



**Operation
and
Maintenance
Activities
in
AFRICA**

Consolidated Report

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Executive summary

Operation and Maintenance Working Group

The Operation and Maintenance Working Group (OMWG) was adopted by the Water Supply and Sanitation Collaborative Council as an affiliated working group in 1991.

Its purpose has been to promote and facilitate cooperation among external support agencies and developing countries, to help the countries to develop tools and processes for the formulation, implementation, monitoring and evaluation of programmes to improve their operation and maintenance procedures in water supply and sanitation programmes. The OMWG's work has been coordinated from WHO headquarters in Geneva through a Core Group of members from international and bilateral external support agencies, technical and academic institutions, and developing country agencies and ministries. Regular meetings have been held.

The initial purpose of the OMWG was to address the key constraints already recognized as related to the performance of operation and maintenance, and to the efficiency and effectiveness of water supply and sanitation services. In response to demand within the sector, the OMWG has developed and distributed certain tools to support national and external support agencies with related responsibilities. These have included case studies, a literature and information database, a guide for managers, and training courses and manuals on specific subjects. The Working Group has also promoted the conduct and coordination of regional and country activities, in particular national and regional workshops to promote sound operation and maintenance procedures and to support training establishments.

At present, steps are being taken to transfer the functions of the current secretariat (WHO) to key regional institutions which will be able to conduct operation and maintenance activities on behalf of the OMWG, including the printing and distribution of the working tools developed through this cooperative framework. Completion of this regionalization process will convert the OMWG into a network of key institutions and professionals oriented towards the promotion and application of good operation and maintenance practices in developing countries.

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Operation and maintenance activities in Africa

This document discusses the progress that has been made in Africa to publicize the concepts of operation and maintenance in water supply and sanitation programmes through subregional and national workshops promoted and sponsored by the OMWG. Since 1991, the following 12 workshops have been organized:

| Participants | No. of countries | Date | Host countries |
|-------------------------------|------------------|----------------|----------------|
| English speaking countries | (12) | November 1993 | Zimbabwe |
| French-speaking countries | (9) | April 1995 | Burkina Faso |
| Portuguese-speaking countries | (5) | September 1995 | Mozambique |
| GTZ-supported countries | (7) | May 1997 | Namibia |
| Ghana (+ 3 neighbours) | | November 1996 | Ghana |
| Zimbabwe | | November 1996 | Zimbabwe |
| Kenya (+ 4 neighbours) | | November 1996 | Kenya |
| Zambia | | April 1997 | Zambia |
| Malawi | | September 1997 | Malawi |
| Swaziland | | October 1997 | Swaziland |
| Lesotho | | October 1997 | Lesotho |
| Botswana | | October 1997 | Botswana |

Plans are being made for a further 10 country workshops to be held, six of which are likely to be completed by the end of March 1999.

The 12 reports describing the workshops listed above were compared and analysed. They contain a large amount of detailed information on the constraints and priority issues perceived by the countries concerned, on their current activities, and on their future plans. Most reports included case studies illustrating particular aspects of water supply and sanitation programmes in urban or rural areas, and the scope of operation and maintenance measures within them.

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All the workshops established working groups to study designated topics and identify the priority issues. In the national workshops in particular, efforts were made to separate the issues into the categories of successes, weaknesses, potentials and obstacles. While findings varied and were sometimes contradictory, the most frequently noted issues in the four categories were as indicated in the table below:

| Category | Urban | Rural |
|-------------------|--|--|
| <i>Successes</i> | Increased service coverage Reorganized institutions Improved staffing Improved revenue collection Better financial situation | Improved community involvement Increased service coverage Better collaboration between Agencies and communities |
| <i>Weaknesses</i> | Aging facilities Illegal connections Poor meter reading Defaulting on payments | Inadequate support services Inappropriate technologies Poor intersectoral collaboration Ineffectual management Weak institutional capacity |
| <i>Potentials</i> | Rehabilitated infrastructure Established systems | Good coordination environment Community awareness |
| <i>Obstacles</i> | Political interference Declining funds | Political interference |

The working groups went on to develop plans of action containing activities to address the priority issues identified. An analysis showed that the most frequently recurring proposals involved:

- the building of capacity through training and development of skilled manpower;
- the promotion of staff development through in-service training;
- broader involvement of the community, including health and hygiene education.

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The recommendations made by the workshops also varied widely, but several referred to:

- the enactment of a sound legal framework;
- the enhancement or establishment of community-based management;
- training, involving the identification of institutions and programme formulation;
- the further introduction of decentralization;
- the formation of intersectoral collaborating bodies on sustainable water supply and sanitation programmes;
- the improvement of financial management.

1. Introduction

1.1 Operation and Maintenance Working Group: Background

When the Water Supply and Sanitation Collaborative Council met in Oslo in 1991, it agreed to adopt the Operation and Maintenance Working Group (OMWG) as one of its seven affiliated working groups. The OMWG had been launched at a meeting of external support agencies in The Hague, Netherlands, in November 1988 to promote and facilitate cooperation between external support agencies and developing countries with the aim of helping the countries to develop tools and processes for the formulation, implementation, monitoring and evaluation of programmes to improve their operation and maintenance (O&M) procedures. This was expected in turn to lead to improvements in the efficiency of water supply and sanitation services.

Since its inception, the OMWG has been coordinated from WHO headquarters in Geneva, and members forming a Core Group have been involved from other international and bilateral external support agencies, technical and academic institutions, and developing country agencies and ministries. Meetings have been held at regular intervals, at least annually since the Oslo meeting. At subsequent forums, the Collaborative Council has recognized the value of the Working Group and extended its mandate.

Initially, the purpose of the OMWG was to address the key constraints which had already been recognized as related to the performance of operation and maintenance, and to the efficiency and effectiveness of water supply and sanitation services. These included:

- inadequate data
- insufficient funding and inefficient use of available funds
- poor management of water supply facilities
- inappropriate system design
- low priority accorded to operation and maintenance activities
- overlapping responsibilities
- political interference.

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In response to the demand generated within the sector, the OMWG has developed certain tools to support national water supply and sanitation agencies and external support agencies with related responsibilities. These are designed to improve the efficiency and effectiveness of services by offering guidance in better management practice and improved operation and maintenance. As a strategy for developing tools, the Working Group initiated activities under the following priority headings:

- policy formulation, collaboration and coordination
- raising the profile of O&M at global and national levels
- management improvement
- O&M data collection and monitoring.

