT/82/002) and has arranged extensive study tours by key developing country sector personnel to major on-site sanitation programmes.

During the past year, new technical assistance projects were begun in Indonesia and Lesotho; the Government of Brazil approved funds (through cost sharing with UNDP) to support the Brazilian resident adviser; the Botswana post was extended to end 1985; and agreement was reached on a rural sanitation programme in India. Discussions are presently underway with donors to support advisers in Kenya, Mozambique, Zimbabwe (for Zimbabwe, Zambia and Malawi), and Francophone Africa; to extend the post in Tanzania (now funded through an IDA credit to the government); to launch technical assistance and demonstration projects in Somalia and Malawi; and to implement the 10-towns sanitation project in Bangladesh.



2. Field Testing and Development of Rural Water Supply Handpumps: UNDP Project INT/81/026

The primary objectives of this programme are to reduce the cost while improving the reliability of rural water supplies to a potential one billion people, by improving hand-pump design and manufacture, and to train and support sector staff. The importance of providing suitable cost-effective handpumps which can be readily maintained has led the project to focus on the VLOM (Village-Level Operation and Maintenance) concept. The programme is now in its third year of operation.

During the past year, extensive laboratory tests have been completed on the first group of 12 handpumps and the results published; laboratory tests on the second group of pumps are now being finalized. Handpump field trials, funded in part by host governments and eight donor agencies, are now underway in 15 countries. Country monitoring engineers supported by the project (generally UN volunteers) are stationed in 11 countries; in four other countries monitoring is done by personnel funded by other agencies. Monitors are being recruited for an additional one to three countries. Direct field supervision is provided by four regional project officers from their posts in Abidjan, Bangkok, Dhaka and Nairobi.

The project is actively engaged in promoting and assisting local manufacturing efforts in eight countries and in development of improved plastic pumps and parts; it is also supporting low-cost water supply projects with an estimated value of \$ 200 million or more. Two major bilateral contributions (through cost sharing with UNDP) were approved in 1983: the Federal Republic of Germany (BMZ/GTZ) (US\$ 0.5 million) is supporting operations in the People's Republic of China; and Canada (CIDA) (US\$ 1.3 million), in Bangladesh, Ghana, Ivory Coast, and Sri Lanka. Discussions are being held with other donors for additional support.

3. Integrated Resource Recovery: UNDP Project GLO/80/004

This project focuses on integrated resource recovery through multi-purpose recycling of primarily household and commercial wastes. It is analyzing, demonstrating and documenting the basic technological, environmental, and institutional practices and potentials of waste recycling within limits imposed by economic justification. Project activities include preparing a series of generic reports on resource recovery practices and conducting country studies and demonstrations and disseminating the results.

During the past year, a state-of-the-art report on integrated resource recovery has been completed; reports on other topics are in various stages of preparation. The most important reports deal with the remanufacturing of parts in solid wastes, health aspects of effluent irrigation, state-of-the-art of biogas plants, co-composting of domestic and human wastes and others. Case studies have been completed in four countries (Cyprus, India, Israel, Ivory Coast) and are ongoing in five others (China, Nepal, Peru, the Philippines and Thailand). Agreement in principle has been reached with Italy to support (through cost sharing with UNDP)

surveys of waste recovery practices in Ethiopia, Mexico, and Sudan; discussions with other donors (BMZ/GTZ, Canada, and the U.K.) have been undertaken to support feasibility studies and demonstration projects in other countries.

4. Information and Training Programme in Low-cost Water Supply and Sanitation: UNDP Project INT/82/002

This project aims to produce the tools for the introduction and use of low-cost alternative technologies by preparing information and training materials and by establishing effective means to disseminate them. With core funding from CIDA through cost sharing with UNDP, the project is preparing four major information and training packages for senior government officials and decision makers; the Technical Package for technical persons involved in the sector; the Community (User) Participation Package for community workers and project staff; and the three-volume Water Supply and Sanitation Project Preparation Handbook to serve as guidelines for the preparation of water supply and sanitation projects by sector staff around the world.

Significant progress has been made during 1983 and materials for the Decision and Technical Packages should be reviewed and field tested by mid-1984. Final on-location filming has begun (with support from the UN Centre for Human Settlements (UNCHS) and the National Film Board of Canada, which is also doing the filming). Drafts of most of the 18 Technical Package slide/sound modules, each with at least two submodels and related training manuals, are to be completed by the end of the year. As part of the preparation of the third package, health education and community participation components of many water and sanitation projects have been reviewed; the two Visual Learning Systems modules intended for community education are in an advanced stage of preparation. All three volumes of the project preparation handbook are available for distribution now. (Please see Publications). During 1983 new contributions to augment the core CIDA funding for the information and training programme were received from UNDP and UNICEF (through cost sharing with UNDP) and were approved by the governments of the Federal Republic of Germany, Switzerland and Finland. Discussions with other potential donors are continuing.

5. Preparation of Water and Sanitation Investment Projects: UNDP Projects RAF/81/001 and RAF/82/004

One of the goals of the Water Decade is preparation of water and sanitation investment projects for funding. Assisting governments to identify and prepare projects and training national staff in project preparation are the objectives of the three regional project preparation offices established with support from UNDP's Regional Africa and Regional Asia Bureaus. Located in Abidjan, Nairobi, and Colombo, each office fields a project preparation team comprised of an engineer and a financial analyst.

The Asia office in Colombo has been operational since early 1982. During this time, the team has begun preparation of nine projects with a total estimated cost of about US\$ 100 million in Nepal, Sri Lanka and Thailand.

In each of these countries project preparation is used as a practical extension of the training of national staff previously provided or funded by the project. A tripartite review of the project in July 1983 recommended extension of the project through 1984 and the addition of a sanitary engineer with specialized computer expertise to the team.

The Africa offices opened in 1982 with initial funding from FINNIDA, but the second team member in each office did not arrive until 1983. The East Africa team has begun activities in seven countries and has tentatively planned to assist in preparation or implementation of projects with a total cost presently estimated at US\$ 280 million. The West Africa team has planned or initiated activities in nine countries; its initial focus will be on conducting sector studies and preparation of project identification briefs.

II. THE WORLD BANK'S WATER SECTOR LENDING PROGRAMME

Decade objectives call for massive investment funds from governments and external lenders and donors. Throughout the Decade, the World Bank will play a key role in providing these external funds.

The Bank's lending programme is carried out through its six geographical regions. Bank loans and IDA credits for the water sector, which includes water supply, sewerage, and sanitation, are made primarily through direct water sector loans, but components are included under loans to other sectors, principally urban development and agricultural and rural development.

During the fiscal years 1981-83, the Bank has lent more than US\$ 2,000 million for 41 water sector projects and 74 water sector components in urban and rural projects. The total estimated cost of these projects and components is over US\$ 4,700 million. During these three years the Bank's water sector lending programme has averaged about US\$ 596 million a year (with a peak in 1983), or about 4.5% of the total lending programme. Adding water supply components from urban and rural sector increases this percentage to an average of about US\$ 683 million a year, or about 5.1% of the total lending programme.

Looking ahead into the next few years of the Decade, the World Bank anticipates a modest increase in the Bank's lending programme in the water sector to about US\$ 625 million a year; the Bank also expects that, in any given year, the lending approved may be considerably higher or lower than this average, depending upon the size of the specific projects approved. To this total must be added the water sector components from the urban and rural projects, an amount currently averaging some US\$ 87 million a year and expected to expand to between US\$ 150-US\$ 200 million a year.

The above figures indicate an increase in sector lending, but they tell only a part of the story. As was noted above, in the future there will be stronger emphasis on the efficiency of investment in the Bank through use of more appropriate lower-cost technologies in water supply and sanitation projects. This emphasis is due in large measure to the UNDP-funded projects executed by the Bank; it should ensure that water supply and sanitation services can be extended to more people at equal or reduced cost.

Source: World Bank presentation at the 11th

IDWSSD Steering Committee Meeting, November 30 - December 2, 1983, Rome, Italy.

For more information please contact:
The World Bank,
Water and Urban Development Department
1818 H Street, N.W.
Washington D.C. 20433, U.S.A.

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NEW PUBLICATIONS

"Measuring the Impact of Water Supply and Sanitation Investments on Diarrhoeal Diseases: Problems of Methodology"

Deborah Blum and Richard G. Feachem in *International Journal of Epidemiology*, 1983, 12: 357-365.

This short but detailed review of the published literature on the impact of water supply and/or excreta disposal facilities on diarrhoeal diseases, or on infections related to diarrhoea, reveals several methodological problems that hamper the drawing of definitive conclusions from these studies.

This paper examines eight of the methodological problems: lack of adequate control, the one to one comparison, confounding variables, health indicator recall, health indicator definition, failure to analyse by age, failure to record usage, and the seasonality of impact variables.

It is suggested that an evaluation of the impact on health of environmental interventions may best be undertaken by the combined efforts of engineers, social scientists and epidemiologists in "opportunistic" settings and that the intervening behavioural processes so necessary for health impact to occur should be a primary focus of such evaluation.

UNDP Project Management (INT/82/002) Report Number I

Water Supply and Sanitation Project Preparation Handbook; Vol. 1: Guidelines, by Brian Grover; Vols. 2 & 3: Case Studies, by Brian Grover, Nicholas Burnett and Michael McGarry.

The World Bank, 1983 (World Bank Technical Papers No. 12-14)

The Water Supply and Sanitation Project Preparation Handbook is the first output of the World Bank-executed UNDP Project INT/82/002, "Information and Training for Low Cost Water Supply and Sanitation". It consists of one volume of Guidelines and two volumes of illustrative Case Studies. It is intended to assist those in developing countries who are responsible for preparing projects during the International Drinking Water Supply and Sanitation Decade of the 1980s and beyond, including but by no means limited to projects proposed for financing by bilateral and multi-lateral aid agencies.

The Handbook foresees three levels of project preparation to satisfy the information needs of different agencies, for projects of variable complexities. Project identification provides minimal information, sufficient to determine how a project fits into a development or assistance programme and to attract financial support. The prefeasibility stage provides considerably more information which permits the selection of preferred alternatives and may suffice for investment decisions about relatively simple projects. The feasi-

bility stage, finally, provides the full justification necessary for complex and large projects. Reports for the various stages of project preparation are illustrated by means of Case Studies in Volumes 2 and 3 of the Handbook.

The preparation of a programme of sub-projects for water supply and sanitation in rural communities normally proceeds somewhat differently than for any single project in the Urban Sector and a special chapter in Volume I is devoted to this.

The Project Preparation Handbook is distributed on the basis of a mailing list.

Copies of the Handbook may be obtained from UNDP Project Management, P.O. Box 37525, Washington, D.C. 20013, USA.

