



WHO  
International Reference Centre  
for  
Community Water Supply

Rijswijk (The Hague), The Netherlands

# Annual Report 1980

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The Netherlands

## irc

IRC was founded in 1968 by an agreement between the World Health Organization (WHO) and the Netherlands' Government. It is an independent foundation. IRC's main purpose is to promote and support the creation of safe drinking water and sanitation facilities in the developing world. IRC works through national institutions, agencies and regional centres, in the rural and peri-urban areas of Africa, Asia and Latin America. The Centre cooperates closely with United Nations organizations, such as WHO, the World Bank, UNDP and UNICEF and with other member organizations in the UN Decade Steering Committee. In addition, IRC acts as WHO Collaborating Centre for Community Water Supply. It is assisted in its work by these organizations and by bilateral donors and institutions in the industrialized countries.

IRC's major programmes are in the fields of: (1) Information Support and Services; (2) Technology Development and Transfer; (3) Manpower Development and Training; (4) Community Education and Participation; and (5) Programme Planning and Evaluation. Support is provided by means of guidance and training material, seminars and workshops, research and demonstration projects, as well as by general support to the development of national facilities.

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WHO PHOTO by P. A. PITTEI

Safe water and adequate sanitation for all by 1990 — that is the challenge of the INTERNATIONAL DRINKING WATER SUPPLY AND SANITATION DECADE. Poverty and lack of development mean that these basic needs are at present denied to a target population of some two billion people, or one person in two on the surface of the earth.

This Moroccan child benefits from a safe village fountain.



# 1. the centre and its scope

The United Nations has declared the years 1981-90 the "International Drinking Water Supply and Sanitation Decade".

The reason is, as UN Secretary-General Waldheim stated on (November 10, 1980), the Decade launching day: "The provision of safe water and sanitation does not merely mean happier, healthier citizens, it also means increased economic productivity. .... Investment in human potential is not only a moral imperative, it is also sound economics".

This action emphasizes the global severity of the problem facing 1,500 million people today, because of the lack of safe drinking water (increasing by 20 million people per year). More than 2,000 million people lack even the rudiments of sanitation facilities (increasing by 100 million per year).

In response to the UN's call for "Clean Water and Adequate Sanitation for All by 1990", many developing countries have established ambitious goals for the development and strengthening of the drinking water supply and sanitation sector, as "the number of water taps per 1,000 population will be an infinitely more meaningful health indicator than the number of hospital beds per 1,000 population" (Dr. Halfdan Mahler, Director-General, WHO, on the Launching Day). IRC strives to assist these countries to attain these life-giving objectives.

IRC supports agencies and programmes, within the developing countries, for the planning, design, management, operation and maintenance and proper use of water supply and sanitation facilities.

This support is provided through guidance and training material; seminars, courses, workshops and meetings; and research and demonstration projects. In addition general support is provided to the development of national facilities.

IRC concentrates in five major programme areas:

- (1) information support;
- (2) technology development and transfer;
- (3) manpower development and training;
- (4) community education and participation; and
- (5) programme evaluation.

The kind of assistance is determined by the problems and needs of developing countries. The programmes are developed in collaboration with agencies in the countries concerned and carried out by national bodies. IRC delivers guidance and coordination and arranges for external financial support if possible. All of the activities are carried out in the spirit of TCDC (Technical Cooperation among Developing Countries).

At the regional level, IRC associates with a number of institutions, including the <sup>1</sup>Pan American Centre for Sanitary Engineering and Environmental Science (CEPIS), Lima, Peru; <sup>2</sup>the Inter-African Committee for Hydraulic Studies (CIEH), Ouagadougou, Upper Volta; <sup>3</sup>the National Environmental Engineering Research Institute (NEERI), Nagpur, India; and <sup>4</sup>the Western Pacific Centre for Promotion of Environmental and Applied Studies (PEPAS), Kuala Lumpur, Malaysia.



## organizational aspects

At the end of 1980, 20 persons worked full-time for IRC, an increase of four over the previous year. The Centre has three sections:

- . programme development section (8 staff);
- . information section (5); and
- . administrative section (6)

(For a full list of IRC staff, see Annex 1)

The work of IRC is made possible by two main lines of funding:

1. A core subsidy of approximately US\$ 700,000 annually is provided by the Netherlands' Government. This is shared by the Ministry of Public Health and Environmental Protection, and by the Ministry of Foreign Affairs/Development Cooperation. The World Health Organization contributes US\$ 10,000 annually to this core budget. This programme-generating budget meets the cost of, among other things:

- \* regular staff and management of IRC, their administrative support, travel costs, etc.;
- \* basic information services (including the library);
- \* printing and mailing costs for the monthly IRC Newsletter and publications;
- \* premises and office equipment; and
- \* consultancy support for programme development.

2. Programme budgets are funded externally from a number of sources. In 1980 four IRC programmes were exclusively financed by external funding, approximately US\$ 1,500,000 :

- \* information project POETRI;
- \* slow sand filtration project;
- \* standard water treatment plants project; and
- \* manpower development and training projects.



UNICEF PHOTO

Too little water or too much — in search of a constant medium. Indochina is the victim of two seasonal extremes. The dry season converts the land into parched blocks, and the rainy season turns in into a swamp.

Of the externally-funded programme budget of IRC, 60 percent is channelled directly to developing countries, 30 percent is for additional services for wider use in the countries (such as consultants' fees, etc.), and 10 percent is for general facilities (such as overhead costs incurred by IRC).

The core budget provides the basic infrastructure and the opportunity for IRC's work; the externally-funded programme budget provides the direction and scope of its work.

Since 1968 the following organizations have been financial supporters of IRC activities: <sup>5</sup>Canadian International Development Agency (CIDA); <sup>6</sup>International Development Research Centre, (IDRC) Canada; <sup>7</sup>Netherlands' Ministry of Foreign Affairs; <sup>8</sup>Netherlands' Ministry of Public Health and Environmental Protection; <sup>9</sup>Pan American Health Organization (PAHO); <sup>10</sup>United Nations Children's Fund (UNICEF); <sup>11</sup>United Kingdom Overseas Development Administration; <sup>12</sup>United Nations Development Programme (UNDP); <sup>13</sup>United Nations Environment Programme (UNEP); <sup>14</sup>United States Agency for International Development (USAID); <sup>15</sup>Water Research Centre, United Kingdom (WRC); <sup>16</sup>World Bank (International Bank for Reconstruction and Development, IBRD); <sup>17</sup>and the World Health Organization (WHO).

In August 1980 IRC relocated in Rijswijk (The Hague), The Netherlands.



VDO PHOTO

## 3. irc programmes

### 3.1. Information support

POETRI is the acronym for the Programme on Exchange and Transfer of Information. It aims at serving developing country information needs in the water supply and sanitation field and provides technical cooperation to help these countries build up their information systems. In addition, POETRI helps national agencies absorb information from other developing countries and assists in its transfer and exchange. Having access to such information will have a positive effect on the appropriateness and cost-effectiveness of water supply and sanitation facilities.

POETRI is a response to the demand for a new approach to information support. At the national level POETRI is assessing widely varying information needs, surveying (potential) users and sources of information, and promoting workshops on information support for the International Drinking Water Supply and Sanitation Decade programmes. From this groundbreaking work presently underway, practical models for information systems and services will be developed, field tested, and evaluated.

By the end of 1980, ten developing countries had appointed National Focal Points (NFPs) to lead POETRI tasks on an individual country basis, and an equal additional number expressed interest in participating in POETRI/Phase 1.

Regional coordination is located at Regional Focal Points (RFPs); RFP functions in Latin America are being led by CEPIS, Lima, Peru (Pan American Centre for Sanitary Engineering and Environmental Sciences) and in West and Central Africa by CIEH, Ouagadougou, Upper Volta (Comité Interafricain d'Etudes Hydrauliques).

