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Annual Report 1981

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INTERNATIONAL REFERENCE CENTRE FOR COMMUNITY WATER SUPPLY AND SANITATION

IRC is an internationally-operating organization dealing with information and technology support for water and sanitation improvement.

With its partners in developing countries and with United Nations agencies, donor organizations, and Non-Governmental Organizations, IRC assists in the generation, transfer, and application of relevant knowledge. The focus of this cooperation is on the rural and urban-fringe areas where the need for technical assistance is greatest.

IRC's 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 advisory support to the development of national facilities.

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

IRC
International Reference Centre
for Community Water Supply
and Sanitation

WHO Collaborating Centre

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Water: the Source of Life
Kathmandu, Nepal

Photo: David Etherton

I. IRC'S ROLE AND APPROACH IN THE WORLD WATER AND SANITATION DECADE

An Integrated Approach Required

* The International Drinking Water Supply and Sanitation Decade (1981-1990) has been declared as an urgent commitment of all countries to develop national programmes for improving community water supply and sanitation. During the next 8 years, IRC will primarily contribute to the necessary action in the developing countries in that context.

* According to its statutes, IRC's general objective is to initiate and develop, through international co-operation, activities directed towards the improvement of public water supply and sanitation.

* IRC takes the line that if the goals of the Decade are to be achieved, programmes in developing countries must be more than an acceleration of investment, and construction and installation of water supply and sanitation facilities alone. Rather, construction and installation work should be part of an overall development approach which includes improvements of a structural nature such as the development of human resources and institutional structures; the strengthening of managerial capacity; and the use of appropriate technology. These are all essential for the proper functioning of water supply and sanitation facilities.

* Such programmes must be integrated into overall (rural) development plans that provide co-ordination of the water and sanitation sector development with other sectors. Water supply and sanitation are to be developed in combination, where possible, and should be seen as an integral part of primary health care provision.

* The size and scope of the problems to be encountered in the Decade will require mass approaches and wide application of available knowledge and experience. Current programmes need critical evaluation and new principles and methods need to be developed. Crucial areas, such as human resources development

and technology, need new inputs. In many cases institutional and financial structures should be more adapted to needs. Mobilization and education of the population are indispensable prerequisites for success. These issues require programmes and activities at the national level which eliminate the constraints involved and develop the necessary institutional facilities.

Information Support in the Widest Sense

* IRC aims to contribute to the development of such national programmes and facilities which are in support of water supply and sanitation development and which ultimately should lead to enhanced capacities in the short term and self-reliance in the long term.
* The main functions through which IRC fulfills its aim are the generation, transfer and application of relevant knowledge, experience, technology and methodology (sometimes collectively referred to as "information").
* These three functions form the basis for a variety of actions depending on the subject. With an increasing degree of depth into the national programmes of the co-operating countries, IRC actions can include:

(a) information exchange, including reference and referral and the development of guidelines and training material;
(b) training courses, workshops and seminars;
(c) research and demonstration projects;
(d) participation in the development of national support programmes and capacities.

Each of the actions is expected to deliver feedback of results for wider application. In some cases it may be necessary to perform a brokerage function in order to obtain funding for programmes.
* IRC can thus be considered as an information-oriented organization with information defined in a broad sense and with various mechanisms in the generation, transfer and application of it.

A Needs-Based Orientation

* All of IRC actions have as common principles that they:

(a) are in line with the basic needs approach and with socio-economic development principles;

(b) have potential leverage and multiplier effects which generate appropriate national action;

(c) are developed according to an integrated approach towards the problems where possible. This means that e.g. technology is not dealt with in isolation; but that various technological, organizational, economic, sociological and cultural aspects are considered in an integrated manner;

(d) aim at the development of local capabilities;

(e) promote and support the development of innovative approaches, techniques and methods that comply with local needs and conditions;

(f) are in line with national policies and integrated in the national water supply and sanitation programme;

(g) promote collaboration among agencies of the national water supply and sanitation and other sectors;

(h) are based on the needs of and are in support of the work of operating agencies.

Target Groups and Partners

* IRC actions are people-oriented. They are directed to planners, managers and operators, as well as community workers and (indirectly) users.

* Primary emphasis is on under-served and deprived populations in rural and urban-fringe areas in developing countries.

* IRC promotes international cooperation. It operates closely with WHO as well as with the World Bank, UNDP, UNICEF and other members of the Decade Steering Committee, as appropriate. Alignment is sought with Decade efforts by these agencies in the developing countries.

* IRC further co-operates with bilateral donors and NGO's and with regional institutions both in developing regions and the Western world.
* The most essential cooperation is with partners in the developing countries. Working relations are developed with (and among) national and local authorities, the national action committees, operating agencies, research and development institutes, user groups and individuals in these countries.
* The operational role of IRC is to initiate programmes, to prepare proposals and the submit these for funding, to co-ordinate the implementation of the programmes and to evaluate and publish the results. The primary responsibility for the planning and implementation of the country programmes is at the country level. The major part of the work is carried out in the countries concerned, in order to assure that the knowledge generated is in direct support of the development of the sector.
* In accordance with the above, IRC's core budget is a generating budget, meant to support the initiation and development of new actions in the form of projects. In that sense IRC can be considered as a project organization. In principle these are financed through external funding by multi-lateral an/or bilateral donors. Funding of such projects covers a component for country programmes, IRC's contribution and a component for Technical Cooperation among Developing Countries (TCDC). Benefiting countries are expected to supply a counterpart contribution for their country programme.

II. IRC FOUNDATION'S GOVERNING BOARD AND ADVISORS

IRC's new status as a non-profit foundation under Netherlands law has brought organizational changes reflecting both the history of IRC and the new demands of the World Water and Sanitation Decade. This has led to the creation of a Governing Board and initiating the formation of an Advisory Council to ensure that IRC's role and approach is consistent with developing countries' needs and the aims of the Decade.

Governing Board

IRC's 9-member Governing Board is composed of 5 representatives from Netherlands ministries that are the major source of IRC funding, and four from the UN agencies most active in the World Water and Sanitation Decade. This Netherlands Ministry/UN agency representation extends the international outlook of IRC which was founded in 1968 upon the initiative of the World Health Organization and the Netherlands Government.

The Netherlands component of the Governing Board includes: Mr. P. Santema (chairman), Mr. P.J. Verkerk (secretary) and Mr. D.J. de Geer (treasurer) of the Ministry of Public Health and Environmental Protection; Mr. H. Gajentaan and Dr. K.G. Wit of the Ministry of Foreign Affairs (Development Cooperation).

The international component of the Governing Board consists of representatives of three United Nations agencies: Mr. J.M. Kalbermatten of the World Bank, Dr. M.G. Beyer of UNICEF, and Dr. P. Lowes from UNDP. WHO is considering representation.

Advisors

In addition to the Governing Board, the new IRC foundation is in the process of establishing an Advisory Council to give practical guidance on the Water and Sanitation Centre's role

and approach. In 1981 four Advisors were invited from developing countries and have a strong background in water and sanitation: Prof. Albert M. Wright of the Faculty of Engineering at the University of Science and Technology in Ghana; Dr. P.K. Chatterjee, Director General of the Calcutta Metropolitan Development Authority, India; Mr. Alfonso Zavala Cavassa, Director General of Sanitary Engineering of the Ministry of Public Works in Peru; and Mr. Luis Jaurequi, President of the Argentine section of AIDIS, Argentina. The fifth Advisor is Head of the Research Division of the OECD Development Centre in Paris, Mr. Brian van Arkadie.

IRC'S GOVERNING BOARD AND ADVISORS APPROVE PROGRAMME PLAN FOR 1982

Late October 1981, IRC's Governing Board and Advisors met together in The Hague for the first time and approved in principle a document called "IRC Programme Proposals for 1982" and a document outlining IRC's Role and Approach in the Water and Sanitation Decade. Prior to that, on October 8-9, 1981, the IRC Director and professional staff met with the Advisors who, in addition to reviewing these, also made specific recommendations. After these discussions, the two documents were presented to the Governing Board and approved. Specific Advisor conclusions and recommendations (among others) include:

Information Support Development

* The presented development of POETRI was approved; caution was expressed however that the programme should not evolve into a sophisticated but unused system. A series of specific outputs as a direct response to needs and dissemination of information to those in need were welcomed.
* Special emphasis was put on the promotion and development of national information systems in a number of selected developing countries.
* IRC should pursue effective monitoring, especially the degree to which disseminated information reaches its users.

Technology Development and Transfer

* Appreciation was expressed for the development of the technology projects so far. In particular the slow sand filtration project with its integrated approach enjoyed the interest of the participants.
* The developments of the handpump programme were acknowledged and were regarded as a useful contribution to pressing problems.
* Emphasis was placed on practical and down-to-earth designs for use in rural areas.
* It was recommended that IRC provide at least minimal specifications and/or basic quality criteria of specific water supply and sanitation equipment. Quality control, though, might present a problem at the institutional level in various developing countries.
* It was recommended to investigate the development of using alternative power sources such as wind and solar energy for pumping in cooperation with relevant agencies.
* Development of practical experience and research by IRC on the difficult aspects of public standposts for water supply from the financial and operational point of view was encouraged. This should include attention for recovering costs and mechanisms to charge the users of standpost systems as well as for decentralized operation and maintenance. The need to search for effective faucets for public standposts was also mentioned.
* Attention was called for information and technology support to the development of sanitation programmes, including their financing.