Sanitation and Disease: Health Aspects of Excreta and Wastewater Management

Third of a series in the World Bank Studies in Water Supply and Sanitation. By R.G. Feachem, D.J. Bradley, H. Garelick and D. Mara.

501 p. + xxvii ISBN 047190094x. Hardcover: US\$ 49.95/£ 24.50.

Published for the World Bank by John Wiley and Sons Ltd. Distribution Centre, Shripney Road, Bognor Regis, Sussex PO22 9SA, England.

This comprehensive reference source on the health aspects of sanitation, an updated and enlarged edition of a 1980 World Bank study, is of primary interest to postgraduate students and professionals in public health engineering, and environmental health and science.

Part I covers existing knowledge of excreta, night soil, sewage and their effects on health. Part II is an encyclopaedic compilation of information describing the environmental properties of a specific group of excreted pathogens and the epidemiology and control of the infections they cause. Particular emphasis is placed on the occurrence and survival of the pathogens, and how various waste treatment processes can speed up their reduction or elimination.

Highly recommended for those interested in the state-of-the-art treatment of public health, microbiological and parasitological aspects of sanitation.

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LDC WATER RESOURCES WORKSHOP HELD

In November 1983, a two-day workshop on the theme "Irrigation and Human Welfare: Intergrated Management of Water Resources in LDCs" was held at Rutgers University in New Brunswick, New Jersey, U.S.A. Organized by a multidisciplinary group of

Rutgers faculty interested in the effects of irrigation, sanitation and water supply projects on human well-being, the workshop received financial support from the UNDP. Approximately 35 individuals from various national and international donor agencies, universities and foundations attended.

The workshop was designed to explore prospects for developing an approach to the planning, design and operation of irrigation projects which would better integrate concerns for the many consequences that they may have on the people affected by them. Types of consequences addressed include: agricultural production effects; consequences stemming from improved access to water for nonagricultural uses; unintended health consequences stemming from changes in the incidence of exposure to gastro-intestinal parasites, vector-borne diseases, and toxic chemicals; and other unintended social and economic changes brought about by irrigation. Relationships among irrigation, domestic water supplies, and sanitation were addressed.

During the workshop, an attempt was made to identify obstacles to the development of a more integrated approach to irrigation projects; to consider how such obstacles could be overcome; and to identify the types of research and training needed to implement such an approach.

A report of the deliberations of the workshop, including abstracts of the seven discussion papers prepared for it, is available from Leslie Small, Department of Agricultural Economics, Cook College, Rutgers University, New Brunswick, New Jersey 08903, U.S.A.

* * * * *

REVISIONS TO WATER RESOURCES TECHNOLOGY COURSE

In October 1984, the Department of Civil Engineering at the University of Birmingham will offer a heavily revised post-graduate water resources technology course. The revised M.Sc. course will place more emphasis on the need for optimal design and operation of water and wastewater systems. The special needs of work in developing countries have also been taken into account.

A brochure describing the course and outlining sponsorship possibilities for UK students can be obtained from:

Dr. T.H.Y. Tebbutt, Department of Civil Engineering, University of Birmingham, P.O. Box 363, Birmingham B15 2TT, United Kingdom.

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With its partners in developing countries and with United Nations agencies and donor organizations, IRC assists in the generation, transfer, and application of relevant knowledge through programmes for water and sanitation improvement.

These information-oriented programmes include: 1. Information Support and Services; 2. Technology Development and Transfer; 3. Manpower Development and Training; 4. Community Education and Participation; and 5. Programme Evaluation and Planning.

Support is provided by means of publications and training material, seminars and courses, research and demonstration projects, as well as by general support to the development of national capacities.

Requests for information on IRC should be addressed to IRC, P.O. Box 5500, 2280 HM Rijswijk, The Netherlands.

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MAJOR CHANGES IN METHODS AND UPWARD TREND IN FINANCING FOR DRINKING WATER/SANITATION DECADE AFTER THREE YEARS

The Decade (1981-1990) was launched by the UN General Assembly on 10 November 1980. Purpose: to focus world attention and action on the needs of 2 billion people in developing countries for safe, accessible drinking water and adequate sanitation. Three and a third years into the Decade, what is happening to serve this purpose?

Major changes are occurring in the way drinking water and sanitation services are designed and delivered in many developing countries.

In the past, large-scale engineering and construction approaches predominated: massive water pumping stations, expensive imported handpumps, major underground sewer lines and sewage treatment plants requiring large quantities of water. Their high foreign-exchange costs meant a large component of international financing was essential.

But now, in a number of developing countries, the balance is visibly shifting towards alternative methods, towards working with people to bring about lower-cost appropriate solutions and mobilizing more "self-financing" from community and national sources. Part of the Decade strategy from the outset, such options are now being proven not only technically viable and popularly acceptable but also financially more affordable. To ensure maximum benefits accrue, care is also being taken to couple this more efficient investment strategy with adequate training, integration with complementary sectors, especially health, and provision of community-based maintenance systems.

This strategy is being supported and mirrored in the programmes and projects of a number of UN organizations active in the Decade, especially UNDP, UNICEF, WHO and the World Bank.

The upward trend both in the amount and proportion of external donor assistance may be evidence that they also increasingly

Technologies for the People

Some of this shift in thinking can be attributed to several inter-country programmes that may well amount to "one of the largest exchanges of planning ideas and technical experience ever undertaken among developing countries". This is how the programmes are described by G. Arthur Brown, Deputy Administrator of the United Nations Development Programme (UNDP). Mr. Brown also chairs the "Steering Committee for Co-operative Action" in which eleven United Nations organizations plan and harmonize their work towards Decade goals.

Handpumps -- an estimated 5 to 7 million of them -- will be required to meet the Decade goals in developing countries. To develop low-cost handpumps that are appropriate to community environments and capable of village-level operation and maintenance (VLOM), UNDP and the World Bank are supporting extensive work in research, testing, development and design.

In the initial phase, handpumps already being used in rural areas were laboratory tested. Recommendations were made to their manufacturers and many have already made changes to improve pump performance and reliability. In the present phase, UNDP/World Bank are working in concert with UN and bilateral organizations to test and develop handpumps in actual field conditions in 15 developing countries.

One revolutionary change in handpumps is the introduction of plastic parts -- polyethylene, polyvinylchloride (or pvc) and others -- especially in below-ground structures. This makes the pumps cheaper, lighter and much easier to maintain at village level. The project reports major developments in VLOM plastic parts in several developing countries. These include India's UNICEF-sponsored "Mark II" pump (approximately 100,000 have been installed in India and Africa); the Malawi "Maldev" handpump; the Bangladesh Tara "No. 1"; the Zimbabwe Blair-Prodorite, the Insto (Dutch) Upper Volta - Volanta, and others. Importance is also given to simultaneous development of appropriate community-based maintenance systems and training. Results of tests and information on the newly developed handpumps will be disseminated to developing countries and manufacturers, with the hope that developing countries will develop their own pump manufacturing capabilities and standardize their national systems for rural water supply.



Low-cost latrines being developed through another UNDP/World Bank collaborative project have major implications for sanitation services. This interregional project has already shown that in sub-Saharan Africa the traditional, unsatisfactory pit latrine, once properly ventilated and safely built, is the ideal sanitation solution for many communities. Already the latrine, known as the "VIP" or ventilated improved pit latrine, is being widely used in urban and rural projects in Botswana, Ghana, Lesotho, Nigeria, Tanzania, Zimbabwe, and in many other developing countries.

For most of Asia, including heavily populated India and Bangladesh, the pour-flush latrine is a simple, affordable disposal method that also suits traditional practices of ablution with water.

A significant innovation is that such low-cost latrines are being introduced not just in rural areas but also as an appropriate first level of service in urban zones. Compared to the astronomical installation and maintenance costs of conventional sewer systems with their heavy demands for water, these low-cost latrines can greatly speed up the achievement of adequate sanitation.

In India, for example, pour-flush latrine programmes in 110 towns will serve some 4-6 million people. Services will be extended to millions more when projects now under preparation in a further 100 towns are implemented, and when this programme is extended into rural areas beginning in 1984. To date, some 40,000 latrines have been installed.

The project's initial phase had an influence on sanitation policies affecting 80 million people by orienting Governments toward appropriate low-cost sanitation technologies. Upon its conclusion it was involved with existing or proposed low cost sanitation investment projects in seven countries worth some \$ 94 million.

Communication and Health Education

Both the handpump and sanitation programmes are seeking higher success rates by ensuring a considerable role for community expression in the social feasibility study, planning, implementation, maintenance and operation stages. "Hardware" elements are complemented by such equally crucial "software" as communication and health education, which are necessary if people are to adopt and sustain the new facilities. A major complementary inter-country project is underway to prepare training materials on low-cost water supply and sanitation for use in training thousands of professionals and trainers in developing countries. UNICEF and WHO are also involved in introducing planners and technical staff to community-based integrated strategies.

The inter-country programmes also work closely with another UNDP/World Bank effort that aims to replicate the demonstration projects in large-scale investment projects to be financed by external donors.

Involvement of women -- who are the most burdened by lack of accessible water and adequate sanitation and will benefit most from their availability -- is the emphasis of another inter-country effort. Executed by UNDP with Norwegian funding and in co-operation with other UN organizations, the project will promote the involvement of women in programme development and implementation in approximately 12 developing countries. Included are plans for incorporating women in

action projects, research on their roles and activities. Case studies of actual accomplishments will be shared by developing countries who are interested in the further promotion of women.

A key issue is how best to achieve positive personal, family and community benefits -- in health, education and economic fields -- by liberating women from time-consuming long treks to collect and carry water that is often not safe anyway. Evidence to date seems mixed: in one locality, closer sources of potable water meant that children (especially girls) are freed to attend school, but that women make more short trips to collect water for an expanding range and volume of home uses; in other localities, women's groups that helped develop community water supply went on to use their "saved time" for such beneficial and income-raising projects as soap-making, poultry production and food crops. The programme aims to closely study these issues and widely disseminate the findings.

Members of the UN inter-agency Steering Committee view the role of women as being so crucial that a task force on women was recently established and a common strategy for action among UN-family members is being drawn-up.

Country Progress

The qualitative shifts taking place in investment, programme planning and implementation are best seen at individual country levels. Emphasis is moving away from conventional large-scale water works and sewerage systems and is going instead:

- in urban slums and small towns, towards phased introduction of more appropriate, low-cost systems;
- in the rural areas, towards low-cost facilities that better reflect the needs of communities and can be locally operated and maintained.

In both urban and rural areas, community involvement at all programme stages and health education on water and sanitation are increasingly built into projects. Recently developed project plans give more careful attention to integrating the different delivery services, to training the necessary people at all levels, and to community-based low-cost strategies --not just to building new installations.

