



IRC
International Reference Centre
for Community Water Supply
and Sanitation

WHO Collaborating Centre

The Hague, The Netherlands

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INTERNATIONAL REFERENCE CENTRE FOR COMMUNITY WATER SUPPLY AND SANITATION

IRC is an internationally operating independent, non-profit 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 co-operation is on the rural and urban fringe areas where the need for technical assistance is greatest.

Support is provided by means of publications, training and education, evaluation and advice, and development and demonstration. IRC's information-oriented programmes include: community participation including the role of women; hygiene education; human resources development; appropriate technology including operation and maintenance; programme evaluation; and community-based financial management.

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**International Reference Centre
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PREFACE

In 1986 encouraging progress was reported for the first half of the International Drinking Water Supply and Sanitation Decade. Safe drinking water was provided for an estimated 340 million people in developing countries. Nearly 140 million rural and urban dwellers benefited from newly installed sanitation facilities. This surpassed the record for the entire 1970s. However, some 1000 million people in developing countries, excluding China, still remain without an adequate and safe water supply and some 1800 million without access to suitable means of disposing of excreta.

New strategies are required if more progress is to be made in meeting development targets in the water supply and sanitation sector for the remainder of the Decade. In 1986 various international, regional and local external support consultations and review meetings decided that in order to increase service coverage of water supply and sanitation, efforts had to be redirected. Several issues were identified and these have been translated into new sector development concepts for follow-up actions and implementation. They are:

- development of national water supply and sanitation sector institutions;
- cost recovery;
- redress of the imbalance between water supply and sanitation services;
- operation, maintenance and rehabilitation;
- community participation and hygiene education;
- co-ordination and information exchange.

Donor consultations and regional external support consultations in the last two years addressed these and other issues and agreed on Decade approaches, which need to be followed in the remainder of the Water Decade:

- complimentary development in water supply and sanitation;
- strategies which give precedence to underserved populations;
- programmes which promote self-reliant, self-sustained action;
- community involvement at all stages;
- socially relevant systems that people can afford;
- association of water supply and sanitation with relevant programmes in other sectors.

Over the years IRC has been active in generating and transferring knowledge on many of these issues.

IRC provides knowledge and information support to thousands in developing countries who are responsible for establishing sustainable water supply and sanitation facilities in rural and urban fringe areas. With more knowledge and experience available to managers, professionals and sub-professionals in this sector, their ability to work more efficiently and effectively together will be increased. Consequently, greater numbers of people will be served with adequate water and sanitation facilities.

J.M.G. van Damme
Director



Village tap committee members at Chibombo, Zambia, one of the project sites in the Public Standpost Water Supplies Project.

1. IRC IN 1986

Thirteen new projects were started in 1986 of which seven were contracts from specialized United Nations agencies and non-Dutch bilateral donors. The international component of externally financed projects fluctuates annually. In 1986 it was 35% of the project budget of Dfl. 1.4 million (1 US\$= Dfl. 2.10). This project funding is generated by a core budget of Dfl. 1.9 million, which covers knowledge base development and documentation, project development, and general management and administration.

In 1986 IRC presented possible options for future information exchange to the 14th Interagency Steering Committee for Co-operative Action for the International Drinking Water Supply and Sanitation Decade (IDWSSD). In September the Steering Committee meeting in Geneva acknowledged the valuable contribution of IRC in stimulating information exchange and providing training material for the Decade. It also endorsed its members' continued co-operation and support for IRC activities.

The two ongoing development and demonstration projects, the Public Standpost Water Supplies project and the Slow Sand Filtration project, are examples of the most comprehensive and intensive of the IRC information transfer mechanisms. The development and demonstration approach incorporates advice and evaluation, training, and the use of publications. Following this approach and using various subject-entry points, the IRC-supported integrated and community-based approach to problem-solving can be introduced to participant-developing countries.

In 1986 the Public Standpost Water Supply project was extended for a further year and groundwork continued for a new follow-up project concentrating on southern Africa. The Slow Sand Filtration project was in its fourth phase focusing on caretakers training and pre-treatment programmes in India and Colombia.

IRC's **advice and evaluation** capacity is increasingly being used by multilateral and bilateral external support agencies. During 1986, contracts were signed with UNICEF, WHO and various departments of the Netherlands Directorate General for Development Co-operation for a total of nine assignments. The work for UNICEF included an identification mission for information support and training in Viet Nam and a socio-cultural baseline survey and sanitary engineering survey for the UNICEF-assisted country programme in Kampuchea. With WHO co-funding, a one-week consultative meeting on technology for water supply and sanitation was prepared. WHO also

supported IRC in a study of school health education materials. In the framework of the UNDP Inter-Regional Project INT/86-002/A/-1/14 "Support to Decade implementation and co-ordination" WHO contracted IRC to establish a standard library of key publications and documents, and to compile a list of commonly used Decade expressions.

Work for projects funded by the Netherlands Directorate General for Development Co-operation included: an identification mission to Burkina Faso; participation in a project formulation mission to Sudan; and a project evaluation mission to the Yemen Arab Republic. A compendium paper on "Community participation and the involvement of women" was prepared at the request of the Netherlands Government for a Development Assistance Committee of the Organization for Economic Co-operation Development (OECD) meeting, and advice was given and monitoring support was provided for the Netherlands-supported drinking water programme in India.

As part of IRC's training and education activity, work continued on the development and field testing of evaluation modules for use in UNICEF-field programmes. IRC was contracted for two missions in Tanzania in 1986. The first was to assist in the community participation training of field-workers for the water supply, health and community development departments in the country. The second, at the end of 1986, involved IRC's community participation specialist (commissioned by Norconsult) in assisting with the formulation of the joint UN support programme to the Shinyanga region.

A very interesting new activity has been the introduction/preparation programme sessions developed for volunteers of the Stichting Nederlandse Vrijwilligers (SNV) (Netherlands Development Organization). Before going out to their jobs in the field, the volunteers are acquainted with relevant information on drinking water supply and sanitation. An agreement was signed with SNV to organize this programme on a regular basis. IRC staff have increasingly participated in training courses developed by other organizations. Its involvement in the National Training Delivery System Project in Sri Lanka, for example, was completed in 1986. Preliminary field testing has shown that the IRC manual "Training skills for supervisors in rural water supply programmes" is particularly useful.

IRC reaches a wider audience with its publication series and newsletters. During 1986 3400 copies of publications were ordered by 500 clients in developing countries. Five new titles were produced. Excellent co-publication work has been done with the Pan-American

Centre for Sanitary Engineering (CEPIS). In 1986 "Participation and Education in Water Supply and Sanitation" (TP12) was translated into Spanish. Translation of three other titles is nearing completion. CEPIS selects the titles which they consider to be suitable for Latin America, then translates, prints and distributes them. CEPIS and IRC share the costs.

During 1986 there were increased efforts to establish promotion and distribution contracts with local agents in various countries. With the assistance of a part-time editor, the IRC Newsletters were produced in English and French and distributed to 4700 readers.

Work done in 1986 for projects under the various information transfer mechanisms increased IRC's knowledge base. At the same time, knowledge from documentary sources and field experience contributed considerably to a variety of projects. In 1986, nearly 750 publications and documents were added to the IRC collection.

Subject areas developed in 1986 were primarily concerned with key software issues and their integration with technology issues. IRC also consolidated information and experience in the fields of community participation, women involvement's in projects, maintenance system development for rural water supply, project evaluation, hand pump selection, community-based financial management, hygiene education, artificial groundwater recharge and appropriate technology.

As follow up on the earlier information exchange programme IRC provided assistance in Indonesia, Malaysia, Sri Lanka and Thailand. Work on information tools, such as the "Interwater directory of sources of information and documentation on community water supply and sanitation" was completed, and work on the Interwater Thesaurus is almost finished. The Canadian International Development Research Centre (IDRC) has provided welcome funds for the latter.

During 1986 IRC decided to change computer software and hardware for the centre's documentation and address holdings. The change to the MINISIS software facilitates information exchange with other ISIS based data bases already being used by agencies co-operating with IRC.



Chairman of the Governing Board, Mr. H. Scheltema, addresses the Interagency Steering Committee.

2. DEVELOPMENT AND DEMONSTRATION

The two ongoing development and demonstration projects, the Public Standpost Water Supplies project and the Slow Sand Filtration project, are examples of the most comprehensive and intensive of IRC's information transfer mechanisms. Indeed, the development and demonstration approach comprises elements of publications, training and advice. Through this mechanism the IRC-supported integrated and community-based approach to problem-solving is effectively used in participant developing countries.

Public Standpost Water Supplies project

Following evaluation in 1985 the Netherlands Directorate General for Development Co-operation of the Ministry of Foreign Affairs made additional funding available, in July, for this ongoing integrated demonstration project. In all four participating countries, Indonesia, Sri Lanka, Malawi, and Zambia, demonstration schemes are now in operation. In this final phase of the project the key issues have been the strengthening of the systems for community-based maintenance and revenue collection and the sharing of information generated by the project. In the countries concerned a great deal has been learned about the integration of various technical, organizational, economic and socio-cultural aspects of the project as well as the importance of early, full, and continuing involvement of the user communities.

National agencies in a number of countries have shown interest in follow-up projects. The Netherlands Ministry of Foreign Affairs has already expressed interest in some form of follow-up activities in the southern Africa region, including Malawi and Zambia. In this region the new programme would widen the development and promotion of community-based approaches to cover various types of piped water supply (group, yard, house connections and public taps). It would further encourage a flexible approach to service levels and give new emphasis to local organization and financing for sustaining operation on completed schemes.

Indonesia

Work has continued in support of the demonstration schemes at Gumulung Tonggoh, Jagasiri, Playangan, and Karyamulya. Gumulung Tonggoh, the first completed, has been extensively monitored and the community's responsibility for the management of the scheme has been given support. In general the smaller schemes are operating successfully, and are good examples of community-initiated mainte-

nance and revenue collection. Communities in the larger schemes appear to need further support.

In 1986 a very useful self-evaluation of the schemes was organized by national project staff. Community motivators, typical users and local government representatives from each demonstration scheme were brought together to discuss and to review the approach developed and to formulate conclusions. One of the conclusions was that the three-stage training of trainers, cadres and community users has been successful. The Assistant Governor of West Java observed part of the self-evaluation exercise. He appreciated the approach developed and wished to see it used on a wider basis.

Project staff held various briefing meetings at several levels as part of the continuing information-transfer process. A final workshop is planned for early 1987 to present and share the Indonesian experience of the community-based approach, with particular reference to standpost supplies. Reports and a brochure on the project in Bahasa Indonesia have also been produced by national participants.

Malawi

PSWS activities in Malawi focused on the consolidation and broadening of the approaches developed under the earlier Urban Communal Water Point Project of the United Nations Capital Development Fund, UNDP and WHO. As a follow-on, PSWS monitored and assisted communities to find appropriate solutions in two mature schemes, Salima and Dowa/Mponella, each operating for two years, and two newly commissioned schemes, Likuni and Kasungu. The PSWS project in Malawi provides opportunity increasing information about the systems already developed and about the communities and institutional infrastructure within which they operate.

In 1986 attention was paid to the tap-committee approach to local management and to strengthening local capability in problem-solving and the Central Water Council.