1.2 Concepts of operation and maintenance

ew concepts such as decentralization and networking, and new issues such as community management and private sector involvement, have required the scope of the OMWG's work to be continuously revised and updated in order to address them. Accordingly, the Working Group has adopted four principles for guiding the development of operation and maintenance:

- The provision of safe water is a service, and requires a service-oriented attitude on the part of the agencies involved. Like any other resource, water should be managed as a commodity, its use and exploitation should have a financially sound and cost-effective basis, and it should be subject to legal and regulatory controls in order to ensure its conservation, protection and well-balanced use.
- The supply of water and the provision of sanitation services should normally be based on the principle of effective demand, which can be defined as the standard of service that will ensure adequate standards of public health that users are willing to finance, operate and maintain.
- Water supply and sanitation systems should be managed and operated in accordance with the principles of good business practice. The form of management will vary according to the local situation (e.g., rural, urban or peri-urban setting, location, and demographic structure). The responsible agency should be autonomous but manage the systems according to technical, financial and administrative guidelines set by national governments. The agency should adopt an open policy and be fully accountable to its consumers.
- Sanitation is recognized as an unfavoured component of the sector. Emphasis should be placed on the development of sanitation, and on linking water supply with environmental sanitation (solid and liquid waste management) in the planning of new programmes.

Nevertheless, the Working Group accepts that governments may have a legitimate concern to satisfy the basic needs of disadvantaged segments of their population, and may require agencies to provide services at subsidized rates, possibly on a temporary basis, in order to promote public health and economic development.

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1.3 Tools, activities and outputs of the OMWG

The tools which the OMWG has been active in preparing include guidelines, manuals and training packages. Most have been fully developed and tested, but others are still in various stages of preparation. The principal tools are:

- *Selected case studies on operation and maintenance of water supply and sanitation systems*

Group members have produced 22 case studies describing experience of different O&M projects and concepts. A document consolidating these studies has been distributed to interested agencies.

- *Tools for assessment of operation and maintenance status of urban and rural water supply and sanitation*

Developed as a response to the lack of adequate guidelines for assessing O&M services in both urban and rural areas, this document combines a literature and information database with a methodology for assessing O&M status. It has been tested by the World Bank in West Africa. A module on sanitation is being prepared.

- *Operation and maintenance of urban water supply and sanitation systems: a guide for managers*

This volume examines the factors that may prevent systems from working efficiently and provides guidelines and solutions for optimization. The guide was issued in 1994 as a WHO publication and has been widely distributed in English and French. It has also been translated to Portuguese.

- *Training course package in leakage control*

This package adopts a logical and "user-friendly" approach to training water practitioners at a range of levels, from senior managers to leak inspectors. The content of each module can be varied according to the depth of knowledge required. The package has been reviewed by experts and has been printed and distributed.

- *Manual on upgrading of water treatment plants*

This manual provides a practical approach to the improvement of water treatment plant performance by summarizing field experience in upgrading and improving a wide range of water treatment plants in developing countries. The guidelines show how both capacity and water quality of plants can be improved. The document is now being printed.

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- *Training course package on management of operation and maintenance of rural water supply and sanitation*

This is the most well-developed of the tools, tested at several national workshops by Working Group members and agencies. It provides hands-on material for conducting a course; the material is adaptable to local situations and makes use of local resource persons. The package is available in English and French and a first draft has been prepared in Portuguese. It is now in process of revision based on the extensive field experience obtained from its use in different situations.

- *Characterization and evaluation of models of management systems for the operation and maintenance of rural water supply and sanitation systems*

This document evaluates the factors which influence the development of O&M management systems for rural water supply and sanitation facilities in developing countries. It describes models in eight representative countries and offers guidance to planners and designers in selecting the most appropriate.

- *Linking technology choice with operation and maintenance for low-cost water supply and sanitation*

This manual aims to inform users of the O&M implications, including cost factors, of selecting a particular water supply and sanitation technology.

- *Manual on field network survey*

This manual (in preparation) will describe measurement and monitoring techniques for use in the field to create better understanding of how a network operates. It will become part of the integrated package of tools to improve operation and maintenance and optimize the performance of water supply and sanitation systems.

- *Manual on operation and maintenance of handpumps*

A manual giving guidance on the operation and maintenance of handpumps, including technology choice, cost, and spare parts is being prepared by SKAT in partnership with the OMWG.

Another important activity of the OMWG has been the conduct and coordination of regional and country activities, including national and regional workshops to promote O&M and to support national and regional agencies in setting up training centres for O&M activities. The Working Group has at the same time been actively involved in providing support to training establishments. Examples of this are:

- Courses for the training of trainers in O&M at the training centre of the National Directorate of Water Affairs (DNA) in Mozambique.

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- Training courses on rural water supply and sanitation for French-speaking Africa conducted regularly by the IRC (International Water and Sanitation Centre, Netherlands) in partnership with the Ecole Inter-Etats d'Ingénieurs de l'Équipement Rural (EIER), Ouagadougou, Burkina Faso.
- Courses on leakage control and management of rural water supply and sanitation for trainers at the Office National de l'Eau Potable (ONEP), Morocco, in partnership with French Cooperation. Courses can be offered to participants from other African countries.

The Working Group has also been active in developing a strategy for promoting O&M and creating awareness of the Group's tools and activities. The requirements of the strategy have been:

- definition of objectives
- definition of target audiences
- understanding the target audience.

The aim of the strategy is:

- to develop promotional messages for motivating change
- to devise ways of reaching the target audience
- to ensure that the strategy works.

Problems with promoting O&M that have been identified are:

- barriers to awareness and understanding, which give O&M a low priority
- a low level of interest, tending to leave O&M to "experts"
- O&M is not prestigious
- a misconception that O&M is only concerned with "fixing".

The promotional strategy therefore aims to break down these barriers and reach the primary target audience (policy-makers) and secondary target audience (project managers) with appropriate material that is suited to each group. It aims to attract attention and illustrate the benefits of O&M. A promotional toolkit has been developed to support this strategy. It consists of a double-pocket folder containing:

- a leaflet for policy-makers
- individual leaflets for each tool
- two posters
- other materials of relevance to specific target audiences.