WHO, funded by UNDP, the Federal Republic of Germany and Sweden, is supporting comprehensive national plans incorporating these strategies. Already, 25 developing countries have prepared such plans and about 40 more countries are in the process of doing so. Over 70 developing countries have established inter-ministerial mechanisms to co-ordinate Decade plans and activities along these lines.

How have these strategies and mechanisms affected national plans and programmes? Some examples:

- Indonesia had planned to invest US\$ 1,600 million by 1990 to bring drinking water supply to 75 per cent of the urban and 60 per cent of the rural people and sanitation to 60 per cent of the urban and 50 per cent of the rural inhabitants. But the Government expects to use lower-cost technologies to bring down total expenditure during the Decade to approximately US\$ 1,000 million - a nearly 40 per cent saving.

- In Sri Lanka, concerned with the magnitude of capital required to provide services

to all its people, the Government revised its plan to focus on programmes that emphasize community participation, improved maintenance/operation, training and more resource mobilization among the users.

- In Upper Volta, the national Decade plan requires external assistance of US\$ 1.76 million over 3 years. Its key features are in "software" areas: institutional structure, developing human resources, improved maintenance and operations and co-ordinating sector activities.

- In Haiti, a project, the first of its kind, is underway to meet basic water supply needs of an urban fringe population of Port-au-Prince with a strategy that emphasizes appropriate low-cost facilities and community participation. The per capita cost for the 150,000 people to be served is expected to drop from US\$ 70 to US\$ 15.

- In India, the Government recently enacted a policy to install sewers only in cities with over 100,000 people. All others are encouraged to adopt the newly developed low-cost alternatives more suited to their population densities and administrative capacities.

- In Brazil, the Government has made a dramatic commitment to lower-cost water supply and sanitation solutions. Programmes have been underway in medium size cities and in the Recife Metropolitan region to introduce appropriate sanitation services complemented with information, education and communication-support programmes. About 33 million people, including 15.4 million urban poor in medium-sized cities, are to benefit from low-cost water supply and sanitation facilities under a newly approved US\$ 863.2 million project (US\$ 302.3 million from a World Bank loan).

Paying for Programmes

When it comes to paying for programmes, the partnership between national and external sources is evolving dynamically.

Approximately US\$ 10,000 million is being invested annually to develop drinking water and sanitation, of which 80 per cent is coming from the developing countries' own budgets and 20 per cent from bilateral and multilateral assistance.

Many developing countries are channeling greater resources into this sector in line with the new priorities set out in their national action plans or the Decade. Analysis of a sample of 12 countries' national plans shows that they are targeting a median rate of increase in the 1980s that is 1.5 times higher for water services and 9 times higher for sanitation services than the rate achieved during the 1970s.

There is also a growing movement towards programmes that are more self-financing. This is being done, for example, by introducing progressive tariff structures and cross-subsidization between lower and higher income consumers; mobilizing community resources for installation and maintenance, starting with low-cost facilities that can be up-graded as resources as infrastructure become available, and, different types of revolving funds. Brazil, for instance, is using funds on loan from social security taxes to build in-house water and sanitation facilities at varying interest rates according to the socio-economic status of the state.

At the international level, external commitments finally have taken an upward trend, though still not at the rate required to meet

the needs of developing country programmes:

- Bilateral assistance for water supply and sanitation has risen from 1 to 2 per cent of total bilateral Official Development Aid in the beginning of the 1970s, to an average of 6 to 7 per cent in the first years of the Decade, according to WHO estimates.

- World Bank loans for water supply and sewerage increased from US\$ 441.2 million in fiscal year 1982 to US\$ 810.9 million in 1983, according to latest statistics. This is due mainly to a US\$ 302 million loan to Brazil. Between 1981-83 the Bank lent more than US\$ 2,000 million for 41 water sector projects. In addition, 74 water sector components in urban and rural projects had Bank investments of over US\$ 2,700 million. Together, these sums represent about 5.1 % of the total annual lending programme. The Bank anticipates a modest increase in the next few years in the water sector from an average of about US\$ 596 million to about US\$ 625 million a year. Due to UNDP-funded inter-country low-cost water supply and sanitation efforts, sector lending is putting stronger emphasis on the efficiency of investment through the use of more appropriate lower-cost technologies.

- The project/donor matching system, run by WHO, now has over 600 projects seeking support from the international donor community. The list of support agencies has grown to approximately 100 in number since the system began in 1980. It has been estimated by WHO that approximately US\$ 440 million worth of projects has been already funded or is being negotiated at this time.

- UNICEF presently expends approximately US\$ 60 million or 30 per cent of its budget on drinking water supply and sanitation programmes. Steps have been taken to ensure funds allocated to the sector are used for community-based programmes, are well integrated especially within the primary health care strategy, and that high priority is given to training and maintenance.

- UNDP in November 1982 had approximately 123 ongoing water supply and sanitation-related projects, totalling US\$ 133.5 million. In 1983 more than 25 new projects were approved.

While these signs are encouraging, they still fall short of expectations. Why? One reason is suggested by Dr. Bernd Dieterich, Director of WHO's Environmental Health Programme, who says: "Relative priority for drinking water/sanitation within overall national objectives is not yet always high enough to win adequate domestic and external support".

So, what kind of Decade is unfolding? "A quality Decade that seeks to work with people to bring low-cost, appropriate solutions", observes Mr. Brown. "As the quality of programmes improves, which is clearly happening, I am confident that we will be seeing more resources being channeled towards meeting the drinking water and sanitation targets of developing countries".

Source: UNDP Division of Information, 1 United Nations Plaza, New York, NY 10017, U.S.A.

NEW PUBLICATIONS

Information Services for Developing Countries
Jacques Valls; Bangkok: Asian Institute of

In this publication Dr. Valls aims to provide guidelines on the establishment and operation of specialized information centres in developing countries. The guidelines basically sum up the author's experience as Director of the AIT Library and Regional Documentation Center (LRDC).

The information explosion and how developing countries can improve their information services are discussed in part 1. Examples of the services provided by LRDC's four information centres (one of which is ENSIC: the Environmental Sanitation Information Center) are described in the second part. Attention is also given to matters as financing, promotion and planning. The publication is richly illustrated with examples, many in colour, of the LRDC's information products such as brochures, journals, monographs etc. (even a sample newsletter is included).

In mid-1982 the LRDC information centres had 1428 members in 106 countries and reached a self supporting level of 50%. Given the limited financial resources available (one of four centres has, for example, an annual budget of US\$ 38,000), one can consider that the creation of information facilities of immediate use to developing countries is indeed feasible.

Information Services for Developing Countries costs US\$ 12 for orders from developing countries and US\$ 20 for developed countries (air-mailing US\$ 3 extra). Orders should be addressed to: Dr. J. Valls, Library, AIT, P.O. Box 2754, Bangkok 10501, Thailand.

Malawi Self-Help Rural Water Supply Programme: A mid-term evaluation of the USAID-financed project

December 1983. 131 pages.
Prepared by the Water and Sanitation Health Project (WASH) as WASH Field Report No. 105.

The four WASH team members found the USAID-financed project, as carried out by the Malawi Department of Lands, Valuation and Water (DLVW) with assistance from the Ministry of Health (MOH) to be well-conceived, competently directed and managed, and adequately supported by the Government of Malawi. USAID financing helped expand the already successful project, begun in 1968, and widened its scope to include health education, sanitation, and research.

The overall success of the project, according to this evaluation, is due to several key factors:

1. All project activity is firmly based on full participation of users, their communities

and leaders.

2. The field staff of the Rural Water Section of the DLVW, and more recently those of the health education and sanitation promotion programme of the MOH, are sensitive to the need for and possess the skills to work with a community-based water supply and sanitation programme.

3. The staff of the Malawi rural water programme has been far-seeing and dedicated, and the political leadership has been supportive of the programme.

The main conclusions deal with institutional issues and the recommendations mainly concern strengthening a project with a proven and enviable track record.

Source: WASH, 1611 N. Kent Street, Room 1002, Arlington, Virginia, 22209, USA.

Environmental Management of Urban Solid Wastes in Developing Countries

by Sandra Johnson Cointreau (214 pages)
This is part of a series produced by the World Bank's Urban Development Department. It is designed to help prepare, implement and evaluate Bank-financed solid waste collection and disposal projects in developing country cities. Although it is primarily a guide for Bank staff, others concerned with urban waste disposal may also find it useful. Address: World Bank, Publications Department, 1818 H. Street, NW, Washington, D.C. 20433, U.S.A.

Catalogue of projects

Summarised information on 123 United Nations Development Programme (UNDP) projects related to the Water and Sanitation Decade. Separate lists cover Africa, the Arab states, Asia/Pacific, Europe and Latin America/Caribbean.

UNDP Division of Information, 1 United Nations Plaza, New York, NY 10017, U.S.A.

IDWSSD Catalogue of External Support

(400 pages)

This catalogue has been abstracted from the full Directory and has been distributed to all developing countries through the UNDP Resident Representatives and WHO. It will soon be reprinted in the 2nd edition of the Decade Directory (available through World Water Magazine, 553/561 Martins Building, 4 Water Street, Liverpool L2 3SX, United Kingdom).

Further enquiries to: Odyer A. Sperandio, Manager, Global Promotion and Cooperation for Water Supply and Sanitation, WHO, 1211 Geneva 27, Switzerland.

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PUTTING THE UMBRELLA ON THE PAGODA

In a village in the Central Dry Zone of Burma, a notice reads: "We need water, not gold". With help from Failing Rig 004DR - and UNICEF - that need is being met. And there are clear signs of improvement in children's health.

By Samphe Lhalungpa,
Information Officer in UNICEF's
Burma Office

On the outskirts of Thakeytan, a village in the Central Dry Zone of Burma, a steel mast shoots out from the canopy of treetops like a metal giraffe's neck. From the cluster of huts in the shade of the trees, strains of Burmese music merge with the thumping bass of heavy machinery. And there, in the tracks by the edge of some cotton fields, is a large blue and white diesel truck raised on stumpy hydraulic hoists. Failing Rig 004DR is at work.

On the truck's flatbed an array of pumps, compressors and hoists seems to be going at the same time: men in mud-stained blue overalls handle the various parts of the rig with a nonchalance born of long practice. From the rear of the truck the mast rises with a length of pipe in its hoists. Standing on a platform at its base, a young driller pulls on a lever and positions the pipe over a spinning collar. With another's help he threads the pipe to the one already in the collar and another 20-foot link has been added to the 550 feet already drilled.

The men then position the kelly - a 20-foot long pipe with two metal catches that fit neatly into the two grooves in the collar - and lower it until the catches fit the groove. This time there is an audible change in the pitch of the 250 h.p. diesel as it braces to hold up the thousands of pounds of pull exerted by the tool string: the drill bit, heavy drill collar and the hundreds of feet

of pipe below. Five hundred and fifty feet underground, a three-head bit looking like three medieval maces welded together is gouging out the clay in search of an underground treasure: water.