The newly established non-technical post of PSWS project officer/water co-ordination officer in the Water Department was a significant initiative by the Malawian Government and one likely to have long-term impact.

Sri Lanka

The community-based approach in the first two demonstration schemes in Sri Lanka, Haldumulla and Seelatenana, has progressed well. There are about 20 taps in each community and a good coverage of



The environment around this tap in one of the Indonesia PSWS project villages has been improved greatly.



The water committee meets the PSWS project manager in a Sri Lankan village.

water-seal latrines. Both communities are well motivated and committed to self-reliance. Detailed mechanisms to build on this in terms of practical operation, maintenance and revenue generation procedures have been developed by project staff.

At Wijebahukanda, community motivation is well developed, hygiene education programmes are underway and construction of facilities has begun. For security reasons it has not been possible to progress with the Padaviya scheme.

Following recommendations from a national workshop held in 1985, a small working group has finalized a community participation manual and guidelines. A video film, commissioned by the project has been professionally produced to record and share the experience of the Haldumulla demonstration scheme.

An important part of the Sri Lankan project has been the successful and parallel development of a sanitation programme with latrine components being manufactured locally and widely accepted by the communities. Technical inputs from WHO have been an important contribution.

Zambia

Work by the national project team in 1986 at two of the local demonstration schemes in Zambia, Mwachisompola and Chimbombo, has contributed to mobilizing support from user-communities. In most schemes the existing Health Committee has been used as the basis for the Water Committee, with appropriate strengthening, and evidence of successful informal hygiene education. An important part of the schemes has been the development of a charging policy agreed to by the communities, based on a flat rate of two Zambian kwacha per house per month (equivalent to US\$ 3.00).

As in Sri Lanka, the piped water supply schemes have been supported by sanitation and hygiene education programmes. Construction materials have been received from a number of donors, including the communities themselves.

A review document on PSWS project experiences has been produced by the Zambian project team for wider distribution.

IRC support

IRC general support to the PSWS project during 1986 has included co-ordination and support visits to the participating countries by the IRC project manager and community participation consultants. IRC commissioned Consumers' Association Testing and Research (CATR) in the UK to carry out a market intelligence survey on standard taps

for use in developing countries. This survey is the first phase of a more extensive study on taps, which will include laboratory and field-testing. Research will concentrate on appropriateness, dependability, acceptability, ease of maintenance and unit-cost reduction.

In June 1986 the proposal for the follow-up project on Piped Supplies for Small Communities (PSSC) in the southern African region was submitted to the Netherlands Government. Support has been given to in-country drafting of work plans, programmes, and budgets in Malawi and Zambia for this three-year project. In response to strong interest, a preliminary planning work for a potential project was also carried out in Zimbabwe.

At the end of the year an experienced water supply engineer from Sierra Leone, following advanced studies in the UK, carried out a ten-week review of IRC experience with piped water supplies in southern African countries.

In November national project staff from Zambia joined their Malawian counterparts for several days of intensive joint work in Malawi. As well as exchanging experiences on the PSWS project, the project teams compared their plans for national activities under the proposed PSSC project from 1987 onwards.

Within the project framework straightforward guidelines on the potential of user-participation in revenue generation for piped supplies were finalized for external review. Publication as an IRC Occasional Paper is planned for 1987. This will be supported by a literature review of revenue generation for piped supplies, which was also completed in 1986.

Slow sand filtration

The Slow Sand Filtration (SSF) project concentrated on the training of caretakers, cost reduction in filter design, simplified filtration rate control and pilot plant investigations on pre-treatment of water. Work has been concentrated in Colombia and India.

Colombia

The University of Cali together with several national organizations is extremely active in promoting slow sand filtration in Colombia. Many SSF plants have been constructed, and a curriculum for post graduate training is being developed, in which slow sand filtration will be a component. The Slow Sand Filtration working group of the University of Valle is involved in the design of more than 30 plants. A first draft of the new caretakers manual in Spanish has also been prepared.

In early February the group, together with IRC, organized a three day workshop on design and construction. This meeting was used for promoting technology as well as reviewing six filter designs. The 25 participating engineers agreed on the design parameters developed in the SSF project and improved the existing designs accordingly. They also identified areas for further study.

Working along similar lines as the SSF group and with the help of inputs from IRC, the university has also established an anaerobic waste water treatment group. This group supports the development of upflow anaerobic sludge blanket reactors for waste water treatment. This working group also organized a workshop to review existing designs.

At the end of the year the Co-ordinator of the SSF working group paid a working visit to IRC to review available literature. He also visited SSF plants in Switzerland (with support from the International Reference Centre for Waste Disposal), UK and the Netherlands. During his stay the Co-ordinator prepared a proposal for technical scale testing of several pre-treatment methods. The possibility of an input on the post-graduate course at the University of Cali has been discussed with the International Institute for Hydraulic Engineering in Delft, The Netherlands.

Contacts with the International Reference Centre for Waste Disposal in Switzerland and the University of Surrey have been intensified in an endeavour to compliment each others' work on the pre-treatment and testing of water. Both agencies are doing field research on these subjects.

India

The National Environmental Engineering Research Institute (NEERI) has translated the SSF caretakers manual into Hindi. After review and pre-testing, the manual will be used in the training of trainers sessions at NEERI central office in either Nagpur or one of the other states concerned. NEERI is also conducting experiments with three pre-treatment systems on pilot scale. They are: upflow slow sand filtration, upflow roughing-filtration, and horizontal roughing-filtration. In January 1987 a workshop to review and improve designs of slow sand filters in India took place. Chief engineers and design specialists from ten Indian states have been invited. These include engineers from the northern states of India, where gravity water supply with slow sand filtration has great potential.

IRC support

A consultant on study leave from the Netherlands Directorate General for Development Co-operation has produced a draft of a literature study on pre-treatment for IRC.

Promotion and dissemination received a further push in 1986 with the distribution of 5000 copies of a promotional booklet entitled "Slow sand filtration: a low-cost treatment for water supply in developing countries". This 20-page booklet was published for the WHO Regional Office, Europe by the UK Water Research Centre (WRC) and IRC. Articles based on field-work experience during the last decade appeared in "Waterlines" and the special issue on filtration of Journal of the American Water Works Association. These were co-authored by the IRC project manager and project managers in participating countries.

In 1986 the revised slow sand filtration manual was reviewed externally and edited for publication in the Technical Paper Series. It will be available in 1987. At the end of 1986 the Commission of the European Communities provided funds for the translation of the SSF caretakers manual into French, and for the further development of training materials and their use in training sessions.



SSF Filter in Alto de los Idolos, Colombia at the beginning of flow testing.

3. EVALUATION AND ADVICE

IRC's expertise on advice and evaluation is increasingly being used by multilateral and bilateral external support agencies. Contracts were signed in 1986 for nine assignments to be carried out for UNICEF, WHO and various departments of the Netherlands Directorate General for Development Co-operation.

Identification mission, Burkina Faso

As a result of IRC's participation in the evaluation mission during the second phase of the Volta Noire Rural Water Supply project in Burkina Faso, the Netherlands Foreign Affairs Ministry commissioned IRC to do an identification mission for the third phase of the project. The Netherlands Government is supporting this project in various ways, including the promotion of local production of the Volanta pump used in the project. The mission identified community-based and financed maintenance as a priority area for future work in the project.

In 1986, IRC, on behalf of the Ministry, published the users' manual for the Volanta hand pump as a support for local maintenance.

Community participation, bilateral agencies

As a following up the recommendations of the Development Assistance Committee of the Organization for Economic Co-operation and Development of May 1985, the Netherlands Government contracted IRC to prepare a compendium paper summarizing present insights and experience on the vital issues of community participation and the involvement of women in water supply and sanitation projects. This paper aims to provide reference material for policy makers and project planners. The subsequent discussions with the Netherlands Directorate General for Development Co-operation and WHO and UNDP in the framework of the Interregional Project "Support to the Decade Implementation and Co-ordination: preparatory assistance", resulted in the development of a proposal for a training programme on community participation and hygiene education for consultants. Both agencies have indicated financial support for this activity and the German Agency for Technical Co-operation (GTZ) also expressed interest. Discussions on an IRC proposal to GTZ on community participation training field testing were still in process at the end of 1986.

Information service, Viet Nam

In January 1986 an IRC mission, under contract of UNICEF, Viet Nam, identified two potential areas for IRC support: information and training activities. At the end of the year the proposal to this effect was still awaiting formal reactions from the Vietnamese authorities and UNICEF. Regular supply of information on IRC products is provided to key Vietnamese institutions.

WHO consultation on technology

On behalf of WHO, IRC organized a one-week consultative meeting on Technology for Water Supply and Sanitation in January 1986. IRC was responsible for preparation, organization, of the meeting and also was responsible for the report. The report formed the basis for discussions during the Study Group on Technology for Water Supply and Sanitation, in which IRC also participated. This took place at WHO headquarters in April.

School health education programme

In another co-funded project with WHO, IRC has carried out a study on educational material on water supply and sanitation for use in primary schools in developing countries. After a first draft had been produced by a consultant, the focus of the study was narrowed to hygiene education materials. Late in 1986 IRC solicited material in a mail survey, which has already resulted in many useful examples. The report and recommendations on hygiene education for primary schools is due to be submitted to WHO early in 1987. Interesting materials have also been collected by IRC staff at UNICEF, the Pan American Health Organization, the US Agency for International Development, and Water and Sanitation for Health project.

UNICEF country programme Kampuchea

With UNICEF, New York, a contract was signed on behalf of the country programme in Kampuchea. IRC agreed to carry out a two phase socio-cultural baseline survey, a sanitary engineering survey and develop a plan of action. One three-week mission has taken place to Pnom Penh to assist in the development and implementation of a baseline study in selected villages.

A combined mission is planned for early 1987. This will consist of a sociologist and a sanitary engineer who will complete the baseline study and assist in the development of the sanitation component of the UNICEF programme.

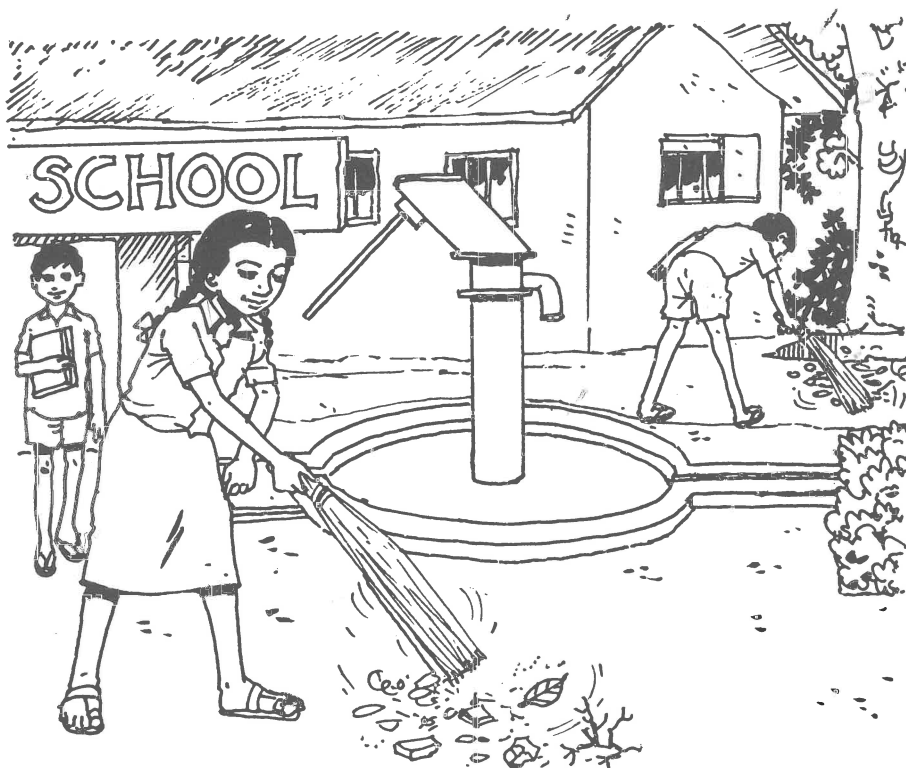


Illustration from school sanitation booklet for a one day orientation course in primary schools, developed by UNICEF for use in India.

