Affordable and effective information management

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CAPACITY IN INFORMATION management in the water and sanitation sector lays the foundation for effective water resources management, applied research, human resources development and training, education and communication – in short, for affordable, effective and, above all, sustainable water supply and environmental sanitation projects.

Although the sector has progressed considerably in the last twenty years, it faces constant challenges due to factors such as population growth, water pollution due to industrialization and urbanization and poverty, together with intrinsic sector weaknesses in institutionalization, in developing partnership with consumers, the private sector and non-governmental organizations (NGOs), in planning for sustainability, in promotion of demand management and in cost recovery.

Affordable and equitable access to water and sanitation is a basic need that the sector has to meet. The need for sector institutions to change from being 'providers' to becoming 'promoters' of services, requires changes in attitude and outlook, the development of new alliances and, above all, capacity building at all levels. To facilitate learning and build confidence for change, access to published information describing experiences, the monitoring and evaluation of sector achievements, and the regular exchange of information at national or district level are vital.

Information management—the capacity to manage information flows and ensure the effective use of information—plays an important role in helping the sector to make these changes. Quality information is needed by water sector planners in choosing project and programme approaches, by financial planners in optimizing funding resources, by trainers in support of institutional human resources development and community management, by communities in learning how best to improve and expand services, and by technicians and project staff in implementing water and sanitation activities. Information management is concerned with all aspects of the information cycle: generation; collection; processing; storage; retrieval; dissemination; and promotion. Only when these activities are effectively managed can sector workers and agencies obtain the information they need to do their jobs properly.

In most sector institutions, information management is carried out through a variety of information units and activities, such as management information systems—including systems for both operational and administrative information—libraries or documentation centres, collections of engineering drawings, hydrological databanks, monitoring and evaluation systems, registries, archives, bibliographic databases, computer networks, conferences, meetings and training programmes, publications, and so on. These are often isolated from each other, employ incompatible methods, and are usually the responsibility of staff at the lower levels of the hierarchy—factors which seriously inhibit their ability to provide effective information service to their users.

In the light of these considerations, can the water and sanitation sector afford *not* to manage information more effectively?

Affordability and sustainability in information management

'Affordable information management' does not mean 'information management on the cheap', or without spending money; rather, it means ensuring that sector institutions can sustain their information management systems themselves, by making the best use of existing resources.

What can happen when the need for sustainability is ignored is demonstrated by the case of a documentation centre in the main sector agency in Guinea Bissau. The centre was set up some years ago under a Dutch technical assistance programme, but has since become moribund through lack of continued support from its parent institution. Libraries and documentation centres are often the most neglected information units in sector institutions, but it does not have to be so; national agencies in Uganda and Angola have recently made serious efforts to rehouse and re-equip their libraries, develop their document collections and initiate effective documentation services, all at modest cost and funded mainly from local sources.

The problems encountered in Guinea Bissau are not uncommon. Even projects specifically designed to develop information systems in the sector often make no provision for integrating their activities into the permanent organizational structure of the institution to ensure continuity after the project has come to an end. This is a serious obstacle to achieving sustainability of information management. It has been encountered also, for example, in projects for establishing sector information networks such as the MAJIDOC network in Tanzania and the WASIN network in Indonesia.

Another problem with information projects is that the financial provision made for essential elements such as books, periodicals or database access is often totally inad-

equate. The project is thus unable to attain the 'critical mass', in terms of capacity to provide information services, which will enable it to meet the needs of its users and so justify the provision of the resources needed for longterm sustainability. Such problems have been encountered in the Philippines, where the amount initially provided for documentation in the budget of the International Training Network - Philippines (ITN-Philippines) project was sufficient to buy only seven books a year for each institution in the network; and in Tanzania, where the true costs of creating planned information products and services under the MAJIDOC project turned out to be far higher than the amounts provided for this purpose in the project budget. By contrast, a recent proposal for training field staff in Maharashtra State in India recognized the need for adequate information support by including provision for three basic libraries of relevant documents to be established in key institutions associated with the training effort.

There are many ways in which an organization may be misled into thinking that information management need not cost money. A simple example is the unquestioning acceptance of gifts of books for its library. This may seem an obvious way to avoid spending money; but if the books are not relevant to the needs of the organization, keeping them simply occupies valuable space and staff time and makes it that much more difficult for users to find the books they really want. One library in the main sector agency in Uganda, for example, was recently found to include several books on clinical medicine which, though of no relevance to the work of the organization, had been retained merely because they were received as gifts.