Thakeytan, a village of some 900 people, has waited three years for the drilling rig. Village Council Chairman U Tin Pe, a stocky middle-aged man, voices the people's elation over the assured water supply and its benefits for the health and economy of the village.

Situated in the heartland of Burma, the Central Dry Zone is a vast rain shadow area that receives less than 40 inches of rain per year. From the air the landscape is speckled by a stubble of dry bush that dots the low-lying country. The white sands of dry river beds mark the path of the monsoon flash floods. Feeder streams etch their way through the fissured landscape like crows feet around ageing eyes.

People learn to cope with the fine silt-like dust that penetrates everywhere: neither man nor machine is immune from clogging. There is a fierce beauty to this land, the hard dazzling light highlights little white-washed stupas - Buddhist shrines - against the red earth. And yet, dry bush and grit are not the only featureers of the landscape. Green paddy-fields bear witness to what can be done when water is available. Water is the key to life, and this is reflected in a sign in another Dry Zone village that reads: "We need water, not gold".

It is to address this vital need that UNICEF in co-operation with the Australian Development Assistance Bureau (ADAB) has been assisting the Rural Water Supply Division's (RWSD) water supply project in the Dry Zone. Since 1978, some 1,800 tube-wells have been drilled in the three Divisions of Magwe, Mandalay and Sagaing. The project aims to complete 3,200 wells in 1982-86 at a cost to UNICEF of \$ 6.4 million. Failing Rig 004DR is one of twelve of its type supplied to RWSD by UNICEF, in addition to support vehicles, spare parts and drilling supplies.

There are now two UNICEF drilling experts based in the Dry Zone who work closely with the RWSD and advise on the best use and deployment of the equipment and training of staff.

No sore eyes

An assured and clean supply can have a dramatic impact on the health of village children. This is nowhere better illustrated than in Kyunbobin village in Sagaing Division. Situated in dry bush country this village of 300 people depended on ponds and spring water - at best a seasonal supply of dubious



quality. However, since December 1980 the village has been served with a tubewell and today children jostle one another at the school tap. There is little evidence of trachoma or the other eye diseases that plague children in other Dry Zone villages without access to a clean supply of water.

The township's energetic Health Officer explains that the village was also able to benefit from a UNICEF-assisted pilot project to install improved sanitary pit latrines in the village. The combination, he says, caused a significant drop in the incidence of gastro-intestinal diseases in children. A before-and-after survey also revealed a dramatic drop in the level of worm infestation among the children.

Besides health improvements, water can also improve the village economy. Eight miles from Kyunbobin, the people of Wayaung village find that their new supply of tubewell water helps them to process the bark of the ubiquitous thanaka tree into cakes of the national cosmetic, called thanaka. Dissolved in water, the light yellow cream is used by women and children throughout Burma for skin care and wrinkle-free beauty.

Using a stationary tractor to run the grinders, the producer's co-op hires 25 people and uses 700 gallons of water per day to make 3000 cakes of thanaka. The thanaka twigs are cut into six-inch lengths, ground to a paste, and refined and sun-dried into cakes.

The villages contribute

Communities that receive tubewells are selected on the basis of a variety of factors, including the nature and volume of the present water supply, the population to be served, the economic condition of the village, as well as geological data. While the tubewell is provided free of cost to the villagers, they must run and maintain the pump, and provide all labour and costs for the construction of the storage tank and pump house. It is not unusual for a village willingly to spend 28,000 kyats on these structures. Chairman U Tin Pe of Thakeytan explains that each family pays what they can afford. Well-to-do donors are willing to meet additional expenses, he says, because they feel giving water is as meritorious an act as putting an umbrella on a pagoda - regarded in Burma as one of the crowning acts of Buddhist piety.

While the Dry Zone has attracted the largest volume of UNICEF assistance in water supply activities, other areas of Burma have not been overlooked. UNICEF is becoming involved in gravity-flow systems in the hilly regions; rehabilitation in lower Burma; and a country-wide environmental sanitation project.

Meanwhile, back in Thakeytan village, the big diesel throbs steadily and a stream of villagers carry water - used for mixing the drilling mud - from the old shallow well half a mile away to the site. And from two large metal horns that look like giant ear trumpets suspended high in the trees, amplified Burmese music washes over the surrounding country side to proclaim Thakeytan's happiness.

Source: UNICEF NEWS, ISSUE 116.
Can water mean health?

JULY 1985 SYMPOSIUM: ADVANCES IN WATER ENGINEERING

A five-day symposium will be held at the University of Birmingham 15-19 July 1985 to discuss advances in water engineering. The following topics will each receive a full day's focus: surface water hydrology; groundwater hydrology; water quality, supply and treatment; wastewater treatment and pollution control; and river engineering. Papers invited. Fee £ 150, includes accommodation, meals, pre-prints, etc.

For details: Dr. T.H.Y. Tebbutt, Department of Civil Engineering, University of Birmingham, P.O. Box 363, Birmingham, B15 2TT, United Kingdom.

WATER: AN ACCEPTABLE POLITICAL PRIORITY

"The measure of the Decade's success seems now to have shifted from economic and statistical indicators to political and technical achievements. Water is becoming an acceptable political priority in many countries: 65 countries have set national Decade targets, and two-thirds of global Decade spending comes from developing countries themselves. The shortage of funds has led to a move away from large, capital intensive schemes to appropriate, low-cost technologies."

The quote comes from the March 1984 Earthscan Bulletin. We gladly report it here as illustration of the increasingly common thinking that although funding for the Decade goals in the first three years may have been well below expectations, the Decade has promoted a tremendous impact, increasing understanding of water and sanitation issues in many developing countries.

Back in July 1983 Earthscan reported rather negatively only on the bleak funding situation, which caused bad publicity in the international press during the World Water 83 conference in London. It is just too bad that "Decade goals watered down" make better headlines in the international media than "Water: an acceptable political priority".

PRESCRIPTION FOR HEALTH - FILM

The International Development Research Centre (IDRC) Canada recently released the film "Prescription for Health" promoting personal hygiene and community practices that can help break the cycle of infection.

In developing countries, waterborne diseases such as cholera, typhoid and dysentery kill thousands everyday. Children are the most frequent victims. Even when a source of drinking water is safe, polluted surroundings and lack of hygiene may contaminate the water, causing disease to spread. This co-production of IDRC, the World Health Organization and Oxfam addresses this basic problem very effectively.

The film is aimed primarily at health care workers, and water and sanitation engineers and technicians in developing countries. It also attempts to be a prime source of information for policymakers. The 23-minute, 16mm color film, produced by IDRC's Communications Division, was shot on location in Bangladesh, the Philippines, Sri Lanka, Thailand and Kenya. Extensive animation has been used to illustrate clearly the path of disease and to unify the film's message for audiences of

diverse cultural backgrounds. English and French versions of "Prescription for Health" can be borrowed from most Canadian Embassies or High Commissions in developing countries. For inquiries on purchase and loans please contact IDRC regional offices/or: Communications Division
IDRC, Box 8500
Ottawa, Canada K1G 3H9

NEW PUBLICATIONS

1. Hydrology of Humid Tropical Regions
- Aspects of tropical cyclones
- Hydrological effects of agriculture and forestry practice.
(Proceedings of the Hamburg Symposium, August 1983, organized by the International Association of Hydrological Sciences (IAHS) International Commission on Surface Water and cosponsored by UNESCO)
468 pp + xi pages
price US\$ 37
IAHS Publ. no. 140 (published 1983)

2. Ground Water in Water Resources Planning, Vol. I and II
* Importance of ground water in different regions
* Economical, social and institutional aspects, practicability of planning concepts
* Technical base for planning
* Multiple demand and conflicts
* Planning and management
* Hazards for and protection of the ground water

Proceedings of the Koblenz Symposium, August-September 1983, convened by UNESCO and organized by the National Committee of the Federal Republic of Germany for the IHP and the OHP. IAHS was one of the many cosponsors)
1212 pp + xiii pages
price US\$ 22
IAHS Publ. no. 142 (published 1983)

3. Dissolved Loads of Rivers and Surface Water Quality/Quality Relationships
In recent years the attention of the IAHS International Commission on Continental Erosion (ICCE) has been directed in its symposia and subsequent publications to the erosion and yield of particulate material. However, it has emerged from many past and present investigations undertaken in the earth sciences and related disciplines that solid matter transport represents only one, and sometimes a subordinate, component of river loads and that a comprehensive discussion of continental erosion must also feature the processes of solute release and the magnitude of dissolved yields.
(Proceedings of the Hamburg Symposium, August 1983 organized by the IAHS International Commission on Continental Erosion and the IAHS International Commission on Water Quality, and cosponsored by UNESCO)
441 pp + xi pages
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WHO PUTS THE WATER IN THE TAPS?

What is community participation? It is one of the most written-about rural development issues, yet the concept remains cloudy and planners too often theorise about it without appreciating what it means to implement. Is participation no more than a way of providing free communal labour to reduce project costs? Does "motivation" mean exhorting a community to accept what the government thinks is good for it?

Earthscan has just published an interesting report which aims to sift jargon from reality. Written by six Third World journalists, it is an account of water and sanitation projects round the world, and the people within a community who are the key agents in the development process. The book describes projects in China, South India, Pakistan, Ghana, Guinea-Bissau, Malawi, Brazil and Mexico.

Outsiders too often idealise the role of the volunteer, but the report shows that the best water motivators are usually dedicated, salaried professionals. In Karachi, Pakistan, a project to build pit latrines in the Baldia slum depended on a paid social worker. The effectiveness of professionals lies in their ability to communicate with both men and women and their qualities of character and training. They are in a unique position of being able to introduce a new technology, and help people use and maintain it.

Common factors among most of the successful community projects are good administration, effective technology and ample funding. No matter how enthusiastic, local participation rarely works without these. Water projects in Malawi's Mulanje West region, for instance, are successful because the District Development committee voices the villagers' need direct to government.

The projects are well funded, and the nation's administration is responsive. Malawi is said to be the only country in the world likely to achieve Water Decade goals by 1990.

Community participation always comes up against political realities. In a village or shanty town, control of water gives political power, so a new tap is not just another facility, it can mean a revolutionary change, reinforcing or altering the social structure of the community.

Participation has had many localised successes, but nowhere outside China has it grown into a mass movement, demystifying the bureaucrat and technocrat. Ironically, the very success of some projects may divert attention from the political issues underlying poverty and powerlessness, by giving the impression people are really changing their environment when, in fact, their involvement is marginal.

What would happen if people really started to determine their own priorities?