Support to Sudan project

IRC input has helped shape the system's approach to village water supply and maintenance being developed in the 1987-88 operations plan of the Water Resources Assessment and Development Project (WADS) in Sudan. The project is a follow-up to the earlier bilateral co-operation programme between the Sudanese National Corporation for Rural Water Development (NCRWD) and the Netherlands Institute of Applied Geoscience, TNO. In November 1986, IRC was involved in a formulation mission to the southern Darfur region. The village water supply activities in this region will have a demonstration function aimed at developing and promoting a system approach to water supply. This includes key elements such as:

- full resources assessment for technology selection;
- village-level operation and maintenance, and cost recovery;
- training;
- institutional and financial provisions for maintenance.

Special consideration will be given to the role of women in the use and maintenance of facilities. During the pilot phase in 1987, 20 dug-well systems will be improved or constructed in 20 villages.

Monitoring India

Late in 1986, the Asian and Oceania Department of the Netherlands Directorate General for Development Co-operation contracted IRC to provide advice and monitoring support to their drinking water programme in India. The Netherlands Government is financing water projects in four states, Uttar Pradesh, Andhra Pradesh, Gujarat and Kerala. In three states project implementation is being guided by review and support teams from separate Dutch consultancy firms. In the fourth state, Kerala, a technical liaison officer has been posted to strengthen the drinking water projects newly established social-economic unit. IRC's task is to advise the Directorate General on the results and approaches of the review and support teams, to advise the technical liaison officer and the social economic unit in Kerala. In this context, IRC has assisted in the formulation of general terms of reference for review and support missions going to India. The centre's staff participate in the briefings and debriefings of the teams, reviews mission reports, and monitor and report on key points for attention.

Advisory services, Yemen Arab Republic

Since 1984 IRC has participated in the advisory group set up by the Directorate General for Development Co-operation to support to the

Netherlands contribution to water supply and sanitation projects in the Yemen Arab Republic. As part of these advisory services, IRC carried out a mission in early 1986 to review the Support Rural Water Supply Department Project. The mission recommended that greater attention be paid to the procedure for selecting villages for inclusion in the project, the functioning and use of completed water supply schemes, institution building, and the integration of sanitation improvements in the project.

4. TRAINING AND EDUCATION

Training and education work continued on the development and field testing of evaluation modules for use in UNICEF-field programmes. IRC was contracted for two missions in Tanzania in 1986. A very interesting new activity has been the introduction and preparation programme sessions developed for volunteers of the SNV Netherlands Development Organization. Before leaving for their jobs in the field, volunteers acquaint themselves with relevant information on drinking water supply and sanitation. An agreement was signed with SNV to organize this programme on a regular basis. The first field testing of IRC's manual "Training skills for supervisors in rural water supply programmes" indicates that the manual will be of considerable use. In 1986 IRC's involvement in the National Training Delivery System Project in Sri Lanka came to an end. Throughout the year IRC staff increasingly participated in training courses of other organizations.

Evaluation course materials, UNICEF

A pilot course was held in Kwara State, Nigeria, in June using course materials for the evaluation of water supply and sanitation projects which had been developed for UNICEF in 1985. Project staff from four states, the Federal Government and members of UNICEF and IRC, together with a number of outside specialists for WHO and the John Hopkins University tested out the course modules developed by IRC. On the basis of valuable suggestions made the course modules are being revised and edited. UNICEF plans a second pilot course in 1987, for which IRC assistance will be sought.

Community participation, Tanzania

In January, during a two-week mission to Tanzania, IRC participated in the community participation training course for field-workers in Tanzanian water supply, health and community development departments. This course was the first in its kind and aimed at an integrated approach to rural drinking water supply and sanitation improvement. The communities become the formal owners of smaller water supplies and the government assists by training them for day-to-day maintenance, simple repairs, local management, finance of recurrent costs and setting up an overall system for monitoring and spare parts supply.

Later in the year, Norconsult commissioned IRC's community participation specialist to assist in the formulation of the drinking water component of the joint UN Support Programme to the

Shinyanga region. IRC's input provided the opportunity for the field-training of a Kenyan sociologist. The three and a half week mission ended in mid-November.

Introductory programme for Dutch Volunteers

At the end of April, three SNV volunteers received a three-day introduction at IRC in preparation for field-work in Nicaragua and Nepal. Costs were shared by SNV and IRC. The programme included the selection of country and relevant subject information and the development of individual information packages based on the job descriptions of their future posts. An evaluation meeting in May found the programme had worked positively.

SNV has commissioned IRC for a further seven introduction courses running to July 1987. In July and November, two more groups of volunteers were given a week long briefing and self-study programme.

Under a similar arrangement with the Netherlands Directorate General for Development Co-operation, briefing programmes have also been given to associate and full experts being posted to developing countries. A pamphlet has been designed and distributed to inform potential clients of this new activity.

National Training Delivery System, Sri Lanka

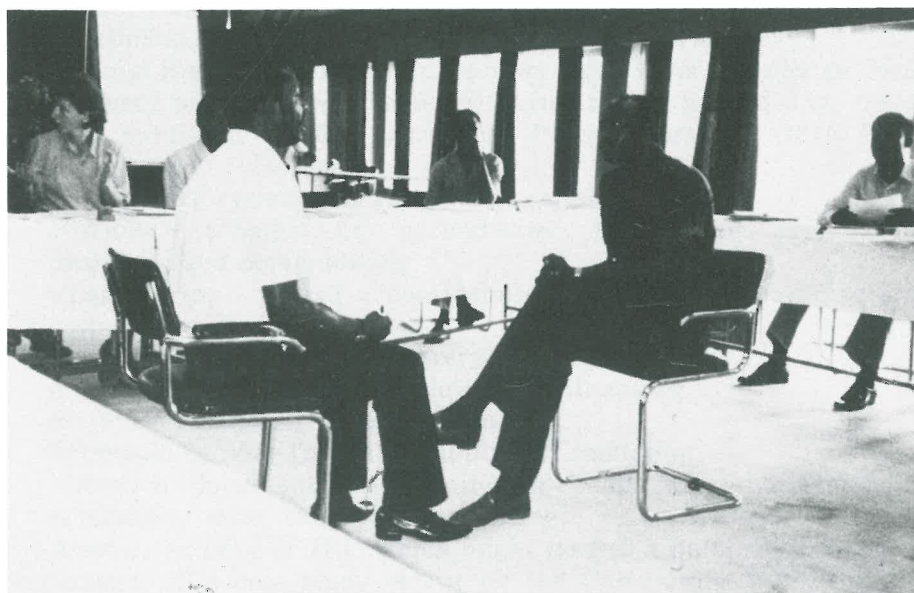
IRC's support to the National Training Delivery System Project, being executed by the National Water Supply and Drainage Board in Sri Lanka, came to an end in 1986. Under this project, which had been funded for two years by the Netherlands Government, planning methodology for human resource needs for construction, as well as operations, and maintenance of water supply and sanitation, has been successfully introduced into Sri Lanka. The district working group in Hambantota produced a good human resources development plan. No further funding could be obtained for projects in other districts.

In 1986, IRC finalized the project's documented output and reporting to the Netherlands Government. This output has been taken over by the various national agencies involved, in particular by the Training Division of the National Water Supply and Drainage Board. The division has started doing more surveys on human resource needs, and has finalized the national plan for human resources development for rural water supply and sanitation (which had been developed in 1985). Training courses have been set up for priority groups.

Training courses

There has been a substantial increase in the inputs made by IRC staff to training courses. These included the international courses of the International Institute for Hydraulic and Environmental Engineering (IHE) in Delft, the courses at the Institute for Housing Studies (IHS) in Rotterdam and courses run by the International Union of Local Authorities (IULA) in The Hague. It was agreed that IHE and IRC should combine forces as much as possible, particularly to strengthen IHE's rural water supply course. Discussions were started on linkages between the training efforts of these international courses in developing countries and IRC supported projects. In 1986 guest lectures were given on various IRC topics at the Delft Technical University, Twente University of Technology, and Agricultural University in Wageningen.

Throughout the year favourable feed-back has been received from various sanitary engineering courses in Europe who had made use of IRC publications.



Role play during the pilot course in Kwara State, Nigeria, where the evaluation course materials were tested.

Training skills for supervisors

"Training skills for supervisors in rural water supply programmes" has been successfully field-tested in various workshops in 1986. US AID financed the translation of this manual into Arabic so that it could be used in three training workshops within the context of the Provincial Cities Development Project in Egypt. Reactions to the manual have been "entirely positive and enthusiastic", US AID reported. The senior training advisor in the project was impressed by how well the trainees grasped the material and the ease with which they used the methodology. The manual has also been of considerable help in supervisor for the Malawi Ministry of Health.

An inventory of reactions is being compiled and will be incorporated in the publication of this training tool in 1987.

5. PUBLICATIONS

IRC's latest title in the Technical Paper series "Participation of women in water supply and sanitation: roles and realities" was the absolute bestseller in 1986. With a bulk order for 300 copies for the American Peace Corps offices around the world, this title accounts for some 1200 of the 3400 copies of IRC publications distributed.

New publications in 1986 included:

- Users manual for the Volanta pump (French);
- Interwater Directory of Sources of Information and Documentation on Community Water Supply and Sanitation;
- Participation and education in water supply and sanitation (Spanish translation by the Pan-American Centre for Sanitary Engineering and Environmental Science, CEPIS);
- Co-operation between Communities and Agencies (Occasional Paper Series).

For the manuscripts on hand pumps, renewable energy sources for rural water supply, slow sand filtration, human resources development case studies, review of the content and final editing have taken more time than anticipated. As a result, publication of these titles in the IRC Technical Paper Series have been re-scheduled for 1987.

Various studies and literature reviews arose from knowledge base development projects (see Chapter 6). After review and editing, these will be published in the Occasional Paper Series in 1987. They include:

- maintenance systems for rural water supplies;
- artificial recharge of groundwater for water supply in medium-sized communities;
- what price water? considerations for user-participation cost-recovery;
- literature review on cost recovery systems;
- pre-treatment in support of slow sand filtrations;
- literature review on hygiene education;
- household options for water supply and sanitation;
- reference document for training of community motivators in community water supply and sanitation.

Another activity of IRC which might lead to a publication was the preparation of a case study report on the Community Water Supply and Sanitation Programme Nepal, Pokhara, under contract to UNICEF Nepal.