Manpower Development and Training

* In the field of manpower development and training an interest was expressed in the developed methodologies and their application.
* It was also recommended to extend training programmes to cover sanitation.

Community Participation

* A warning was expressed that international support, to developments that could vary strongly locally, should be exercised with great reservation.
* The development of a multi-country support programme including Technical Cooperation among Developing Countries, was encouraged.

Planning and Evaluation

* In the planning and evaluation area, the envisaged plan for publicatons and guidelines was endorsed, but caution was expressed that IRC should not go too deep in country planning and certainly not duplicate efforts of other organizations.
* It was further suggested to collect information about successful organization and management, including project and construction management.

General Conclusions and Recommendations

* It was recommended to gradually develop the emphasis of IRC's activities -- staff time and resources permitting --to social issues, in addition to present programme activities. It was, however, suggested to apply this development step by step, and to keep close contact with other agencies working in this field.
* In each of IRC's programme areas more emphasis on sanitation is gradually required as another essential development at IRC.

All Advisors took part in this discussion except Mr. Luis Jauregui who couldn't attend because of family illness. Active observers in the framing of the recommendations were Dr. P. Bourne (UNDP), Mr. J. Freedman on behalf of Mr. J. Kalbermatten (World Bank), and Mr. S. Unakul, WHO.

People in an Egyptian village also have to drink this water *Photo: Dr. B. Mabrouk*

Photo: VDO

Will this handpump provide these Tanzanian villagers with enough safe water tomorrow? Handpumps are the workhorse for rural water supply but are still plagued by poor design, unsatisfactory performance, shortened working life, and by ultimate failure.
POETRI can help national agencies make realistic assessments about national water supply needs, and make use of data provided by the ongoing UNDP/World Bank Global Project for laboratory, field testing and development of handpumps.

1. INFORMATION SUPPORT DEVELOPMENT

PROGRAMME ON EXCHANGE AND TRANSFER OF INFORMATION (POETRI)

In response to specific recommendations of the United Nations Water Conference concerning information support, POETRI is designed to promote the exchange and transfer of information in direct support of national planning and implementation of water supply and sanitation facilities. This flow and use of information is particularly geared towards supporting improved planning and programme development, increased resource allocations, increased investment capacity and an improved realization of potential benefits. Special emphasis is given to information needed to support the policies for the International Drinking Water Supply and Sanitation Decade (IDWSS Decade) which stress the importance of communication and the development of community based programmes.

In order to promote the availability of information on community water supply and sanitation development which is needed at the country level, three immediate objectives are pursued simultaneously by the Programme:

1. Improving and expanding the immediate delivery of selected key documentation and specific information services by international and regional centres aimed at the majority of developing countries.
2. Developing and strengthening the national capacities and infrastructures for information support in selected countries where the institutional arrangements lend themselves to the establishment of a National Focal Point for water supply and sanitation information through existing organizations; when more in-depth work can be done to establish workable infrastructures and service operations for water supply and sanitation information within the country.

3. Improving the exchange of information between countries and regions through established National Focal Points with the active support of Regional Focal Points, IRC and other international resource centres.

Against this background a start was made by IRC with the financial help of the Netherlands Government to initiate the first phase of POETRI (June 1979-December 1981).
The main activities for the first phase of the Programme have been the stimulation of in-depth developments for information exchange and transfer in a few selected countries, to organize regional workshops and training courses and to prepare the necessary guidelines and tools for information exchange. Also a preliminary design of the POETRI documentation system and services was finalized during 1981 and will be published in 1982 as the POETRI Reference Manual, Volume 1.
The need for an extension of the first phase of POETRI as discussed by the Steering Committee for Co-operative Action in the Second Consultative Meeting on the IDWSS Decade (16 June, 1980), was followed up in a meeting of the Task Force on Information Exchange (The Hague, January 1981). The latter also discussed and agreed upon modifications needed, and stressed the importance of immediate information services such as packages of key Decade documentation, a standard source library, and a Decade Newsletter.
During 1981 the framework of POETRI Phase II (January 1982-December 1984) was reanalyzed. The Programme is now proposed as an international project with cost sharing by a group of multilateral and donor agencies and NGO's. Detailed consultations with these donors were held in 1981 jointly by WHO and IRC. Although not all components proposed for POETRI Phase II are funded yet, the commitments to date are such that a meaningful number of activities are expected to be carried out from March 1982 onwards.

Photo: IRC

These children have a good reason to smile.
The drilling rig in the background is boring for safe groundwater which will remain unpolluted when capped by a properly-designed well and hand pump installation. (Upper Volta, 1981).

2. TECHNOLOGY DEVELOPMENT AND TRANSFER

2.1. Handpumps

For use in community water supply

Several hundred million people already depend on manual pumping devices (handpumps) for their drinking water supplies. Major handpump programmes are underway or planned in many countries. There is a wide acceptance of the important role handpumps will realistically play, for a long time to come, in providing an acceptable community water supply particularly in rural areas of developing countries.

Experience shows that the use of handpumps in community water supplies presents serious problems regarding handpump design and selection, quality of manufacture and maintenance. These problems have a world-wide dimension, as they are encountered in all countries where handpumps are used extensively. IRC's Programme on Handpumps for use in community water supply was started in early 1977. It has received financial support from the UN Environment Programme (UNEP**) and is carried out in close collaboration with WHO, World Bank, UNICEF and bilateral donor agencies concerned. The Programme is fully attuned to authorative statements and recommendations***.

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* The word "handpump" is used because hand-operated pumps are the most common in small community and rural water supply. The programme also covers foot-operated pumps and wind and solar power for pumping.

** UNEP Project No. (462) 010-74-002

*** The UN Water Conference (March 1977) in its Action Plan recommended, inter alia, that international organizations and other supporting bodies should, as appropriate and on request, support research development and demonstration particularly on low-cost groundwater pumping equipment (I/Cof. 70/29 Recommendation 17).
The Meeting of Directors of Institutions Collaborating with the International Reference Centre for Community Water Supply in April 1973, recommended a project (no. 17) "designed to evolve reliable handpumps for rural communities".

In 1981 IRC further accumulated an extensive information base relating to handpumps and their use in rural water supply in developing countries. Information and technical support was provided to organizations involved in rural water supply programmes with handpumps, on a worldwide basis. This included groups such as:

- national public health departments and water supply agencies
- international organizations and bilateral aid agencies
- field project staff
- research and testing institutes
- handpump manufacturers and suppliers

IRC on-going participation in the UNDP/World Bank project for testing and development of handpumps (GLO/79/010) involved project support and technical assistance and also participation in the Advisory Panel (Steering Group) of the project*.

An International Catalogue of Handpumps, a draft of which was prepared in 1981, was circulated for review; it is scheduled for publication in the summer of 1982.

* Members of Advisory Panel for the Project are officials of UNICEF (Chairman), UNEP, WHO, IRC, USAID, IDRC (Canada), CA Testing and Research (U.K.)

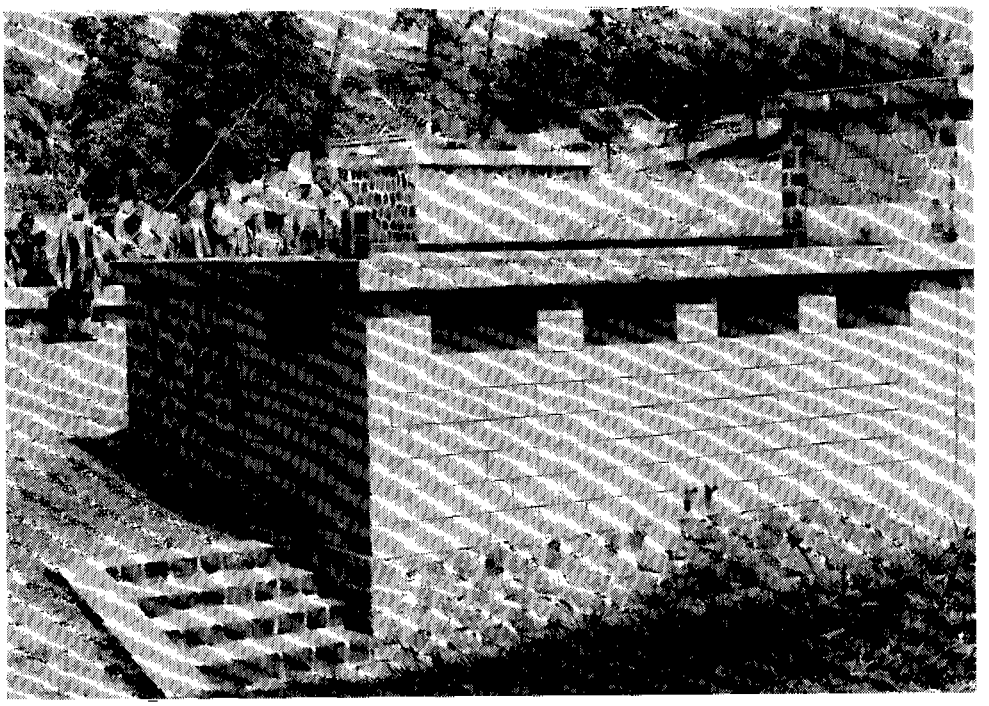


Photo: IRC

Participants in the IRC co-sponsored Slow Sand Filtration Conference (December 8-11, 1981) inspect a slow sand filtration installation in Guzang, Cameroon.