Similarly, advanced information-handling hardware and software are often accepted uncritically by sector institutions in developing countries under projects financed by external support agencies. Even if the new technology is not too sophisticated to meet real local needs, the training provided for local staff is often inadequate. When local staff are given proper training in these technologies, they frequently leave shortly afterwards for the private sector, taking their newly-developed skills with them. Such situations often lead to considerable waste of time and frustration as staff struggle to retrieve information which they know the system ought to be able to deliver—or even to a complete breakdown in the flow of information when equipment cannot be maintained due to lack of spare parts.

Conversely, continuing to use traditional methods and techniques which cannot cope with the quantity or complexity of the inputs and outputs, in the mistaken belief that this is cheaper than using more effective modern methods, is also likely to prevent users from obtaining the information they need.

Such 'solutions' are not really cheap; there are always hidden costs—for example the cost of providing storage space for useless books, the waste of staff time and effort in trying to master systems which are too sophisticated, or

the economic and social costs arising from the inadequacy of data collected by traditional systems.

Meeting the needs of information users

To be effective, information must be appropriate to the needs of its users. One example of the differing information needs of different groups of users comes from Ethiopia, where users at the national water technology institute and others working in the main government water agency had quite different information needs which called for different responses in terms of information materials, facilities and services. The academic staff, students and researchers at the institute needed information mainly from external sources, such as foreign books and journals, with only an occasional need for local reports, studies and information. The reverse was true for the managerial and technical staff of the government agency. These differences in the information needs of key groups of users were important factors in deciding where a proposed national documentation centre for the water sector should be located in order to be able to meet the information needs of the sector as a whole as effectively as possible.

Considerations such as these emphasize the importance of identifying the various groups of potential users of an information management system and, further, of deciding which groups the system should aim to serve, and in what order of priority. Many groups may like to have access to the information the system can provide, but it may not be either practical or desirable to try to serve them all. For example, local schools may want to use a sector documentation centre for study projects, but visits by groups of students may disturb and annoy other users of the centre.

It is not enough merely to identify target groups of users; it is also important to determine their information needs and, again, to decide which needs the information system should aim to meet, and how. In Kenya, for example, the Kenya-Finland Western Water Supply Project maintains several databases and a document collection designed to meet the specific information needs of those involved in water supply development in the Western Province, but relies on links with other institutions to obtain more general information on water supply and sanitation.

Neither the population of information users, nor their information needs, are likely to remain static for long; identifying users and their needs must therefore be an ongoing, dynamic process designed to ensure that the information system can respond quickly and flexibly to changing demand.

Finding the right information

Even when the information needs of users have been identified, they cannot be met unless the right kinds of information already exist and can be made available. Finding out whether or not the required information

exists can be difficult. In Uganda, for example, a lot of the information needed by the main sector agency is not generated within the agency itself, but by external sources such as aid agencies, consultants or contractors, project management teams or government bodies. In such cases, it is often difficult to find out if the required information exists, and if so, how it can be obtained.

In Tanzania, also, one of the most difficult tasks faced by the MAJIDOC network was that of identifying and collecting unpublished documentation produced within the country. The solution proposed was for the responsible Minister to issue a directive requiring every unit of the Ministry to supply the network with copies of all new reports produced each month. This procedure could later be extended to other government departments and institutions with the cooperation of the responsible ministers or chief officers, while donor agencies, consulting firms and contractors could be required to make similar arrangements through appropriate clauses in official agreements and contracts.

An effective information management system will also aim to meet the needs of different groups of users in the most appropriate way. For example, a senior sector manager or policy maker needing to be briefed on a particular water technology for a meeting with donors does not need a comprehensive bibliography on the subject; he needs a digest of five or six key papers highlighting the main advantages and disadvantages of the technology, the conditions under which it can be effectively applied, and the costs involved. By contrast, a district water engineer responsible for implementing a new piped supply scheme will have a more pressing need for accurate data on the population to be served and the location and quality of the water sources than for access to the agreement between the government and the donor agency funding the project.