Volanta manual

In 1986, IRC published "Volanta: guide d'entretien", users manual for the Volanta hand pump, which is being used in the Volta Noire Rural

Water Supply Projects in Bukina Faso. This project receives funding from the Netherlands Directorate General for Development Co-operation, who have also contracted IRC to produce this manual as part of its efforts to promote local production of this Netherlands-designed pump. The project in Burkina Faso has requested 400 copies of the manual and a further 100 copies have been purchased by the pump manufacturer.

Interwater Directory of Sources

As part of IRC's ongoing activities in information exchange, the "Interwater directory of sources of information and documentation on community water supply and sanitation" was published late in 1986. This second revised edition contains updated information on 255 organizations and has country and subject indexes for easy reference. The print run was 400 copies. All registered organizations received a complimentary copy.

Spanish translations

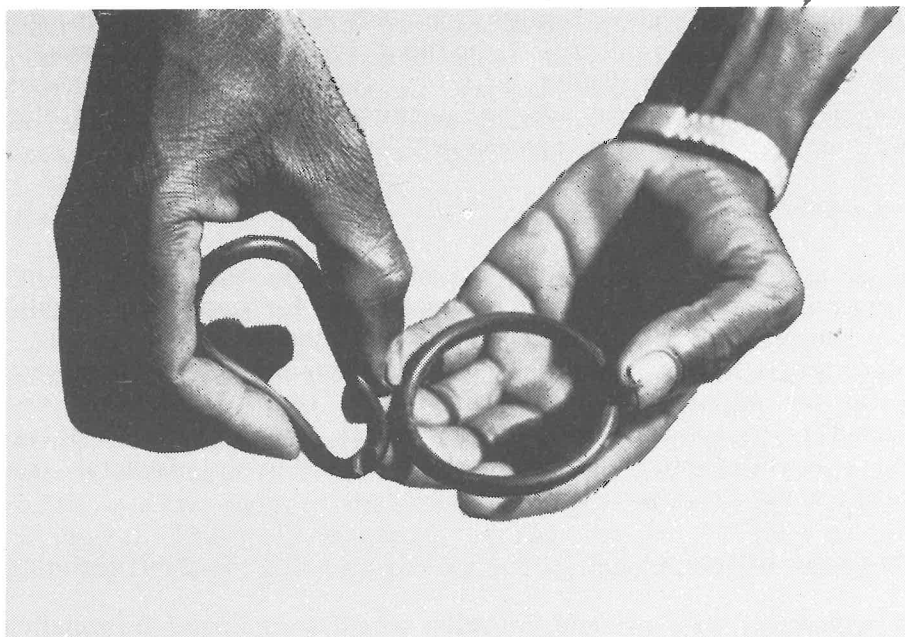
Under the standing agreement with the Pan-American Centre for Sanitary Engineering and Environmental Science (CEPIS) in Lima, Peru, the fourth IRC title has been translated into Spanish, printed and distributed in Latin America. It is called "Participation and education in community water supply and sanitation programmes: a literature review". At the end of the year, translation of a further three IRC titles was nearing completion at CEPIS.

New title

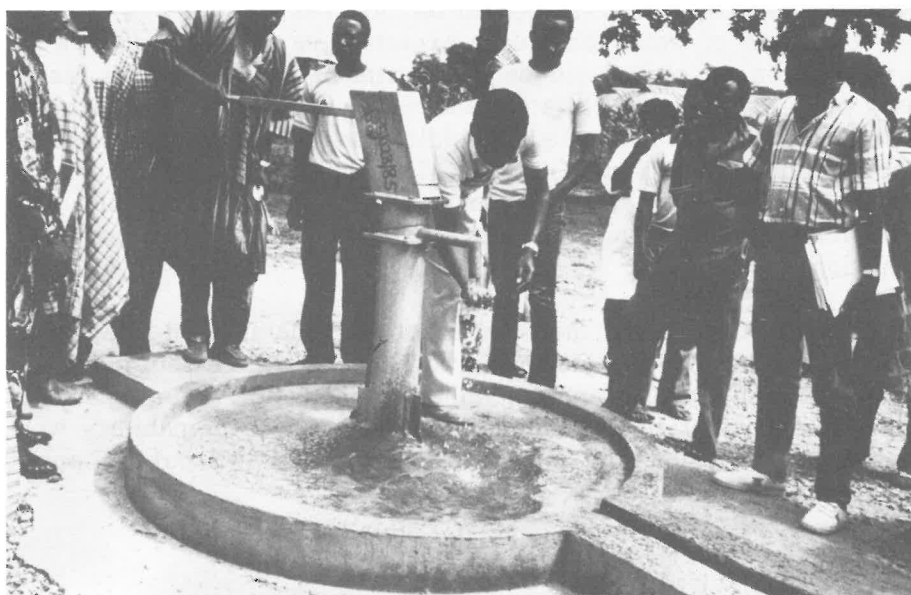
A new title to the Occasional Paper Series is: "Co-operation between communities and agencies". This publication is a follow-up to the IRC anniversary symposium in 1984 on the same subject. It provides a framework for project planning, and gives examples from cases and projects to illustrate the key recommendations and conclusions of the symposium.

Hand pumps

Publication of the new manual on hand pumps in the Technical Paper Series, the joint venture with Canadian International Development Research Centre, has been postponed. In consultation with IDRC and the project staff of the UNDP/World Bank Hand Pump Testing project, it was decided to revise the earlier draft. Apart from



Step 15 from the users manual for the Volanta hand pump.



Boreholes, pumps, and platforms for drainage, as well as community involvement in operation and maintenance are important aspects of hand pump programmes.

incorporating the latest results from the UNDP/WB project, the external review also identified the need for additional information both on well construction and on community-based financial management. After final editing, printing and distribution of this joint publication has been re-scheduled for late 1987.

Renewable energy sources

At the end of the year, final editing, artwork, and layout of the manuscript entitled "Renewable energy sources for rural water supply" was completed. This comprehensive state-of-the-art on wind energy, solar energy, hydropower and biogas for water pumping will be very useful for policy makers and engineering staff. The project was funded by the Netherlands Ministry of Housing, Physical Planning, and Environment, the Netherlands Directorate General for Development Co-operation, and IRC.

Slow sand filtration

A manuscript on slow sand filtration which consolidates information generated in the local demonstration schemes on slow sand filtration (see Chapter 2), was nearing completion at the end of the year with final artwork and editing was being done. Publication in the Technical Paper Series had to be re-scheduled for mid 1987.

A number of water technology experts have commenced work for a publication on various simple pre-treatment methods which can be used prior to slow sand filtration and which reduce the high turbidity levels of surface waters. High turbidity can be a drawback to wider application of slow sand filtration. This publication which aims to consolidate the latest information on these methods, will also give guidelines for selecting the best available option in a particular situation.

In a similar way, the new information generated in the Public Standpost Water Supplies demonstration project will be consolidated in a revised manual for planning, implementing, and sustaining manual piped supplies for small communities. In 1986, the preparatory work was done for review and integration of earlier PSWS publications in the Technical Paper Series.

Case studies in human resource development

External review and final editing of the five case studies on human resources development in water supply and sanitation resulted in a

camera-ready copy in 1986, for publication in 1987. Case studies on human resources development have been included from the Philippines, Sri Lanka, Thailand, Togo and Zaire. The Development Directorate of the Commission for European Communities provided funds for this document and its planned use in training.

Case study Nepal

There is very little published information on experimental rural water supply programmes where community involvement has played an important role. One such project is the Community Water Supply and Sanitation Programme in Pokhara, Nepal. The Ministry of Panchayat and Local Development with support of UNICEF and the Swiss Appropriate Technology Agency SATA runs this programme in the Western Development Region. In 1986, UNICEF Nepal contracted IRC to do a two-month field study in order to prepare a write-up of the project. The work is due to be finalized in 1987 and in the meantime funds are being sought for publication of this case study.

6. KNOWLEDGE BASE DEVELOPMENT

IRC's knowledge base in 1986 was enriched with documented information and experience originating from the activities described in the previous chapters. At the same time knowledge from documented sources and field experience has contributed to various outputs under the transfer mechanisms: development and demonstration, evaluation and advice, training and education, and publications. Subject areas on which knowledge base development was concentrated in 1986, were primarily concerned with key software issues and their integration with technology issues. IRC's knowledge base has been firmly established on community participation, effective involvement of women in projects, maintenance system development for rural water supply, project evaluation, hand pump selection, community-based financial management, hygiene education, artificial groundwater recharge and appropriate technology. This consolidation of information and experience has strengthened IRC's capacity to give support to a wide variety of projects.

Maintenance systems development

Although the problem of maintenance in rural water supply has been stressed by international donor agencies in 1986, follow-up action has not so far been effective. Most national governments do not yet consider maintenance to be a priority. Project planning often neglects maintenance requirements. Work on IRC's maintenance study, co-funded by the Netherlands Government, continued in 1986. Results have been used in the IRC inputs to the formulation mission for the third phase on the Water Resources Assessment and Development Project in Sudan (see Chapter 3).

At the 13th Ministers' Conference of the Comité Inter Africaines d'Etudes Hydrauliques (CIEH) in Brazaville, the IRC presentation on maintenance was received with great interest. CIEH confirmed its willingness to co-operate with IRC and with interested bilateral donors in the development of maintenance systems through demonstration projects in several selected countries in the West African region. Various countries and bilateral aid agencies have expressed interest in participating.

In November the final draft of a maintenance system publication was submitted to the funder. This paper will be published in the Occasional Paper Series.

Community participation

Ongoing work on community participation has strengthened the information base on this subject, and has resulted in new assignments both in an advisory capacity and publication of information. Norconsult, UNICEF, WHO and the Netherlands Directorate General for Development Co-operation, were among the agencies making use of IRC community participation expertise. The countries involved were Tanzania, Nepal and Burkina Faso. Local organization, community management and maintenance components were used in advice work for women's projects in North Yemen, supported by the Netherlands Government.

At the request of a number of external support agencies, development of training and briefing packages for consultants on community participation received top priority (see Chapter 3).

Women and water

IRC's expertise on women and water was used in two meetings in 1986. Early in the year, IRC staff assisted in the COCODEV meeting of the International Water Supply Association (IWSA) on women's involvement in the water sector. In July, a member of the IRC staff acted as facilitator at the meeting of the Development Assistance Committee of the Organization for Economic Co-operation and Development (DAC/OECD), in Paris to discuss community participation and women's involvement. An increasing number of requests reached IRC for advice on women-related aspects of drinking water supply and sanitation.

Community-based financial management

Cost recovery and generation of revenue have gained increasing significance within water supply and sanitation programmes in 1986. At various external support/co-ordination meetings during the year this issue was stressed. Local funds remain scarce and the ability of users to pay for the services is limited. Improvement of both internal and external financing mechanisms is required to maximize available resources.

Extensive effort has been made to develop IRC's data base on this subject. The draft manuscript setting out practical options for revenue generation for piped supplies was sent for external review. Its publication in the Occasional Paper Series is due in 1987. The companion literature review and glossary of terms was also nearing

completion at the end of the year. An article on revenue generation which was prepared by IRC staff appeared in the Rural Water Supply Issue of "World Water".