2.2. Slow Sand Filtration

The Slow Sand Filtration Project consists of three phases of which the second is nearly completed. In Phase I the knowledge and experience which were gained in Europe during a century of slow sand filtration practice were tested by five research institutes in India, Thailand, Sudan, Kenya and Ghana. After two years of investigations, a number of recommendations and adaptations were proposed to attune the SSF-system to the needs and circumstances in developing countries. The Directorate General for International Cooperation (Ministry of Foreign Affairs) of the Netherlands Government is the funder of this Project.

The practical results of this research phase combined with the existing knowledge were subsequently published in a manual on the application of Slow Sand Filtration in developing countries. (IRC Technical Paper 11 Slow Sand Filtration, 1978) and now available in English, French, and Spanish editions.

However, to convince both policy makers and other professionals active in the water supply field of the positive impact this newly acquired knowledge could have on the,quality of the drinking water, one also had to demonstrate the efficiency of the technique under normal working conditions. Phase II therefore focused on the implementation of Village Demonstration Plants: village water supply schemes using slow sand filtration to produce safe drinking water from surface water. An extensive community education and participation programme ran concurrently with the various stages of implementation in the villages selected for demonstration.

This integrated approach of the Project in which the community, the public health department and the water supply agency closely co-operate with each other, was chosen in order to increase, through continuous community involvement in

the various stages of implementation, the commitment of the community. Where this succeeds it greatly enhances the continuous operation of the water supply system.

The Report of the International Appraisal Meeting on the Slow Sand Filtration Project, organized in collaboration with NEERI, Nagpur, India, was published in March 1981 as IRC Bulletin No. 16. The report contains a number of practical observations and recommendations with regard to: design, construction, operation and maintenance of slow sand filters; training of operators; and planning and execution of health education and community participation support programmes. In Bulletin 16 summaries of ongoing SSF-projects in Colombia, Sudan, India, Jamaica, Thailand and Kenya are also included.

In 1981 a start was made with Phase III, the dissemination of results and experiences gained in the SSF projects, through a series of seminars. The first of these seminars was held in Bafoussam, Cameroon in December 1981. Organization of this seminar in Cameroon was very appropriate since through its Department of Community Development, Cameroon has gained a lot of engineering expertise in the implementation of water supply schemes including slow sand filtration.

A number of mostly Francophone West African countries and institutions were invited to participate in the seminar. Each of these countries was requested to delegate two representatives to the meeting: an engineer, who at the national regional level is actively involved in the implementation of water supply and sanitation programmes; and a social scientist who has been active in the field of community education and participation. During the seminar attention was also given to sanitation through a paper on "On-site Sanitation Options" prepared especially for the occasion.
In November 1981 the French translation of the manual on design and construction of slow sand filters (TP 11) was

published by IRC. The translation was prepared by the "Association Française pour l'Etude des Eaux".

To promote the Project a brochure was published in December 1981 and distributed widely.

Photo: IRC

This public standpost provides safe water to villagers in Togo. How far must these children carry their heavy loads? (1981).

2.3. Public Standpost Water Supply Systems

For many people in a large number of developing countries, drinking water supply from public standposts will be the only feasible water supply system for a long time to come. This is especially true in rural areas, where scattered housing makes house-connections particularly expensive, and in urban poor areas where little revenue is generated to pay for public services. In general, water supply by public standposts is an appropriate system where funds for investment are severly limited.

IRC's work on this subject started a few years ago with a study carried out for the World Bank, directed to the identification and analysis of major problems related to the application of public standposts in community water supply projects. The results of this study are presented in two publications: Public Standpost Water Supplies (IRC/Technical Paper 13), and Public Standpost Water Supplies, a Design Manual (IRC/Technical Paper 14).

The information generated in the first phase of the Programme forms the basis for further development, in particular for the series of country demonstration projects and the special subject studies in support of these projects.

In 1981, a proposal for an integrated development and demonstration project was prepared and submitted for funding. The major components of the Programme are:

1. To set up and to develop demonstration projects on the application of public standposts in community water supply schemes in a number of selected countries.
2. To conduct a series of studies and to prepare guidelines on particular organizational, economic, technological and socio-cultural aspects of public standposts water supply systems in developing countries.

3. To evaluate the respective projects and studies.
4. To promote international collaboration, transfer of knowledge and experience and exchange of information on various aspects of public standpost water supply systems, in line with the TCDC concept.

A tentative selection of countries for the development of the demonstration projects includes: India, Indonesia, Sri Lanka, Thailand, Malawi, Sudan, Zambia and Zimbabwe. Consultations on participation are to be finalized early 1982. The proposed activities will be carried out with WHO.

In developing the demonstration projects, special attention will be given to:

- operation and maintenance
- administration and financial management
- basic sanitation education
- community participation
- organizational and institutional aspects
- design and construction
- local manufacture of parts and equipment
- manpower requirements and training.

For each of these items a study has been initiated to develop guidelines and manuals in support of the demonstration projects.

In 1981 an extensive literature survey has been carried out by the WEDC-Group (Loughborough University of Technology, U.K.).

About 400 institutes in more than 80 countries have been requested to contribute to this literature study. The resulting selected and annotated bibliography is under review and is scheduled to be published the first half of 1982.

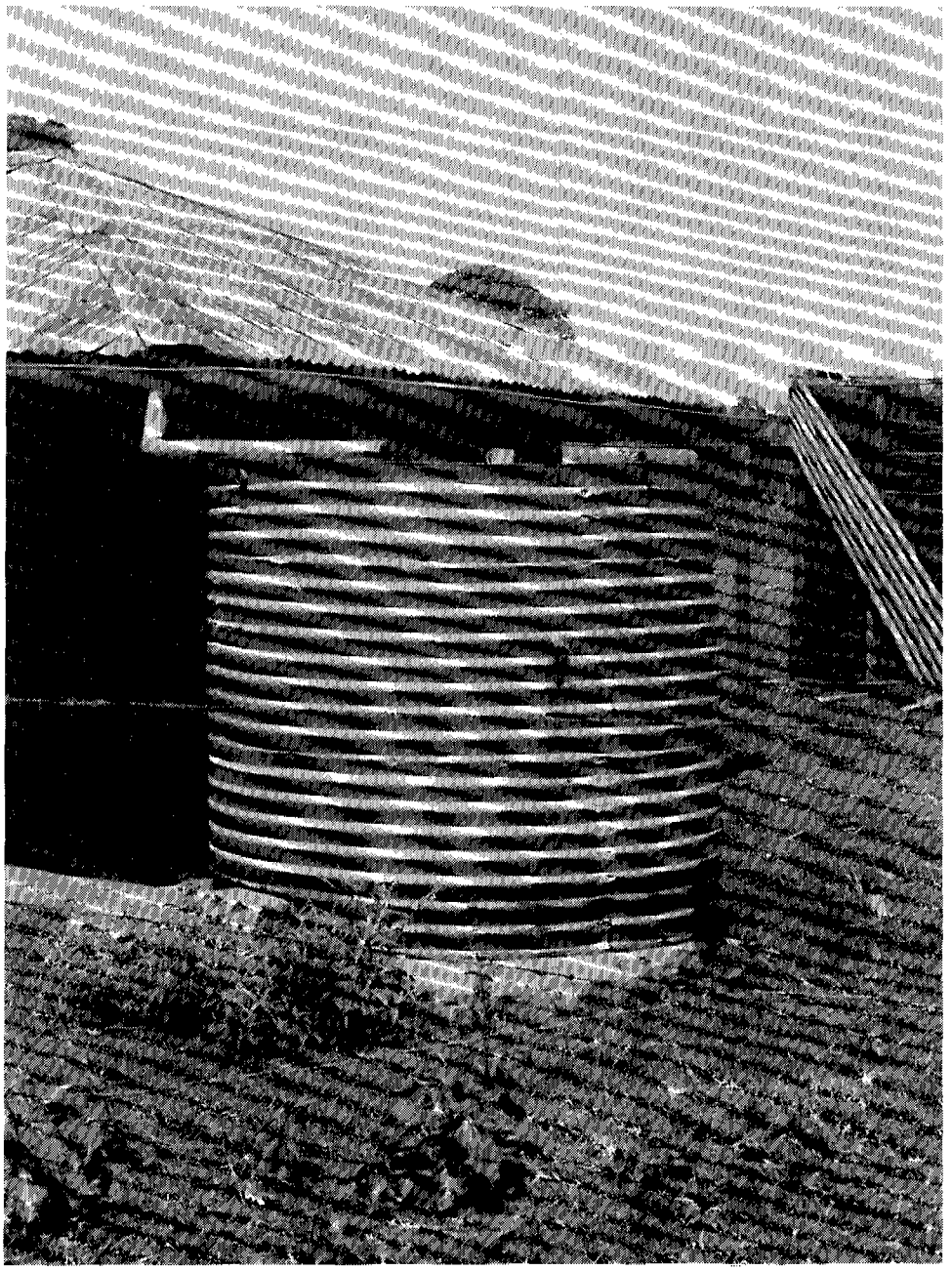


Photo: IRC

Rainwater harvesting: a technique used for thousands of years and now being reanalyzed and employed for greater potential, especially in arid and semi-arid countries. (1981).

2.4. Rainwater Harvesting

In some parts of the world, rainwater catchment and storage have been traditionally practised for drinking water supplies, and in some areas they continue to be used for this purpose. In other regions, rainwater harvesting for drinking water supply is less common. Yet, in view of the pressing need for adequate supplies of drinking water in many arid and semi-arid areas, the catchment, storage and use of rainwater should receive more renewed attention.