The Cutzamala project to bring piped water into Mexico city ran into problems because peasant farmers objected to the pipes passing through their fields. Can people be encouraged to talk about taps without moving on to wages and politics? Governments tend to encourage participation when it means popular support for official programmes, but not when it results in new demands for better housing, or action against slum landlords - which is why they generally regard community participation with distinctly mixed feelings.

"Who puts the water in the taps? Community participation in Third World drinking water, sanitation and health" by Sumi Krishna Chauhan with Zhang Bihua, K.Gopalakrishnan, Lala Rukh Hussain, Ajoa Yeboah-Afari and Francisco Leal, is published by Earthscan in London (£3) and Washington (\$5.50). 92 pages.

- "Measuring the Impact of Water Supply and Sanitation Investments on Diarrhoeal Diseases: Problems of Methodology" Deborah Blum and Richard G. Feachem in International Journal of Epidemiology, 1983, 12: 357-365

This short but detailed review of the published literature on the impact of water supply and/or excreta disposal facilities on diarrhoeal diseases, or on infections related to diarrhoea, reveals several methodological problems that hamper the drawing of definitive conclusions from these studies.

This paper examines eight of the methodological problems: lack of adequate control, the one to one comparison, confounding variables, health indicator recall, health indicator definition, failure to analyse by age, failure to record usage, and the seasonality of impact variables.

It is suggested that an evaluation of the impact on health of environmental interventions may best be undertaken by the combined efforts of engineers, social scientists and epidemiologists in "opportunistic" settings and that the intervening behavioural processes so necessary for health impact to occur should be a primary focus of such evaluations.

HRD - bibliography.

As recognition grows of the importance of human resources development (HRD) in the water supply and sanitation field, there is an increasing need for access to key HRD references. In order to respond to this need, the Water and Sanitation for Health (WASH) project has compiled a useful annotated bibliography of selected HRD references. It is primarily intended for managers in developing countries with responsibility for planning and implementation of HRD programmes in the water and sanitation sector.

Title: Human Resources Development: a selected and Annotated Bibliography for use in the water supply and sanitation sector, WASH Technical report no.22, contact: WASH Project.
1611 N. Kent Street, Room 1002
Arlington, Virginia 22209
U.S.A.

NEWS FROM IRC

Good news for French audiences of IRC publications. IRC's "best seller" Small Community Water Supplies (TP18), of which since late 1981 3,000 English copies have found their way to people in the field or as a textbook in training - courses, is now also available in French. This handbook, which has been very well received as an excellent introduction and technical guideline for anybody dealing with low-cost water supplies for small communities, was translated by CEFIGRE, the Centre de Formation Internationale à la Gestion des Ressources en Eau, in Valbonne, France.

How well the Small Community Water Supplies publication has been received is illustrated by the recently published commercial version, co-produced between John Wiley & Sons and IRC. Wiley is bringing out the enlarged book with a hard cover in its Third World Technology Series, and has produced a paperback version for IRC.

Recently IRC also published an Occasional Paper on Planning and Evaluation for Community Water Supply and Sanitation. This publication contains a literature review and a selected and annotated bibliography. The first section is on planning and evaluation in general and is based on a systems approach to the community water supply and sanitation sector. In the second section, the environment of the sector is briefly reviewed. In the Third section eight sector components are discussed: planning (structure and organization), institutional arrangements, legislation, financing, manpower, technology, community participation, and information. The fourth section discusses the sector planning process. The fifth section deals with some planning methods and techniques, (e.g. the scenario technique, and some project selection methods). The last section contains 110 annotated references and another 87 (non-annotated) references on the subject.

Planning and Evaluation for Community Water Supply and Sanitation

A literature Review and a Selected and Annotated Bibliography Prepared by Wouter T. Lincklaen Arriëns, Consultant, 153 pages, 14 figures.

IRC, INTERNATIONAL REFERENCE CENTER FOR COMMUNITY WATER SUPPLY AND SANITATION

Costs : US\$ 5,--

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These information-oriented programmes include: 1. Information Support and Services; 2. Technology Development and Transfer; 3. Manpower Development and Training; 4. Community Education and Participation; and 5. Programme Evaluation and Planning.

Support is provided by means of publications and training material, seminars and courses, research and demonstration projects, as well as by general support to the development of national capacities.

Requests for information on IRC should be addressed to IRC, P.O. Box 5500, 2280 HM Rijswijk, The Netherlands.

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IRC SYMPOSIUM ON WATER AND WOMEN

The involvement of communities and especially women in water supply and sanitation is the main theme of the symposium which IRC is organizing from 20 - 22 June 1984 in Amsterdam, marking the 15th anniversary of IRC. The title: "The Local Decade; men, women and agencies in water and development". The symposium is supported by the Netherlands Minister for Development Cooperation in the context of the International Drinking Water Supply and Sanitation Decade.

The symposium takes as a starting-point that a well-balanced relationship between functions to be carried out by local communities in developing countries and the support from higher-level organizations is of crucial importance. Projects that only provide services to the people without involving them in the project have failed too often. The present emphasis on community participation, however, carries the risk that demands are made on the people, without at the same time adapting the approach and the support services to fit community needs. Not only the resources of the community as a whole need to be considered, but also special attention must be paid to the interests and potential of the local women.

Women are as users, educators of children and protectors of family health, most directly concerned with water and sanitation. But in preparation and initiation of projects in the community, choice of technology, local organization and maintenance as well as local management few examples of effective involvement exist. It is hoped that the symposium will contribute to practical ways as to how women can be effectively involved as an integral part of the community in the development and maintenance of water and sanitation systems.

Dutch Minister for Development Cooperation Egge Schou will officially open the sym-



posium. Contributions have been promised by UN Decade Steering Committee chairman Arthur Brown and WHO Director General Halfdan Mahler. Four working groups of 8 to 10 participants will concentrate on four entry points for discussion of the complex general themes:

- * preparation and initiation of a project in the community
- * local organization and maintenance (including choice of technology)
- * hygiene education
- * local management including finance and income generation.

The symposium provides an opportunity to follow up the interregional Seminar on Women and the IDWSSD organized by the UN International Research and Training Institute for the Advancement of Women (INSTRAW) in Cairo from 12 to 16 March 1984. It is also envisaged that the symposium will constitute a forum for review and discussion of the preliminary findings of, and form an input into the UNDP project "Promotion and Support for Women's Participation in the IDWSSD". For this project IRC's community participation expert Christine van Wijk is preparing a selected and annotated bibliography on the Role of Women in CWSS.



The IRC Newsletter invites contributions about practical experience from readers with the balance between the community contribution and agency support to drinking water and sanitation projects, and the particular involvement of women. Please address to: Dick de Jong, IRC Information Manager, P.O. Box 5500, 2280 HM Rijswijk, THE NETHERLANDS

WATER, SANITATION AND VILLAGE HEALTH: A COMMUNITY ORGANIZATION AND PARTICIPATION APPROACH IN TANZANIA

I. Project Summary

From 1981 to 1983 IRC has been involved in a project on community participation in the Tanzanian rural water supply programme, carried out under the bilateral cooperation programme of the Tanzanian and Dutch governments. The purpose of the project was:

- (1) to determine if there was a need for more community participation in the Tanzanian rural water supply programme
- (2) to develop, select and test a practical community participation model.

Several models were developed after an assessment of the existing situation in 12 of the 20 regions of Tanzania. These were discussed at a national workshop of project technicians, social scientists and departmental staff. As a result of the workshop the project was transferred from the Ministry of Water and Energy to the newly established Community Development Department in the Prime Minister's office (PMO). The Department decided to carry out an in-depth evaluation and action research project in 60 villages in two regions of the country. Data from the other regions were collected through indirect methods. The evaluation showed a need to strengthen CP and establish official guidelines. Issues addressed by the project:

- (1) village organization for maintenance of the improved water supply (selection of village caretakers for further training; organization of site maintenance; reservation and creation of village funds for the acquisition of tools and spares and a honorarium for and supervision of the caretakers;
- (2) village improvements of traditional supplies;
- (3) village improvements of public hygiene conditions;
- (4) participation in planning and construction of new water supplies;
- (5) productive uses of water (e.g. a communal vegetable garden; beer brewing project to raise maintenance funds and brick-making and building projects);
- (6) local health education programmes to improve hygiene conditions and behaviour patterns;
- (7) liaison of the CD worker with outside agencies for clarification of previous decisions and/or possible support to solve problems beyond village capacities.

Planning and implementation was undertaken by a village water sub-committee, which was elected in a general meeting after the results of the evaluation were discussed with the villagers. Steps to increase the chance of a public health impact included:

- (1) a greater involvement of the communities in the local planning and decision-making

- phase, especially in siting of the pumps;
- (2) more involvement in local maintenance, repairs and management and
- (3) linkage of the water projects with local health education, using a group discussion and a series of 12 locally-made discussion posters instead of the existing lecture and campaign approach, and involving the village water sub-committee in planning, implementation and evaluation.

II. Evaluation of Participatory Health Education Programme

The results of the three activities have been evaluated at village level in all project villages. Evaluation showed marked improvements in most villages, and will be reported in detail in the final report of the project. A more detailed evaluation of the participatory health education programme was carried out in 2 of the 8 sample villages. Interviews and observations in a 15% household sample showed that between 64% and 75% of the female household heads had participated in one or more health discussions. Recall and understanding of the poster-topics varied from 60% to 75% for the posters referring to familiar situations and behaviour patterns, to 1% for hookworm and 0% for oral rehydration. CD workers were reported to have used a discussion approach in all communications (village meeting, home visits, neighbourhood meetings).

Committee members in the first village were also reported to have used a discussion approach, but in the second village some members had just given instructions. Impact on environmental conditions and behaviour was considerable. Continuous use of handpumps in the first village increased from 16% to 48%. Three quarters of the change was however due to the installation of another handpump, with villages involved in the siting discussions, and one-fourth only to health education. Reported boiling of drinking water had also increased and specific reasons for boiling given. Upkeep of hygiene around the pumps was now organized by the committees and observed to have improved greatly. In the unserved village, unprotected wells had been cleaned and protected and scoops on poles placed nearby to draw water. Extra latrines had been built at the village schools and were observed to be clean. However, the latrines at the dispensary were still unsatisfactory.

Other improvements concerned the observed safe drawing of drinking water (from 54% to almost 100%), construction of latrines in cultivation areas, and better latrine hygiene and use of fly covers (increase from 50% to 92%). Handwashing provisions and latrine roofing lagged behind. The latter is the responsibility of the men in the area concerned. A problematic issue also remains the prohibition of washing and bathing at handpumps for fear of source pollution. This causes many women and girls to continue using bilharzia-infested water for bathing and washing to reduce the burden of water carrying. Water is often only carried for the husbands, who bathe in a secluded area near the latrine.

