

Managing information in the water and sanitation sector

by J. Stephen Parker

In the current climate of financial restraint, it is more important than ever that work is carried out efficiently. One way to do this is to plan an effective information management strategy.

IN COMPARISON WITH other sectors, such as agriculture and health, the development of information management capacities in the water and sanitation sector has, until recently, been seriously neglected. Assignments carried out by the IRC International Water and Sanitation Centre in Africa and Asia have shown that while managers in sector institutions are often aware of the need to organize information more effectively, they do not always know how to go about it.¹ The general aim of the assignments was to help sector agencies to identify and overcome these problems.

One of the main problems is a lack of appreciation, on the part of policymakers, of how important information and data are to the work of institutions in the sector. This results in the absence of clearly-defined policies and responsibilities for information management, and a consequent lack of appropriate organization structures and co-ordinating mechanisms, as well as inadequate provision of all kinds of

resources, including qualified personnel, accommodation, equipment and supplies, and finance.

The importance and use of information

Reliable, up-to-date, and accurate information is vital to policymakers and planners, trainers, technicians and project staff, and water users. In most countries, many different institutions and government departments work in water and sanitation, and potential users of information are widely scattered and difficult to identify.

Even when users have been identified, their information needs cannot be met unless the right kind of information already exists and can be made available. In many cases a lot of the information needed is not generated within the institution itself, but by external sources such as aid agencies, consultants or contractors, project management teams, or government

bodies. It is often very difficult to find out both if the information that is needed exists and how it can be obtained. This may even apply to information produced by the agency itself.

In Tanzania, for example, one of the most difficult tasks facing the MAJIDOC information network in the Ministry of Water (MAJI) was that of identifying and collecting unpublished documentation produced within the country. It was recommended that every section of the ministry concerned with water and sanitation should supply MAJIDOC regularly with copies of all the documents in certain specified categories (annual reports, for example, but not correspondence) which it produced. The method could later be extended to other government bodies, while donor agencies, consultants, and contractors could also be required, through clauses in agreements and contracts, to supply the network with copies of suitable documents.

Policy and responsibility

At the national level, a national information policy for the sector can provide a framework for developing complementary and compatible information systems which will reduce wasteful duplication of effort and unnecessary expenditure. In specific institutions, decisions as to which groups of users their information systems should serve, and how, should be made within the context of a general information policy for the institution.