In 1981 IRC contributed to the UNEP project on rainwater harvesting for drinking water and small-scale irrigation through advisory and documentation input. The first phase of the project is being concluded. Further UNEP/IRC co-operation is envisaged regarding field demonstration of selected rainwater harvesting techniques; this will be the 2nd phase of the project.

With various inputs from a consultant, and based on field studies from various countries, a synthesis report was prepared in 1981; this is now being reviewed by project participants.

2.5. Standard Designs

At the U.N. Water Conference it was proposed that programmes should be set up to ensure a reliable water supply to all urban and rural areas by the end of the decade if possible. National programmes indicate hundreds or thousands of rural water supply schemes to be built each year which are often of a similar and simple type.

Essential aspects of standard designs underlined in the "Regional Seminar on Modular Design", held in Jakarta 6-10 October 1980 (IRC Bulletin 17, 1981) are:

- incorporation of community involvement in all phases of project preparation and implementation;
- major engagement of specially trained para-engineers/ technicians;
- a methodology of design and construction with recurrent use of standard designed components.

Type and Standard Design

In the development of a type design manual in 1981, further material was collected from a number of countries, projects and agencies. It's purpose is to provide basic information and a number of options for developing standard designs according to socio-economic conditions in a country. Introduction of these designs has a number of merits such as an increased output of the design selection through the use of pre-engineered components according to a standard methodology. This allows the engagement of technicians who can be trained in relatively short courses. The few professional engineers available could then concentrate themselves on supervision of the programme, evaluation and handling of problem cases.
During 1981 new material received was screened and reviewed in a consultant's study.

Contacts were established with agencies interested in developing standard designs and information support provided. The programme development aims at promoting the methodology mentioned in a number of countries and to strengthen design and construction sections at national level. In this respect criteria and guidelines for rural water supply were also collected.

Modular Treatment Plants

An IRC study for the Indonesian Government to design modular water treatment plants was finalised in early 1981. There, locally produced modular treatment units will be a major contribution to the implementation of the Small Towns Programme. In a follow-up study by the Government, proto-types in concrete and steel have been set-up for testing and to provide the data for a construction programme.

2.6. Drinking Water Quality/Disinfection

In developing countries diarrheal diseases form one of the greatest public health problems. Cholera, which was reported to occur in three continents in the last 20 years, became endemic in areas with incidence of other acute diarrheal diseases. Enteric diseases and infection-causing pathogens are transmitted through water and/or food; hence the importance of an adequate supply of safe water, to which according to the WHO Mid-Decade Survey (1975) more than 1,500 million people in the developing countries have no access.

Supply and distribution of water of which the quality is not safe can thus be a disaster rather than a boon. In professional jargon, disinfection is said to be a last defence line.

Related IRC activities in 1981 were:

Simple methods of disinfection
Information on various locally-made disinfection devices was collected from a number of countries by a mail survey.

On-Site Hypochlorite generation
A testing and development programme was initiated by IRC in collaboration with the Universities of Delft and of Bandung; a commercial unit was selected.
A survey of the patent literature was made. Based on laboratory testing some modifications of the units were proposed. Experiments were continued in Indonesia to which information support is provided by IRC.

Drinking Water Quality
In the WHO (European Regional Office) activities to develop the International Guidelines for Drinking Water Quality, IRC contributed to the Task Group Meeting on the Application of Guidelines for Drinking Water Quality in Alexandria, Egypt in June 1-5, 1981.

At the Appropriate Technology Seminar on Drinking Water Demineralisation, organised by the WHO Regional Office for Europe in El Djezair, Algeria (14-19 November 1981), a paper was presented on "Technical Cooperation in Defluoridation".

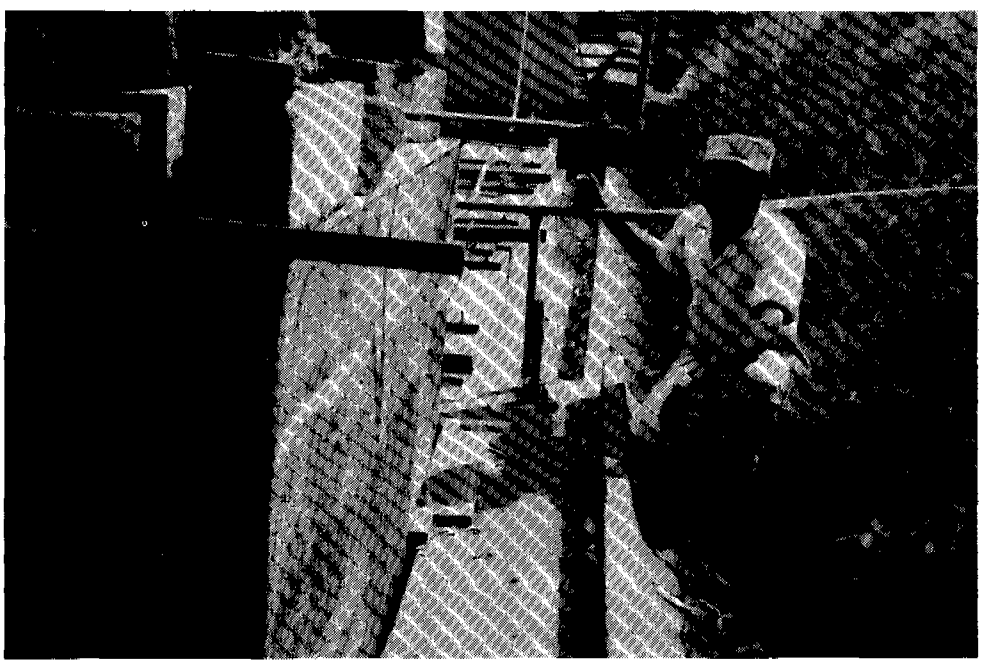


Photo: IRC

A proud hospital mechanic shows off his handiwork: a self-made gas pipeline system on a biogas installation. This low-cost technology will provide fuel by recycling human waste. (Cameroon, 1981).

2.7. Sanitation

The provision of safe drinking water alone will often fail to produce tangible results in terms of health condition improvement and convenience, if the community water supply is not complemented by sanitary waste removal systems. The main transmission routes of endemic gastro-enteric diseases remain dangerously open if household hygiene, excreta disposal and/or waste water removal are neglected and inadequate.

Awareness of the need for proper sanitary waste removal systems, complementary to the provision of safe drinking water, is not so widely shared as it should be. Sanitary waste removal measures often receive low priority in the environmental health programmes of governments. The situation has been summarized as follows:

Rural	1970 (%)	1975 (%)	1980 (%)
water supply	14	22	29
sanitation	11	15	(13)
Total (urban & rural)			
water supply	29	38	43
sanitation	27	33	25

Percentage of population adequately served.

These figures show an improvement in the rural water supply but indicate percentage-wise a decline in numbers of people having access to adequate sanitation facilities.
It is clear from these statistics that the provision of excreta disposal facilities has not kept pace with the increasing population in the developing world.

To remedy this situation will require sustained long-term effort, gigantic in terms of personnel and financial resources. The scale of the waste disposal problems faced by the developing countries, in many respects, is of unprecedented proportions.

The pressures of population and requirements to improve health conditions in developing countries are enormous, and there can be no doubt that water borne (sewered) waste removal systems will be outside the range of practical possibilities in all but a relatively small number of urban situations. Developing countries are therefore likely to follow a different route, using sanitary waste removal technologies appropriate to their situations.

It is IRC's intention to gradually extend its work to include the field of sanitation, much in the same way as it attempts to cover essential issues in the water supply field. Against this background an IRC Occasional Paper, "On-site Sanitation" (in English and French) was finalized in 1981 (see Slow Sand Filtration reference). It will be published in 1982 as an Occasional Paper and will review and elaborate on a number of simple on-site sanitation options giving specific technical, cultural and socio-economical details and observations on each of the selected options.

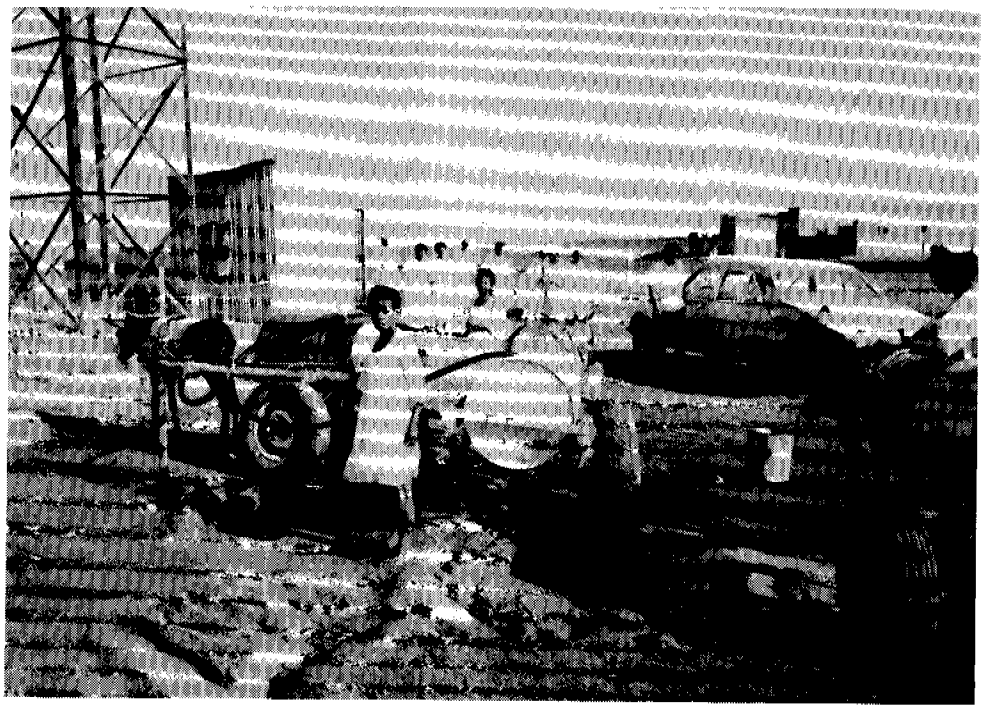


Photo: IRC

This public standpost in East Africa was designed to provide safe water. Yet the chances are very slim that it remains safe. Are those old oil drums used for transport regularly cleaned to prevent pollution? The practice of bringing the draught animals onto the site has turned the immediate surroundings muddy and inaccessible. This not only discourages regular use of the public standpost, but also provides a perfect breeding ground for disease-carrying pathogens and parasites.