Hand pumps

Monitoring of new developments in hand pump selection, manufacture and maintenance continued in 1986. This was done in connection with the work on the forthcoming publication on this subject (see Chapter 5). Information was exchanged with a range of donor agencies, implementing agencies and manufacturers. IRC participated in the review meeting of the UNDP/World Bank Rural Water Supply Hand Pump Project in Ivory Coast, in October.

IRC knowledge base also contributed to the discussion within the Netherlands Directorate General for Development Co-operation on hand pumps. IRC reviewed a project proposal from a consultant on the development of selection criteria and the improvement of pumps used in Netherlands-assisted water supply projects. The Swedish Institute of Technology commissioned IRC support for a study on cup seals used in hand pumps. This study was needed in the hand pump testing project sponsored by the Swedish International Development Agency (SIDA) in co-operation with the World Bank.

Evaluation

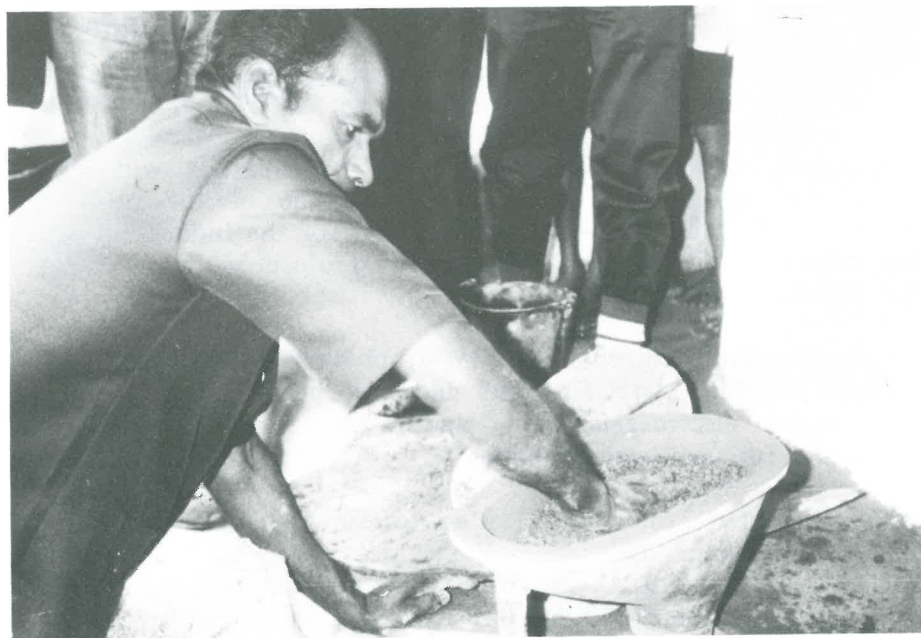
Various evaluation and advice missions in which IRC expertise has assisted project development of multilateral, and bilateral aid agencies have already been described in Chapter 3. These activities have also helped to improve evaluation skills of national project staff in several developing countries. In this, IRC built on the results of an approach applied earlier of self-evaluation in the public standpost water supply project and work on the evaluation modules for UNICEF country programmes. In 1986, preparatory work began on publication of evaluation procedures and processes.

Sanitation

The knowledge base on sanitation was selectively strengthened, basically in relation to the sanitation handbook which was produced in 1986 for internal review. Discussion has started on what IRC can usefully do in this important area, without duplicating the efforts of other agencies. At the end of the year, a French firm commissioned IRC to undertake literature searches on community blocks and on-site sanitation in developing countries. This is to prepare the way for a



Maintenance systems development should be a key issue in project planning.



A local artisan in Sri Lanka at work in latrine production.

new French initiative in this area. IRC also participated in an expert meeting on waste stabilization ponds, organized in France by WHO's Regional Office for Europe.

Artificial groundwater recharge

The literature search and knowledge synthesis report on the potential application of artificial recharge of groundwater for water supply to medium-sized communities was submitted in May to the funder, the Netherlands Ministry of Housing, Physical Planning and Environmental. Experts from the Netherlands Institute for Water Testing (KIWA), the Netherlands Water Undertakings (VEWIN) and Delft University of Technology reviewed the document. In December the KIWA Infiltration Committee Meeting reviewed the final draft and discussed possible options for follow-up involvement of the Dutch water industry on this subject. The document will be published in 1987.

Contacts have been established with agencies interested in using artificial recharge in pilot schemes. IRC also prepared a paper on the subject which was used in the World Water 1986 Conference held in London.

Disinfection

IRC promotion work on the local manufacture of disinfectants for safe drinking water supply was consolidated in 1986. Indonesia and Thailand received IRC information support. In Indonesia, the Bandung Waterworks helps surrounding communities with mini-purification plants, for which use was made of the previously developed IRC Standard Purification plants for the Indonesian Water Programme. Other drinking water quality projects in Indonesia were also provided with support.

Two project documents emerging from work of consultants under contract to IRC were finalized and distributed. One concerned hypochlorite electro-generation, and other electrolic disinfectant production for small water supplies.

In October, IRC contributed to an expert meeting working on a disinfection manual. This was in France organized by WHO's Regional Office for Europe. IRC also participated in the working group of Dutch specialists on endemic fluorosis in developing countries.

Hygiene Education

Under the sponsorship of the Netherlands Directorate General for Development Co-operation, IRC has prepared an outline for a literature review and annotated bibliography on hygiene education based on a review of materials available at IRC. The advisory group of five specialists from various organizations to the Directorate held its first meeting in March. During the year, a mail survey was conducted, commissioned by WHO, about hygiene education materials for use in primary schools. This resulted in a continuous flow of materials from the field; and was still in progress at the end of the year.



Water committee members at a water point in Malawi.

7. INFORMATION EXCHANGE

During 1986, IRC's central position in information exchange for improved community water supply and sanitation was further strengthened. As follow up on the earlier programme on exchange and transfer of information, IRC assisted in Indonesia, Sri Lanka and Thailand. The Canadian International Development Research Centre (IDRC) has expressed interest in funding these national activities as part of its effort to support specialized documentation centres, libraries and data bases for developing countries.

IDRC also assisted with the preparation of such information tools as the Interwater Thesaurus, to be available in three languages, and which was nearing completion at the end of the year. IRC published the updated, second edition Interwater Directory of Sources of Information and Documentation on Community Water Supply and Sanitation. During the year, IRC decided to install new hardware and software programmes for its documentation and address holdings. The IDRC-supported MINISIS software package was chosen, thus securing compatibility with key collaborating agencies.

IRC was invited to present their views on future information exchange to the 14th Interagency Steering Committee for Co-operation Action for the International Drinking Water Supply and Sanitation Decade. IRC was represented by the Chairman of the Governing Board and Director. The Steering Committee meeting in Geneva in September acknowledged the valuable contribution of IRC to information exchange and training material for the Decade. It also endorsed its members' continued co-operation with and support for the centre's activities.

In the framework of the UNDP Inter-regional Project INT/86-002/A/-1/4 "Support to Decade Implementation and Co-ordination", WHO contracted IRC to establish a standard library of key publications and documents, and a list of commonly used Decade expressions in order to assist various levels of target groups.

IRC contributed to the International Training Network for Water and Waste Management by co-organizing a regional training workshop in Indonesia. This was done under an agreement with the World Bank. Other inputs on which work has progressed include publication of supplements with "News from the ITN Network" in the IRC newsletter, and the design and preparation of a slide-sound module on the use and role of information.

During the year, various IRC inputs have assisted the European "Solidarite Eau" initiative to link water projects in the developing world with local funding and awareness-raising activities in local communities in Western Europe. On behalf of the Commission of

European Communities, IRC finalized a feasibility study for establishing a European water network. At the request of the Netherlands Ministry of Housing, Physical Planning and Environment, IRC developed a proposal for the establishment of a Dutch water network. IRC also participated in the follow-up discussions with key agencies involved in the start of a pilot phase.

Documentation

During 1986 nearly 750 documents were added to documentation holding aspects of water supply and sanitation of the information base. At the end of the year the total number of entries in the IRC data base was 3400. The number of visitors increased in 1986, so did the number of requests for information for which computer searches in IRC and external data bases were required.

Five new titles were added to the publication list (see Chapter 5). Although no major title appeared in the Technical paper series nearly 3400 copies of publications were sold and distributed, the same number as in 1985. Five newsletters in English and five in French reached 4700 readers.

A growing number of clients are beginning to realize that information products and services have monetary value. During the year a number of extensive literature searches were undertaken at cost for consultancy agencies. This subsidized the request handling for developing country agencies. Similarly, the price paid by clients in the industrialized world subsidized free of charge distribution to the developing world. During 1986 negotiations were started with a number of distribution agents for IRC publications in selected countries.

In its regular information exchange work, IRC had intensive contacts with some 40 international and regional agencies and some 30 bilateral donors and non-governmental agencies. In developing countries, the various information exchange mechanisms were extensively used. More than 300 clients were reached by handling requests and providing other external information services. During 1986, 500 clients in 69 countries ordered 3400 copies of IRC publications. Nearly 300 of these clients were agencies from developing countries (see Chapter 8).

National activities

In 1986 IRC continued to assist in the establishment of national information exchange activities. In three countries: Indonesia, Sri

Lanka and Thailand, where earlier work done in the programme on exchange and transfer of information had reached the most advanced stage. In the first three countries, the Canadian IDRC expressed serious interest in funding viable information activities.

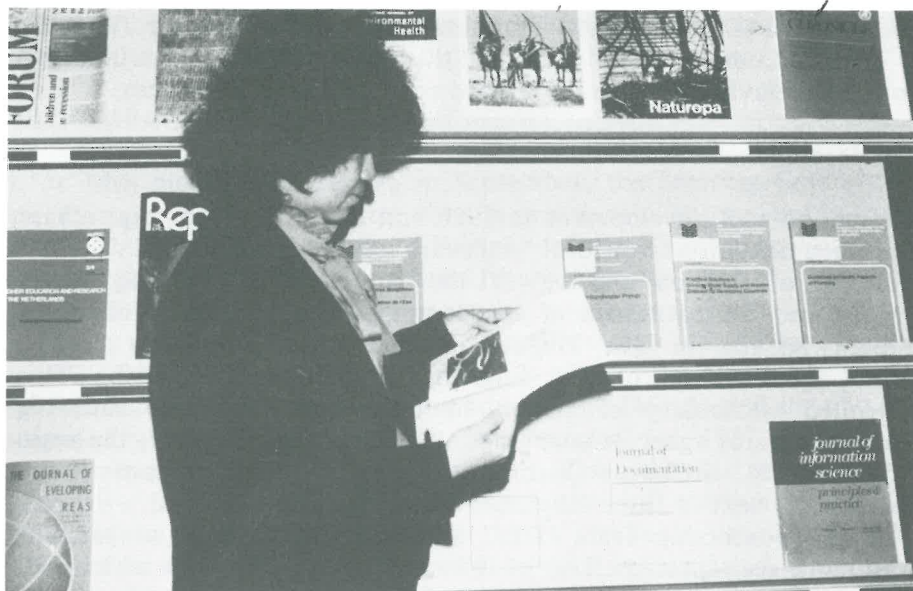
In **Indonesia** discussions on the consultancy done in 1985 resulted in a request from Cipta Karya to IDRC to start a pilot project with a national information system for water supply and sanitation in co-operation with relevant ministries and agencies in Indonesia. This was followed by an identification and project formulation mission of IDRC staff to Indonesia in September 1986. At the end of the year, a proposal was submitted formally to IDRC.