CEPIS has its own information network with which POETRI works closely -- REPIDISCA, the Pan American Network for Information and Documentation on Sanitary Engineering and Environmental Sciences.

At the regional level, POETRI is organizing regional workshops and training courses. The first regional POETRI workshop was held at CEPIS on 11-13 November 1980. Senior staff level National Focus Points took part from Colombia, Ecuador, Peru and Argentina, with observers from Guatemala, Costa Rica, Brazil, Chile, Bolivia, and Venezuela. Presentations were also made by information scientists from CIEH and NEERI.

POETRI is also developing guidance material such as training modules for regional and national workshops and courses as well as guidelines for specific parts of the national POETRI workplan. Methods, standards, and tools for information handling and exchange are being prepared including a multi-lingual thesaurus, an abstract journal, and an international directory of information sources. In order to ensure compatibility between POETRI and UNESCO's policies and plans concerning scientific and technological information, a UNESCO/WHO/IRC consultation (Paris) was held in October 1980.

High priority is given to an immediate service in order to better provide a minimum level of information support to all countries committed to the Water Decade. Such a service will concentrate on the broad distribution of key books and documents ("standard library") on water supply and sanitation, as well as the periodical despatch of documentation via the communication system developed for the Water Decade.

Apart from funding by the Netherlands' Government, POETRI Phase I (June '79-'81) received support from the UN Steering Committee for Cooperative Action for the International Drinking Water and Sanitation Decade which adopted in its fourth

meeting (20 and 21 March, 1980) a recommendation for an extension of the programme. This recommendation was approved by a second Consultative Meeting held in Geneva on 16 June, 1980.

A Task Force on Information Exchange was established by the Decade Steering Committee for the purpose of reviewing and promoting the further development of an information system to provide support to Decade programmes.





WFP/FAO PHOTO by Benoun/Caracciolo.

Reconstruction of a traditional wheel for raising water.

### **3.2. Technology development and transfer**

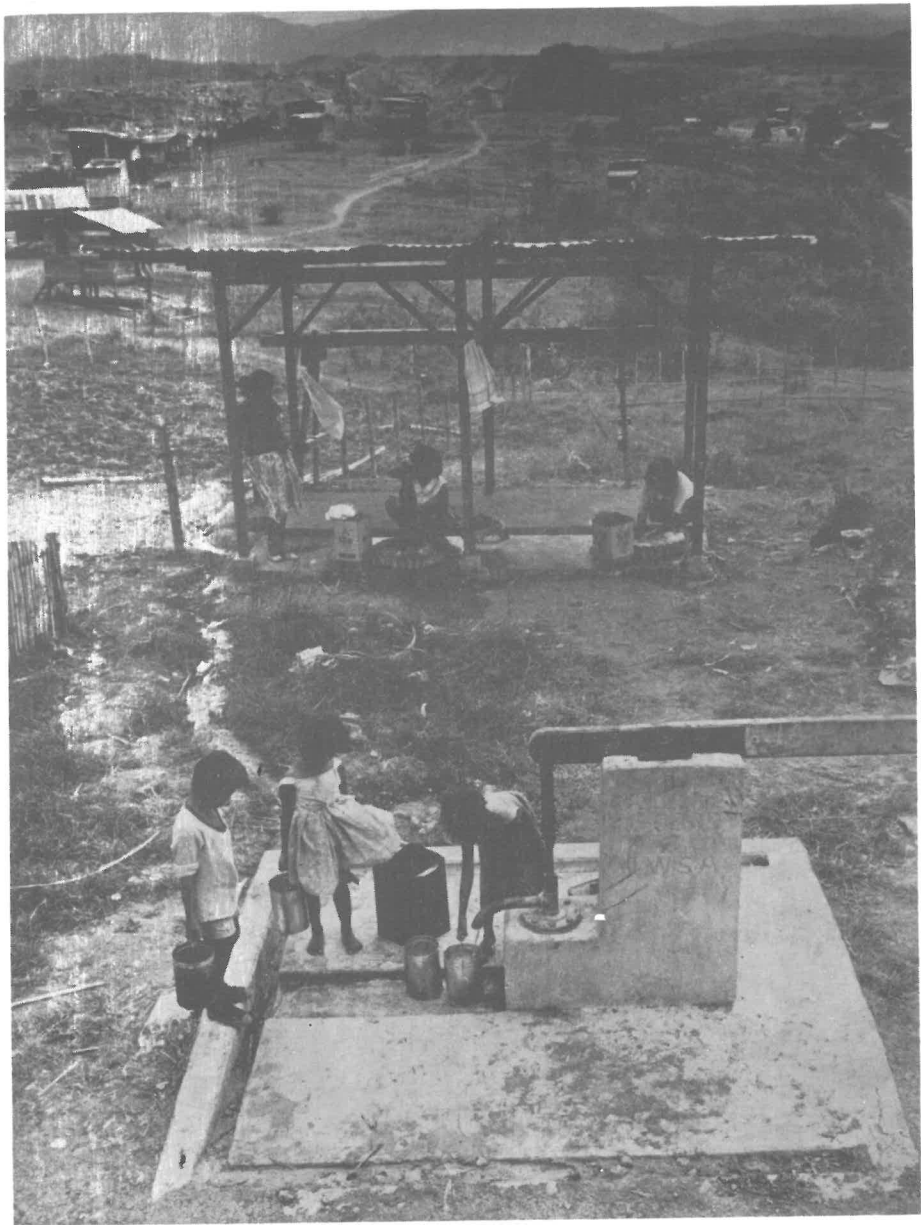
Handpumps, slow sand filters, and public standposts are becoming common denominators in the water supply and sanitation sector in developing countries. From a superficial glance they might not appear very complex relative to counterpart modern Western-style technology -- yet their design and application have proved on countless occasions that "simplified" and "low-cost" technology is anything but simple. We can think of common denominators of the water supply systems in rural Latin America, Africa, and Asia; but how people perceive and use these technologies is unique and varies widely according to culture, social class, and local history, just to mention a few variables.

The challenge is not just to design and deliver equipment but, together with the people, to make it fit into and complement the myriad ways in which people live. In rural and semi-urban areas, there is simply no money to purchase sophisticated, imported machinery for mass-scale drinking water and sanitation facilities nor large numbers of professional engineers and technicians to operate and maintain them.

Over the past years, IRC has coordinated and guided extensive research and development work on small community water supply technologies. The following paragraphs report on progress during 1980.

#### **Handpumps**

Protected dug wells or tubewells fitted with a handpump continue to be a prominent feature in the rural water supply programme of many countries. In fact, handpumps are being installed in rapidly increasing numbers. A reasonable estimate indicates that the handpump installation programme envisaged in the Third World countries, if implemented successfully, might bring handpump water supplies to an addi-



UN PHOTO

A barrio council installed a pump and a shed for the washing of clothes, Manilla, The Philippines.

tional 500 - 800 million people, in the course of the Water Decade (1981-1990). In the same period handpumps serving some 100 - 200 million people would need to be replaced.