In developing countries skilled workers, technicians, supervisors and engineers are everywhere in short supply. New schemes have to be designed, built or installed, often in remote areas. Improving water supply and sanitation is costly in money and effort. Yet these are wasted unless people at all levels are trained for the job. People are ready and able to learn new skills, but often lack the chance.

3. MANPOWER DEVELOPMENT AND TRAINING

3.1. Multi-Country Manpower Development Project

This Project aims to support the development of sectoral training delivery systems in the Eastern Caribbean, Tanzania and Sri Lanka. It includes assistance in assessing manpower and training needs, training of training staff, development of curricula and training materials and evaluations and international exchange of experience gained. The Project also aims to promote the exchange of personnel and materials between participating countries. The experience of initiating appropriate programmes in diverse geophysical, administrative and cultural situations will help identify common underlying principles of sectoral manpower development.

In the Easter Caribbean, IRC, jointly with Canadian technical assistance (CIDA), assisted in a PAHO project to introduce a sectoral training delivery system for ten participating countries with funding from the Netherlands' Government. As a microcosm of international co-operation and exchange, the project is a significant pilot experience.

In June 1981 a team of experts evaluated the project results against its objectives. Among other proposals, follow-up assistance was recommended.

Sri Lanka has formulated indicative planning targets for the period 1981-1990. It is estimated that $ 1,000 million should be invested in the sector to achieve required coverage targets, including $ 20.3 million for training and manpower development. Sri Lanka is facing a severe medium-term shortage of skilled labour, especially in the critical construction sector. It is clear that to implement existing plans alone, substantially upgraded training facilities will be needed in the water supply and sanitation sector by 1983.

After consultation with officials of the Ministry of Local Government Housing and Construction and of the National Water Supply and Drainage Board (NWS & DB), the original terms of reference for IRC assistance to Sri Lanka were changed to read as follows:

- Studying detailed quantitative and qualitative sectoral manpower requirements.
- Formulating a 5-year sectoral training plan for all levels of staff.
- Preparing a phased and costed proposal for a 5-year training project, indicating staff, facilities and other resources required for its implementation, to be available if so required as a basis for securing external funding

These activities, co-ordinated locally through the WHO Institutional Support Programme at the NWS & DB have been underway since February 1981, in collaboration between Board officials and consultants of the National Institute of Business Management, Colombo, and the United Kingdom Industrial Training Service. This work resulted in a Manpower Study and Training Plan and a draft project proposal.

Based on the manpower study and training plan, the draft project proposal estimates that Rs. 81.3 million (US$ 4.5 million) will be required to implement a 5-year sectoral support programme for manpower development and training. It proposes construction and equipment of a comprehensive training centre at or near NWS & DB headquarters, planned to be operational by 1984.

In Tanzania, a workplan compiled in 1979 in consultation with the Ministry of Water and Energy (MAJI) to describe the activities under the project in that country, was reviewed and revised in 1981 to meet the present views and to incorporate experience gained in other projects (i.e. Sri Lanka and Indo-

nesia). In the workplan, 4 phases of development are distinguished:

I Survey Activity

II Design of the Training Delivery System

III Implementation

IV Evaluation

Consultations will continue, with the aim of commencing IRC activities in mid-1982.

3.2. Manpower Development Programme: Indonesia

The Government of Indonesia aims to improve the skills and optimise the utilisation of all levels of staff in the urban water supply sector. To this end it promotes the establishment of a country wide organization for the development of sectoral human resources.

In order to achieve these objectives, a Manpower Development Programme has been established within the Indonesian Ministry of Public Works. The Programme (MDP) stimulates and co-ordinates planned sectoral training and other manpower related activities. It will be implemented by the Sub-Directorate for Development.

IRC was commissioned by the Netherlands' Ministry of Foreign Affairs to assist in the development programme for the Indonesian water supply sector. This assistance is provided during a 3-year project which started in September 1980. The project costs are estimated at about US$ 1,000,000.
Three professinals on technical water supply training, training development and media development have been appointed. They are supported by short-term consultants in various fields of expertise. In October 1981 the expatriate team was extended with one more expert who is assigned to the project manager.
Formal training and practical work experience have been given to the MDP staff by the external consultants in job and task analysis. A short workshop on the techniques of systematic industrial training and manpower development has been given by the Consultant, Training of Trainers.
Development of the Manpower Classification System for Junior Staff was completed in mid-1981 and was the basis of most of the vital short-term activities of MDP.

A seminar was also held in Jakarta for Provincial Development Assistants, Project Managers Cipta Karya and MDP Staff in "The Development, Use and Implications of the Manpower Classification System". This has been followed by a series of short workshops on applications of the MCS for the MDP Staff.

Other related activities in 1981:

* Collection of data for the Manpower Planning Model. It has been found necessary for personal visits to be made as written response to questionnaires is limited. An interview questionnaire was designed and evaluated.
* Provision of inputs to the DHV (Dutch consultancy) Six Cities Project Crash Training Programme. These included inputs by the Consultant, Training of Trainers, in assistance with the development of the management training programme; by the Consultant, Training Materials Development in media production; by the Technical Consultant on technical content of management courses; and finally by lectures by the Programme Manager.
* An approach has been made to manufacturers and suppliers and training agencies requesting information about relevant training and training related materials.
* An approach has been made to organizations in Indonesia requesting information relating to payment systems used in other sectors.
* A media policy has been developed and submitted to the Directorate for Sanitary Engineering for approval. Once approved, and the budget agreed upon, staff recruitment and equipment should proceed in phase with course material production.

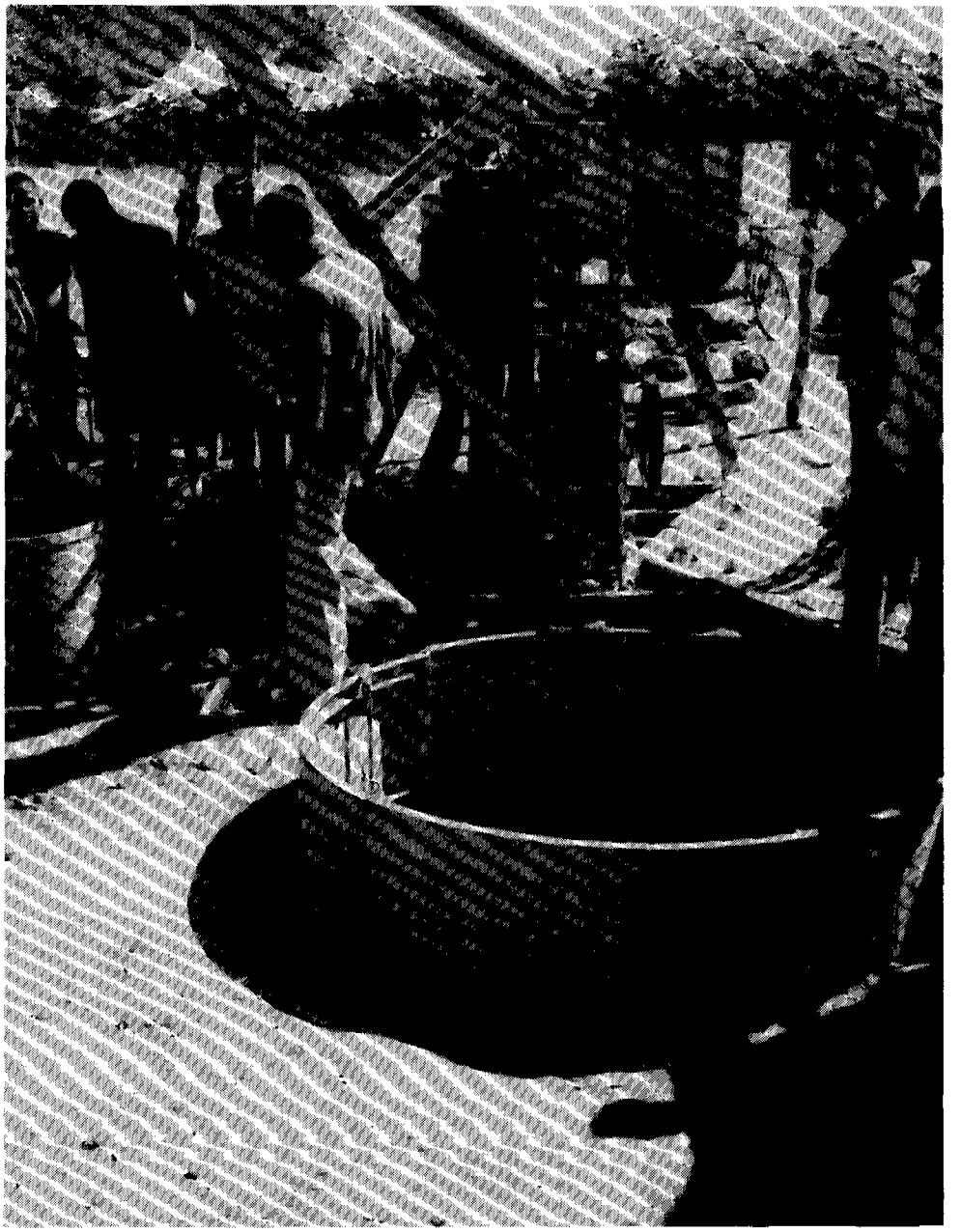


Photo: IRC

These Upper Voltans are busy constructing new wells. Community participation – in site allocation, construction and health education – is an important mechanism to ensure that low-cost technology will be properly used and maintained. (1981).