1.4 Future development

The OMWG's future work will be developed through a decentralized framework in which key regional or subregional agencies will play a major role in disseminating and applying operation and maintenance tools. Several agencies in particular the Institute of Water and Sanitation Development (IWSD), Zimbabwe and CINARA, Colombia, have shown interest. For the next few years, the Working Group will work intensively towards identifying key regional and national institutions interested in conducting operation and maintenance activities on behalf of the Group. The consolidation of this transfer of responsibility to partner institutions which are closer to the target users of these tools, namely the water supply and sanitation agencies at country level, will require the active and committed support of the members of the Collaborative Council.

The OMWG's Core Group concluded that the elements to be considered in a model of decentralization should include:

- a high-level global forum to act as supervisory body
- secretariat based for the time being in Geneva, but possibly rotated
- an O&M core group
- regional training institutions
- technical resource centres
- a consultative group
- regional centres, such as focal O&M centres and other centres of excellence;
- national O&M centres
- a decentralization task force.

It was considered that the responsibilities of the OMWG Core Group need to be reviewed and updated. Moreover, promotional work needs to be carried out with institutions to establish their technical competence, areas of expertise, and resource potential. The International Training Networks (ITNs) in developing countries would seem to be well qualified to be support agencies.

The criteria for selecting suitable agencies to undertake O&M activities might be as follows:

- willingness to enter into an informal agreement;
- capability to ensure sufficient financial resources
- sound foundations with appropriate expertise
- ability to prepare an action plan and commitment to implement it within a four-year time scale.

Dissemination of documents will be an important part of the work of the support centres.

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Hence, any agency undertaking this support role will need to consider the cost of production and postage. At present the tools are issued under the copyright of WHO, so that it can forward them to agencies for printing and distribution when appropriate.

An active network of contact organizations and experts is already being coordinated by the OMWG. This has been invaluable in assisting in the preparation, testing and dissemination of tools to date. However, the Group now feels that, in order to fulfil its objectives of decentralized dissemination of tools, the network should be expanded and its database operated by an external agency. This would allow dissemination to take place in a systematic and sustainable manner.

2. Analysis of operation and maintenance in Africa

2.1 Subregional and country workshops

Reference has already been made to the OMWG's work in supporting and sponsoring national and regional workshops to promote O&M in water supply and sanitation programmes. This has usually involved visits by members of the Core Group, and in most cases the Coordinator of the OMWG, to the host country in order to identify the key participating agencies and initiate the process of planning the workshop.

The purpose of such visits would normally be to:

- Discuss with responsible managers in the water supply and sanitation sector the need for O&M and for a workshop to promote it;
- Identify the person responsible on site for logistics, planning, organization and preparation of the workshop;
- Select a local organizing committee if necessary;
- Decide on dates and select a venue;
- Agree on participants to be invited (government departments and agencies/country representation);
- Consider making invitations to local/regionally represented external support agencies and NGOs;
- Identify national or locally based persons to act as workshop facilitators, resource persons, etc.;
- Agree on any external facilitators, resource persons, etc., who might be invited to participate;
- Decide on recruitment procedures for external experts;
- Discuss the content of the workshop (opening, subjects to be covered, background documentation, case studies, working groups, reporting, closure, etc.);
- Discuss authors of documentation/case studies and fix responsibility for contacting them;
- Agree on expected outcome (e.g., action plan to orient sector activities towards O&M, recommendations);
- Identify funding sources.

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The following workshops on operation and maintenance of rural and urban water supply and sanitation systems have already been held under the OMWG's auspices in the African Region:

Subregional

- English-speaking countries, 8-12 November 1993, Harare

| | |
|------------|-----------------------------|
| Botswana | Namibia |
| Ghana | Nigeria |
| Kenya | Swaziland |
| Lesotho | United Republic of Tanzania |
| Malawi | Zambia |
| Mozambique | Zimbabwe |

- French-speaking countries, 18-21 April 1995, Ouagadougou

| | |
|---------------|---------|
| Algeria | Mali |
| Benin | Niger |
| Burkina Faso | Senegal |
| Guinea | Togo |
| Guinea-Bissau | |

- Lusophone Countries, 26-30 September 1995, Maputo

Angola
Cape Verde
Guinea-Bissau
Mozambique
Sao Tome and Principe

- GTZ-supported countries, 19-22 May 1997, Windhoek, Namibia

| | |
|-----------------------------|----------|
| Botswana | Uganda |
| Eritrea | Zambia |
| Namibia | Zimbabwe |
| United Republic of Tanzania | |

Country

- Ghana (and neighbours), 19-21 November 1996, Accra

Gambia
Liberia
Sierra Leone

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- Zimbabwe, 25-29 November 1996, Kadoma
- Kenya (and neighbours), 26-27 November 1996, Nairobi

Eritrea
Ethiopia

United Republic of Tanzania
Uganda

- Zambia, 21-24 April 1997, Livingstone
- Malawi, 23-26 September 1997, Mangochi
- Swaziland, 7-10 October 1997, Nhlangano
- Lesotho, 14-17 October 1997, Maseru
- Botswana, 20-24 October 1997, Francistown

In two of the national workshops in Ghana and Kenya, neighbouring countries were invited to send representatives to participate.

All the meetings were attended by a representative of the OMWG, and most were assisted by WHO. Several other international organizations, notably UNICEF, played an important role in some cases, as did external support agencies such as German Technical Cooperation (GTZ), the International Water and Sanitation Centre (IRC) of the Netherlands, the Swiss Development Cooperation (SDC and SKAT), and others. A few of the workshops were attended by representatives of NGOs, including the Save the Children Fund and OXFAM.

Additional country workshops are being planned in about 10 further countries. Steps have already been taken to arrange meetings before the end of 1998 in Uganda and the United Republic of Tanzania and before the end of March 1999 in Benin, Mali and Niger.

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2.2 Reports of workshops

The 12 reports produced by these workshops contain a vast amount of detailed information on how the various countries are approaching the task of providing water supply and sanitation services to the different communities. The present review summarizes and synthesizes the common factors, and analyses the successes, failures, potentials and obstacles which countries have identified in their consideration of the operation and maintenance practices and measures adopted. No attempt is made to summarize each report, though examples and extracts are quoted, and all the reports have been used in an effort to illustrate the priority issues and concerns facing government officials, programme and project managers, technical staff and community leaders.

The content of most of the reports included:

- introduction
- objectives of the workshop
- organization of the workshop
- summary of paper presentations/case studies
- group discussions
- plan of action
- recommendations.

The main body of the report was usually followed by annexes containing:

- list of participants
- opening addresses
- details of working group findings
- concluding addresses.