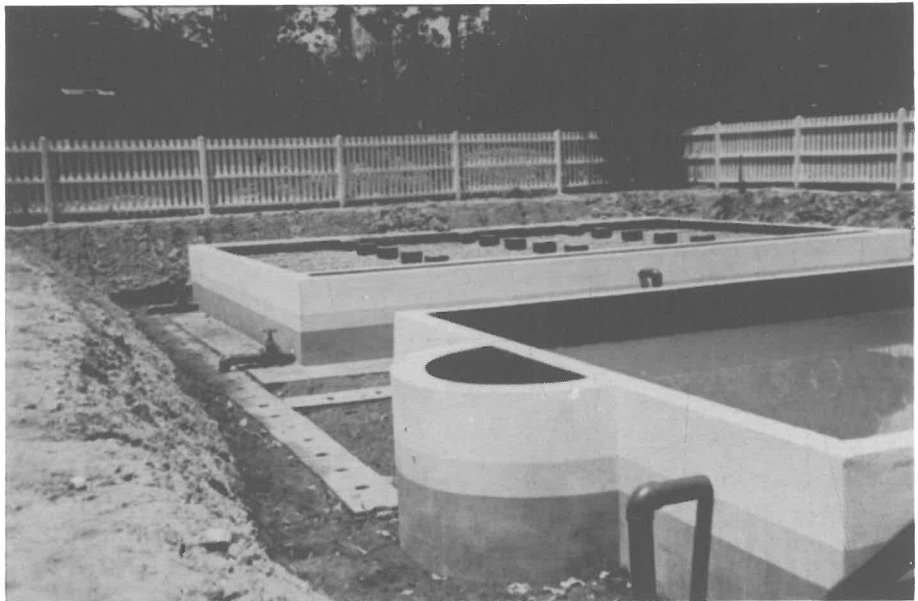
Village handpumps have to be sturdy enough to withstand the stress of being often used by several hundred people a day. Yet this need for durability must harmonize with the fact that women and children are the traditional water haulers in the developing world. Handpumps which require the height and strength of a full-grown man to operate may last longer -- but they will not serve their primary goal -- to provide ready access to safe water.

In view of these enormous requirements for suitable, reliable handpumps, IRC in 1980 further developed its Programme on Handpumps, in close cooperation with WHO, the World Bank, UNICEF and several bilateral development agencies.

IRC was contracted to provide assistance to a UNDP-financed, World Bank-executed global project (GLO/79/010) for selection and testing of handpumps which started during 1980. The first meeting of the project management group was held at IRC 31 July - 1 August. A second meeting took place in Uppsala (Sweden), 7 - 8 October. *follow up*

The project is being developed as a fully integrated series of activities covering field monitoring and trials, as well as laboratory testing. Under the project, the Consumers' Association Testing and Research Laboratory at Harpenden (England) will be conducting laboratory tests on 12 selected handpumps starting early 1981.

IRC, with inputs from other organizations, further coordinated a comprehensive protocol for field-testing and performance-monitoring of handpumps. Comments were obtained from a number of experts having experience in this area, mainly in UNICEF-



IRC PHOTO

A Slow Sand Filter in the foreground; a prefilter in the background.  
Ban Bangloa, Thailand.

assisted handpump installation projects. The draft document will serve as a resource in the above-mentioned UNDP/World Bank Global project for handpump selection and testing.

Handpump maintenance is assuming great significance in view of the growing number of installed handpumps, and the serious problems that are experienced. Many rural water supply programmes will need an improved system of maintaining the pumps, if their positive impact is to continue. IRC started the preparation of a document that draws on the experiences and information from handpump projects in a number of countries (e.g. India, Bangladesh, Thailand, Tanzania, Malawi).

Using the extensive information base on handpumps and their use in rural water supply which IRC has accumulated over the years, technical support was provided in 1980 to agencies concerned with handpump design, testing, maintenance and manufacture in India, Bangladesh, Thailand, Indonesia, the Philippines, Ghana, Kenya, Malawi, and several countries in Latin America.

The potential role of handpumps in small-scale irrigation was worked out in a contribution to a FAO project on low-cost water lifting devices for irrigation.

### **Slow sand filtration**

For several years IRC has been involved in the research and demonstration project on slow sand filtration. The main characteristic of this project is its integrated nature, in which the technical aspects are seen within a larger framework which comprises amongst others financing and administrative organization, and social and cultural dimensions. Countries participating in the project are Kenya, Sudan, India, Thailand, Colombia, and Jamaica.

The primary goal of the SSF Project is the promotion of slow

sand filtration for community water supply in developing countries. The project comprises three phases, focusing on respectively: 1) research, 2) demonstration, and 3) transfer of knowledge and experience. The project includes a health education programme to create understanding and awareness of the benefits of safe water. Community participation is also an explicit component, to ensure the fullest possible involvement of the community in the planning, implementation and finally the management of the water supply system.

Apart from gaining experience with the slow sand filtration process, the specific objective of the research programmes was to develop appropriate criteria for the design, construction, operation and maintenance under village scale conditions in the participating countries.

At present the emphasis of the project is placed on the implementation of the demonstration programmes. The objective of this phase is to demonstrate the effectiveness and feasibility of water treatment through slow sand filtration at the village level and to test the integrated implementation strategies required for the proper introduction of the water supply scheme into the community.

A key event in the project was the international meeting held at NEERI in Nagpur, India, 15-19 September, 1980 organized by IRC and NEERI to review the demonstration phase of the SSF project; participating country representatives came from Columbia, Jamaica, Kenya, Sudan, India and Thailand. These countries are sharing their findings in the spirit of TCDC - Technical Cooperation Among Developing Countries. In plenary sessions and workshops they focused on: the design and construction of SSF plants; operation and maintenance; training of operators; baseline health surveys; health education programmes; impact studies; and community participation. A report of these findings will be published by IRC mid-1981.



In 1980 the final preparations were made for the start of phase III in 1981.

### **Public standpost water supply systems**

Piped water supply systems usually comprise house connections, yard connections, and public standposts. The mix of these components may vary considerably. The present IRC programme is directed to the development of appropriate strategies, methods and techniques for the planning, implementation and management of public water supply systems that include a large percentage of public standposts.

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

The first phase of IRC's work on this subject, the identification of the major problems of public standposts, was supported by the World Bank. The findings of this study are presented in two publications:

Technical Paper 13: Public Standpost Water Supplies and  
Technical Paper 14: Public Standpost Water Supplies, a Design Manual.

Technical Paper 13 provides the reader with insights into the organizational, economic, socio-cultural and technical aspects of public standpost water supply. This publication is of particular interest to decision-makers, planners, administrators, public health workers and engineers responsible for the planning and implementation of such schemes.



Process: Fetching water from a Comfort Station — a combined public standpost and sanitary facility.

Technical Paper 14 deals with the engineering aspects of public standposts. It offers a step-by-step design method, an example design calculation and construction drawings. These drawing and technical design descriptions can easily be adapted to suit local conditions.

TP 13 and TP 14 are companion documents and may also be utilized for instruction and training purposes.

The knowledge generated in the first phase of the programme forms the basis for a series of demonstration projects which will begin in 1981. In 1980 IRC developed the concept for these projects and consulted with potential water agency participants in Indonesia, India, The Philippines, Sri Lanka, Thailand, Egypt, Kenya, Malawi, Tanzania, and Zambia as well as with potentially interested donor agencies.

The most important theme running through the demonstration projects is that in the planning, implementation and management of public standpost water supplies, various organizational, economic, socio-cultural and technological factors are to be taken into account in an integrated manner.

As a back-up to the country demonstration projects, a number of special subject studies have been recently commenced:

- the preparation of a bibliography on various aspects of public standpost water supply systems (in collaboration with the WEDC group of the Loughborough University of Technology, UK);
- the compilation of a manual on financial management of piped water supply systems;
- the preparation of a manual on low-cost water distribution pipe-networks;
- guidelines on operation and maintenance;
- guidelines on selection, testing and local manufacturing of parts and equipment;

Finally a proposal for country projects has been prepared for submission to donor agencies.

### **Modules for small water supplies (Type and Standard Designs)**

Facing the task of building numerous facilities within the short-term period of a five-year plan or Water Decade, not only calls for the application of appropriate techniques, but also for the use of appropriate programme planning and implementation methods. The use of standard pre-designed elements (modules) which comprise a water supply system can accelerate implementation especially where there is a shortage of professional staff. An IRC activity to collect and identify type designs of such components has been developed in a number of countries in Latin America, Africa and Asia. Designs collected provide basic information for the preparation of standard designs based on nationally-accepted criteria.