4. COMMUNITY PARTICIPATION

Community Participation is now receiving considerable attention and activities in the field are being strengthened or initiated in a large number of countries. It might be said that enthusiasm for a participatory approach has been generated faster than progress in understanding how to go about implementing the approach, in particular how to overcome the problems of re-orienting the work of government agencies towards increased co-operation with local communities.

IRC's role is to further the understanding of how to implement a participatory approach in different national circumstances. It is not a field in which IRC, or anyone else, knows all the answers. Therefore, the objectives of the work include:

1. To keep up with experience in the field by (i) maintaining an ongoing review of new literature; (ii) maintaining contact with others active in the field, through the advisory group (see reference below) and attendance at expert meetings; and (iii) brief study visits to government and voluntary agency programmes and projects in developing countries which are of interest, e.g. those incorporating innovative ideas.

2. To support the development of participatory approaches in a small number of countries through country projects, especially within the framework of the inter-regional CEP project (mostly African countries) and the Tanzanian CEP project. Voluntary agencies might be supported as well as national agencies.
   The type of support will depend on the specific needs of each country, but will generally include:
   (i) assistance in the appraisal by the agencies of their past experience in community participation;

(ii) assistance in the development of further plans and procedures. This will often take the form of pilot projects. Understanding of the problems of implementation will also be enhanced through process evaluations, drawing conclusions from the experience in pilot projects which are assisted.

3. To support regional training and the sharing of experience between participating countries and with other countries through regional workshops. Manuals etc. will be published where there is a need which can be met.

4. To share as widely as possible the knowledge gained through published analyses of project-generated and other experience in the field.

IRC began its work in the field of community participation in 1977. Related events in 1981 were:

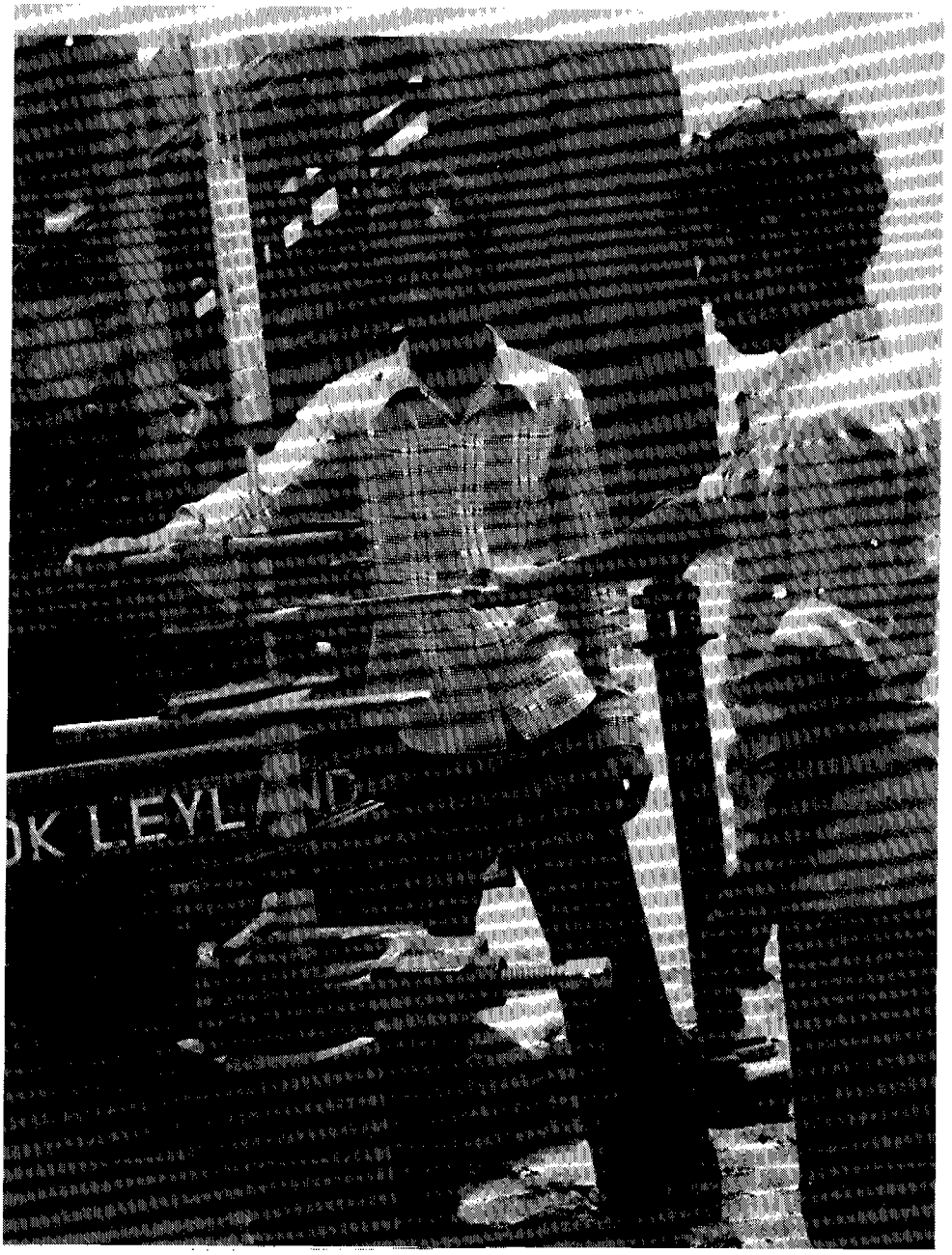
1. The publication of a revised version of the Literature Review by Christine van Wijk-Sijbesma in December 1981.
2. Publication in June 1981 of a monograph on Concepts, Strategies and Methods, called Community Participation in Water and Sanitation, by Dr. Alastair T. White.

Also in 1981 the development of projects specifically in the field of community participation has received much attention including:

1. A project for the development of a community participation component in the Tanzanian rural water supply programme. Work on this project, funded by Directorate General International Cooperation (DGIS) of the Netherlands' Ministry of Foreign Affairs, began in February 1981.

2. An inter-regional project on community education and participation, involving mostly African countries. Pending final agreement, provisional funding for 3 months of initial work was provided by DGIS for the last quarter of 1981.

The study and implementation of community participation in water and sanitation was the topic of the first meeting of the "Community Participation Advisory Group" in The Hague, 8-9 October 1981. About 20 experts from both the developed and the developing world met to sum up and evaluate experiences in the community participation field and to recommend priorities for technical cooperation activities, studies and services.
A full report of the meeting's findings and recommendations will be published by IRC in 1982.



Increased coverage of water supply and sanitation requires sound planning. Effectiveness studies, however are certainly a weak link in this field. In recent years, many bilateral and multilateral agencies have upgraded the role of evaluation. This reflects the seriousness of the operation and maintenance problems faced by many countries.

5. PLANNING AND EVALUATION

Many developing countries plan to increase considerably the coverage of water supply and sanitation facilities and services, in the context of the International Drinking Water Supply and Sanitation Decade. This requires sound planning and programme development procedures. A need exists to evaluate experience as a basis for better planning. It is expected that there will be an increasing demand for more and better information on these subjects in the first few years of the Decade.

The main objectives of the present Programme which is still in a stage of development are:

- to promote the development and application of appropriate methods and techniques for the planning and evaluation of the community water supply and sanitation sector in developing countries;
- to provide information and technology support to planning and evaluation activities at national level (studies, workshops, advisory consultancies, etc.).

The Programme aims at studying procedural apects (how to plan, how to evaluate) and substantial aspects (what to plan, what to evaluate).

In 1981, Evaluation for Village Water Supply Planning (IRC Technical Paper 15) was made available to numerous agencies in developing countries.
A literature survey was carried out and a literature study commissioned. This study will result in the publication of a selected and annotated bibliography in the first half of 1982.
A draft glossary of terms has been compiled and is presently being reviewed, as well as a paper on the application of the scenario methodology in the planning and development of the community water supply and sanitation sector.

A proposal for a series of workshops and technical assistance was prepared in collaboration with ILO.

Consultations on the further development of the Programme have been held with various national and international organizations.

Photo: Ministry of National Guidance, Sudan

What does lack of adequate supplies of safe water mean to 1,500 million people? A life sentence of hard labour, particularly for women and children.

Photo: IRC 1981

The single-vault, ventilated, composting latrine. This humble-looking Tanzanian structure, if used and maintained properly, will not only protect villagers from many types of faecal-related diseases, but will also ensure that the nearby safe water supply cannot be contaminated. In addition, in one year or so the villagers can use the compost as a first-class fertilizer for their crops. This is low-cost, appropriate technology!