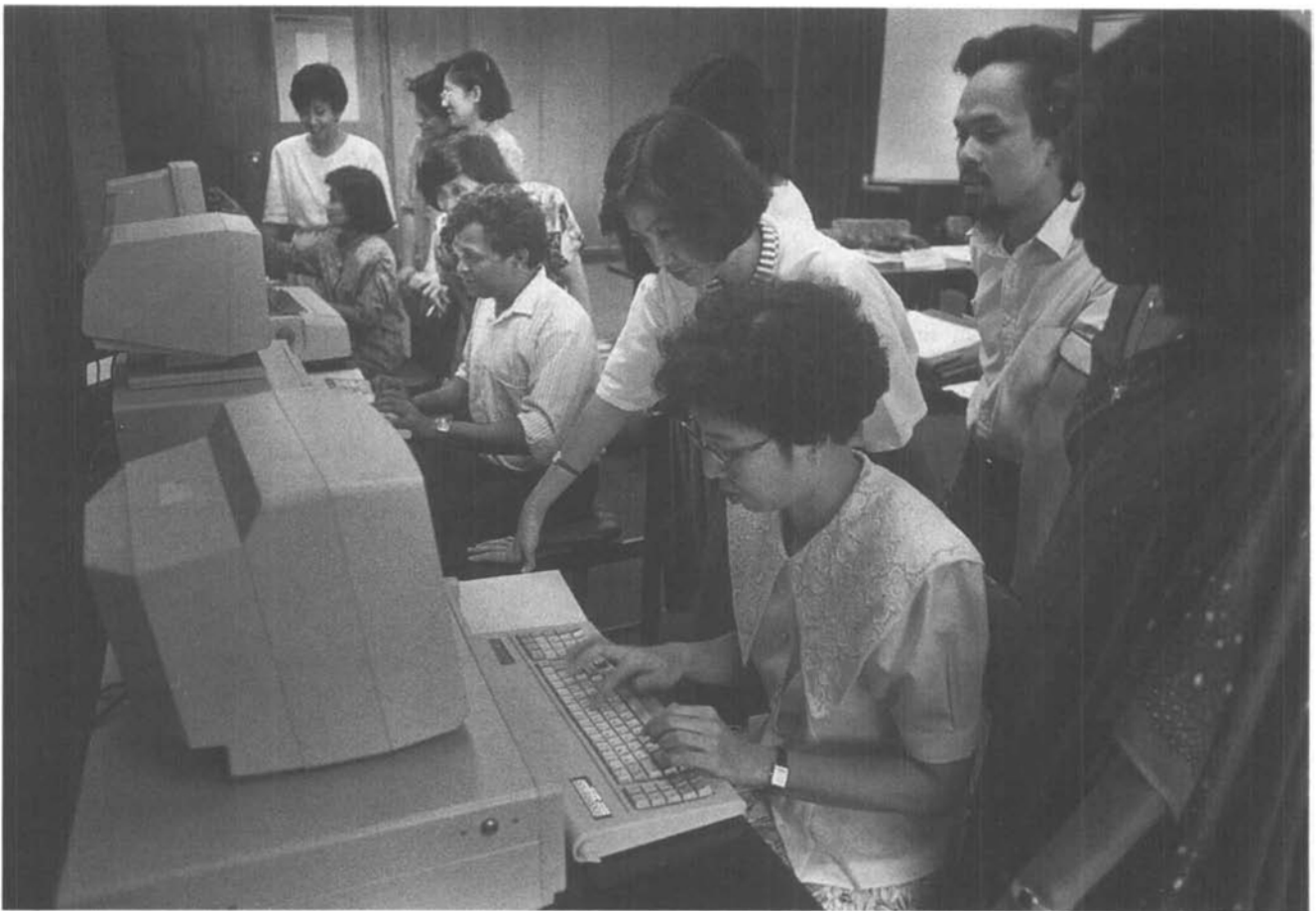
One result of the absence of information policies is the lack of clearly-defined responsibility for information management within sector institutions. The first step towards implementing an integrated approach to information management should be to assign responsibility for it to a senior manager. This 'information manager' should either be a sector professional with training in information work, or an information specialist with qualifications in an appropriate discipline.

Proposals to this effect were made in several of the countries visited, but so far only the Water Development Department in Uganda and the National Water Directorate in Angola have appointed information managers. In both cases, this has had a very



WHO Photo

Policymakers must appreciate how important information and data are to sector institutions.



Ron Gilling/Panos Pictures

It is vital that the staff who are to operate and use new information services are properly trained.

positive impact on the development and role of information management in the institution and sector.

Information systems and services

To provide the information needed by specific types of users, appropriate information systems and services are needed. These may be concerned with:

- project and sector information;
- management information;
- technical information; and
- Information, Education, and Communication (IEC).

Project and sector information relates to the water and sanitation sector in a country as a whole and to completed, ongoing, and proposed projects in the sector. To be effective, a project and sector information system must be linked to management information systems in individual institutions. These may be concerned either with operational information, such as hydrological data, borehole records, operation and maintenance data, or water-quality data, or with administrative information relating to topics such as personnel, equipment, stores, and finance.

The need for project and sector information is generally recognized, but the existing management informa-

tion systems and documentation services are often not capable of providing the required level of support. In Uganda in 1990, for example, operation and maintenance records were incomplete and unreliable because of the difficulty of communicating with field operators, the lack of standardized systems and forms, and inadequately trained operators. Water-resources data was not being collected systematically, and there was no proper system for retrieving borehole records. Original engineering drawings were often removed from the files and not returned, and staff were unable to locate documents or even complete files in the registry because of inadequate indexing. By the following year, however, a start had been made on computerizing the water-resources data and a databank of water sources had been created. Similarly, in Angola and Guinea Bissau, software, hardware, and training for water-resources data management have been supplied under technical assistance.