Conclusions and Follow-up

The study showed that for a better likelihood of health impacts of water supply projects the supplies should be adapted as much as possible to the behaviour and needs of the village women. Additional participatory health edu-

cation can further reduce remaining risks of transmission of water and sanitation related diseases. To obtain maximum benefits their local programmes should not be directed at women and leaders only, but also involve their husbands.

Results of the whole project were discussed at an interministerial meeting of Prime Minister's Office, the Ministry of Water and Energy and the Ministry of Health in December 1983. The meeting agreed on a series of recommendations on specific and national guidelines for community participation in planning, implementation, rural maintenance and health education. These are presently under review by the Tanzanian government. In a later stage IRC plans to publish a more detailed account of experiences in this PMO/IRC project.

WOMEN AND THE IDWSSD SEMINAR

The United Nations International Research and Training Institute for the Advancement of Women (INSTRAW) organized an International seminar on Women and the International Drinking Water Supply and Sanitation Decade (IDWSSD) in Cairo, Egypt which was held from 12 - 16 March 1984. The Institute organized this seminar in cooperation with the government of Egypt, Ministry of Information. The purpose of this meeting was to discuss the multifaceted problem of drinking water supply and sanitation as it relates to women, in order to ensure that women's role and needs are taken into consideration at all levels of design and implementation of water supply and sanitation projects. The objective of the seminar was to indicate the cause of the major problems confronting women in this domain from a regional viewpoint: to reach a global consensus on the most appropriate approaches to address the problems of women in water supply and sanitation with a view to reaching possible solutions, and to generate commitment and momentum worldwide within the framework of activities of the IDWSSD in support of national efforts to solve the problems.

Fifty-six participants from the various world regions attended the meeting in their personal capacity, to address the different areas related to the problems of water supply and sanitation in the socio-economic health and sanitation, and science and technology areas, and the role of women therein. Included among the participants were a number of representatives of UN bodies and specialized agencies, international donor agencies, non-governmental organizations and other international organizations. The meeting was also attended by a number of observers from foreign embassies in Cairo, Egypt, local organizations, associations, agencies, the media, etc. The participants represented a tripartite participation scheme of social scientists, medical doctors and health specialists, as well as scientists and engineers.

The output of the seminar will be a report incorporating the ideas of experts as set forth in the background papers (25 submitted) as well as the views exchanged and conclusions and recommendations reached in the seminar. In addition, it is envisaged that based on the results of the seminar, the Institute will establish training guidelines and manuals to assist governmental and non-

governmental organizations, institutes and agencies at the national level in developing their training activities for women in the field of water supply and sanitation; publish and disseminate information relevant to women and water supply and sanitation and identify follow-up activities to be carried out in each of the different regions.

EEC/EDF SUPPORT TO WATER SUPPLY AND SANITATION DEVELOPMENT

Global Support of the EEC

While for historic reasons African countries have in the past had first call on aid of the European Economic Community (EEC), today this extends to all countries of the developing world. There are three main groups:

- The African-Caribbean-Pacific (ACP) countries who are associated with EEC under the terms of the second Lomé Convention signed in 1980 and covering the period 1981 - 85. It is interesting to note that the Convention is an agreement negotiated between two groups of countries: the 10 member states of the EEC and about 60 ACP-countries. It defines the rights and obligations of the two parties. The funds come from the European Development Fund and the European Investment Bank, and are managed by the Commission of the EEC and the European Investment Bank, respectively. EEC Headquarters are in Bruxelles, the EIB is located in Luxembourg.

- agreements relating to technical and financial cooperation have been signed with the eight associated countries situated to the south of the Mediterranean basin. These agreements cover the period 1981-1985.

- The non-associated countries in the Mediterranean region, Latin America, the Middle East and South-East Asia who meet certain criteria. Aid to this group of countries is limited to rural development. Although the level of aid funds available under these agreements may appear modest in relation to the needs, in practice they are only a small fraction of the direct bilateral aid given by EEC member states under separate agreements. Under Lomé II the total aid funds, both grants and loans to the ACP countries amounts to just over 5 billion European Currency Units (ECU); the value of 1 ECU = 1 US dollar. Of this total 11 Mediterranean countries will receive 1 billion ECU and the non-associated countries 200 million ECU.

Table 1 gives an overview of the amounts of EEC financial support under the agreements (Lomé I, 1976-1980 and Lomé II, 1981-1985).

Table 1.

	Lomé I	Lomé II
	(in millions of ECU)	
<u>ACP-countries</u>		
* grants	2.100	2.928
* conditional loans*	430	504
* EIB-loans	860	1.795
total	3.390	5.227
<u>Mediterranean countries</u>		
* grants	143	260
* conditional loans *	164	155
* EIB-loans	362	600
	669	1.015

Non-associated countries

* Annual budget 1.000

approx. 200mln ECU thus, over 5 years

* Interest 1% or 0,75%; loan period 40 years
grace period: 10 years.

Project Preparation and Approval Procedure

In general projects pass through distinct phases. The important ones which precede financing are: the programming phase which result in an agreement between the parties on the amount of aid which shall be available in the period covered and the sectors of development in which it is to be used; and, the examination phase in which the parties jointly evaluate proposed projects according to certain criteria.

Following this the EEC Commission determines the total amount of "programmable" aid and the financing modes for the country concerned. The recipient country is generally represented by planning officials who have the responsibility for establishing the objectives and priorities which form the basis of the indicative programmes. In other words, the two parties in this stage jointly define the sectors, in which the EEC aid will be utilised. These are for example; rural development, transport, health, water supply and sanitation. In the "instruction" phase carried out jointly by the two parties the proposed projects are evaluated against the applicable criteria. The projects proposals worked out by the recipient country are evaluated on coherence, effectiveness and viability.

Coherence requires, for example, that there shall be a clear relationship between any project in the water supply sector and the national development plan. This requires that there actually is a national water policy covering objectives, priorities, programming, management and financing, with an indication of the links with other sectors such as rural development and health. Effectiveness requires a clear view of the needs and the level of services which will give a beneficial return in relation to cost. Viability is important to the Commission to make sure that the future continuity in financing and maintenance of the projects will be safeguarded. EEC aid is currently divided as follows: 38% rural development; 19% transport and communications; 18% health and education; 9% industry; 6% housing and town development; 10% miscellaneous. Water supply and sanitation investment is not separately identified here as it forms part of the sectoral distribution as mentioned.

EEC Support in the Water Supply and Sanitation Sector

With this background it is possible to comment on reasons which may have contributed to the relatively low level of water investment in spite of the policies of the Commission, and international and bilateral agencies, to stress its importance. One problem is that the recipient countries themselves do not give water high priority in the programming phase. Another aspect of this problem is that policies for the water sector are not sufficiently elaborated and therefore do not stimulate the development of programmes. The national planners frequently are not sufficiently informed about the sector. This situation may be a result of the division between the engineers/managers of the water services and the economists/planners. Another specific problem of the water sector is the inadequate attention given by governments to the capacity of users to pay for services provided and, thus, to generate sufficient recurrent income to run and maintain the services and the installations.

Table 2 provides an overview of EEC financial support in the water supply and sanitation sector.

Table 2

	1st	2nd	3rd	4th	5th	EDF
ACP-countries						(in millions of ECU)
Rural projects	26.2	14.3	9.6	53	50	
Urban projects	14.2	24.6	39.2	30	150	
Total	40.4	38.9	48.8	83	200	
Mediterranean countries						1st protocol
Non-associated countries						40mln of ECU
All projects						(over 5 years)

* The water supply and sanitation sector absorbs about 6% of total EEC aid.

In spite of all, the conclusion may still be optimistic. Firstly, useful progress is being made both by the financing agencies and the recipient countries in moving towards increased water supply investments. Secondly, there exists considerable experience of the working out of national policies for water. Thirdly there has been an acceptance in some countries of EEC participation in village water projects which seem the best chance of improving the conditions of life in rural areas the population of which may represent up to 80% of their total population.

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HOW TO INVOLVE WOMEN IN WATER: SOME PRACTICAL ANSWERS FROM IRC's WATER AND WOMEN SYMPOSIUM

A well-balanced and well-defined partnership between community involvement and support from higher level organizations is the key to long term functioning and use of water supply and sanitation facilities in developing countries. Create meaningful partnerships "together with" the people, only then the slogan "Water and Sanitation for all.." can be turned into a longer lasting achievement.

This message to governments and non-government agencies was voiced loud and clear by 34 experts from 14 countries participating in the "Local Decade: men, women and agencies in water and development" organized by IRC in Amsterdam from 20-22 June to mark IRC's 15th anniversary. The Symposium was supported by the Netherlands Minister for Development Co-operation in the context of the Water and Sanitation Decade.

One of the major recommendations was that agencies should involve women as users, managers, acceptors and agents of change in water supply and sanitation in the various phases of project development and implementation.

In order to guarantee that key roles of women at the local level are recognized, promoted and supported, commitments should be undertaken to facilitate active participation by women.

Practical answers on how to do this emerged from the discussion between participants with engineering, managerial and social science backgrounds, and government, non-

government and UN affiliation. More than half of the 34 participants were women, one third coming from developing countries.

On project preparation and initiation, practical recommendations included:

- identify community needs, and especially needs of women;
- organize meetings at suitable times and places for women to attend them;
- help women to express their views through special training or to raise points of concern to women in meetings;
- orient policy makers, planners and executing staff to women's potential and actual roles in water supply and sanitation through workshops and field exposure;
- build on existing structures or organization at village level and not impose leaders on the community from outside;
- identify and plan for necessary motivational, technical, maintenance and administrative training.

On local organization and maintenance, suggestions as to how to involve local communities include:

- use the community knowledge of the water and sanitation aspect of the environment;
- find out social, cultural and religious preferences and constraints;
- survey needs and present and envisaged needs of the water to be supplied for other purposes than drinking;
- consult communities on the estimated costs of the options being considered;
- identify and discuss the capacity of the community to contribute to capital and/or recurrent costs;
- special points of consultations with women should be the siting of the water points/pumps and latrines, hours of service, and design and organization of upkeep of washing and bathing facilities;
- decentralize operation, preventive maintenance and repair wherever possible, and plan and discuss these right from the inception of the project.



There is a need for local caretakers or operators who should be chosen in consultations with the community and paid and supervised by a community and committee. There is a strong case for the appointment of women as caretakers or operators, since they are more likely to remain in the community. Women are also more likely to remain interested in this type of part-time work. Logistic support to communities is indispensable, for instance to ensure provision of spare-parts.

At the same time realities at community level will very much influence the degree of decentralization of operation maintenance:

- availability of local technical skills;
- interest of the community in training to learn the technical skills necessary for maintenance;
- ease of obtaining and storing spare-parts locally or local production of spare-parts;
- frequency with which maintenance operations have to be carried out.