Making information management affordable

How can information management systems be made both effective and affordable? The key is to make the best possible use of existing information resources; this calls for a dual approach to information management. First, there is a need to integrate information received from various sources into one information system or, more appropriately, into one family of mutually-compatible systems, to facilitate the exchange of information between them and eliminate unnecessary duplication. Secondly, there is a need to disseminate this information to different groups of users in different ways in accordance with their needs—that is to say, to provide different types or levels of service to users of different kinds.

The creation of an integrated—or at least, coordinated—information management system in a sector institution requires that overall responsibility for information management be assigned to an 'information manager' or

'information management unit' at a senior level. The main tasks of such an individual or group are to plan and coordinate all aspects of information provision within the institution, to facilitate the exchange of information through ensuring the technical compatibility of systems, to plan and promote staff training, and so on.

Action to establish such a unit has already been taken by the main sector agency in Angola. During the first phase of its implementation, the unit will be coordinated by the head of the agency, acting as information manager. The main sector agency in Uganda has also appointed an information manager to coordinate all aspects of information provision. In both cases, the key factor has been the positive attitude to information management displayed by top management.

An information manager or information management unit will develop an intimate knowledge of the information resources of the institution, and will thus be well equipped to make these resources available to other institutions through participation in one or more information networks.

There are many information networks in the water and sanitation sector, but their members do not always seem to realize that, to benefit from participating in a network, they must also be willing to accept their share of the costs and responsibilities involved. A key problem in ensuring the sustainability of such networks is that sector agencies differ considerably in their ability to participate effectively in the management and operation of the network. One way to avoid this problem is for networks to support different member institutions in different ways in accordance with their capacity and willingness to contribute to network activities. For example, help in developing a database might be offered to an institution which already had suitable equipment and expertise, while another, with different internal resources, could be helped to develop training courses in information management—all for the benefit of the network as a whole. Such an approach has proved effective in several countries, and seems likely to create better prospects for success, while minimizing the consequences of failure.

Resource requirements

The resources required to make significant improvements in information management in the sector are relatively modest; what is most urgently required is a clear commitment, on the part of both national governments and external support agencies, to providing them.

The most decisive resource is undoubtedly that of staff. Different kinds of information professionals, with appropriate training and qualifications, are needed for different information units in sector institutions, such as the registry, the hydrological data section, the library or documentation centre, and so on. All information personnel, at all levels, need technical training in appropriate fields, as well as training in management skills and interpersonal relations.

An information unit needs space for its collections of documents and for information users to consult them, as well as adequate working space for staff, and equipment to help them to work effectively. By nature, information systems expand, and this has to be taken into account when planning space and resources.

To establish an effective information system and afterwards maintain it in a condition to be able to meet the needs of users, the budget of the parent institution should include an item for information management, with adequate provision for both recurrent and capital expenditure. Provision for meeting the costs of information support should also be included in the budgets of general projects in the water and sanitation sector.

Money is needed for salaries and other expenses; for furniture, equipment and consumables; for maintaining the premises; for collecting and processing scientific and administrative data; for buying and subscribing to documents; and for producing and distributing information products and services. It is also important to include a foreign exchange component for acquiring foreign information sources.

Conclusion

Both in developing information networks and in creating or strengthening information management systems in individual institutions, the key to success is not to try to do everything at once, but to develop and implement an information plan aimed at meeting information needs and moving gradually towards increased coordination and integration. Such a plan should be developed in accordance with a formal statement of information policy for the institution.

An information policy statement for a sector institution should identify the target groups of information users to be served, define the priority to be given to meeting their differing information needs, and indicate the types and levels of information products and services required.

A basic aim of the information plan should be to establish an organizational structure for information management which will be capable of implementing the information policy effectively. This may include appointing an information manager or setting up an information management unit, as suggested above. The information plan should also clearly indicate the human, physical and financial resources required, and adequate arrangements should be made for monitoring and evaluating its implementation.

If information management is properly planned and executed, it inevitably costs money. This represents an investment in information, the return on which comes, not from the use of information in itself, but from the extent to which the overall aims and objectives of the institution are attained more rapidly, more completely, or more efficiently as a result of the use of information. Effective information management is thus not an end in itself, but a means to an end; that of ensuring that the water and sanitation sector is able to fulfil its responsibilities in meeting the basic human need for equitable access to safe drinking water and adequate sanitation.