Inter-related aspects in planning and implementation of numerous small water supply schemes were the topics of discussion of the Regional Seminar on A Modular Approach in Small Water Supply Systems Design, which was initiated by the Government of Indonesia and IRC and held in Jakarta, Indonesia from 6 to 10 October 1980.

Delegates from Australia, Bangladesh, Colombia, Federal Republic of Germany, Great Britain, France, Hong Kong, India, Indonesia, Malaysia, Nepal, Netherlands, Singapore, and Sri Lanka participated in the seminar which was supported by UNDP, WHO, UNICEF, USAID, the Asian Development Bank and the Governments of Indonesia and the Netherlands.

In view of the participating developing countries' needs to meet Decade goals, the regional seminar proposed that international follow-up be given to its recommendations, salient points of which are:

- in order to increase the rate of project implementation, the development of modular designs of water supply components based on nationally-accepted criteria are needed;

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based on nationally-accepted criteria are needed;

- the large number of project preparation and implementation sub-professionals required for the specific tasks should be trained with the aid of training modules;
- incorporation of community involvement at various stages of planning, construction, operation and maintenance is essential for a successful programme; appropriate modules should be designed for this purpose;
- the need for review of existing project-by-project planning procedures stresses the importance of programmatic planning; programmes should be derived from a national water supply and sanitation plan.

Proceedings of the regional seminar will be published early 1981.

### **Standard water treatment plants study-Indonesia**

Development of standard water treatment plant modules to be used in the Indonesian Small Towns Programme was the subject of a Netherlands-assisted technical assistance study by IRC in 1980.

By prefabrication and on-site construction with pre-engineered designs, the Government of Indonesia intends to supply a greater number of towns with treatment facilities in a short time. With guidelines, criteria and specifications designed by consultants, the Government plans to stimulate domestic manufacture using local material and labour. Aspects covered in the IRC study in which a group of international consultants participated are:

- selection of process based on quality of water sources, existing designs, availability of equipment, materials, skills;
- designs of modules for concrete and steel construction based on proposed criteria and standards;
- study of economic, technical, manufacturing aspects;

- institutional support for production of and servicing modular plants.

In follow-up of the study, pilot models will be built and an appraisal made as to the plants requirements of low maintenance, good performance, low cost and streamlined manufacture. Manufactured modules will be used in the programme of 150 small towns, to which several lending agencies have committed themselves.

Important spin-offs of the study are:

- development towards national guidelines and design criteria;
- providing a basis for local manufacture;
- transfer of technology -- the knowledge would be a direct input in other government programmes with a similar character for which a modular approach can be considered.

### **Rainwater harvesting**

In the year under review, IRC continued to contribute to the United Nations Environment Programme (UNEP) Project on Rainwater Harvesting. The objective was to generate "knowledge synthesis" through documenting selected rainwater harvesting techniques. This information is scattered and there is poor access to demonstrated technology. Rainwater fails to receive the attention it deserves as a potential useful element in the rural water supply programmes of developing countries. Rainwater is particularly relevant for dry areas with a dispersed population and a suitable pattern of rainfall.

The second phase of the UNEP project will concentrate on the field demonstration of selected rainwater harvesting techniques. Several countries have been already been contacted, and are interested to take part. In cooperation with the West Java Rural Water Supply Project in Indonesia, IRC has arranged for a design manual on rainwater harvesting systems to be



prepared.

### **Small community water supplies: a handbook**

With a view to provide ready access to selected technology for small and rural community water supply systems, IRC has been cooperating with a group of authors and contributors in the preparation of a comprehensive manual. In 1980 this work was accelerated. It is an up-to-date supplement to Monograph No. 42, Water Supply for Rural Areas and Small Communities, published by WHO in 1959. Contributing authors of the new handbook include: L. Huisman, Professor of Sanitary Engineering, Delft University of Technology, The Netherlands; J.M. de Azevedo Netto, previously Professor of Sanitary Engineering, University of Sao Paulo, Brazil; B.B. Sundaresan, Director, National Environmental Engineering Research Institute, India; and J.N. Lanoix, formerly of the Division of Environmental Health, World Health Organization, Geneva. The manual contains a number of special subject contributions from experts.

Small Community Water Supplies has been designed to provide a broad introduction to the technology of small community water supplies. It provides information and guidance that should be most readily used by those having some technical background in fields such as civil engineering, public health or irrigation, but with no formal training or experience in water supply. It should serve engineers and public health inspectors who are called upon to assume responsibility for the design of small water supply systems. This group also includes provincial and town engineers, who have responsibility for water supply and sanitation, amongst many other tasks.

### **Practical solutions**

The IRC publication "Practical Solutions in Community Water Supply and Sanitation" has been updated and revised with the assistance of the Water and Waste Engineering for Developing Countries Group of Loughborough University. Sanitation and

waste disposal techniques are receiving much more emphasis in this new edition.

In 1980 the draft was submitted for review by the consultants; it is now being edited. Publication is expected mid-1981.



*PHOTO: Mohammed Amin/Earthscan*

Manpower development: to ensure continued operation of facilities, to train for future needs. (Kenya).

### **3.3. Manpower development and training**

There is consensus that the International Drinking Water Supply and Sanitation Decade will only achieve its objective if an unprecedented supply of skilled manpower becomes speedily available. In 1970 the consolidated view of 86 developing countries identified lack of trained staff as the second greatest constraint in implementing successful water supply programmes. Later studies have indicated limited progress, but estimates of Decade needs indicate a global requirement of between one and three million additional skilled people just to meet development targets. This figure takes no account of the massive shortage of people able to operate and maintain existing installations properly. This reflects the imbalance between physical and human resource provision which has so far characterised sectoral development efforts. The substantial development funds now becoming available will fail in their aim unless much bigger, but still relatively modest investment is made in relevant and imaginative training schemes.

#### **Multi-country manpower development project**

The project aims to support the simultaneous development of sectoral training delivery systems in the Eastern Caribbean, Tanzania, and Sri Lanka. This includes assistance in assessing training needs, training of training staff, development of curricula and training materials, and evaluation and international exchange of experience gained. The project also aims to promote the exchange of experience, personnel, and materials between participating countries.

The experience of initiating appropriate programmes in diverse geophysical, administrative and cultural situations will help identify common underlying principles of sectoral manpower development.

In the Eastern Caribbean, IRC - jointly with Canadian technical assistance (CIDA) - is funding a PAHO project to introduce a sectoral training delivery system for ten participating

countries. The project has produced manuals for training of trainers and management training, as well as for various skilled workers training programmes. The project's main achievement has been to raise the awareness of policy makers, donors, and managers of water undertakings, of the importance of good manpower development policies. Cadres of staff from different islands have had practical experience in giving training at various levels in various countries. As a micro-cosm of international co-operation and exchange, the project is a significant pilot experience.

A recent USAID mission to Sri Lanka has assisted the Government in formulating indicative planning targets for the period 1981 - 1990. It is estimated that \$ 1,000 million should be invested in the sector to achieve coverage targets, including about \$ 14 million for training and manpower development. The proposals come at a time when Sri Lanka is facing a severe medium-term shortage of skilled labour, especially in the critical construction sector. It is clear that to implement existing plans alone, substantially upgraded training facilities will be needed in the water supply and sanitation sector by 1983. IRC therefore proposed to assist the National Water Supply and Drainage Board to plan its manpower requirements and prepare and cost a comprehensive staff development and training plan. During 1981, the manpower planning activity will begin with the support of the UK Industrial Training Service and local consultants from the National Institute of Business Management.

Proposals for IRC involvement in Manpower Development and Training in Tanzania have been agreed with by the Government, and Netherlands funding is available to commence work as soon as possible.