Technical information is concerned with problems and solutions, methods and techniques, the results of research and field studies, sources of equipment, expertise, and materials. Collecting such information is generally the task of libraries and documentation centres. These are perhaps the most neglected of all information units in

sector institutions. In Guinea Bissau, for example, a documentation centre set up in the General Directorate of Water Resources some years ago with Dutch technical assistance has become moribund through a lack of continued support. By contrast, the Water Development Department in Uganda and the National Water Directorate in Angola have both taken steps to rehouse and re-equip their libraries, develop their document collections, and initiate effective documentation services.

Information, Education, and Communication is targeted primarily at the general public, and aims to develop awareness, improve motivation, and change behaviour in relation to water and sanitation. IEC activities were studied in detail only in Guinea Bissau. It was found that although there was a high level of awareness of the importance of these activities, they were less effective than they could have been, partly because they had not been fully institutionalized in the main sector agencies. There was too much reliance on technical assistance projects as the institutional mechanisms through which IEC work was carried out.

Organizational structures

The four categories of information referred to above are not mutually exclusive. Project and sector informa-

tion may be partly derived from the output of management information systems, while performance indicators and growth forecasts produced by a project and sector information system may serve as inputs to management information systems for planning purposes. Similarly, data derived from a management information system may be made available in a report or periodical article as an item of technical information, which may in turn provide the basis for a radio broadcast, a brochure, or a poster for use in an Information, Education, and Communication programme. The same source of information may thus be used in many different ways and for a variety of different purposes.

These considerations emphasize the need to adopt an integrated approach to information provision in water sector institutions. This requires the establishment of an appropriate organizational structure for information management within the institution.

Responsibility for information management in the sector is often dispersed, and there is a need for better

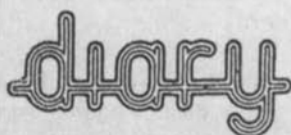
co-ordination of information activities, both within individual institutions and in the sector as a whole. In countries such as Tanzania, the Philippines, and Indonesia, national water and sanitation information networks have been established with the aim of improving the co-ordination of information provision in the sector, while a number of regional networks, such as the Environmental Systems Information Network (ENSICNET), which covers six countries in Asia, attempt to do the same thing at the regional level.

Several of the assignments evaluated the performance of these networks. It was found that most of their member institutions had a positive attitude towards co-operating with others in providing information, but they did not always appreciate that to obtain the benefits of participating in a network, they must also make an active contribution to its activities. Many were not able to do this effectively, and the networks needed to distinguish more clearly between institutions which could participate actively and those which were only able to use the

services of the network without being able to contribute to them.

One way of avoiding these problems is for networks to support different members in different ways, according to their ability to contribute to networking activities. One institution might be offered technical advice on setting up a database, for example, while another could be helped to develop training courses and a third to produce an inventory of information sources — all for the benefit of the network as a whole. This approach has already proved its effectiveness in several countries, and seems to create better prospects for success while minimizing the consequences of failure.

In cases where an information manager is designated, as suggested above, he or she may become the head of a small information management unit, with responsibility for planning and co-ordinating the provision of all kinds of information within the institution, ensuring the compatibility of information systems, and planning and promoting the training of information



22-6 August 1994. **Twentieth WEDC Conference, Colombo, Sri Lanka.** The main theme is 'affordable water supply and sanitation'. Other subjects under discussion will include: Affordable technology for water resources, groundwater location and abstraction, pumping, distribution; management by communities and agencies; affordable health improvements; health and hygiene education. Information from: *Rowena Steele, WEDC, Loughborough University of Technology, Leics LE11 3TU, UK. Fax: +44 509 211079.*