In **Sri Lanka**, negotiations between the National Water Supply and Drainage Board and IDRC-New Delhi resulted in a proposal to establish a Water Supply and Sanitation Documentation (WASSDOC) Unit at the NWSDB Library. This unit will serve information needs at a national level for all agencies concerned, including non-governmental organizations directly involved in rural community water supply and sanitation. IRC also funded the translation by the National Water Supply and Drainage Board of key publications into Singalese. This concerned IRC publications on hygiene education and groundwater, a selection from the "Water for the World" material produced for US AID, as well as some relevant local literature earlier published in English.

In **Thailand**, the training and information centre of the Provincial Waterworks Authority (PWA) working with various agencies has been successful in creating a national water information unit at PWA. IDRC showed interest to fund the Thai proposal for detailed assessment of information needs in community water supply and sanitation in Thailand. Late in the year, the training skills for supervisors manual (see Chapter 4) was being translated into Thai for use in the PWA training programme. The Asian Institute of Technology (AIT) is also involved in this translation programme.

Under a co-financing arrangement between the UNDP Water Supply and Sanitation Project (RAS/81.0001), the Mahidol University started compiling a bibliography of relevant literature on rural water supply and sanitation in Thailand. AIT who is also participating on this project, will publish this document in English, and Mahidol University will publish it in Thai.

In **Malaysia**, the University of Peranian Malaysia (UPM) started a new information pilot project "Focalized Network Information" in Kuala Lumpur aiming to serve the Western Pacific region. This agricultural university works closely with the Regional Centre for the



Information exchange takes place in documentation units as well as in communities.



Promotion of Environmental Planning and Applied Science (PÉPAS) in Kuala Lumpur. IRC assisted this new information unit by supplying relevant documents in hard copy and on microfiches.

Tool development

Information tool development in 1986 and IRC's decision to purchase the documentation retrieval software programme MINISIS will improve information sharing in the future. Two working group sessions and the assistance of the computer staff at the Ministry of Foreign Affairs in The Hague, resulted in a completely revised multi-lingual thesaurus in English, French and Spanish. This controlled vocabulary of structured terms has facilitated indexing work by various agencies concerned. At the end of the year, the main body of the thesaurus had been put into the computer; the introductory text in three languages was being computerized.

With Sponsorship from IDRC and with the help of a specialist consultant, six representatives of information agencies with which IRC has a long working relationship contributed to this effort. The Pan-American Centre for Sanitary Engineering and Environmental Science (CEPIS) in Peru, and the Association Francaise pour l'Etude des Eaux (AFEE), have provided translations in Spanish and French respectively. Together with specialists from the Environmental Sanitation Information Centre (ENSIC) Bangkok, the Comité Inter Africain d'Etudes Hydraulique (CIEH) from Burkina Faso, and the Water Research Centre from the UK, these agencies also contributed to the content of the new thesaurus. CEPIS, CIEH and ENSIC can communicate with the MINISIS software, to which IRC is also moving.

During their last meeting, this group of information specialists also stressed the need for training in the handling of information. The group developed a proposal for the development of information training manuals, which IRC submitted to IDRC at the end of the year for consideration for funding. IDRC developed the MINISIS software programme and the Canadians are interested in supporting exchange activities in water supply and sanitation.

The consultant working on the thesaurus also started revising the glossary of terms prepared earlier. This will be based completely on the new thesaurus. CEPIS has already agreed to translate the glossary into Spanish in a co-publication, and for the French translation a similar solution is to be found.

At the end of the year, IRC published and distributed the second revised and updated edition of "Interwater directory of sources of information and documentation on community water supply and

sanitation". A questionnaire concerning future updates was also mailed to the 270 agencies listed in the directory.

INFO-IMPACT

In its 14th meeting in Geneva in September, the Steering Committee for Co-operative Action for the International Water Supply and Sanitation Decade invited the Chairman of the Governing Board to present IRC's views on what future actions might improve information exchange. The presentation and papers from IRC were positively received. The key agencies involved also reacted favourably to IRC's follow-up proposal to initiate a plan of action for improved information exchange for the remainder of the Decade and beyond. A proposed working group meeting is scheduled for 1987 at IRC to review constraints and opportunities. This should result in a responsive plan of action directed at better information exchange. This meeting will be preceded by a technical workshop for information specialists, preparations for which were started at the end of the year.

Decade Information Exchange

The 14th Steering Committee also discussed two other information tools which were produced by IRC. These were the first drafts of a standard library of key publications and documents for policy level and technical staff, and a first draft of a list of commonly used expressions related to Decade work. These activities were part of the standardization and co-ordination efforts, which are taking place in the framework of the UNDP Inter-regional Project INT/86/002/A/-1/14 "Support to Decade Implementation and Co-ordination". WHO, as executing agency, contracted IRC for both these tasks. At the end of the year, comments and suggestions from various Steering Committee members were coming in, and these would be used for improvement and finalization of these information tools early 1987.

Also at the request of WHO and in the framework of the previously mentioned UNDP interregional project, IRC drafted a proposal to develop community participation and hygiene education, and to stimulate co-ordination of these components in projects financed by external support agencies.

World Bank Training Network

In April 1986, as a follow-up to the Netherlands Government funded programme on exchange and transfer of information, the World Bank contracted IRC to contribute to the International Training Network for Water and Waste Management (ITN). This included supplements in three IRC newsletters, design and preparation of a training module on information use and the organization of a regional workshop.

IRC helped to co-organize this regional training workshop at the Institute for Technology, Bandung, Indonesia, in October. It collaborated closely with ITB, the International Institute for Hydraulic and Environmental Engineering (IHE), and World Bank staff. There were 21 participants in this workshop and slide sound modules developed in the ITN project were used.

IRC is preparing a training module on the value and use of information in this ITN series and a consultant was assisting with the final production at the end of the year.

In December, the first ITN-News supplement was received with information on the training network. This was included in the last IRC newsletter of 1986.

European water network

The development of "Solidarité Eau" initiative of the European Ministers of Environmental linking the initiatives of local authorities and groups in Western Europe with water projects at community level in developing countries, has taken longer than anticipated. In the Netherlands, the Water Network had taking shape by the end of the year.

IRC submitted feasibility studies for the European as well as the Dutch water network. At the European level, the European Commission had a proposal prepared by a French consultant for activities in the Solidarité Eau European Committee which included an IRC component. This committee met in Brussels in December to discuss further action based on a proposal submitted to the Commission of European Communities. Financing of the European water network was still unclear, pending the budget discussions of the European Commission. In the Netherlands, IRC's proposal to the Netherlands Ministry of Housing, Physical Planning and Environment to start the Dutch water network with a pilot phase resulted in follow-up actions by the Ministry. Agencies consulted previously were invited to discuss the organizational structure and possible division of tasks. At the request of the Ministry, IRC prepared a final proposal, which was accepted in September by the key agencies concerned.

After various rounds of consultations, it was decided to test the viability of a Dutch water network, with emphasis on awareness raising in Dutch local communities linked with the funding of community water projects in developing countries. In a nine-month pilot phase, starting in 1987, a small preliminary water-network project information base will be established at one of the non-governmental organizations involved. A small steering committee will co-ordinate and guide this activity and its future potential will be evaluated after nine months. The Ministry and the Netherlands Directorate General for Development Co-operation have guaranteed funding after this pilot phase.

Agencies represented in the steering committee include the association of municipalities (VNG), water utilities (VEWIN), NGO's and the national agency for public awareness of development co-operation in the Netherlands (NCO).

Information services

The improvements in internal and external computer searching facilities which were made in 1986 meant more effective service to IRC staff and better handling of information requests from outside. In total 46 searches were made in external data bases of which five were done at cost of consultancy firms in Europe. Of the more than 300 requests for information handled in 1986, roughly a quarter originated from developing countries. Consultancy firms with 44 requests were top of the list of documentation service users, followed by university students. The remainder of the requests were made equally by agencies, external support agencies, UN agencies and non-governmental organizations.

In total 736 publications and documents were added to the collection and in six current awareness bulletins were produced together with five accession lists for internal use. Extensive support was provided to the introduction programme for Dutch volunteers preparing for their work in the field (see Chapter 4). Extensive work was also done in collaboration with a water supply engineer who was making a ten-week overview study at IRC on piped water supplies in Southern African countries (see Chapter 2).

At the end of the year two information specialists who were graduates of the Library Academy joined IRC on contracts of one year and 18 months.

IRC's differential charging policy for information services was working well, with charges for products and service delivery which better suite the needs of various market segments.

Newsletter

With the assistance of a part-time editor, five issues of the IRC newsletter in English and French were produced and distributed in 1986, and the sixth was at the printer by the end of the year. An increasing number of agencies have requested bulk deliveries for their internal distribution. As a result the total print run for the English newsletters was increased to 5000. Feedback from readers through the change of address slip at the back of the envelope was good, and resulted in some 500 changes in the computer address system.

At the end of the year the first supplement with news from the International Training Network for Water and Waste Management of the World Bank was processed to be included in the first newsletter mailing in 1987.

Publication management

During 1986 five new titles were added to the publication list bringing the total to 35. These include a co-publication in French, a Spanish translation, a new title in the Occasional Paper Series, and a directory (see chapter 5). In the first quarter the caretakers manual for slow sand filtration was published in the new training series. A reprint of 500 copies was made of IRC's highly successful title "Small community water supplies in developing countries". The Wiley hard copy edition of this book sold 426 copies in 1986, for which IRC received royalties.

Although no new titles appeared in the Technical Paper Series and although two publications were out of print for almost the entire year, total distribution could be kept at the same level as 1985. Agencies and individuals in developing countries who ordered a total of 800 copies; and almost half of the 1986 distribution went to 34 agencies ordering in bulk for distribution to their field officers. The largest bulk orders were from the Peace Corps and WHO in Geneva. The various appropriate technology groups, such as Intermediate Technology Publications, TOOL, SKAT, GATE and GRET who offer book by post services to developing countries sold some 700 copies of IRC publications. The value of total sales in 1986 increased to Fl. 57 000.

All the IRC publications were put on microfiche in 1986, including earlier publications no longer available in hard copy. This additional service will be useful for information and documentation centres with a microfiche reader.

Various IRC titles were also added to the Appropriate Technology Sourcebook, a library on microfiche, for developing countries. This is organized by the Volunteer in the Asia Technology project.

During the year various international book fairs were visited to promote IRC publications and to negotiate promotion and distribution contracts with various agents. At the end of the year contracts were in hand with agents in Canada, in France, (also for francophone Africa) and in Singapore.

8. EXTERNAL RELATIONS

IRCs key role in information exchange received recognition from the 14th Interagency Steering Committee for Co-operative action for the International Drinking Water Supply and Sanitation Decade (IDWSSD) in Geneva in September 1986.

IRC also participated in various External Support Consultations organized by WHO and the German Agency for Technical Co-operation (GTZ), in which external support agencies and recipient countries discussed progress, constraints and priority issues related to the remainder of the Decade. It concerned the Regional Consultation for the Americas in Washington in April and the Sub-Regional Consultative Meeting for Central America and Panama in Guatemala in October. The Director also attended the World Health Assembly at WHO, which reviewed and discussed the progress made during the first half of the Decade and the third consultation on the Decade in Europe, in Turkey in April.

