this context, cooperation and collaboration could be sought with Elsevier, a publishing house that has been directly involved in the development (or sponsorship) of many of the mainstream science related information databases currently in use.

Finally, the combination of its geographic size and location, and its extensive commitment to the developing world makes the Netherlands an ideal environment for the development of methods to:

generate the standardization and integration of development related databases; assist developing countries in generating databases and overcoming information management problems; and generate access to available external sources.

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INFORMATION POLICY AND THE WATER SUPPLY AND SANITATION SECTOR AT A NATIONAL LEVEL

Information management development for the water supply and sanitation sector continues to be neglected both by national level institutions and by donor organizations. Everyone agrees on the importance of information, but too little is being done to translate the recognition of the importance of information into a practical, well defined information policy and corresponding strategy for water/sanitation institutions in developing countries. This article provides a review of what has been done and what should be done in this respect, in order to place the water sector in a better position to achieve its objectives.

IRC International Water and Sanitation Centre, founded in 1968, was designated by the World Health Organization (WHO) as a specialized collaborating centre on community water supply. During the mid 1970s its role was to provide information and expertise relevant to the particular situation of water supply (and sanitation) in developing countries.

As part of its capacity building policy, IRC joined hands with regional and national institutions to execute research projects and conferences. It became soon very clear that availability and communication of information on even common water supply and sanitation aspects was proving to be a major constraint to the sector. IRC then expanded its role and adopted - in addition to its assigned role of collecting, generating information - a policy in support of the development of national, institutional and project information management capacities.

The POETRI (Programme of Exchange and Transfer of Information) Programme, in the early eighties, represented the first attempt to stimulate a global commitment to national capacity building in information management (1). Though the project as such was not successful in terms of physical implementation as it was not able to attract sufficient funding, several capacity building efforts at a national level (WASIN/Indonesia and WASSDOC/Sri Lanka) and at regional level (Francophone West Africa, e.g. SAINEA/Burkina Faso) can be seen as spin-offs.

In the course of the Water Decade there was growing frustration among sector planners about the slow pace of physical implementation and the lack of learning from experience. This led in 1986 to a new series of initiatives code-named INFO-IMPACT (2). INFO-IMPACT aimed at preparing an analysis of the practical information issues for the sector in order to come to a sensible information development approach. The INFO-IMPACT activity stimulated interest in the information issue at the highest levels such as with the Inter-Agency Steering Committee for the IDWSSD (International Drinking Water Supply and Sanitation Decade) and the broader Collaborative Council for Water Supply and Sanitation.

Presently, IRC serves as the convenor of a Working Group under the aegis of the Collaborative Council concerned in particular with Information Management (WG ~ IM). This group has been active in various ways since 1991, and will hold its third meeting from April 20-22, 1993 at the WHO Regional Centre for Environmental Health Activities (CEHA) in Amman, Jordan.

Within the sector the Working Group has played an important role in advocating the need to reinforce information capacities. It is now engaged in developing a strategy for effective country level capacity building in information development. The WG ~ IM brings together planners, policy-makers and practitioners in addition to information specialists. It is this mix that enables the Working Group to come up with suggestions and strategies that are understood and accepted by both operational sector staff and information managers.

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To make information really a supportive element in the sector, further advocacy is needed to convince national agencies, institutions and projects of the importance of managing information. Each agency will need to assess its information requirements and develop a strategy to ensure that these requirements (continue to) be met. For such a strategy to be effective and flexible, it needs to be embedded in and subject of an information policy. At national, and institutional level, information policies need to be formulated that describe the rationale ,objectives, and information outputs. As part of its information task IRC has worked on a number of practical information tools such as the Interwater Thesaurus (1987) and a classification system for water supply and sanitation in developing countries (3).

Constraints

The water and sanitation sector is complicated by the fact that there is a need to reconcile the varying interests of the many institutions and agencies. These may include: ministries and departments of the central government; national research and training institutes; local non-governmental organizations; international and bilateral agencies; professional associations; project teams; and so on. This is something which makes it difficult to establish any information policy to which all those organizations concerned can wholeheartedly subscribe.