14 October 1994. **Effective Irrigation Management, Wallingford, UK.** Organized in association with Hydraulics Research. Draws on extensive experience of irrigation management methods and performance-assessment techniques. More information from: *Glynis Cooper, Publicity Administrator, Institute of Irrigation Studies, University of Southampton, Highfield, Southampton SO9 5NH, UK. Fax: +44 703 677519.*

11-14 November 1994. **Third Commonwealth Conference on Diarrhoea and Malnutrition, Shatin, Hong Kong.** Details from: *Dr Peter B. Sullivan, Organizing Secretary, Department of Paediatrics, Prince of Wales Hospital, Shatin, N.T., Hong Kong.*

21-6 November 1994. **Eighth IWRA World Congress, Cairo, Egypt.** Congress topics include: water demands; the economic aspects of demand management (cost recovery and water pricing); satisfying demands under drought conditions; and the World

Water Council. Contact: *Dr Mahmoud Abu-Zeid, Water Research Centre, 21 El Galaa Street, Bulak, Cairo, Egypt. Fax: +20 2 773678; or Dr Glenn E. Stout, IWRA, University of Illinois, 205 North Mathews Avenue, Urbana, IL 61801, USA. Fax: +1 217 244 6633.*

1-2 December 1994. **International Water Supply Association Conference on 'Desalination and Water Reuse', Perth, Australia.** The major focus will be on the latest, most effective technologies. For further information, write to: *Dr K. Mathew, Remote Area Developments Group, Institute for Environmental Science, Murdoch University, Murdoch WA 6150, Western Australia. Fax: +61 9 310 4997.*

13 March-7 April 1995. **International Course on Computer Applications in Irrigation, Southampton, UK, and Wageningen, The Netherlands.** Two-module course for irrigation professionals in need of up-to-date training in the use of computer software for irrigation design and management. More details from: *Glynis Cooper, Publicity Administrator, Institute of Irrigation Studies, University of Southampton, Southampton SO9 5NH, UK. Fax: +44 703 677519.*

19-25 June 1995. **Seventh International Conference on Rainwater Catchment Systems, Beijing, P.R. China.** Focuses on identifying the environmental and ecological impacts of rainwater utilization, the role of women, and the establishment of water-quality standards for rainwater catchment systems. This forum for open discussion and exchange of ideas hopes to attract scientists and end users. All queries and correspondence to: *Mr Mou Haisheng, Department of Hydrology, Institute of Geography, CAS, Building 917, Datun Road, Anwai, Beijing 100101, P.R. China. Fax: +86 1 4911844.*

staff. The staff of such a unit will soon develop an intimate knowledge of the information resources of the institution, making the unit the most appropriate element within the institution to make this information available to other institutions through networks.

Resources

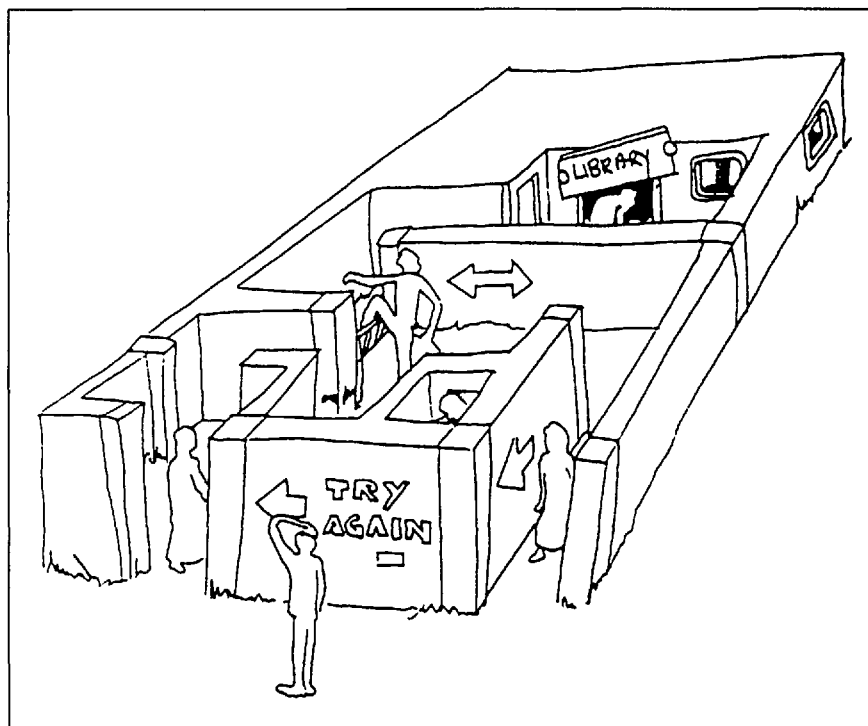
The lack of resources of all kinds is a major reason for the inability of many sector information systems and networks to provide satisfactory services to users.