IRC staff members were invited to contribute to international meetings on a variety of subjects including:

- the Asian mid-Decade Regional Conference in Calcutta organized by the Water Engineering for Developing Countries Group (WEDC) of Loughborough University, UK; where the paper entitled "Peoples Water and Sanitation Decade" was presented;
- the 13th Ministers' Conference of the Comité Inter Africaines d'Etudes Hydrauliques (CIEH) in Brazaville in February; where the paper entitled "Maintenance of Rural Water Supply Systems, the need for a systematical approach" was presented;
- the second international conference on the application of micro-computers in Information, Documentation and Libraries in the Federal Republic of Germany in March; where a paper entitled "The Application of Micro Polydoc at IRC" was presented;
- the WHO Consultation on Technology in Geneva in April;
- the workshop "Strengthening Water Quality Monitoring Programmes, in Thailand, in April;
- the UNICEF Water and Sanitation Workshop in Nairobi, in May;
- the World Water 1986 Conference in London in July;
- the International Water Supply Association Seminar on Famine and Drought in London in July;
- the Advisory Panel Meeting of the WB/UNDP Hand Pump Testing Project in Abidjan in October;
- the IULA Seminar "Managing Local Water Supplies, North-South Co-operation" in the Netherlands, in October, where a paper entitled "Towards Sustainable Community Water Supply Systems: Opportunities for local project support" was presented;

- the WHO Consultation on the Disinfection Manual for Rural Water Supply in France in October;
- the WHO Consultation on Waste Stabilization Ponds in France in October;
- the WHO Regional Workshop on Planning and Information Systems for Rural Water Supply and Sanitation, organized by PEPAS, Kuala Lumpur, in October 1986;
- the Instructor Workshop on Low-Cost Water Supply and Sanitation of the International Training Network for Water and Waste Management, organized by The World Bank, IHE, IRC and ITB, in Bandung, in October 1986;
- the WHO/Danida Regional Workshop on Management Information for Water Supply and Sanitation in Malawi in November;
- the UNICEF/WHO Programme Review Meeting in Geneva in December.

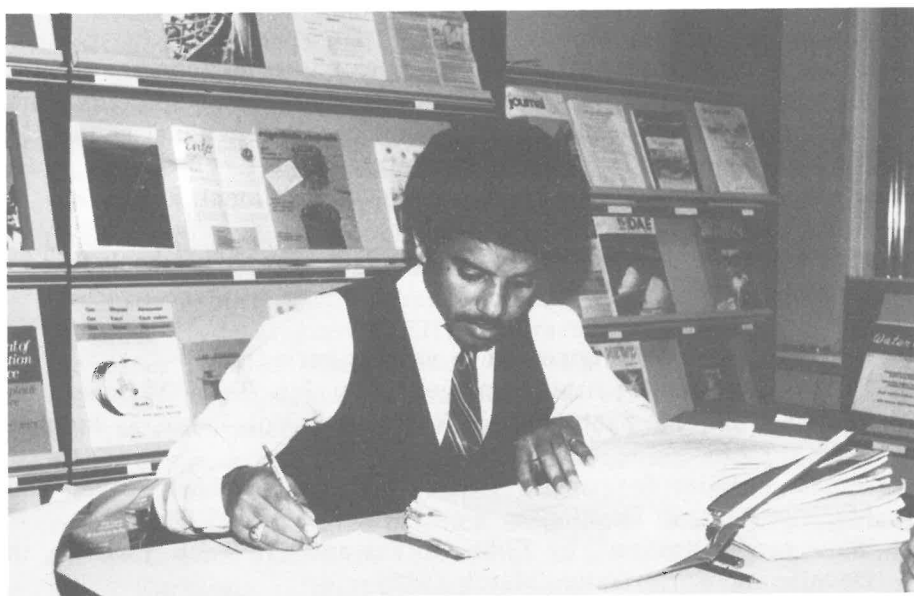
Activities of a more general public relations nature included:

- . introductory programmes at IRC for four groups of students from developing country students at the various international courses in the Netherlands (128 students in total);
- . a display at the four-day Aquatech International Exhibition in Amsterdam in September;
- . visit to London book fair in April and the Frankfurt book fair in October.

During 1986, 13 articles appeared in various periodicals:

- . "IRC's slow sand filtration project", by Jan Teun Visscher, R. Paramasivam, M. Santacruz, in *Waterlines*, Vol 4. no. 3, January 1986;
- . "Piped supplies for small communities", by Michael Seager and Marieke Boot, in *Developing World Water*, March 1986;
- . "Slow sand filtration", by Ebbo Hofkes and Jan Teun Visscher, in *Developing World Water*, March 1986;
- . "Small steps ahead in partnership with the people", by Hans van Damme, Toon van Dam, Dick de Jong, in *Developing World Water*, March 1986;
- . "Drinking water at least cost", by Dick de Jong and Ebbo Hofkes, in *The Courier* (European Commission);
- . "Helping women to help themselves", by Christine van Wijk-Sijbesma, in *Waterlines*, Vol. 4. no. 4, April 1986;
- . Three more articles by Christine van Wijk-Sijbesma on the role of women in the Dutch periodical *Vice Versa*, *Foster Parents*, and the *Provinciale Zeeuwsche Courant*;

- "Planning water and sanitation systems in drought-prime areas" by J.M.G. van Damme, in Water Supply, Volume 5 no.1, 1987;
- "How users can contribute to rural schemes", IRC, in World Water, October 1986;
- "Drinkwater tarieven in Ontwikkelingslanden", by Henk Tjen-A-Kwoei, in Eau Courant, no. 3, October 1986;
- "Lessons from the local decade", by Dick de Jong, in VITA-news, October 1986;
- "Slow sand filtration back into business", by Jan Teun Visscher and Gerardo Galvis, in AWWA Journal, December 1986.
- "Application of artificial groundwater recharge for rural water supply, by Ebbo Hofkes, Jan Teun Visscher and Toon van Dam, in World Water'86, 1987.



A visitor studying information material in the IRC documentation unit.

9. MANAGEMENT AND ORGANIZATION

Status

In 1981, coinciding with the beginning of the Decade, IRC became an independent non-profit making organization. This allowed for impartial and effective expenditure on projects. The international character of IRC is reflected not only in its mandate, staff and working relationships, but particularly in its Governing Board. This comprises representatives of international agencies, WHO, the World Bank, UNDP and UNICEF and of the two sponsoring Netherlands ministries, the Ministry of Housing, Physical Planning and Environment, and the Ministry of Foreign Affairs (Development Co-operation). The members of the Governing Board are listed in Appendix 1.

IRC acts as Collaborating Centre for Community Water Supply and Sanitation for WHO.

Governing Board

The international Governing Board met twice in 1986, in April and September. The April meeting reviewed the annual programme and discussed the focus of IRC work in the second part of the Decade. This meeting also discussed the Chairman's presentation on information exchange in response to the invitation of the Geneva Steering Committee. At the September meeting the discussion which had taken place in the Steering Committee and the outline for follow up action were reviewed. The Indicative Medium-Term Plan 1987-1989 and the annual plan and budget for 1987 were also considered.

During the year the Governing Board said farewell to three members. Appreciation was expressed for their valuable support and advice over the years. They were Dr. Peter Lowes (UNDP) and Odyer Sperandio, who both retired after long international service. In June the Dutch member Mr. L.P.J. Mazairac left the Board when he became the Netherlands' ambassador to Nigeria.

Management Team

The Management Team consists of Mr. J.M.G. van Damme, Director, Mr. J.T. Visscher, Programme Officer for Programme Co-ordination and Content, Mr. A. van Dam, Programme Officer for Information, and Mr. M.K. Peterse, Administrator. The management team concentrated on improvement of the planning and monitoring system, the co-ordination of and between projects, and staffing issues.

Attention was also given to focussing of emphasis and direction on multi-disciplinary and innovative work, based on needs and demands of various external support agencies as well as water supply agencies in developing countries.

The Management Team made decisions about 11 new projects for which staff time and money were allocated for which the annual plan is adapted on a quarterly basis. Discussions in the Management Team contributed to adapting the structure to IRC's strategy (see Appendix 3).

The Team agreed to the commercial marketing of IRC publications. A staff training plan was also begun. At the end of the year and after clearance by the Governing Board, the Management Team decided to order Hewlett Packard computer with software for office applications, documentation and address-system (MINISIS) to be installed in 1987.

Budget

IRC operates with a core budget from the Netherlands Government supplemented with extra budgetary resources from various sources for specific programme activities. The generation of these extra budgetary resources, knowledge base development and documentation acquisition, as well as general management are defrayed from the core budget.

The core budget in 1986 increased to approximately US\$ 900 000 (Dfl. 1.9 million) and the additional programme budget was approximately US\$ 700 000 (Dfl. 1.4 million). The proportion of international financing compared to Dutch financing increased to about 35% of project funding.

Personnel

There were several staff changes in 1986. Two professional posts became vacant for which late in the year an advertisement was placed in various periodicals. Selection is to take place early 1987. Three project research officers were given new contracts, five administrative posts changed hands and a new financial officer joined IRC. At the end the year total staff numbered 30. The full list of staff members including changes is given in Appendix 2. One staff member Mr. T. Kien Tjiok deserves special mention. He retired from IRC after 15 years of dedicated service. Mr. Tjiok has been nominated as an Advisor to IRC.

In 1986, job descriptions were completed and more emphasis was placed on educational opportunities for staff members. Various

courses on the use of computers were followed by most of the project assistants and support staff. A set of social activities was drawn up to strengthen the team spirit of IRC.

Automation

Automation specialists for the Netherlands Ministry of Housing, Physical Planning and Environment completed their assessment of IRC's needs for the foreseeable future. A blue print was presented on the basis of which new HP3000 equipment was ordered with additional MINISIS software, principally to improve computerization of documentation and address holdings. Additional software has been ordered for word processing. This second phase in the aspects of the centre's administration, introduction of automation effort will increase efficiency on the one hand and will eventually lead to additional project activities on the other.



Women involvement in all project phases is essential for effective water supply and sanitation programmes.

10. PROGRAMME PLAN 1987

As a follow-up to the request of the IDWSSD Steering Committee, two international meetings about the improvement of information exchange for the remainder of the Decade will take place at IRC in 1987. The first meeting concerns a technical workshop of experts on information and documentation for water supply and sanitation. This group will prepare the groundwork for a plan of action for information exchange, which is to be considered at a working group meeting of representatives from interested developing countries, UN agencies, bilateral donors and information institutions in September. The plan is for a two-pronged approach, addressing actions to be implemented at global level and at field level in a few selected countries. Issues to be covered include market analysis, product development and delivery, awareness and promotion of the benefits of information, compatibility and tool development, automation, and skills development of information staff.

The publication projects, information networks and knowledge base development will be continued at the same level as in 1986. Three titles will be added to the Technical Paper Series; Renewable Energy Sources for Rural Water Supply; Slow Sand Filtration for Community Water Supply; and Hand Pumps. Spanish titles will also be published by CEPIS, such as the ones on Evaluation for Village Water Supply Planning and Community Participation in Water Supply and Sanitation.