### **Manpower development programme: Indonesia**

The programme aims to improve the skills and utilisation of all levels of staff in the urban water supply sector in Indonesia, through the organisation of a national Manpower Development Programme. The project became operational in September 1980, with the start of a three-month assignment of Mr. A. Milburn, seconded from the UK National Water Council, as interim project leader. His current terms of reference require him to assist the Government in launching the manpower development programme, to coordinate the activities of external consultants who have already been engaged, and to prepare a detailed work-plan for the full project period of 3 years, identifying future staffing requirements.

Mr. Wittenberg, seconded from the Netherlands' consultants DHV, began an assignment on October 1, 1980, as consultant for training methods and materials. Assignment of a 6-month consultant for manpower classification, a 2-month consultant for training of trainers, a 2½-year project leader, and a 2-year consultant for operator training are anticipated for early 1981.

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In addition to the above-mentioned country manpower projects, IRC prepared, at the request of WHO, a proposal for an international strategy for manpower development for drinking water supply and sanitation.



WHO PHOTO

A Health worker explains the benefits of chlorination.



### **3.4. Community education and participation**

For a number of years IRC has been absorbed with the theory and practice of community education and participation (CEP) in community water supply and sanitation. In 1979 IRC published a Literature Review (Technical Paper No. 12) on the topic by Christine van Wijk-Sijbesma and a companion volume, a Bibliographic Study (Bulletin 13). The demand for the Literature Review has been so great that the author spent the last quarter of 1980 preparing a substantially revised and updated version which will be printed in mid-1981. A Spanish and French translation of this revised edition will appear soon after.

Also finalized in 1980 were two other related studies;

"Community Participation in Water and Sanitation: Concepts, Strategies and Methods" by Dr. Alastair White, which is of special interest to national planners, and

"A Guide for the Design of National Support Programmes for Community Education and Participation in Water Supply and Sanitation" of which Dr. Anne Whyte is the principal author. This study was prepared at the request of WHO and has a practical check list format featuring all aspects of potential roles for the community in participation and health education.

#### **CEP project: Tanzania**

The Tanzanian government approved in November 1980 IRC's proposal for a 16-month community education and participation project. The project's goal is to provide technical support to operating agencies for community water supply and sanitation in Tanzania for developing and field testing a community education and participation component. The Dutch government has provided initial funding.

Studies of drinking water supply and sanitation programmes in Tanzania, especially those of the Tanzanian Bureau of Resource Assessment and Land Use Planning (BRALUP) show problems of community acceptance and organization of operation and main-

tenance. In some other countries, such problems have led to the introduction of a community education and participation component. The proposed strategy for Tanzania is based on the experiences gained in these programmes.

### **Inter-country CEP project**

During 1980 a proposal was developed for a project which is very much similar to the one undertaken in Tanzania, only on a wider scale of operation. Negotiations with six developing countries have been largely successful and, pending funding arrangements, IRC is planning to commence the project in most of these countries by mid-1981.

### 3.5. Programme evaluation

Increased coverage of water supply and sanitation facilities and services requires sound planning and programme development procedures. However, there is not much information on the effectiveness of such procedures for water supply and sanitation programmes. Additionally, a need exists to evaluate experiences as a basis for better planning.

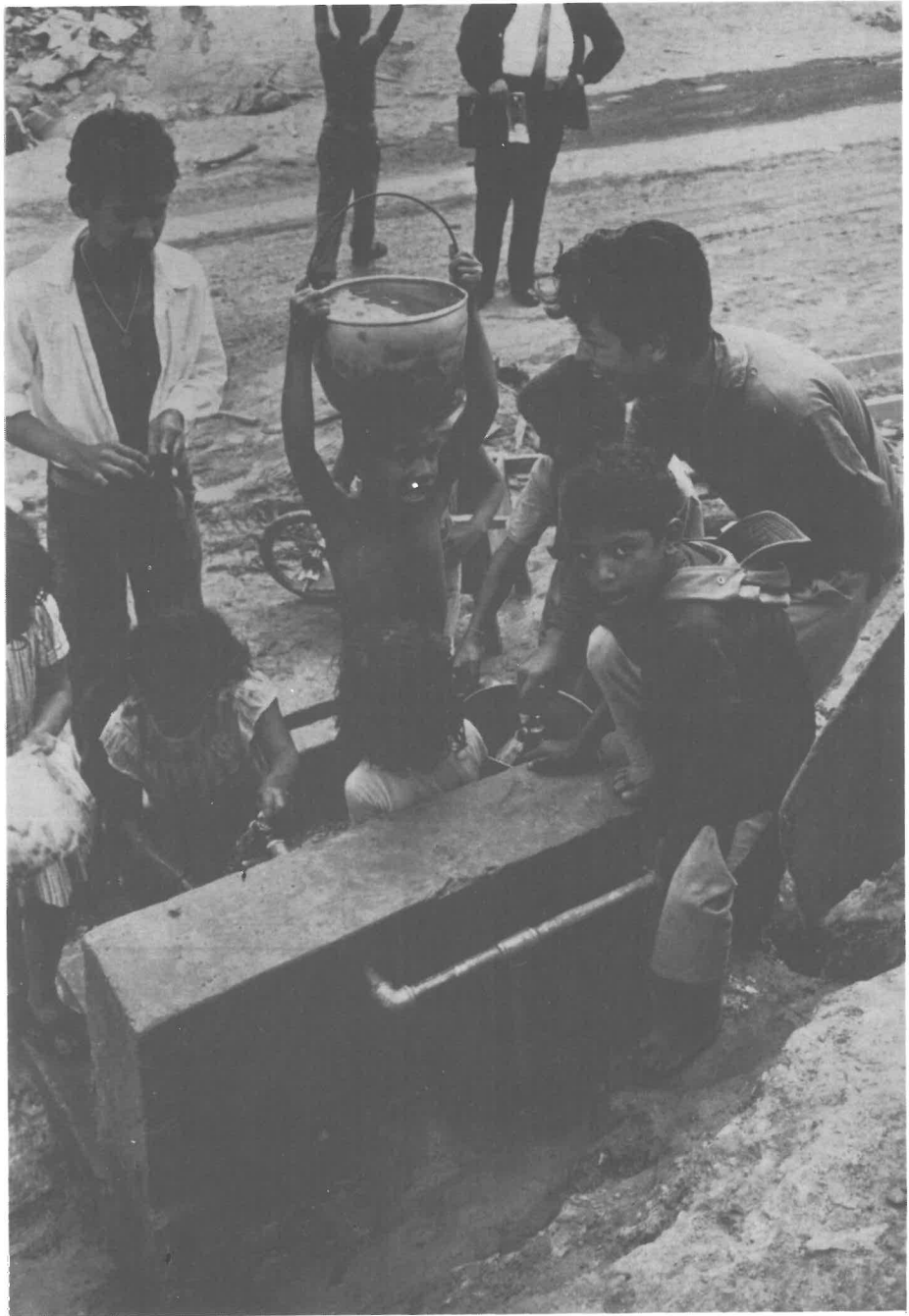
The objectives of IRC's programme in this field are:

- to promote the development and application of appropriate methods and techniques for planning and evaluating community water supply and sanitation programmes;
- to promote projects and studies on planning and evaluation at national level; and
- to provide information and technical support to programme planning and evaluation at the same level, as well as to studies, workshops, etc., on this subject.

In 1980, Evaluation for Village Water Supply Planning (Technical Paper No. 15) was published, a joint effort of the Ross Institute of Tropical Hygiene and IRC. It is a comprehensive yet practical guide to the evaluation of village water supply projects for engineers and development field workers, as well as for planners or administrators in development assistance organizations.