The present review is particularly concerned with some of the case studies, the working group discussions and findings, the plans of action, and the recommendations. These subjects are addressed in the following sections.

2.3 Case studies

The number of case studies presented at each workshop varied greatly. In the Subregional meetings for the different language groups, case studies took the form of presentations describing country situations, problems and constraints in the general field of O&M procedures. At the GTZ-sponsored meeting, a case study on Operation and maintenance - the Namibian experience was presented and used by working groups together with the individual national experiences of other countries.

The case studies presented at national workshops generally dealt with aspects of O&M in urban water supply, rural water supply, urban sanitation, and rural sanitation, variously combined or linked with Peri-Urban Services. Some workshops (e.g. Botswana, Ghana, Malawi, Swaziland, Zambia) were provided with studies relating to specific cities or rural locations, but others dealt more generally with national constraints.

The meeting in Ghana examined a selection of interesting case studies, as follows:

- Essence of operations and maintenance - the Ghana experience;
- Pilot operation and maintenance - barakese headworks;
- Measures towards reduction of unaccounted-for water;
- Leakage/waste control in the distribution of water;
- Management of non-revenue water through sustainable O&M of metering;
- Experiences in O&M of six small towns water supply in Northern Ghana.

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Box 1 abstracts from one of these papers a table indicating a process for reduction of unaccounted-for water (UfW) illustrating Ghana's experience.

Box 1

Ghana's experience with unaccounted-for water

Axiom: Unaccounted-for Water (UfW) in a system is an index that reflects upon both the overall performance of the organization and the state of the network system. Consequently the modus operandi of all relevant departments in the organization and the competency and knowledge of the staff affect the index. In addition, network-related problems also affect the level of the UfW.

REDUCTION OF UFW - STAGES

A. Implement systems

Stage 1 Implement an integrated management information system encompassing:

- (a) Data (network, areas, meters)
- (b) Field instrumentation
- (c) Geographical information systems
- (d) Management information systems
- (e) Engineering network systems

B. Define the problem

- Stage 2 Quantify and narrow down UfW
- Stage 3 Identify and quantify components of UfW

C. Reduce/eliminate the problem

- Stage 4 Network-related causes of UfW
- Stage 5 Management-related components of UfW
- Stage 6 Remaining major non-visible leakage

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As an example of an uncomplicated, well functioning, financially sound rural water supply scheme, the success of which is dependent on community responsibility for operation and maintenance, Box 2 summarizes the case of the gravity-fed piped scheme at Langeni in Swaziland.

Box 2

Case study

Langeni Rural Water Supply Scheme, Swaziland

Description of facility

Gravity fed, serving 130 homesteads, (population 1600), through a pipe network of 15 kilometres and 44 standpipes; provision was for 10 private connections but more have been made. Constructed in 1991 with a design population of 2023. The source is a mountain stream, treated with slow sand filters. The scheme has low maintenance, covers a large population and allows for future development. In the wet season, stream flow reaches 5 litres per second. Maintenance work involves cleaning of the intake works, and of the slow sand filters before and after the rainy season, and at other intervals depending on observed need.

Operation and maintenance cost

Average annual cost of O&M for the scheme is E500 for minor problems and E2000 for major ones (10 emalangeni = US\$ 4.5). This is without the involvement of the Rural Water Supply Branch (RWSB). RWSB transport and field labour expenses average E500 per scheme annually. Including these expenses, the cost per homestead per year may range from:

E6.70 - E10 with only minor problems;
E18 - E20 where a major problem is experienced.

The maximum monthly maintenance cost per homestead is thus about E2.00, which is the current operation and maintenance fee charged for the Langeni water scheme. Private connections pay E3.00 per month.

There are two water minders for the scheme, and also standpipe caretakers. The Water Supply and Sanitation Committee runs the scheme, the Chief playing an active role. Defaulters are disciplined by the Committee, whose members are elected alongside the rural health motivators and standpipe caretakers, who are automatic members. With no pumping involved, maintenance problems are minor and they are easily handled by the community. Procurement of spare parts has not been a problem. The scheme is relatively new having not yet reached its 10-year design period.

Community participation in O&M

The importance of this has been recognized from the start, as the community identified its own needs and initiated its own programme. The RWSB required that a committee be set up, an operation and maintenance fund established (minimum E10 000) and a bank account opened. A monthly water user fee to be collected was established. Further, there had to be an agreement to build latrines in the locality before the water supply project was started.

Outcome

Before the construction of the scheme there was a high incidence of diarrhoeal disease and sporadic cases of schistosomiasis in the area. These diseases have reduced remarkably since the scheme was commissioned in 1992.

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2.4 Working group sessions and findings

The subjects selected for working group discussions were in many respects predictable: urban water supply, urban sanitation, rural water supply, rural sanitation (8 selections each). Sometimes these were combined, i.e. as urban water supply and sanitation, etc. (e.g. Ghana, Kenya, Lesotho, Zambia), or urban and rural water supply, etc. (e.g. in Malawi and Mozambique). In some cases, peri-urban water supply and peri-urban sanitation measures were tackled separately (e.g. in Kenya and Mozambique); in others they were linked to urban services (Malawi, Zambia), or not specifically mentioned as subjects for working group deliberations. Outside these broad topics, the Zimbabwe workshop selected more specific topics for examination:

- ▶ community-based management
- ▶ institutional support to O&M
- ▶ wastewater treatment
- ▶ unaccounted-for water.

The workshop in Botswana divided into six working groups to examine the following critical issues agreed on in the plenary sessions:

- ▶ information, education and communication (IEC)
- ▶ human resources development
- ▶ policy development
- ▶ financial issues
- ▶ water conservation
- ▶ institutional arrangements
- ▶ community participation
- ▶ development of infrastructure and technology
- ▶ planning and coordination.

The GTZ-sponsored intercountry workshop in Namibia also chose an interesting set of topics for working group discussions on issues and constraints in O&M:

- ▶ utility Companies (water and sewerage)
- ▶ management processes, institutional structures and interministerial cooperation
- ▶ technology
- ▶ human resource development and O&M performance monitoring
- ▶ financial sustainability/cost recovery.

Mozambique included an extra topic on wells and water points, and Zambia, in addition to its two working groups on urban (and peri-urban) services and rural services, arranged for two groups to study the operation and maintenance issues to be tackled in urban and peri-urban and in rural areas.