Limited field experience is available on feasible forms of community-based financial management. Recommendations included:

- promote community-based financial management to strengthen the organizational and financial independence of the community water and sanitation sector;
- develop appropriate revenue collection methods for both direct and indirect charging systems, taking into account the type of water supply system, existing practical government policies, types of traditional community organization and local income generation patterns;
- explore innovative alternative financing mechanisms and methods, including loans from development banks, informal local credit systems, cooperative funds and revolving funds to accelerate coverage;
- involve women effectively in whatever financing scheme may be devised;
- in cases in which community- or women's groups become responsible for financial management and revenue collection, appropriate training in bookkeeping and accounting should be made available to them.

Although in most instances health is a direct or implied goal and a major justification for investments in improved water supply the record on hygiene education as a process to change attitudes and behaviour in order to break the chain of transmission of diseases associated with inadequate levels of sanitation is most uneven in water programmes.

A wide variety of approaches can be observed. In too many instances, hygiene education is viewed simply as giving information through radio, posters, or lectures without any real understanding of attitudes or behaviour. However, without such understanding, key hygiene practices, such as the casual handling of children's faeces, will be difficult to alter.

Understanding and then changing attitudes is the key to improved hygiene. However, changes in attitude sometimes follow new behaviour rather than bring about a change in behaviour in the first place. People who desire modern and convenient latrines may change their attitudes about the value of hygienic practices more readily once they are in the habit of using such facilities. People can be motivated in many ways. In India, there is evidence to suggest that concern about inadequate food leads people to accept improved sanitation when told that this can reduce intestinal parasites which rob families of food.

Successful hygiene education very often involves women volunteers and motivators. Programme planners must be both sensitive and imaginative in incorporating women in environmental sanitation programmes. When the culture restricts the movement of women, training can be held in their villages, or perhaps in religious centres. When women cannot travel alone, teams can be employed.

In some instances, acceptance of hygiene education messages is constrained by the expense of the technical solution on offer. People may be motivated to act but, for instance, lack sufficient money for latrines. Low-cost sanitation technologies used successfully in one country remain unknown or unavailable in neighbouring countries.

Demonstration projects can succeed in stimulating a desire for similar improvements in nearby villages. However, without the necessary resources, this can result in frustration and disappointment.

Hygiene education, when well planned and executed, can succeed in changing certain aspects of behaviour in a short period of time. Other aspects may be very resistant to change, and resources must be allocated, for example, to school hygiene education for longer term benefits.

Practical recommendations accepted on a range of hygiene education issues, included:

- hygiene education, adequately funded, should be a dialogue between the community and change agents, designed to improve family health in relation to water and sanitation. Women, with their focal position in the family, should play a central role as motivators and educators;

- a hygiene education plan of action for a community against the specific pattern of diseases common in the area should be developed using as many local resources and people as possible;
- the plan should seek to promote action by individuals to prevent or reduce disease or insanitary conditions, rather than to provide medical details or explanation of disease transmission routes. The plan should focus on promoting activities such as hand/body washing, adequate disposal of excreta, environmental sanitation and on responding to community interests;
- visual aids should be used to support the process and not as the only technique;
- a good deal of time and effort should be spent on teaching the educators how to present materials in the most effective manner;
- hygiene education workers must serve the people of their communities, and therefore must make efforts to understand how the community and the individuals members of it receive and act upon information;
- information about community needs and resources must be drawn out from the community by dialogue and observation;
- hygiene education should be coupled with water and sanitation efforts;
- to make health education effective at least three levels of workers are needed: trainers at the local level, trainers of trainers at regional level and designers of programmes;
- a mixed group of staff is often needed for an effective programme. Both women and men should be trained to work together. The use of women is important as they often have the best access to the home;
- multipurpose community development workers and single purpose health-workers should be aware of the importance of formal and informal social structures in a community, leadership issues, and decision-making processes before they are sent into the field;
- in selecting target groups in the community, the whole family should be involved to make education effective;
- women and their influence in decision making should not be neglected but overemphasis on women leading to conflict between the sexes can damage a programme. Men, women and children may need to be reached in separate dialogues;
- groups of women, such as literacy groups, savings groups, mothers clubs, should be reached effectively because such groups can provide peer support;
- one way of empowering women, especially poor women, is to involve them in the collection and sharing

of information;

- health education should be given budget categories from the start of a project, and should make up a substantial proportion of the budget;

IRC will condense this review of field experience of the role which can be played by the community, and by women in particular, together with relevant case studies to produce a publication with relevant practical information.

This work will start mid-September.

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WHO-IRC COLLABORATION: "MUCH TO BE PROUD OF"

The baseline review of the Water Decade, to be published shortly by WHO, will reveal a considerable reduction in estimated costs. Forecasts made in 1980 of costs of Water Decade programmes ranging from US\$ 300 to 600 billion raised expectations way beyond attainable goals. It is clear now that the developing countries themselves, having recognised the constraints to accelerated development and the enormous financial commitments implied by full-coverage programmes, have opted for realistic targets, not impossible dreams.

Perhaps more significant to the very substantial reductions in these estimated costs is the obvious trend towards low-cost technologies. This means that many more people are now being served from the same size investments.

This news was announced by Dr. L.A. Kaprio, Director of the WHO Regional Office for Europe, speaking on behalf of Dr. H. Mahler at the IRC symposium in June.

The Decade tasks are still ambitious and challenge us all to produce the required support. "For WHO and IRC that means a continuation, and perhaps even a strengthening of our efforts to promote successful technologies, ideas, techniques and institutional developments", Dr. Kaprio said.

The WHO official looked back at the efforts of WHO and IRC leading up to and during the Decade. There is much to be proud of, and he highlighted the following examples:

- IRC's pioneering work on hand pump development provided the spark for what is potentially one of the major technological contributions to rural water supply programmes. IRC continues to support the programme of UNDP and the World Bank in this vital research.
- Earlier publications on slow sand filtration and on public standpost water supplies have established the Centre's reputation for highly relevant programmes and pertinent publications.
- This work on hardware is being partnered by important contribu-

tions in the software field. IRC's timely bibliography on Participation and Education in Community Water Supply and Sanitation Programmes has played an important part in increasing in community participation. Other collaborative efforts of WHO and IRC include human resources development, minimum evaluation procedures, and operation and maintenance.

- The role of IRC has been important in spreading the word through its publications, through the newsletter, symposia and through the personal contacts of its staff on their visits to developing countries.
- POETRI has been one of the communication channels in which we all placed great hope, Dr. Kaprio continued. The POETRI programme has shown us that countries can be encouraged to share information. "If it has also shown that ambitious programmes which call for considerable institutional support and even institution building cannot expect early dramatic progress, then perhaps we should accept that as another lesson of the Decade".

So much for the past in which WHO and IRC can take pride in the way that joint messages have been delivered and accepted. Turning to the future Dr. Kaprio identified four further areas of collaboration, based on the country reports received by WHO.

All countries plan to do something about the desperate shortage of skilled manpower by training more people. We must ensure that motivation, job satisfaction and career development go hand in hand with training. Directly linked with this is the need to develop and promote appropriate tariff systems. More than half of the countries report that they collect less revenue through tariffs than they spend on water production.

On community participation and the vital role of women in water supply and sanitation, WHO and IRC will make sure that the evident momentum created is not lost.

"I hope that these remarks have made it clear that we at WHO value present and past collaboration with IRC, and see great scope for further development of future collaboration", the WHO Regional Director concluded.

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HYGIENE EDUCATION GUIDELINES

About 80 % of diseases are related to water and sanitation: diarrhoea, worm infections, skin infections, eye infections, and insect borne infections. Their prevention is not only a matter of new water supply and sanitation facilities, but is also influenced by hygiene behaviour.

IRC's newest publication in the Occasional Paper Series "Making the links", Guidelines for Hygiene Education in Community Water Supply and Sanitation, provides guidelines to improve hygiene behaviour at community level.

Chapter 1 deals with how to promote community healthy community-based hygiene education activities. This chapter forms the backbone of the document, and the other chapters can be used as resource material for this chapter.

Chapter 2 discusses the ways in which water and sanitation related diseases can be prevented or reduced by the people in the community.

In Chapter 3, a short description is given of the main water and sanitation related diseases and the ways they are transmitted. This chapter is not meant to provide medical information but to impart a basic understanding of these diseases and their causes according to medical science.

Chapter 4 provides information on the development and use of audio-visual aids in community-based hygiene education programmes.

The guidelines are primarily intended for community hygiene promoters and their trainers, and supervisors involved in IRC's public standpost water supplies demonstration project in Indonesia, Malawi, Sri Lanka and Zambia. These guidelines may also be useful in making planners, engineers, technicians and survey staff more aware of the importance of well-constructed, convenient, reliable and well-maintained water supply and sanitation facilities.

"Making the links" publication has 82 pages and includes 50 drawings. It is available at US \$ 5 per copy from IRC, P.O. Box 5500, 2280 HM Rijswijk, The Netherlands.

Non-commercial agencies and individuals from developing countries may write for a complimentary copy.

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With its partners in developing countries and with United Nations agencies and donor organizations, IRC assists in the generation, transfer, and application of relevant knowledge through programmes for water and sanitation improvement.

These information-oriented programmes include: 1. Information Support and Services; 2. Technology Development and Transfer; 3. Manpower Development and Training; 4. Community Education and Participation; and 5. Programme Evaluation and Planning.

Support is provided by means of publications and training material, seminars and courses, research and demonstration projects, as well as by general support to the development of national capacities.

Requests for information on IRC should be addressed to IRC, P.O. Box 5500, 2280 HM Rijswijk, The Netherlands.

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THE PUBLIC STANDPOST WATER SUPPLIES (PSWS) PROJECT

Update on the most recent IRC demonstration project

Encouraging progress can be seen in a number of areas of IRC's Public Standpost Water Supplies (PSWS) Project, now moving into the second half of its three year period. Recent developments in the four participating countries include successful regional seminar on public standpost water supplies organized by project staff in Indonesia, and the development in Sri Lanka of a community-based approach through demonstration projects. An international working meeting of project staff from Indonesia, Malawi, Sri Lanka and Zambia took place in Thailand in November to share experiences.

On the support side, "Making the Links", an IRC Occasional Paper on Community Hygiene Education and "The Environment of Simple Water Supplies" a selected bibliography on public standpost water supplies systems have been well received.

Designed in response to the universal difficulties encountered with this type of primary level piped water supply, the PSWS Project aims to develop and promote more successful and appropriate ways to plan, execute and manage standpost and mixed systems. Implemented on a multi-country basis by national participants in Indonesia, Malawi, Sri Lanka and Zambia, the Project explores the issues through demonstration projects, in-depth studies on key subjects, preparation of guidelines and manuals and on-going evaluation and "lesson learning".