Support was also provided for an evaluation study of the Barangay Water Programme in the Philippines and for similar activities in some other countries. The collection of information is an ongoing activity and a draft list of references has been published. Consultations were started on the preparation of a proposal for a series of national planning workshops.

In the further development of the programme, emphasis will be given to the application of the results of evaluation studies in the preparation of new plans, and - in relation to this -



UN PHOTO

Will this Venezuelan standpost provide an adequate quantity of water five years from now?

to increasing the appreciation for evaluation by planners. An increasing need for information on planning and evaluation for community water supply and sanitation can be expected, especially in the first years of the Decade.

To meet this need, planned IRC publications include:

- a literature survey and a selected and annotated bibliography;
- a compilation of "selected readings";
- a "state-of-the-art" study, including a review of studies and activities underway or being planned by different national and international agencies; and
- guidelines on planning and evaluation for community water supply and sanitation.

...ethnic origin, religion, social or economic status or sex.

In the past, greater involvement in the sector projects has come from the more economically advanced regions and communities and their leaders. Others have remained more passive and tended to be less projects and have projects ended to them. These which have the most and

...why the project was deemed... make a difference in the interest and

# IRC NEWSLETTER

TO THE INTERNATIONAL DRINKING-WATER SUPPLY AND SANITATION BOARD

INFORMATION SUPPORT

April 1981

No. 120

The April 1981 Newsletter has as its main theme community education and participation in water supply and sanitation. This issue contains lots of attention these days from not only national policy makers and agency organizations, but also from donor agencies and individuals. There is growing evidence that participation in the process of developing water supply and sanitation facilities in developing countries is becoming more and more important. But not only the theory - each country has its own definition of what is possible and what is not. But perhaps of these local and national successes and failures in developing water supply and sanitation facilities in developing countries. There is growing evidence that participation in the process of developing water supply and sanitation facilities in developing countries is becoming more and more important. But not only the theory - each country has its own definition of what is possible and what is not. But perhaps of these local and national successes and failures in developing water supply and sanitation facilities in developing countries.

...ian manuals on CEP from the Institute National de Santé, by Dr. Anne Whyte, University of Toronto. The Institute for the Design of a National Programme for Community Education and Participation in Water Supply and Sanitation, which Dr. Anne Whyte is also the principal author. This document was prepared in consultation with the World Health Organization, but is available at no cost in photocopied format. A full text of the document is available at the request of the author. Please write to the information officer, IRC, for more details.

...jects. Critic... level. Without... community education... participation... village level work... and policy con...

IRC proudly announces the forthcoming publication of Small Community Water Supply Systems, a comprehensive handbook of technical small water supply systems. Co-authors include: J. M. De Wit, Professor of Sanitary Engineering, Delft University of Technology, The Netherlands; J. M. De Wit, previously a Professor of Engineering, University of Sao Paulo; B. B. Sundaresan, Director, National Institute of Environmental Engineering Research Institute and J.N. Lanoix, formerly of the Department of Health, World Health Organization, Geneva. This handbook was compiled by IRC.

...ing is an abridged... Van Wilk-Sijbesma's... Technical Paper 12... which the Small... community education... es.

The needs are enormous. Millions living in developing countries lack access to an adequate supply of drinking water. The problems are particularly acute for countless small communities in the rural and urban fringe areas. It is a misconception to regard a community water supply system as 'a collection of urban installations less engineering skill or ingenuity exact opposite may be the case. It is smallness should not be regarded as a disadvantage, but rather a strength. Technology selected that can be integrated into the community involvement and participation approach which is so essential in such schemes. Misapplication of technology likely will waste the designer's effort and understand the basic costs over a long period of time.

This handbook has been designed to provide a broad overview of the technology of small community water supplies. It provides information and guidance that should be readily used by those having some background in fields such as civil engineering, public health or irrigation, but also by those who are not engineers. The handbook will serve engineers as a reference and as a design guide.

## CIR FAITS NOUVEUX

NOUVELLES DU CIR

Revenir 1981

REMARQUE: Veuillez noter que le CIR a changé sa politique d'envoi de FAITS NOUVEUX à nos abonnés individuels de publication et de porteur de lettres. Les lettres individuelles de la revue française ou espagnole ne sont plus envoyées. Les commandes groupées seront envoyées et les lettres individuelles de la revue française ou espagnole ne sont plus envoyées.

designer ne saisis pas clairement l'excès de fonctionnements et les nécessités de l'entretien. Ce manuel a été conçu pour largement informer les techniciens qui sont pour la plupart déjà expérimentés dans le domaine de l'approvisionnement en eau. Ce manuel prendra en compte les responsabilités pour la conception de petits systèmes d'approvisionnement en eau. Ce manuel prendra en compte les responsabilités pour la conception de petits systèmes d'approvisionnement en eau. Ce manuel prendra en compte les responsabilités pour la conception de petits systèmes d'approvisionnement en eau.

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## CIR FAITS NOUVEUX

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## CIR NEWSLETTER

TO THE INTERNATIONAL DRINKING-WATER SUPPLY AND SANITATION BOARD

February 1981

No. 118

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## IRC publications

## 4. information services

IRC's general information services - for both internal and external clients - are provided by the Information Section. Section tasks include:

- \* editing and production of IRC publications;
- \* compilation of the monthly Newsletter;
- \* development and maintenance of 'public relations'; and
- \* library and documentation services.

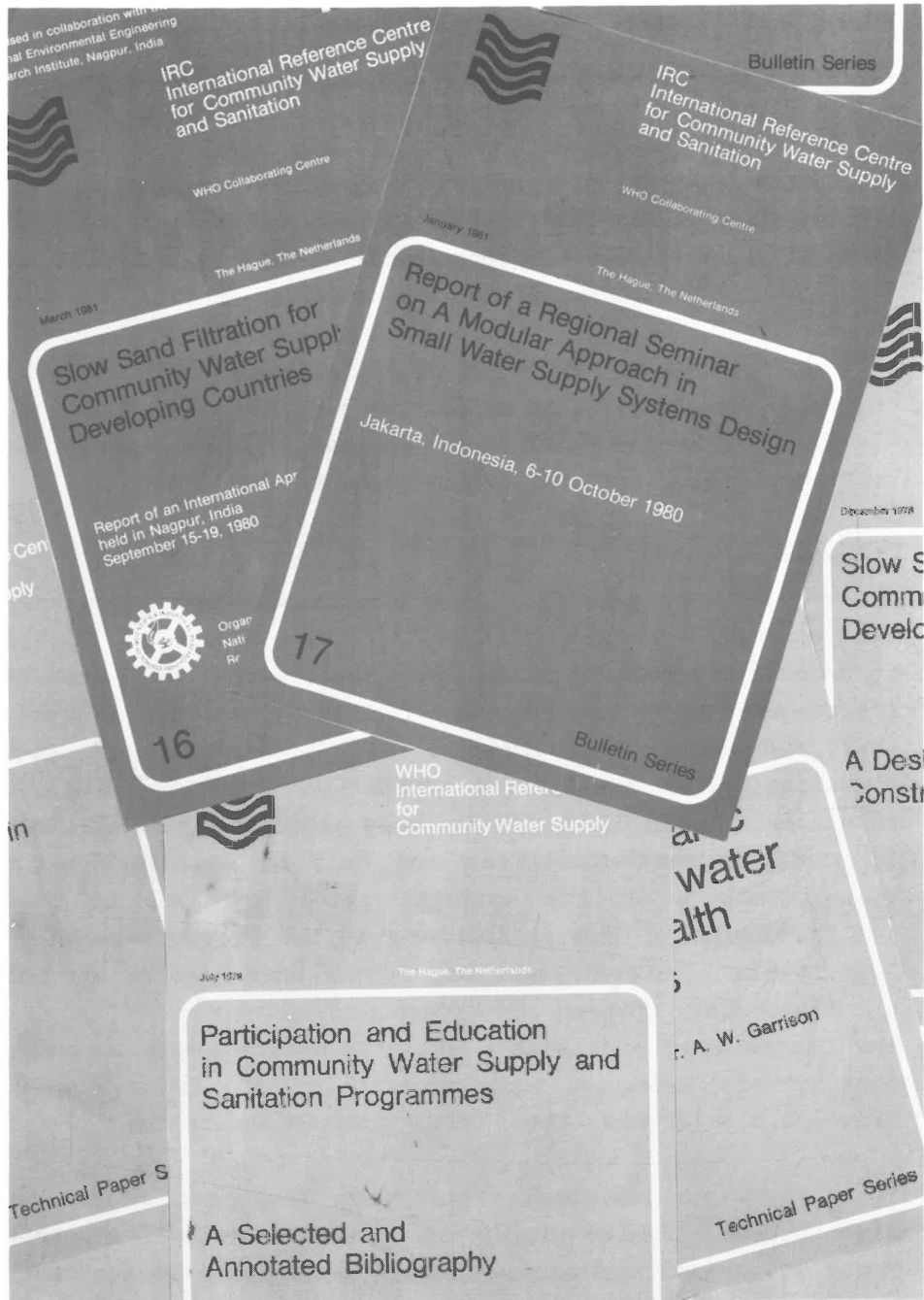
In principal, basic services (e.g. provision of IRC publications) are provided at no cost to non-commercial parties in developing countries (upon request only). Details on more complex services are available, again upon request.