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In the Subregional workshops, there was less specificity with regard to the presentation of findings than was proposed for the national workshops where working groups were generally invited to separate issues into the categories of successes, failures (or weaknesses), potentials and obstacles. The Subregional meeting for French speaking countries identified a set of principal constraints on the introduction of O&M measures in the rural sanitation sub-sector which is abstracted here as Box 3.

| Box 3 | |
|--|---|
| Rural Sanitation | |
| Principal constraints met in the French-speaking African countries | |
| Legal and political | |
| | <ul style="list-style-type: none"> ◆ Lack of political will ◆ Absence or lack of application of sanitary legislation ◆ Absence of a defined national policy |
| Institutional, including private sector and communities | |
| | <ul style="list-style-type: none"> ◆ Lack of coordination between different players ◆ Erosion of attributed powers |
| Economic and Financial | |
| | <ul style="list-style-type: none"> ◆ Lack of resources allocated to rural sanitation ◆ Low level of income of the population ◆ Donor constraints ◆ Lack of interest of many donors |
| Social and cultural | |
| | <ul style="list-style-type: none"> ◆ Resistance to changes in customs ◆ Lack of basic organization ◆ Insufficient knowledge of aspects of water and sanitation ◆ Technology not culturally acceptable |
| Technical | |
| | <ul style="list-style-type: none"> ◆ Technical aspects not adapted to the rural environment |
| Other constraints | |
| | <ul style="list-style-type: none"> ◆ Difficulties of maintenance ◆ Shortage of information, education, knowledge ◆ Lack of data |

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From the Subregional meeting for English speaking countries, Table 1 summarizes the participants views on private sector investment.

| Private sector involvement: views of English-speaking African countries. | |
|---|--|
| Actors in the private sector | O&M support role |
| International and national manufacturers and suppliers | Design and manufacture of pumps and other equipment for O&M at village level Supply of spare parts and consumables (e.g., chlorine) |
| International and national consultants | Design of schemes for community management. Development of community/agency managed O&M systems. Provision of O&M training |
| International and national contractors | Rehabilitation and extension of schemes for community O&M On-the-job training of O&M staff during construction |
| Local contractors | Service and maintenance contracts Major repair work |
| Small-scale industries | Local manufacture of spare parts and tools |
| Self-employed artisans in the formal and informal sectors | Local skills for preventive and corrective maintenance and repair work: mechanics plumbers, builders, masons, blacksmiths electricians, etc. Operation of facilities |
| Administrators and accountants | Billing, rate collection, auditing of accounts |
| Banks | Provision of banking facilities for O&M funds Provision of credit facilities for irregular high-cost items and the expansion or modification of facilities |

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The working groups in the national workshops went into considerable detail in listing the constraints and issues relevant to their subject. This resulted in a massive number of tables and lists, each containing multiple items. As an example of the findings of the working groups, Table 2 indicates the perceptions of the working group at the Kenyan national meeting on issues related to urban water supply and sanitation. Similarly, Box 4 provides equivalent perceptions for rural water supply and sanitation services in Zambia.

Table 2

Urban water supply and sanitation: perceptions of sector issues in Kenya

| PAST EXPERIENCE | |
|--|--|
| SUCCESSES | WEAKNESSES |
| <ol style="list-style-type: none"> 1. Increased water and sewerage coverage 2. Increased O&M budget and expenditure 3. Revenue collection improved 4. Billing method improved 5. More meters installed 6. Water supply better managed 7. Reduction of unaccounted-for water 8. Improved collaboration of Water Departments 9. Formation of Water and Sanitation Departments (WSD) - Semi Autonomy 10. New technology in place 11. More staff trained 12. Improved communication system 13. Better (improved) tariffs in place | <ol style="list-style-type: none"> 1. Aging facilities 2. Poor record-keeping 3. Weakness in enforcing bye-laws 4. Defaults in payments due for services rendered 5. Not all consumers connected 6. Illegal connections 7. Inability to control demand 8. Reduction in funding for capital projects 9. Lack of specialized personnel 10. Inability to attract and retain qualified personnel 11. Vandalism 12. Inappropriate technologies in use 13. Diversion of funds |
| FUTURE | |
| POTENTIALS | OBSTACLES |
| <ol style="list-style-type: none"> 1. Improved terms and conditions of service 2. Plough back revenue collected into the Water and Sanitation Department (WSD) 3. Put in place support and control systems 4. Trend to adopt self-sustaining tariffs 5. Situation conducive to new policy changes 6. New institutional set-ups have increased ability to maintain sinking fund 7. Design tailor-made short courses for WSD staff | <ol style="list-style-type: none"> 1. Obsolete bye-laws 2. Tariff approval procedures too lengthy 3. Political interference 4. Existing legislation does not support full autonomy 5. Procurement procedures too bureaucratic |

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| | |
|---|--|
| Box 4 | |
| Rural Water Supply and Sanitation | |
| Perceptions of Sector Issues in Zambia | |
| PAST PERSPECTIVES | |
| SUCCESSSES | WEAKNESSES |
| <ul style="list-style-type: none"> Collaboration among stakeholders Community participation Deep wells constructed in a durable manner Change of attitudes to use of latrines Minimal vandalism in rural areas Increased coverage Decentralization Establishment and development of WASHE communities (water, sanitation and hygiene education) | <ul style="list-style-type: none"> Ineffective management Difficulties in distribution of tools to participants Inadequate training for extension staff Non-existence of information systems Inappropriate technologies Inadequate support services Poor linkages among partners Weak institutional capacity at all levels |
| FUTURE PERSPECTIVES | |
| POTENTIALS | OBSTACLES |
| <ul style="list-style-type: none"> Adequate training for extension staff Establishment of information systems Sufficient and safe water by the year 2000 Effective management Establishment of monitoring systems Conducive political environment Creation of coordination body Good linkage among partners Adequate guidelines on RWSS Appropriate technologies Development of adequate support services More skills training Time saved for other activities | <ul style="list-style-type: none"> Political interference Inadequate resources Poorly planned settlement schemes Geographical obstacles Insufficient funds Poor road network Natural calamities Donor dependence |

The findings contained in these tables have been compared with those of working groups analysing the situation in other countries. There is a surprising lack of common ground, although some points are repeated. Despite the inevitable contradictions, an attempt is made to summarize below what appear to have been the most important issues raised.