A further difficulty arises from the different and often overlapping responsibilities and interests of these many organizations, which may be involved, with varying degrees of commitment, in water resources; water supply; water quality; irrigation; hydroelectric power; industrial processes; domestic sanitation; school sanitation; health aspects, including water-borne and water-related diseases; disposal of solid and toxic wastes; recreational uses of water; soil erosion; land drainage; desalination; etc.

If these many and varied interests and responsibilities are to be reconciled, and wasteful duplication of effort and resources avoided, a general policy for sector development, embodying overall sector objectives and appropriate sector strategies, is needed. This could be done as part of a water sector master plan. A comprehensive water sector master plan should include, as a matter of course, a clear statement of the information requirements of the sector, clearly-defined objectives and strategies designed to meet those requirements, and a clear indication of the human, material and financial resources required.

These considerations apply not only at the national level, in the framework of general master plans for the sector as a whole, but also at the institutional and the project level. *In fact, all activities in the water and sanitation sector depend upon the generation, collection, processing, retrieval and dissemination of data and information of one kind or another to achieve their aims, and all programmes, plans and projects for such activities should make adequate provision for the management of data and information.*

The complexity of the sector has made it very difficult to agree on a sector wide national information policy. Still, such policies are necessary to create the right environment for capacity building in information management. At least at institutional level, depending on the mandate and mission of a national-level sector institution, water sector managers and policy-makers need to formulate and adopt a realistic and clearly-defined information policy. This policy should preferably be established in consultation with other national level agencies and should reflect the current directions, issues and needs of the sector.

To support information development for the sector the Collaborative Council in its meeting of September 1991 in Oslo, recommended that as a matter of national sector development policy, governments, External Support Agencies (ESAs) and sector support institutions emphasize *capacity building for information management as an essential component of sector strategy by committing resources for information management capacity development as part of a programme of project activities or as a contribution to institution building* (4).

This statement is a powerful message to country level sector institutions and ESAs to support the formulation of an information policy, be it at institutional or national level. The overall objective of the information policy should be to ensure the availability and effective use of information for optimum performance in water supply and sanitation, and in water resources management.

With a clear policy in hand, a strategy should be developed which can indeed provide the many types and formats of information needed. Quality information will be needed by sector planners to promote and facilitate choice of project and programme approaches, by financial planners to optimize funding resources, by trainers to support institutional human resources development and community management, by communities to know how best to improve and expand services, by technicians and project staff to track all the aspects of implementation from resources planning, ground water surveys, new technologies and solutions, to progress monitoring and system utilization.

When an institution has established its information policy to cover its own role in the sector, it can start to develop and implement a strategy to address the issues that hamper information management

development:

* a lack of awareness, particularly among policy makers, of how important information and data are to the performance of institutions in the sector;
* a lack of well-designed modern systems for managing the various kinds of information and data;
* a lack of appropriate organizational structures and coordinating mechanisms for information management;
* a lack of competent well-trained information personnel;
* a lack of suitable accommodation,equipment and supplies for information handling; and,
* underlying all these, a lack of adequate financial support (5).

To find solutions to these problems, at any level, water sector managers and policy-makers need to formulate and adopt a realistic and clearly-defined information policy.

User Needs

In 1987, as a result of the first INFO-IMPACT meeting, an inventory was made on the different types of information needs of the water sector. Four different levels were identified with differing information needs/requests:

1. Local level
Consisting of: community members, village health workers, social workers, village water committees, school teachers, well drillers, village mechanics and craftsmen, women's groups, religious leaders, boy scout and girl guide leaders.
Requiring: health/hygiene materials; guidelines on financial management and technical matters; standards and maintenance manuals.

2. Intermediate/District level
Consisting of: district health workers, sanitarians, trainers, documentalists, hospital staff, non-governmental organization field workers, water agency district officers, local planners.
Requiring: technical standards; up-to-date evaluations of project approaches; local project information training materials; promotional literature; problem solving

3. National level
Consisting of: policy/decision makers, programme planners, engineers, health officials, legislators, politicians, universities, national representatives of UN agencies, donors and NGOs, research/reference centres.
Requiring: Programme/technical data from within the country as well as from other countries, promotional aids, training aids; up-to-date product information

4. International level
Consisting of: bilateral and multilateral donors, UN agencies, research/reference centres, technical universities, consulting firms, commercial publishers/information specialists (6).