Knowledge base development will concentrate primarily on maintenance systems development, evaluation, community-based financial management and sanitation. A desk research and mail survey on water seal latrines is planned. Special attention will be given to the finalization of the literature review and to a selected and annotated bibliography on hygiene education. The information search on school hygiene education will also be completed.

In the development and demonstration projects, the planned follow-up of the Public Standpost Water Supplies Project by the Piped Supplies for Small Communities Project will concentrate on Malawi and Zambia. Further general support will be given to Indonesia and be linked to slow sand filtration application and information support in the country. Discussions on further developments in Sri Lanka are underway. With expected funding from the Netherlands this two-year project is scheduled to start mid-1987. In the fourth phase of the slow sand filtration demonstration project 1987, emphasis will continue to be on promoting application of this technology on a larger scale on

training local staff. Dissemination of SSF will also be helped by publication of the condensed field experience of the last years in the Technical Paper Series. Another issue to be tackled in 1987 is simple pre-treatment methods. A proposal has been prepared by UNIVALLE (Colombia) in collaboration with IRC for the comparative testing at field level in Colombia of various simple pre-treatment methods which can be combined with slow sand filtration.

In the advice and evaluation projects IRC assists the UNICEF-supported water and sanitation programme in Kampuchea to establish a baseline survey in selected communities, and for drafting a plan for the implementation of latrine and hygiene component. IRC will assist the Water Resources Assessment and Development Project in Sudan by giving support to socio-economic studies by the Dutch associate experts working on the project and by giving advice on community-based activities.

Baseline surveys for project formulation and impact evaluation are often not very well established. IRC field experience on baseline surveys in Colombia, Tanzania, and Kampuchea and information available at IRC contribute to a new activity in this area. A consultant will develop guidelines for baseline surveys, which will outline a computer programme for analysis. IRC will continue to give support to review missions and advice on further development of the monitoring process to the Netherlands supported water and sanitation programmes in India.

In the training and education projects, support will continue to be given to the training of field staff in project evaluation. The evaluation training course for UNICEF will be finalized. Regional level implementation of training courses for moderators at country level is planned to take place in 1987. Information and training programmes on community participation are also a new venture which IRC has scheduled for staff from consulting firms and government agencies. Support is forthcoming from World Health Organization and the Netherlands Government. Several of these one-week programmes are planned for 1987 following the success of last year's introduction programmes for volunteers and experts going to the field.

APPENDIX I

Mr. H. Scheltema
(Chairman)

Mr. J. Haijken
(Secretary)

Mr. W.J. Kakebeeke
(Treasurer)

Mr. H. Wagenmakers
(until September 1986)

Mr. G. Ringnalda
(from September 1986)

Mr. L.P.J. Mazairac
(until September 1986)

Dr. R.C. Harkema
(from September 1986)

GOVERNING BOARD

Former Ambassador.

Head, Water Supply Planning
Department,
Directorate General for Environmental
Protection,
Netherlands Ministry of Housing,
Physical Planning and Environment.

Head, International Environmental
Affairs Department,
Directorate General for Environmental
Protection,
Netherlands Ministry of Housing,
Physical Planning and Environment.

Deputy-Director, International
Organizations Department,
Directorate-General for Development
Co-operation,
Netherlands Ministry of Foreign Affairs.

Chief, International
Organizations Department,
Directorate-General for Development
Co-operation,
Netherlands Ministry of Foreign Affairs.

Director, Development
Co-operation Africa Department,
Directorate-General for Development
Co-operation,
Netherlands Ministry of Foreign Affairs.

Chief, Sector Programmes
Co-ordination and Technical Advice
Department,
Directorate-General for Development
Co-operation,
Netherlands Ministry of Foreign Affairs.

Dr. P.D. Lowes

UNDP/WHO Co-ordinator for the
Water and Sanitation Decade,
United Nations Development
Programme/World Health Organization.

Dr. M.G. Beyer

Senior Policy Specialist
Water and Environmental Sanitation
Team,
United Nations Children's Fund.

Dr. Ping-Cheung Loh

Director, Water Supply and Urban
Development Department
The World Bank.

Mr. O.A. Sperandio

Manager, Community Water Supply
and Sanitation
Division of Environmental Health
World Health Organization.

APPENDIX II

IRC STAFF IN 1986

Director

- * Hans M.G. van Damme

Professional Staff

- | | |
|---------------------------------------|--|
| Teun F. Bastemeyer | Planning and organization |
| Ms. Marieke T. Boot | Hygiene Education |
| Robert E.A.L.E. Brasseur | Human resources development |
| Ms. Lizette A.M. Burgers | Hygiene Education |
| * A. Toon van Dam | Information and Programme Organization |
| Ebbo H. Hofkes | Water supply technology |
| Barry Karlin
(from September 1986) | Hygiene education |
| Michael Seager | Public standpost water supplies |
| T. Kien Tjiook
(until April 1986) | Water quality and treatment |
| * Jan-Teun Visscher | Programme Co-ordination and Content |
| Ms. Christine A. Van Wijk-Sijbesma | Community education and participation; role of women |

Information Section

- | | |
|-------------------------|----------------------|
| Dick de Jong | Information Officer |
| Ms. Bettie E. Westerhof | Senior Documentalist |

-
- * Members Management Team

Cor H. Dietvorst

Documentalist

Ms. Shobba Kannan
(until May 1986)

Assistant Documentalist

Henk Tjen-A-Kwoei

General Documentation Support

Ms. Antoinette A.M.
Oosterveer

Information Assistant

Ms. Lia A. Wahab

Publication Assistant

Erik van Veen
(from December 1986)

Assistant Documentalist

Ms. Inge Stargardt
(from November 1986)

Assistant Documentalist

Administration and Finance

* Krijn M. Peterse

Administrator, Head of the
Section

Michel Lugtmeyer
(from May 1986)

Financial Officer

Ms. Nicolette Wildeboer

Management Assistant

Ms. Hülde W. de Vries

Staff Assistant

Ms. Anneke Groenendal

Programme Assistant

Ms. Karin de Korte
(from January 1986)

Programme Assistant

Ms. Janine L. Bauer
(from April 1986)

Project Assistant

Ms. Sheila Nicholls
(until October 1986)

Word processing

* **Members Management Team**

Ms. Christine Barden
(from November 1986)

Word processing

Ms. Lauren Wolvers

Word processing

Hein Bodrij

Bookkeeper

Edwin W. de Ruiter
(until November 1986)

Assistant Bookkeeper

Ms. Lucie te Riele
(until April 1986)

Receptionist

Ms. Izabella Wimmers
(from June 1986)

Receptionist

Michel van der Leest

Office Assistant

APPENDIX III IRC'S STRATEGY

IRC's overall strategy to achieve its objective is the generation and transfer of information. In this context, information includes knowledge and experience; technology and methodology; intelligence and public information. The two main components of the overall strategy are the generation of information, which is the development, collection, screening and consolidation of information; and the transfer of information, which makes information readily available and accessible.

Information is transferred to the target groups through projects in the context of four main transfer mechanisms, which are listed here in order of increasing impact, but decreasing geographic coverage:

- ° publications
- ° training and education
- ° evaluation and advice
- ° development and demonstration

Closely related to these mechanisms is the knowledge base development. IRC also has a more general role in providing information exchange which includes general information dissemination, documentation services, and reference and referral functions.

These mechanisms are implemented through support projects which in principle require external funding. Projects are developed in response to requests from "clients" or their support agencies, sometimes as part of larger projects of these agencies to use IRC's support role, including its knowledge base. An overriding consideration in the support projects is the integration of various technical and non-technical aspects through one or more subject areas which constitute entry points. In most cases, projects include a strong component of generation of information. As much as possible activities are carried out and supported by staff in the countries concerned. In the spirit of Technical Co-operation among Developing Countries (TCDC), IRC aims to establish links between the countries with which it works. It is a collaborating centre with WHO and has close links with the World Bank, UNDP and UNICEF. It also co-operates with other UN agencies, financial donors and non-governmental organizations, which work with the various agencies which comprise IRC's primary target group and which use IRC's output in their programmes.

APPENDIX IV LIST OF AVAILABLE PUBLICATIONS

Technical Paper Series

- ° Hand pumps for use in drinking water supplies in developing countries. (TP 10*,**) 1978.
- ° Slow sand filtration for community water supply in developing countries: a design and construction manual. (TP 11*,**) 1978.
- ° Participation and education in community water supply and sanitation programmes: a literature review. (TP 12**) 2nd revised edition, 1981.
- ° Public standpost water supplies. (TP 13**) 1979.
- ° Public standpost water supplies: a design manual. (TP 14**) 1979.
- ° Evaluation for village water supply planning. (TP15) 1980.
- ° POETRI, Programme on Exchange and Transfer of Information: reference manual, Volume I. (TP 16*) 1981.
- ° Community participation in water supply and sanitation: concepts, strategies and methods. (TP 17) 1981.
- ° Small community water supplies in developing countries: technology of small water supply systems in developing countries. (TP 18*) 1981.
- ° Guidelines on health aspects of plumbing. (TP 19) 1982.
- ° Practical solutions in drinking water supply and wastes disposal for developing countries. (TP 20) 1982.
- ° A groundwater primer. (TP 21) 1983.
- ° Participation of women in water supply and sanitation, roles and realities. (TP 22) 1985.

Bulletin Series

- ° Global workshop on appropriate water and waste water technology for developing countries. Report on proceedings. (B7) 1973.
- ° Slow sand filtration for community water supply in developing countries: a selected and annotated bibliography. (B9) 1977.
- ° Public standposts for developing countries, proceedings of an International Expert Meeting, Achimota, Accra, Ghana. (B11) 1978.
- ° Participation and education in community water supply and sanitation programmes: a selected and annotated bibliography. (B13) 1979.
- ° Community education and participation in the IRC slow sand filtration project. Report of proceedings. (B14) 1979.
- ° Slow sand filtration for community water supply in developing countries, report of an International Appraisal Meeting, Nagpur, India. (B16) 1981.

- Report of a global seminar on a modular approach in small water supply systems design, Jakarta, Indonesia. (B17) 1981.
- Informe del seminario internacional sobre filtración lenta de arena para abastecimiento público de agua en países en desarrollo. (B18) 1983.

Occasional Paper Series

- The Colombian field manuals and training guides for the promotion of community participation in water and sanitation schemes. 1983.
- Guidelines for operation and maintenance of slow sand filtration plants in rural areas of developing countries. 1983.
- Planning and evaluation for community water supply and sanitation: a literature review and a selected and annotated bibliography. 1982.
- Making the links: guidelines for hygiene education in community water supply and sanitation with particular emphasis on public standpost water supplies. 1984.
- The environment of simple water supplies: a selected and annotated bibliography in support of public standpost water supplies. 1984.
- Drinking water supply and sanitation: co-operation between countries and agencies. 1986.

Other Publications

- The Buba-Tombali water project, Guinea-Bissau, 1978-1981. 1983
- Directory of organizations involved in community education and participation in water supply and sanitation. 1983.
- Volanta-pompe à main, instructions d'entretien. 1986.
- Interwater directory of sources of information and documentation on community water supply and sanitation. 1986.

*) Also available in French.

**) Also available in Spanish from CEPIS, Casilla Postal 4337, Lima 100, Peru.

APPENDIX V SUPPORT ROLE OF IRC