2.4.1 Urban water supply and sanitation

Successes

- Most countries recorded:
 - an increased coverage
 - reorganized institutional structure
 - improved staffing
 - improved revenue collection
 - better financial situation
- Mention was made of:
 - better regulated tariffs and billing systems
 - installation of more meters (with less UfW also reported)
 - a general improvement in maintenance
 - a better managed water supply
 - improved collaboration with sector agencies
- Other issues cited include
 - absence of vandalism
 - improved communication systems
 - establishment of loan mechanisms
 - positive commitment to work
 - less political interference
 - better enforcement of bye-laws
 - water quality improvement
 - community/private involvement in financing mains extensions
 - fewer illegal connections
 - increased donor confidence.

Weaknesses

- Most countries noted:
 - aging facilities, including transport
 - illegal connections
 - poor metre reading and revenue collection
 - defaulting on payments for services or loans
- Some mentioned:
 - inability to meet demand or expected service level
 - unrealistic or inadequate tariffs
 - reduction in funding and financial constraints
 - shortage of trained or specialized personnel
- Other issues raised included
 - weakness in enforcing bye-laws (but see above)
 - lack of piped sewerage in urban areas

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- dependence on expatriate staff
- no cost recovery in peri-urban areas
- lack of community participation/appreciation or motivation
- lack of commercial approach
- vandalism (but see above)
- inappropriate technology use
- diversion of funds.

Potentials

- Findings included:
 - rehabilitated infrastructure and new policies
 - established support, control and monitoring systems;
- Some noted:
 - good inter-agency relations
 - appropriate technology available
 - private sector participation
 - economic and self-sustaining tariffs
 - expansion of revenue base;
- Individual issues were
 - improved transportation
 - reduced cost of water quality testing for new boreholes
 - improved political stability
 - growing market with sufficient available raw water
 - reduced production costs
 - development of water schemes with sanitation components
 - less waterborne disease
 - improvement of the environment.

Obstacles

- Several countries noted:
 - political interference.
- Some mentioned:
 - strict conditions of donors
 - lengthy bureaucratic procedures for procurement, tariff approval, privatization, etc.
 - limited financial resources and increased cost of inputs;
- Other issues raised included:
 - obsolete bye-laws
 - brain drain
 - reluctance of customers to pay
 - drying up of water sources.

2.4.2 Rural water supply and sanitation

Successes

- Most reports included:
 - improved community involvement and management
 - increased coverage
 - better collaboration among agencies and communities;
- Some noted:
 - standardization of technologies
 - less vandalism
 - integration of hygiene education into water supply and sanitation activities
 - effective human resource development, producing pump caretakers, mechanics, etc.;
- Other issues:
 - decentralization
 - locally manufactured handpumps and spare parts
 - participation of women
 - change of attitudes to use of latrines
 - reduction in faecal-borne disease
 - availability of competent planners and designers.

Weaknesses

- Common issues were:
 - inadequate support services
 - technologies too numerous, complex and often inappropriate
 - poor intersectoral collaboration
 - ineffective centralized management
 - weak institutional and technical capacity at all levels;
- some recorded:
 - lack of information systems
 - low priority for sanitation
 - difficulties in distribution of tools and spare parts
 - inadequate training of extension staff and community leaders;
- other issues noted were:
 - low involvement of women
 - no clear strategy for O&M
 - misappropriation of funds
 - dependence on expatriates
 - high cost of VIP latrines
 - low staff morale
 - uncoordinated private sector involvement
 - socioeconomic problems.

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Potentials

- Findings included:
 - good environment for intersectoral and inter-agency coordination
 - community awareness of effective management capacity.
- Some noted:
 - establishment of information and/or monitoring systems
 - development of adequate services
 - improved approach to training and human resource development;
- other issues were:
 - increased interest in ownership of household sanitation facilities
 - privatization of services
 - improvement in water quality monitoring
 - integration of water supply and sanitation at planning stage
 - encouragement of small-scale water supply and sanitation projects
 - many external support agencies willing to support the sector
 - communities to be assisted in raising capital and in cost recovery
 - tariffs adopted to recover costs.

Obstacles

- Most countries reported:
 - political interference
 - declining funds and inadequate resources.
- Some noted:
 - geographic obstacles, such as poor roads and accessibility,
 - administrative bureaucracy.
- Other issues raised included:
 - donor dependence
 - declining manpower
 - long procurement procedures
 - rural settlements scattered and unplanned
 - limitations of technology
 - natural calamities and poverty.

3. Strategic measures

3.1 Plans of action

After having discussed and reached agreement on the priority issues, working groups at the workshops in most cases went on to develop plans of action for addressing the problems and constraints identified. These either dealt with the findings of each working group on its specific topic, or consolidated issues selected from all groups into a national plan of action.

An example of the first type is taken from the GTZ-supported workshop held in Windhoek, in May 1997. One working group looked at the major issues and constraints to operation and maintenance in relation to technology. The topics the group was asked to consider were:

- ◆ constraints to use of technology
- ◆ selection of appropriate technology
- ◆ social issues and user acceptability
- ◆ perceptions of technology
- ◆ local availability and spare parts
- ◆ political aspects
- ◆ low cost versus appropriate technology
- ◆ environmental aspects
- ◆ long-term versus short-term costs
- ◆ standardization
- ◆ sustainability of technology
- ◆ outsourcing
- ◆ ownership.

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The Working Group considered all the positive and negative aspects, and listed the constraints under technical, institutional and financial headings. It took as its goal that technology should contribute to sustainable water supply and sanitation service. Four objectives (issues) were identified to achieve this, through, 16 activities. A summary of the Group's findings is shown in Box 5.

Box 5

GTZ-Supported Regional Meeting on Operation and Maintenance Findings of working group session on **TECHNOLOGY**

Goal: Contribute to sustainable water supply and sanitation (WSS) service

Objective 1. Ensure application of appropriate technology

- Activities:
- ▶ Form a regional body for data collection;
 - ▶ Collection of data on existing technology;
 - ▶ Collection of data on existing WSS systems;
 - ▶ Evaluation of O&M data and handover to decision-makers;
 - ▶ Develop appropriate training and education materials and provide training.

Objective 2. Ensure environmental protection

- Activities:
- ▶ Hold consultative meetings with consumers;
 - ▶ Follow correct environmental impact assessment (EIA) procedures in planning stage;
 - ▶ Enact and enforce water pollution regulations;
 - ▶ Monitoring of environmental aspects of WSS systems;
 - ▶ Provide education and training on environmental aspects.