### IRC publications

IRC publishes a Technical Paper Series which provides expertise on topics ranging from the analysis of organic compounds in water, to community education and participation. Technical Papers are the joint efforts of consultant experts and IRC staff and address themselves to solving pressing needs in the community water supply and sanitation field in developing countries. These documents are used selectively by all levels of staff in many countries: not only by engineers and top decision-makers at the national level but also by public health officials, and technicians at the provincial and village levels. Several Technical Papers have been or are being translated into Spanish and French.

The Centre also publishes a Bulletin Series, with reports on international meetings (co)organized by IRC, as well as bibliographic reference lists, and a monthly Newsletter.

In 1980 three new English-language Technical Papers were distributed: 'Public Standpost Water Supplies' (Technical Paper 13); 'Public Standpost Water Supplies, a Design Manual' (TP14); and 'Evaluation for Village Water Supply Planning'



Newsletters



(TP15). This last Technical Paper was produced jointly with John Wiley and Sons Ltd. (UK).

A full list of IRC publications presently available can be found in Annex 2.

### **Newsletter**

In 1980, eleven issues were produced. Appearing monthly, the Newsletter describes new developments in the community water supply and sanitation field, announces new publications and conferences, highlights innovative techniques and other newsworthy items (including "News from IRC").

Preparations were finalized for a new, four-page Newsletter format, to be produced from January 1981 onward. This new Newsletter has been designed to provide even more explicit information support to the International Drinking Water Supply and Sanitation Decade.

### **Public relations**

Here, section activities range from maintenance of IRC's housestyle and direct mailing to pertinent journals (for review purposes) of new publications, to reception of visitors to the Centre. The compilation of Annual Reports, brochures, etc. is also carried out by the Section.

Public Relations are not restricted to promotion of the International Reference Centre and its work. Increasingly, attention is paid to the presentation of the Water Supply and Sanitation cause to a broad public. In this context mention should be made of an information leaflet on the International Drinking Water Supply and Sanitation Decade. This brochure was produced in October 1980 (anticipating the official launching of the Decade in November of the same year) and received wide attention. A Decade Press Briefing Seminar was organized jointly with Earthscan (UK) and the Netherlands' Organization

for Applied Physics Research - TNO.

### **Library and documentation**

IRC's rapidly-growing library contains about 12,000 documents. The collection consists of all types of publications dealing with water resources, water supply and sanitation, waste treatment and disposal; it includes documentation on developing countries, development aid, and appropriate technologies. On programme subjects, the holdings are very extensive, and specific attention is given to documents which are not officially published or which do not have a wide circulation. The Centre receives about 140 journals and newsletters. Primarily, the library serves staff members in their preparation of handbooks, training guides, and in their work in the field. The library and documentation unit plans to accommodate future efforts of the Centre particularly in the sanitation field.

In late 1980, a feasibility study was made to appraise the need for the automation of IRC's library and documentation activities using the information retrieval and management system MINISIS.

The main reason for this proposed automation - apart from the fact that IRC's information holdings risk becoming unmanageable manually - lies in several projects planned for the POETRI programme (see Chapter III) e.g. thesaurus development, abstract journal production, and large-scale selective dissemination of information.

annexes



## annex 1

### irc staff

as per december 1980

#### Director

Ir. P. Santema

Director, National Institute  
for Drinking Water Supply,  
The Netherlands.

#### Management

Drs. J.M.G. van Damme

Ir. J. Haijkens

Manager

Deputy Manager/Programme Co-  
ordinator

#### Programme development section

Ir. E.L.P. Hessing

Ir. H.A. Heijnen

Ir. E.H.A. Hofkes

Mr. G.L. Howell

Ir. P. Kerkhoven

Ir. T.K. Tjiook

Ir. M. van Melick

Programme Officer

Programme Officer

Programme Officer

Programme Officer

Programme Officer

Programme Officer

Project Manager

#### Information section

Mr. W.-K. Hoogendoorn  
M I Inf. Sp.

Head Information Services

Mr. G.J. Bedard, B.A.

Ing. A.L.M. Helderma

Ms. P.A. O'Donnell

Mr. A. Bolton

Editor

Information Officer

Information Assistant

Library Assistant

#### Administrative section

Ms. I. de Boer

Ms. E.M. Kool

Ms. W.M. Ballering

Ms. B. Isgar

Ms. H. Wolsink †

Ms. M.A. Zijdemans

Management Assistant

Staff Assistant

Programme Assistant

Programme Assistant

Programme Assistant

Programme Assistant



## annex 2

### list of irc publications

#### Technical paper series

- The Potential Pollution Index as a Tool for River Water Quality Management, 1973 (order code: TP6E)
- Prediction Methodology for Suitable Waste and Wastewater Processes, report, University of Oklahoma and U.S. Agency for International Development, 1976 (TP8E)
- Analysis of Organic Compounds in Water to Support Health Effect Studies, a Consultants Report, 1976 (TP9E)
- Hand Pumps for Use in Drinking Water Supplies in Developing Countries, 1978 (TP10E)
- Slow Sand Filtration for Community Water Supply in Developing Countries, A Design and Construction Manual, 1978 (TP11E)
- Participation and Education in Community Water Supply and Sanitation Programmes, a Literature Review, 1979 (TP12E)
- Public Standpost Water Supplies, 1980 (TP13E)
- Public Standpost Water Supplies, a Design Manual, 1980 (TP14E)
- Evaluation for Village Water Supply Planning, 1980 (TP15E)

#### Bulletin series

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

#### NOTES

'Hand Pumps for Use in Drinking Water Supplies in Developing Countries' and 'Slow Sand Filtration for Community Water Supply in Developing Countries, A Design and Construction Manual' are also available in French (order codes TP10F and TP11F resp.). Spanish editions of these two publications can be obtained from CEPIS, Casilla Postal 4337, Lima 100, Peru.

- Global Workshop on Appropriate Water and Waste Water Treatment Technology for Developing Countries, Voorburg, The Netherlands, 1977 (B7)
- Slow Sand Filtration for Community Water Supply in Developing Countries, a selected and annotated bibliography, 1977 (B9)
- Public Standposts for Developing Countries, Proceedings of an International Expert Meeting held in Achimota (Accra), Ghana, 1978 (B11)
- Participation and Education in Community Water Supply and Sanitation Programmes, a selected and annotated bibliography, 1979 (B13)
- Community Education and Participation in the IRC Slow Sand Filtration Project, Voorburg, The Netherlands, 1979 (B14)

### **Other publications**

Symposium on Community Water Supply in Development Cooperation, report, 1977

Water and Sanitation for all by 1990, Brochure on the International Drinking Water Supply and Sanitation Decade. Prepared by IRC's Information Section, 1980.