Given the wide scope of the information needs/requirements identified in the INFO-IMPACT meetings, it is not surprising that a follow up meeting on Communication and Information arrived at the following different types of information in 1989:

Technical information
covering technology, social/cultural aspects, institutional and organizational aspects, etc.;
Project/sector information
covering general information about the sector (in a country) and about the type of projects being undertaken;
Monitoring and evaluation
often covers technical information;
Management information systems
covering the management and associated progress reporting of project and institutional resources, necessary to undertake an activity;
Public information
known since 1989 as the concept Information, Education, Communication (7).

Strategies

The IRC led Collaborative Council Working Group on Information Management during its meetings in 1991 and 1992, paid particular attention to develop strategies for information management at country level. Objectives of this strategy include:

A. formulation of policies for information provision, management and use;
Proposed strategy:

* develop cooperative and participatory arrangements involving policy makers, information personnel and users for formulating policies and defining the scope of information activities.

B. information provision based on the actual needs of specific target groups of users;
Proposed strategy:

* define target groups and define the scope of coverage;
* assess and determine information needs of the target groups.

C. provision of accurate, reliable, and relevant information on a selective basis in accordance with the needs of specific groups of users;
Proposed strategy:

* develop and strengthen with user participation criteria and mechanisms for generating, recording, collecting and evaluating information in relation to user needs and for feed back on the use of such information.

D. establishment of efficient and effective structures and methods for delivering information on a selective basis to selected groups of users.
Proposed strategy:

* create, develop and maintain appropriate organizational structures for information management;
* provide adequate numbers of appropriately qualified managerial and technical staff;
* make adequate and sustainable financial provisions;
* provide adequate accommodation, equipment and communication facilities;
* establish and maintain effective information systems and networks on the basis of shared inputs and outputs; and
* create, develop and maintain information products and services in accordance with the needs of the users (8).

Conclusion

Putting this all into perspective, leads to a conclusion that it is not easy to generalise about information policy for the water sector. If the water sector is going to succeed in achieving its objectives in developing countries, it is clear that much needs to be done to meet the needs of a wide range of different target groups. By concentrating on national level user needs, it is envisaged that through appropriate information policy plans (an integral part of wider water sector master plans) it will be possible to ensure that the water and sanitation sector in developing countries will be better placed to meet the diverse requirements of potential users of any information generated.

IRC hopes by continuing to play a leading role in shaping the thinking behind future information policy in the water sector that it will be able to contribute towards establishing a sustainable information base for the water sector at a national level and below.

Notes

1. IRC and UNESCO. Division of the General Information Programme (1981). POETRI reference manual. Vol. 1. The Hague, The Netherlands, International Reference Centre for Community Water Supply and Sanitation, (Technical paper series ; no. 16).

2. IRC (1988). Info-impact : report on working meeting on information exchange for water supply and sanitation : The Hague, 22-24 September 1987. The Hague, The Netherlands, IRC International Water and Sanitation Centre.

3. Leatherdale, Donald (1987). Interwater thesaurus for community water supply and sanitation. The Hague, The Netherlands, International Reference Centre for Community Water Supply and Sanitation, (Reference series ; no. 4).

4. Water Supply and Sanitation Collaborative Council (1992). Global forum : Oslo, 18-20 September 1991. Volume 1 : Main report : Volume 2 : working sessions' reports. Geneva, Switzerland, Water Supply and Sanitation Collaborative Council Secretariat, World Health Organization. Vol. 2, p. 12.

5. Unpublished IRC background paper in preparation for WG ≈ IM meeting in Amman.

6. IRC (1988). Info-impact : report on working meeting on information exchange for water supply and sanitation : The Hague, 22-24 September 1987. The Hague, The Netherlands, IRC International Water and Sanitation Centre. P. 8

7. These concepts are further discussed in the recent IRC publication: Parker, Stephen (1993). Information management in the water and sanitation sector : lessons learned from field assignments in Africa and Asia. The Hague, The Netherlands, IRC International Water and Sanitation Centre, (Occasional paper series ; no. 19). See especially Chapter Two.

8. Water Supply and Sanitation Collaborative Council. (1992) Terms of Reference : Working Group on Information Management. Unpublished paper. P. 5

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