Objective 3. Ensure participation of women

- Activities:
- ▶ Sensitize community to the need for gender equity;
 - ▶ Appoint women to regulatory functions.

Objective 4. Ensure generation of funds for O&M

- Activities:
- ▶ Sensitize water consumers to the need for revenue collection;
 - ▶ Introduce tariff systems for all WSS service;
 - ▶ Enforce 100% revenue collection;
 - ▶ Guarantee revenue income to cover O&M budget.

Table 3, on the other hand, summarizes the findings of the combined working groups in the national workshop held in Lesotho in October 1997. This case is typical of the outcomes of the national workshops generally. Here 13 priority issues (or actions) were selected and a total of 39 activities to address them were identified. The agency or institution responsible for undertaking each activity was indicated, and in a few cases the completion schedule was shown (most were recorded as "on-going").

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Table 3.
Workshop on Operation and Maintenance of Water Supply and Sanitation Systems
Maseru, Lesotho: Plan of Action

| Issues and corresponding activities | Expected outcomes |
|--|---|
| <p><u>Issue 1:</u> Promote collaboration and coordination between different ministries concerned with water supply and sanitation (WSS)</p> | <p><u>Expected result:</u> less duplication of duties, maximization of meagre resources; better collaboration, coordination and communication between different sectors</p> |
| <ol style="list-style-type: none"> 1. Formulation of a national policy on WSS 2. Identification of a lead ministry in the sector 3. Revival of the Steering Committee 4. Inventory of all ongoing WSS projects 5. Dissemination of information to relevant agencies | |
| <p><u>Issue 2:</u> Secure enough funds for the project</p> | <p><u>Expected result:</u> Improved coverage</p> |
| <ol style="list-style-type: none"> 1. Water royalties should be paid back into water and sanitation services 2. Enlist support of business community and NGOs | |
| <p><u>Issue 3:</u> Privatize the service</p> | <p><u>Expected result:</u> Improved delivery of services</p> |
| <ol style="list-style-type: none"> 1. Identify services to be handled by private sectors 2. Invite application for tenders | |
| <p><u>Issue 4:</u> Improve evaluation and monitoring systems</p> | <p><u>Expected result:</u> Target achieved, leakage of conservancy tanks avoided</p> |
| <ol style="list-style-type: none"> 1. Introduce guidelines and proper supervision of tanks 2. Regular inspection of the system 3. Consult stakeholders concerned with the project | |
| <p><u>Issue 5:</u> Reduce unaccounted-for water (UfW)</p> | <p><u>Expected result:</u> Increased water sales, and therefore increased cost-recovery</p> |
| <ol style="list-style-type: none"> 1. Introduce mechanisms for detecting leakages 2. Introduce mechanisms for detecting illegal connections | |
| <p><u>Issue 6:</u> Reduce the rate of defaulters</p> | <p><u>Expected result:</u> Sustainable revolving fund, increased revenue collection</p> |
| <ol style="list-style-type: none"> 1. Strengthening of the existing guidelines for monitoring and evaluation 2. Frequent meter reading 3. Frequent house-to-house visits 4. Water supply disconnection | |
| <p><u>Issue 7:</u> Construct sludge lagoons in all urban areas</p> | <p><u>Expected result:</u> Proper sludge disposal, less pollution, prevention of disease</p> |
| <ol style="list-style-type: none"> 1. Proper designing and specifications 2. Supervision of collection and disposal | |

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| | |
|--|---|
| <p><u>Issue 8:</u> Promote construction of dams</p> | <p><u>Expected result:</u> Adequate supply of water; time saving; proper disaster management</p> |
| <ol style="list-style-type: none"> 1. Preliminary/feasibility studies to be conducted 2. Proper design and specification | |
| <p><u>Issue 9:</u> Promote collaboration between ministries and NGOs dealing with WSS</p> | <p><u>Expected result:</u> Improved coordination, more active National Steering Committee (NSC), Less duplication of national resources, more savings of national resources</p> |
| <ol style="list-style-type: none"> 1. Revival and strengthening of NSC for WSS and involvement of NGOs 2. More consultation with the Ministry of Economic Planning 3. Quarterly meetings held by NSC 4. Request ministries to nominate officials from middle-management level to be members of NSC | |
| <p><u>Issue 10:</u> Enhance performance of stakeholders in WSS</p> | <p><u>Expected result:</u> Better organized WSS sector, more positive response from community, maximum output</p> |
| <ol style="list-style-type: none"> 1. Training of managerial and administrative staff 2. Training of technical and promotional staff 3. Conduct public awareness campaigns 4. Basic training of unskilled labour | |
| <p><u>Issue 11:</u> Improve the approach to LLB training and training of water minders</p> | <p><u>Expected result:</u> Competent LLB products and water minders</p> |
| <ol style="list-style-type: none"> 1. Initial training of 2 weeks plus quarterly refresher training of 1 week each 2. Establish a strong working relationship between DRWS and environmental health 3. Initial training followed by at least two refresher courses for water minders | |
| <p><u>Issue 12:</u> Improve supervision and support</p> | <p><u>Expected result:</u> Better output, improved reporting</p> |
| <ol style="list-style-type: none"> 1. Revive supervisory visits on a regular basis 2. Convene regular quarterly meetings with headquarters 3. Establish a means of disseminating information 4. Exchange programme regionally and internationally | |
| <p><u>Issue 13:</u> Optimize the cost of VIP latrines</p> | <p><u>Expected result:</u> Maximized coverage</p> |
| <ol style="list-style-type: none"> 1. Identify a broad-based material supplier pool 2. LLBs who construct VIPs for paupers to be paid | |

Like the issues considered, the activities that feature in the plans of action cover a vast range. In the 12 workshops from which reports were received and reviewed, about 250 priority issues (or goals or objectives, according to the terminology used) were presented, or about 22 per workshop. To address these in the suggested plans of action, from 1 to 8 activities (average about 2.5) were identified for each, making a total of over 600 separate activities.

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Comparison of all these action plans yielded the following conclusions:

- Three issues were included in practically all action plans in one form or another:
 - the building of capacity through training and development of skilled manpower at all levels
 - the promotion of staff development through in-service training
 - broader involvement of the community, including health and hygiene education and motivation.

- More than half the plans included:
 - improvement of intersectoral collaboration and coordination
 - improvement of evaluation and monitoring services
 - harmonization of the legal framework
 - improvement or establishment of community-based management
 - study of appropriate technology, its improvement and wider use
 - mobilization of resources, particularly for O&M.