### **Papers by IRC staff**

Towards an Improvement of International Transfer and Exchange of Information on Water Supply and Sanitation in Developing Countries, W.-K. Hoogendoorn, 1977

Special Training Problems for Rural Water Supply in Developing Countries, J. Haijkens and R.P.J. Turrell, 1978

Community Water Supply and Sanitation, Basis to Rural Development, T.K. Tjiook, 1978

Hand Pump Technology for the Development of Groundwater Resources, E.H.A. Hofkes and F.E. McJunkin, 1978

Support Programmes in the Water Field, J.M.G. van Damme and W.-K. Hoogendoorn, 1979

Third World Tests for Sand Filters, P. Kerkhoven, 1979 (in: World Water, September, 1979)



Cooperation for the International Drinking Water Supply and Sanitation Decade and the Case of the Slow Sand Filtration Project, a discussion paper prepared for the 5th WEDC Conference, Loughborough, United Kingdom, 22 - 24 April, 1979, P. Kerkhoven

Slow Sand Filtration for Community Water Supply in Developing Countries - Part I: General Aspects, lecture given at a Post

Graduate Study Course in Sanitary Engineering, Delft University of Technology, April 1979, P. Kerkhoven

Information Support to the International Drinking Water Supply and Sanitation Decade, J.M.G. Van Damme, W.-K. Hoogendoorn and P. Kerkhoven, 1980

A Commentary on the Water Supply Situation in Africa, E.H.A. Hofkes, 1979 (In: Aqua, December 1979)

Manual Pumping of Water for Community Water Supply and Small-Scale Irrigation, E.H.A. Hofkes, 1979

Research Strategies for Rural Water Supply and Sanitation Development, paper presented at the Interregional Seminar on Rural Water Supply, Uppsala, Sweden, J.M.G. Van Damme, 1980

Strategies for Water Supply Systems in Developing Countries, paper presented at the International Symposium on Water Supply and Health, Noordwijkerhout, The Netherlands, J.M.G. van Damme, 1980

### IRC newsletter

Monthly, available free of charge in English (Newsletter) and French (Faits Nouveaux) upon request. A Spanish version (Noticiero) can be ordered from CEPIS, Casilla Postal 4337, Lima 100, Peru.

### NOTES

'Practical Solutions in Drinking Water Supply and Wastes Disposal for Developing Countries' (1977) is out of print; a second version is in preparation. 'Support Programmes in the Water Field' (J.M.G. Van Damme and W.-K. Hoogendoorn, 1979) is also available in French.

## Reference lists

- RL 1 Technology Transfer to Developing Countries
- RL 2 Training Manuals on Water Supply and Sanitation
- RL 3 Defluoridation of Drinking Water
- RL 4 Drinking Water Use in Developing Countries
- RL 5 Health Aspects of Community Water Supply in Developing Countries
- RL 6 Testing of Handpumps
- RL 7 Schistosomiasis and its Control in Water Supply and Sanitation in Developing Countries
- RL 8 Diarrhoeal Diseases
- RL 9 Health Hazards in the Use of various Materials in Water Distribution Systems
- RL 10 Construction of Pit Latrines
- RL 11 Water Resources for Drinking Water Supply in Developing Countries
- RL 12 Water Resources and the Hydrological Cycle
- RL 13 Wind Energy for Water Supply
- RL 14 Disinfection of Drinking Water in Developing Countries
- RL 15 Public Standpost Water Distribution Systems
- RL 16 Solar Energy in Water Supply
- RL 17 Artificial Groundwater Recharge
- RL 18 Quality of Drinking Water in Developing Countries
- RL 19 Rainwater Harvesting
- RL 20 Springs as a Source for Drinking Water in Developing Countries

## NOTES

The lists of bibliographic references mentioned above do not pretend to be exhaustive. They consist of titles of documents collected by IRC over the past few years, supplying the user with some introductory material which could provide a basis for further literature research.

# annex 3

## current and planned involvement of irc in country-based projects on information and technology support

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

* = currently involved in country project	● = working contacts established	■ = planned involvement
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1 = information programme 'POETRI'	6 = sanitation systems
2 = manpower development	7 = standardization
3 = handpumps	8 = roving seminars
4 = public standposts	9 = community participation
5 = slow sand filtration	10 = evaluation and planning



## annex 4

### list of visitors to irc in 1980

ACHESON, M.	WHO, Headquarters.
AGARWAL, Mr. A.	Consultant, Earthscan, London.
AHMAN, Mr. I.	WHO, Headquarters.
ALI, Mr. K.	CIEH, Ouagadougou, Upper Volta.
ALOZIE, Dr. O.U.	UNEP.
APPLETON, Mr. B.	World Water, Liverpool.
ARBOLEDA, Mr. J.	Environmental Health Technology. Support, Colombia.
ARLOSOROFF, Mr. S.	World Bank.
AUSTIN, Mr. J.	Consultant, US AID, U.S.A.
AZEVEDO NETTO, Prof. J.M. de	Consultant, Brazil.
BACHMANN, Dr. G.	WHO, Headquarters.
BALL Mr. S.	WEDC, Loughborough University of Technology, U.K.
BARABAS, Dr. S.	WHO Collaborating Centre for Water Quality Control, Canada.
BARRY, Mrs. S.	ASLIB, U.K.
BEYER, Mr. M.	UNICEF.
BHAT, Mr. S.G.	NEERI, India.
BOURNE, Dr. P.	UNDP.
CHINGTHAM, Mr. B.S.	Water Supply Division of Imphal, India.
COOMBS, Mr. M.	Wiley & Sons, U.K.
CURRAN, Mr. C.	An Foras Forbartha, Ireland.
DANIEL, Mr. M.H.	Ministry of Public Health, Egypt.
DAVELAAR, Mr. H.	UNICEF Consultant, Spain.
DEKKER, Mr. G.	UNDP.
DENSHAM, Mr. J.K.	ITS, U.K.
DIETERICH, Dr. B.	WHO, Headquarters.
DOCTOR, Mr. R.	Ahmedabad Municipal Corpora- tion, India.

DWIVEDI, Mr. O.N.	Water Supply Division, India.
EWAGATA, Mr. P.	Voice of Kenya, Kenya.
FEACHAM, Dr. R.	Ross Institute for Tropical Hygiene, U.K.
GIROULT, Mr. E.R.J.	WHO Regional Office for Europe.
GORCHEV, Dr. H.	WHO Regional Office for Europe.
HUISMAN, Prof. L.	Delft University of Technology, The Netherlands.
HUTTON, Mr. L.	WEDC, University of Loughborough, U.K.
JORGENSON, Ms. K.	Centre for Development Research, Denmark.
KALBERMATTEN, Mr. J.	World Bank.
KALRA, Dr. K.S.	Industrial & Allied Sales Ltd., India.
KATKO, Mr. T.	Tampere University of Technology, Finland.
KHARE, Mr. S.T.	Maharashtra Water & Drainage Board, India.
KIPPING, Mrs. J.	Water Research Centre, U.K.
KISHORI, Mr.	Regional Water Engineer, Shinyanga, Tanzania.
KRUERKLOW, Mrs. D.	Rural Water Supply Division, Ministry of Health, Thailand
LANOIX, Mr. J.M.	Consultant, Switzerland.
MATHER, Mr. T.	FAO, Italy.
MCGARRY, Dr. M.G.	IDRC, Canada.
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