6. MANUALS, TRAINING, MODULE DEVELOPMENT, SEMINARS AND COURSES

Frequently the efforts aimed at transfer and dissemination of available technology are meagre compared to the original inputs (research, studies, etc.) that were required to generate the technology and knowledge.

In water supply and sanitation, available technology and research findings, in principle, have a world-wide potential and relevance. Generally, the group of people familiar with most of the available technology is only a tiny fraction of the total group that could apply it beneficially*.

In particular, engineers and others involved in field projects have little chance to be exposed to and obtain access to all technology and methods relevant to them. Without special efforts, the results and impact of many research projects and studies may remain limited to the potential users having a superficial awareness of the projects.

Tools that can be used in technology dissemination and exchange of technological information are handbooks, guides, manuals, reference sources and technical reports.

IRC generates a series of Technical Papers which supplement selected documents and monographs from other sources (see Information Services reference). These documents are designed or selected for use by various levels of staff engaged in water supply and sanitation programmes, not only engineers and planners, but also technical staff and public health officials. IRC Technical Papers are usually the result of joint efforts of consultant experts, contributors, and IRC staff.

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* One important exception is the UNDP Global Project (GLO/78/006) executed by the World Bank, for demonstration projects in low-cost water supply and sanitation.

In 1981, a comprehensive handbook on the technology of small water supply systems was completed and published Small Community Water Supplies, Technology of Small Water Supply Systems in Developing Countries (IRC Technical Paper No. 18). This handbook was developed with contributions from and under the supervision of four senior authors, with a dozen special subject contributions from specialists. It is without doubt IRC's "best seller".

Manuals brought to finalization for publication, were:
- Guidelines on Health Aspects of Plumbing
- Practical Solutions for Drinking Water Supply (completely revised edition).

Further suitable material such as training modules, case studies and teaching aids have been collected, and are being developed for worldwide use.

Seminars, training workshops and short courses can be very useful tools in knowledge dissemination and transfer. Obviously they require various types of working documents as well as training aids. In its knowledge transfer activities, IRC has cooperated extensively over the last few years with many organizations, agencies and institutes, in a collective effort of information exchange and transfer and continues to do so. These efforts tie in with the concept of Technical Cooperation among Developing Countries (TCDC).

Consultation with the African Regional Centre for Technology led to an understanding to jointly elaborate an ARCT-IRC project on field demonstration of Low Cost Water Supply and Sanitation for Rural Conditions, amongst other things to promote small entrepreneurial activities.

In 1981 a project for a series of national seminars and training workshops was proposed and developed in cooperation with the Institute of Environmental Studies at the University

of Toronto, in Canada. This proposal is being considered for financial support by the Canadian International Development Agency (CIDA).

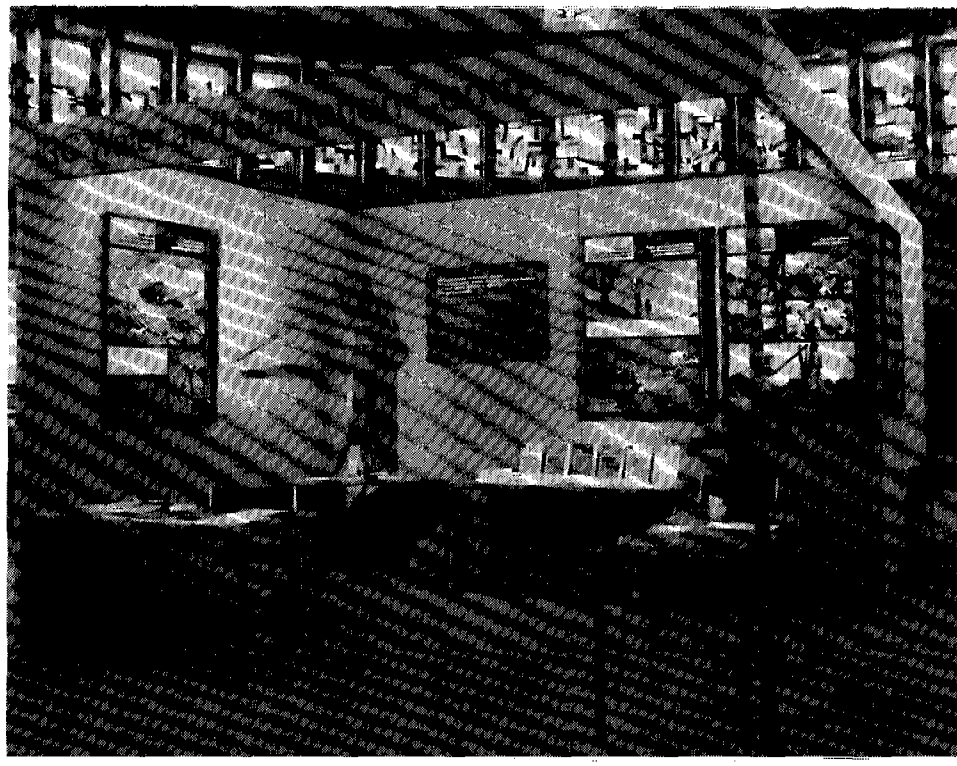

Photo: IRC

IRC's face at the International Symposium on the Quality of Groundwater, held in Noordwijkerhout, The Netherlands, 23-27 March 1981.

7. INFORMATION SERVICES

IRC's Information Section provides a number of services both internally and externally. These tasks include the editing, text processing and mailing of IRC publications; the writing, editing and mailing of the IRC Newsletter; performing public relations functions; and library and documentation services.

IRC Publications

IRC Publications -- Technical Papers, Bulletins, and Occasional Papers -- are playing a greater role in the Centre's life than ever before. Without exaggeration, the Water and Sanitation Decade has made its impact in the sharply increased demand for the Centre's publications. Each working day about 30-50 requests from all over the world are received for publications, and these range from orders for one copy to several hundred. The requestors for IRC publications include students doing research work, consultant agencies based in Europe and the Americas, water and sanitation agencies and health ministries in the developing countries, voluntary agencies, with the lion's share of publications going in bulk orders to various United Nations agencies active in water and sanitation in the developing world.

Because of the increasing demand for the Centre's publications in 1981, it was necessary to make a very clear distinction about the charging policy. Traditionally, individuals and non-commercial agencies based in the developing countries could request complimentary single copies (but not bulk orders). This was and remains IRC policy.
IRC has a no charge policy for single copies in developing countries, and a charge policy for developed countries.

Technical Papers

IRC Technical Papers cover a wide range of topics, more than the label "technical" would first imply. They include not only the technical aspects of handpumps and slow sand filtration, for example, but also present the latest findings on newer "people" topics like community participation.
(A full list of IRC publications is to be found in the Annexes).

In 1981 the following IRC TP's saw the light of day:

* TP 11 - the French translation of an earlier English language text by J.C. van Dijk and J.H.C.M. Oomen on Slow Sand Filtration - La Filtration Lente sur Sable. This 192-page book was translated by "l'Association Française pour l'Etude des Eaux".
* TP 12 - a fully revised and updated version of Christine van Wijk-Sijbesma's Participation and Education in Community Water Supply and Sanitation Programmes, A Literature Review (222 pages), and to be translated into French, Spanish and Japanese in 1982.
* TP 17 - Community Participation in Water and Saniation: Concepts, Strategies and Methods (180 pages) by Dr. Alastair T. White.
* TP 18 - Small Community Water Supplies: Technology of Small Water Supply Systems in Developing Countries, 413 pages, compiled by E.H. Hofkes. Main contributors were: Prof. L. Huisman, Prof. J.M. de Azevedo Netto, Dr. B.B. Sundaresan, and Dr. J.N. Lanoix.

Bulletins

The Centre also publishes a Bulletin Series with reports on international meetings (co)organized by IRC.

Published in 1981 were:

* Bulletin 16 - Slow Sand Filtration for Community Water Supply in Developing Countries, Report of an International Appraisal Meeting held in Nagpur, India, September 15-19, 1980 (64 pages).
* Bulletin 17 - Report of a Regional Seminar on A Modular Approach in Small Water Supply Systems Design, held in Jakarta, Indonesia, 6-10 October 1980 (70 pages).

Newsletters

1981 brought several changes to the IRC monthly Newsletter -- it expanded from 2 to 4 pages -- and to its content orientation. Produced for almost 10 years, the Newsletter provided short descriptions of news from IRC, the latest technical innovations, new books and upcoming conferences. This tradition is upheld in the "new" Newsletter, but there is now more emphasis on describing in greater detail the content of various reports, books, donor information, and puts greater emphasis on the "news" of the Decade.

Its primary target readership is in the developing countries where access to information (e.g. books) is a serious constraint and this requires more explanation of the how's and why's of things. For example, several issues pursued the topic of community participation, a concept neither simple in theory nor in practice. The aim of the new Newsletter is to provide in 4 pages a number of concepts and ideas on various topics which have a wider readership than simply engineers or technicians, for surely one important aim of the Decade is to stress integrated development in which health educationists and practioners, engineers, technicians in water and sanitation agencies, and government officials and planners play interlocking roles. The Newsletter is free, available in English and French, and is airmailed monthly.

Public Relations

P.R. in the Centre's context means explaining what IRC does, how and why, to the outside world of potential users of IRC information, present and potential funders, and to the public at large.