There is a general lack of trained staff, particularly professionally qualified information specialists, while in many cases staff who have been trained at all have only attended short courses designed to teach basic technical skills. Expecting a national water information system to be successfully managed by staff with only technician-level training in information work is like expecting a national rural water supply programme to be successfully managed by a pump mechanic.

Local consultants can, if they are professionally qualified in information work, provide continuing advice and support after a foreign consultant has departed. They were successfully employed by sector institutions in Uganda and the Philippines to follow up on the initial assignments, and it is IRC policy to encourage the use of such local expertise wherever possible.

Existing information resources — books, periodicals, and other documents — are often in poor physical condition and are sometimes located in inaccessible parts of the building. In Tanzania, for example, where the MAJI library was located on the tenth floor of the Ministry headquarters, the lift stopped on the eighth floor and there was neither natural nor artificial lighting in the staircase to the tenth floor. The ninth floor was flooded, and visitors to the library had to pick their way in semi-darkness on planks laid in the water.

Underlying all other resource problems is the lack of finance. Adequate support from regular institutional budgets is crucial to the development of information management capacity. One of the main problems of information systems and networks set up under technical assistance projects is that, too often, inadequate provision is made for continuing the activity after the project comes to an end. Many project budgets do not budget for buying books and periodicals, especially from foreign sources. In the International Training Network (ITN) project in the Philippines, for example,



if the entire amount provided for 'Library and documentation' in the project budget were to be spent on books, it would still only be possible to purchase 430 books during the five-year project — an average of about seven books a year for each of the twelve institutions in the network.

Conclusion

The progress made in Uganda shows what can be achieved when the authorities take information management seriously, are determined to improve information provision, and are able to work in close co-operation with both foreign and local advisers and foreign aid agencies to implement realistic proposals within a reasonable time frame.

Within two years of the first assignment the Water Development Department in Uganda had:

- established an Information Management Unit and appointed a senior manager as its head;
- established the Uganda Water Information and Documentation Centre (UWIDOC);
- appointed a documentalist and provided the centre with new accommodation and furniture;
- introduced computerized systems for managing water resources and water supply data;
- organized training for information staff; and
- arranged for senior managers to receive orientation training about the new information services.

Not all the recommendations of the Uganda assignments have been implemented, and some may never

be. The Department has shown, however, that under the leadership of a senior manager with a genuine interest in information management and a clear understanding of the importance of information in its daily work, positive steps can be taken, without enormous cost, towards providing its own staff, and those of other sector institutions in the country, with the information they need to do their jobs properly and to achieve the government's aims for the water and sanitation sector.

The resources required to make significant improvements in information provision in the water and sanitation sector are relatively modest. What is essential is a clear commitment, on the part of both national governments and external support agencies, to provide these resources — not merely within the short life-span of a technical assistance project, but over a long enough period of time to ensure that information systems and services are firmly established, and are thus capable of meeting the needs of managers, technicians, and water users. ●

References

1. Parker, Stephen. *Information management in the water and sanitation sector: Lessons learned from field assignments in Africa and Asia*. Occasional Paper 19. IRC International Water and Sanitation Centre, The Hague, 1993.

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