Keynotes of the project include:

- on solution-seeking largely by nationals in the participating countries themselves supported by IRC staff and consultants;
- development of community-based approaches at every stage;
- promotion of a broad yet integrated approach in which issues related to the success of a system, such as hygiene education, finance, and operation and maintenance, are given due attention in relation to more technical issues;
- transfer and application of the newly generated knowledge both within and between participating countries and also internationally.

World-wide, problems encountered with public standpost systems largely stem from difficulties of shared ownership, which often lead to little feeling of personal responsibility. Difficulties usually follow relating to finance, particularly how to cover the cost of the water and ongoing maintenance, and the first level of operation and maintenance and "housekeeping".

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NEW ADDRESS IRC

From its new location and with the best wishes for the New Year, IRC remains at your services.

The new address as of end December:
IRC
Prinses Margrietplantsoen 20
The Hague

Postal address:
P.O. Box 93190
2509 AD The Hague
The Netherlands



Project countries are tackling these problems by:

- allowing time before construction for adequate consultation with the people, particularly on level of service, location of the standposts, and the communities continuing responsibilities, and also for the development of community-based projects, with only essential support from outside;
- developing participatory methods of hygiene education, in which, through discussion, communities are encouraged to develop understanding of the health, time and convenience benefits of a piped water supply;
- continued monitoring and support of communities during operational phases;
- promoting parallel development of water supply, sanitation, and hygiene education;
- developing the concept of "semi-private", neighbourhood, or community standposts, where users are part of a smaller, more intimate group and therefore, more readily take on joint responsibilities.

The project coordination institutions in the four participating countries are:

Indonesia: Institute of Human Settlements, Bandung
Malawi: Department of Lands, Valuation and Water, Lilongwe
Sri Lanka: National Water Supply and Drainage Board, Colombo
Zambia: Department of Water Affairs, Lusaka.

In each country additional support is given by many other institutions and agencies, by contributions to management through an inter-agency Project Management Committee and through cooperation at field level. In several cases project staff have been seconded from other ministries to work in the lead-agency, thus encouraging inter-ministerial cooperation. International agencies, particularly WHO, have provided welcome support, especially at country level.

IRC's role is principally coordination and support by project staff, occasional consultants, support documents and information services. The project is funded through IRC by the Netherlands Directorate-General of Development Cooperation.

1985 will see local demonstration schemes operational in most participating countries, the development of monitoring and evaluation techniques, the production of guidelines and manuals in the subject area, and the organization of national and international workshops to discuss project experience within the framework of broader Technical Cooperation between Developing Countries (TCDC). Evaluation of the project is also planned for the first half of 1985.

IRC hopes that its latest demonstration project will contribute to reviving interest in standpost systems as a valid step in the de-

velopment of piped water supplies for small communities, assist in the development of workable and appropriate approaches, and contribute to the flow of information in this subject.

IRC Technical Papers TP13 and 14 form the basis of current project development and are available free of charge to users in the developing countries. TP13 presents an integrated approach to simple piped water supply systems and TP 14 concentrates on more technical issues. A new brochure on the project and its objectives is now available. Project contacts at IRC are:

Michael Seager
Hanny van Eerden

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GROUNDWATER EXPLORATION: A TOOL FOR MORE SUCCESSFUL WELL DRILLING PROGRAMMES

Groundwater tends to be where you find it and not where you want it! In recent years, there has been great pressure on the development and use of groundwater resources for rural drinking water supplies. Most developing countries, especially those of the drought hit regions, are in a hurry to exploit groundwater to provide full water coverage in rural water by the year 2000. Priority is, therefore given to well drilling programmes, often without due regard to preliminary hydrogeological investigations. One of the best ways to risk failure of a project is to put all your eggs in one basket, or in this case, in one bore hole. A large hole in the wrong place can easily ruin what may, in the long run, be the most economical means to obtain a water supply. It may lead to a project being delayed for years so that new finance has to be arranged for a second attempt.

In a recent waterproject in the Comores (a group of islands in the Indian Ocean) of the 20 successful bore holes drilled, only three provided usable drinking water. In the 17 other the salinity level was too high. This could have been detected by proper site investigation and groundwater level checks. Discussions with the local population would have revealed the existence of salinity problems in earlier unofficially drilled bore holes.

A number of methods and techniques are available, for preliminary investigations, which help increase the success rate of a drilling programme considerably.

Used to assist in development, planning, operation and management of water projects, ground-water exploration can help prevent waste of money and resources.

The cheapest method to locate suitable aquifers is to collect, process and evaluate available data, such as topographical and geological

maps, and hydrogeological features, inventory with well logs and the results of pump tests of these wells.

If sufficient information is available somewhat more sophisticated techniques will have to be employed, preferably a combination of these.

- Detailed topographical and hydrogeological maps based on the interpretation of satellite images (landsat) and the stereoscopic interpretation of aerial photographs. To this end, remote sensing can be used to identify suitable aquifers. This information can then be used to make field prospecting much more specific.

- Geophysical surveys using electrical resistivity and seismic methods can also be contemplated. In resistivity surveying, the electromagnetic method has been used successfully to reduce manpower and costs.

- Test drilling and subsequent pumping tests are required to confirm the presence of exploitable groundwater resources.

A prerequisite to reasonable and acceptable results in water well drilling programmes is acknowledgement of the need for investment groundwater exploration. Geophysical prospection is essential to determine the location of suitable aquifers, and their capacity and reliability. This helps to increase success rates of well drilling programmes. Geophysical surveys are expensive to conduct and difficult to interpret accurately. The expertise required adds to the cost. But savings resulting from geophysical operations outweigh their cost. Using remote sensing techniques in Bourkina Fasso and Niger, a Dutch consultant has claimed a drilling success rate of over 80 percent. This evaluation of drilling programmes showed 40 percent success in random drilling without investigation. Study of aerial photographs followed by specific field work (at a cost of US\$ 300 per well site) improved the success rate to 60 percent. The addition of a geophysical survey at a cost of US\$ 900 increased the success rate to 80 percent. A productive well costs US\$ 6,000 to install, including the pump. Non-productive drilling absorbs US\$ 4,750 without any return.

The introduction of surveys as a tool for more efficient management of groundwater resources calls for far-reaching changes. It requires institutional and organizational development. In most developing countries the main constraints relate to weak organization and shortage of qualified manpower, equipment, and funds. Government agencies responsible for water supply are located within a variety of different departments, ministries and autonomous bodies. Attention has to be paid to organizational and institutional aspects, so that the allocation of tasks to the management of groundwa-

ter resources can be clearly defined. Planning and development activities in this field are plagued by the lack of relevant and adequate data. The first step to overcome this should be the establishment of measuring networks for both surveys and monitoring. The maintenance and repair of geophysical and other instruments can cause problems and will depend on the availability of spare parts and expertise. This calls for training of technical field assistants and setting up an instrument workshop. Without adequate local manpower to carry out the surveys effectively, developing countries remain dependent on foreign expertise. The results of groundwater exploration are rarely used for drinking water supplies alone, they are also used in related areas, such as agriculture, irrigation, and water resources management. For example, the water resources development programme of the Indian Action for Food Production (AFPRO) based in New Delhi has investigation teams, who offer a number of services including hydrological surveys for Rs 500 (about US\$ 50) per square kilometre, surface resistivity sounding for US\$ 30 per site; resistivity profiling US\$ 90 per kilometre, deep soundings at US\$ 120 per site; satellite imagery maps at US\$ 75 for prints scale 1:500,000, and scale 1:250,000, US\$ 150.

A great measure of coordination and cooperation between the agencies involved is required for rational and efficient management of groundwater resources. Thought should be given to the need for cooperation before the irreparable harm is done.

Transfer of information on this subject from specialists to relatively inexperienced users will be featured at a workshop on hydrologic applications of space technology in Florida, USA in August 1985. This workshop is being organized by the International Association of Hydrological Science (IAHS) and the World Meteorological Organization.

An important objective of the workshop is to create increased awareness of current and future applications of remote data transmission and remote sensing as integrated into hydrological models. A small fund is available to provide grants to participants from developing countries to cover some expenses. For further information and registration, contact:

A. Ivan Johnson
President, IAHS/ICRSDT
7474 Upham Court
Arvada, Colorado 80003, U.S.A.

All potential participants from outside the USA should also register with:

The Secretary-General
World Meteorological Organization
Case postale No.5
CH-1211 Geneva 5
Switzerland.

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NEW PUBLICATIONS

Two new IRC Occasional Papers are available and have been well received so far.

"Making the Links - Guidelines for Hygiene Education in Community Water Supply and Sanitation" was announced in Newsletter 155.

"The Environment of Simple Water Supplies - A Selected and Annotated Bibliography in support of Public Standpost Water Supplies" is the second Occasional Paper to come out of IRC's demonstration project. Prepared by the Information Section and based on an earlier work for IRC by the WEDC Group, the bibliography presents selected annotated references in each major "component subject" of a fully integrated approach to public standpost water supply systems. These include planning, economics and evaluation; organization and legislation; community and social aspects; health; administration and financial management; technical aspects; materials, parts and equipment; operation and maintenance; and training and manpower development. A general chapter lists work of wider subject coverage and there is also a chapter listing country-specific studies. As well as promoting public standpost water supply in a wider framework, the component subject approach highlights areas of neglect in the systems approach to community water supply and sanitation, particularly financial management, and operation and maintenance. The bibliography is designed for the use of national project managers and those involved in planning and managing public standpost water supply systems in the developing countries, and may also prove to be a useful reference source, for others. Details of how to obtain publications and a comprehensive index, (including key words) have been included.

This publications is available as an IRC Occasional Paper at the price of US\$ 5 or without charge to those from or working in the developing countries.

"Water Supply and Sanitation Project Preparation Handbook." has been issued by the World Bank as the

first output of the UNDP/World Bank Project (INT/82/002), Information and Training for Low-Cost Water Supply and Sanitation. The handbook comprises three volumes, one of guidelines and two on illustrative case studies.

The guidelines, written by Brian Grover, are directed to three levels of project preparation, project identification, prefeasibility study; and the final feasibility study. The various stages of project preparation are illustrated by case studies, prepared by Brian Grover, Nicolas Burnett, and Michael McGarry.

Copies of the handbook (Volumes 1, 2 and 3) may be obtained from:

World Bank Publication Distribution,
P.O. Box 37525,
Washington, D.C. 20013,
U.S.A.

"Human Resources Bibliography : a selected and annotated bibliography for use in the Water Supply and Sanitation sector", has been prepared by the Water and Sanitation for Health (WASH) Project. This is a response to the growing need for access to key information on human resources development in water supply and sanitation.

It is intended primarily for managers in developing countries with responsibility for planning and implementation of HRD programmes.

For more information, please contact
WASH Project,
1611 N. Kentstreet, Room 1002,
Arlington, Virginia 22209,
U.S.A.

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