This implies ensuring that review copies of IRC publications are sent to the right journals and newsletters, compiling travel reports, organizing IRC representation at appropriate conferences, informing journalists about the Water and Sanitation Decade, and conceiving and writing brochures which explain the role of IRC.

In the mailing of this Annual Report is a brochure written and printed in 1981 which explains IRC's role in general; a smaller flyer on IRC, and also a brochure on IRC Slow Sand Filtration Project were also developed and printed in 1981.

Library and Documentation

The Centre's library serves staff members in their preparation of handbooks, training guides, in their work in the field, and in reference and referral capacities. It's 13,000 documents consequently cover many aspects of water and sanitation and development cooperation. The library's reference and referral role will be accelerated in 1982 because of the inclusion of these services in the POETRI and Community Participation Programmes.

ANNEXES

Annex 1

Governing Board

Mr. P. Santema (chairman), Netherlands Ministry of Public Health and Environmental Protection
Mr. P.J. Verkerk (secretary), Netherlands Ministry of Public Health and Environmental Protection
Mr. D.J. de Geer (treasurer), Netherlands Ministry of Public Health and Environmental Protection
Mr. H. Gajentaan, Netherlands Ministry of Foreign Affairs (Development Co-operation)
Dr. K.G. Wit, Netherlands Ministry of Foreign Affairs (Development Co-operation)
Mr. J.M. Kalbermatten, World Bank
Dr. M.G. Beyer, UNICEF
Dr. P. Lowes, UNDP

IRC Staff as per December 31,1981

Director
Drs. J.M.G. van Damme

Programme Development

Ir. R.E.A.L.E. Brasseur	Programme Officer
Ir. E.L.P. Hessing	Programme Officer
Ir. H.A. Heijnen	Programme Officer
Ir. E.H.A. Hofkes	Programme Officer
Ir. T.K. Tjiook	Programme Officer

Information

Mr. G.J. Bedard	Editor
Mr. C. Dietvorst	Library Assistant
Ms. H. Wolsink	Information Assistant
Ms. L. Wahab	Information Assistant

Administration and Finance

Mr. M.K. Peterse	Head Administration and Finance
Ms. L.I. Sackman	Management Assistant
Mr. H. Bodrij	Staff Assistant
Ms. C. Raley	Programme Assistant
Ms. M.A. Zijdemans	Programme Assistant
Ms. M. Ritsema	Programme Assistant
Ms. A. Groenendal	Programme Assistant

Detachement Manpower Development and Training Indonesia

Mr. R. Cook
Mr. A.L. Spencer

Consultants on a semi-Permanent Basis

Dr. Alastair T. White
Drs. Christine van Wijk-Sijbesma
Ms. L.F. Hoffman

The following Programme Development Staff left the employment of IRC during 1981: Mr. G. Howell (July), Mr. W.-K. Hoogendoorn (October), Ir. J. Haijkens (October), Ir. P. Kerkhoven (December); Administrative staff who left IRC during 1981: Mrs. B. Isgar, Ms. H. Ballering, Mr. T. Bolton.

Annex 2

LIST OF IRC PUBLICATIONS

Technical Paper Series

* Health Aspects Relating to the Use of Polyelectrolytes in Water Treatment for Community Water Supply; Report of a consultant group, 1973 (order code: TP5E)

* Aspects Sanitaires de l'Emploi des Polyelectrolytes pour le Traitement des Eaux Destinées à l'Approvisionnement Public, Rapport d'un groupe de consultants, (TP5F)

* The Potential Pollution Index as a Tool for River Water Quality Management, 1973 (TP6)

* Prediction Methodology for Suitable Water and Waste Water Processes, 1976 (TP8)

* Analysis of Organic Compounds in Water to Support Health Effect Studies, 1978 (1st edition 1976) (TP9)

* Handpumps for Use in Drinking Water Supplies in Developing Countries, 1978, reprinted 1982, (TP10E)

* Pompes à Main Destinées à l'Approvisionnement en Eau Potable dans les Pays en Voie de Développement, (TP10F)

* Bombas de Mano para Uso en Abastecimientos de Agua Potable en Paises de Desarrollo.
Available from: CEPIS, Casilla Postal 4337, Lima 100, Peru

* Slow Sand Filtration for Community Water Supply in Developing Countries, a Design and Construction Manual, 1978 (TP11E)

* La Filtration Lente sur Sable pour l'Approvisionnement en Eau Collective dans les Pays en Développement (TP11F)

* Filtracion Lenta en Arena para Abastecimiento Publico de Agua en Paises en Desarollo.
Available from CEPIS

* Participation and Education in Community Water Supply and Sanitation Programmes, a Literature Review, 2nd revised edition, 1981 (1st edition 1979) (TP12)

* Public Standpost Water Supplies, a Design and Construction Manual, 1980 (TP14)

* Evaluation for Village Water Supply Planning, 1980 (TP15)

* Community Participation in Water Supply and Sanitation, Concepts, Strategies and Methods, 1981 (TP17)

* Small Community Water Supplies in Developing Countries, Technology of Small Water Supply Systems in Developing Countries, 1981 (TP18)

Bulletin Series

* Meeting of Directors of Institutions Collaborating with the WHO International Reference Centre for Community Water Supply, Bilthoven, The Netherlands, report of proceedings, 1973 (order code B5)

* Global Workshop on Appropriate Water and Waste Water Technology for Developing Countries, Voorburg, The Netherlands, report of proceedings, 1973 (B7)

* Slow Sand Filtration for Community Water Supply in Developing Countries, a selected and annotated Bibliography, 1977 (B9)

* Public Standposts for Developing Countries, Proceedings of an International Expert Meeting, Achimota (Accra), Ghana, 1978 (B11)

* Participation and Education in Community Water Supply and Sanitation Programmes, a Selected and Annotated Bibliography, 1979 (B13)

* Community Education and Participation in the IRC Slow Sand Filtration Project, Voorburg, The Netherlands, report of proceedings, 1979 (B14)

* Slow Sand Filtration for Community Water Supply in Developing Countries, Report of an International Appraisal Meeting, Nagpur, India, 1981 (B16)

* Report of a Global Seminar on a Modular Approach in Small Water Supply Systems Design, Jakarta, Indonesia, 1981 (B17)

IRC Newsletter

Monthly, available free of charge in English (Newsletter) and French (Faits Nouveaux) upon request.

Annex 3

CURRENT AND PLANNED INVOLVEMENT OF IRC IN COUNTRY-BASED PROJECTS ON INFORMATION AND TECHNOLOGY SUPPORT

Projects	1	2	3	4	5	6	7	8	9	10
Countries										
South East Asia Region										
Bangladesh			■						■	
India	✱		◐	◐	✱	■	■	■	◐	◐
Indonesia	◐	✱	■	■			✱	■		
Sri Lanka		✱	■	◐			■	■		
Thailand	◐		◐	◐	✱	■	■	■		◐
Western Pacific Region										
South Korea										◐
Malaysia						■	■			
Philippines	◐		◐	■		■	■		■	✱
African Region										
Benin	◐									
Cameroon	◐		■		◐			■	◐	
Chad	◐									
Congo	◐									
Gabon	◐									
Ghana			◐		✱					
Guinea-Bissau									■	
Ivory Coast	◐									
Kenya	■			◐	✱			■		◐
Malawi			■	■					■	
Mali	◐									
Mauretania	◐									
Niger	◐									
Senegal	◐					■				
Tanzania	■	◐	■	◐			■	■	✱	■
Togo	◐									
Upper Volta	◐							■		
Zambia	■		■	■						
Region for the Americas										
Argentina	✱									
Bolivia	◐									
Brazil	◐									■
Caribbean (Eastern)		✱								
Chile	◐									
Colombia	✱		■		✱				◐	
Costa Rica	◐		■				■	■		
Equador	◐							■		
Guatemala	◐						■			
Jamaica	✱				✱		■			
Nicaragua									■	
Peru	✱						■		■	
Venezuela	◐									
Eastern Mediterranean Region										
Egypt				■						
Sudan	■				✱					

✱ = currently involved in country project
◐ = working contacts established
■ = planned involvement

1 = information programme 'POETRI'
2 = manpower development
3 = handpumps
4 = public standposts
5 = slow sand filtration
6 = sanitation systems
7 = standardization
8 = roving seminars
9 = community participation
10 = evaluation and planning

Annex 4

List of Visitors to IRC in 1981

AHMAN, Dr. I.	WHO, Switzerland
ANDERSON, Mr. T.	Industrial Training Service, United Kingdom
ARKADIE, VAN, Mr. B.	OECD, Paris, France
ARLOSOROFF, Mr. S.	World Bank
AUSTIN, Mr. J.	USAID, U.S.A.
BARRY, Ms. S.	ASLIB, United Kingdom
BARTONE, Dr. C.	CEPIS, Peru
BEVERLY, Dr. J.	WASH, U.S.A.
BIXBY, Mr. P.R.	Consultant, United Kingdom
BOULDON, Mr. G.	Action Learning Associates, United Kingdom
BOURNE, Dr. P.	UNDP, U.S.A.
BRANDRETH, Mr. M.	IDRC, Canada
BUTRICO, Mr. F.A.	PAHO, U.S.A.
CHAPMAN, Mr. C.	Industrial Training Service, United Kingdom
CHATTERJEE, Dr. J.	Calcutta Metropolitan Development Authority, India
COURRIER, Mr. Y.	UNESCO
DONALDSON, Mr. D.	WASH, U.S.A.
EAST, Dr. H.	Consultant
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