- Other issues frequently raised were:
 - privatization or greater involvement of the private sector
 - reduction of unaccounted-for water, through expanded metering, leak detection programmes or other means
 - improvement of supervision and support
 - development of guidelines for operation and maintenance services
 - enforcement of bye-laws
 - review and rationalization of pricing, tariffs and cost-recovery

- Two issues which have appeared important in previous reporting received little specific attention in these plans of action, although they are perhaps concealed in the detail:
 - gender issues, particularly involvement of women in community management and sector activities (two mentions)
 - development of information systems (two mentions).

Clearly there are some issues specific to particular countries which do not attract high priority elsewhere. This is borne out in the example given from Lesotho (see Table 3), since no other action plan proposed to "construct sludge lagoons in all urban areas", or "to optimize the cost of VIP latrines". Other action plans contained similar issues not reappearing more than once or twice.

It can be expected that, if the approximately 600 detailed activities were to be listed and analysed, there would also be a considerable measure of common acceptance of the important strategic measures to be adopted.

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3.2 Major recommendations

In the same way as before, the recommendations made by the workshops were analysed for common approaches.

The Subregional meetings were considered separately from the national workshops because, although the presentation of Recommendations was thorough in all three, - English-, French- and Portuguese-speaking countries, there was a tendency towards generalization and a lack of country specificity. The workshop for English-speaking countries held in Harare, in November 1993 detailed 62 individual recommendations concerning:

- O&M of urban water supply
- O&M of rural water supply
- O&M of urban sanitation
- O&M of rural sanitation
- the AFRICA 2000 Initiative.

These covered well the basic issues identified and actions proposed by the working groups, and the report served as a benchmark for many of the 12 participating countries, 10 of which were subsequently involved in further meetings where national considerations were given more attention.

The French-speaking subregional workshop held in Ouagadougou in April 1995 referred to the recommendations made at the national meeting held earlier in Ouagadougou, in March 1995, where 23 separate recommendations were divided among the following topics:

- The involvement of the community and particularly of women, in all phases of the project;
- The integration of a sanitation component into village water supply programmes;
- The introduction of communication and information components into training programmes;
- Limitation of the number of brands of pump used;
- better organization of the O&M system.

Here again, the report of this meeting has provided useful background material to the nine participating countries, but, while three of them are reported to be in the process of preparing similar national workshops, none has yet taken place.

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As far as the Subregional workshop for Portuguese countries held in Maputo, in November 1995 is concerned, none of the five participating countries has yet reported on a national workshop. It is worth noting, however, that two of the countries attended earlier subregional meetings: Mozambique the one in English, and Guinea-Bissau the one in French. The recommendations of the Maputo workshop were drawn up chiefly with Mozambique in mind. However, they appear to cover more general than country-specific topics, and deal in particular with:

- Coordination between the countries;
- Documentation and access to information, particularly with regard to the translation of O&M tools and country reports into Portuguese;
- A proposal for a meeting, possibly in Brazil, on the development of a data bank, information collection and dissemination, the training of staff in this function, and review of national plans;
- Human resources development and the establishment of training centres.

Among the countries that participated in the GTZ-supported meeting in Windhoek, Namibia, in May 1997, were Zambia and Zimbabwe which had previously held national workshops in November 1996 and April 1997 respectively, and also Botswana which held a later meeting in October 1997. Although the Windhoek workshop reported in detail on the discussions and findings of the working groups, no consolidated list of recommendations was presented.

One of the eight country workshops from which reports were received did not identify recommendations separately, so it was excluded from the analysis. This summary is therefore based on seven country workshop reports.

In Box 6, the recommendations of the national workshop in Zimbabwe are reproduced more or less in full as they offer a good example of a well-balanced and comprehensive consolidation of the findings expressed by a meeting. They are perhaps more elaborate than those included in other reports, but could serve as a good model.

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Box 6

Recommendations of National Workshop on Operation and Maintenance of Rural Water Supply and Sanitation Systems, Kadoma, Zimbabwe

As a result of its review of the global recommendations of the Regional Workshop in 1993, the presentation of case study papers on the existing situation in Zimbabwe, the field visit and the working group reports, the National workshop agreed on the following action-oriented recommendations:

1. The decentralization process currently advocated in Zimbabwe should imply not only that responsibilities and roles be transferred from the Central Government to the provincial, district, ward, village and community levels, but also that lower levels have the capacity to implement all the operation and maintenance activities in their respective areas. In particular:
 - An operation and maintenance strategy should be developed by the National Action Committee (NAC) for the rural areas, and appropriate ministries and the Engineers Forum for the urban issues;
 - Rural district councils (RDCs) should play a more active role in O&M activities in rural areas; because they lack capacity in terms of human, financial and technical resources, Central Government should embark on capacity-building so as to make the RDCs self-reliant.
 - Local authorities have a major responsibility in the delivery of safe water supply and wastewater disposal/treatment, for the protection of the environment; a reliable service depends not only on technical performance but also on efficient management and effective regulations.
2. Unaccounted-for water can greatly decrease revenues, resulting in poor maintenance or total collapse of the systems. Local authorities should therefore:
 - Improve the monitoring of physical assets (water meters, standpipes etc.) and the billing system;
 - Give some priority to wastewater projects, because these projects are usually self-financing;
 - Enact relevant laws and bye-laws and impose stiff penalties on offenders who pollute water bodies;
 - Involve consumers as much as possible in O&M issues;
 - Improve financial management and reinforce human resources through appropriate training.
3. Community-based management (CBM) encompasses planning, ownership, control and maintenance of the community-based facilities by users or beneficiaries, so as to ensure sustainability of the facilities. Although this is widely accepted, there is a lack of a clearly defined strategy/policy on CBM and support, both financial and political. Current CBM efforts emphasize the water component only. Therefore:
 - The NAC should develop a strategy defining CBM and its role in O&M in both water supply and sanitation;
 - Water and sanitation committees should be set up in villages with assistance from RDCs, and the CBM concept should be promoted in all projects by the NAC;
 - Technologies should be user-friendly and correspond to village-level O&M capacity.
4. The Workshop noted with great concern the low coverage of sanitation in rural Zimbabwe, reported to be less than 30%. This calls for immediate action to be taken by all concerned in close collaboration with the Ministry of Health and Child Welfare. It was resolved that the O&M system for rural sanitation should be established and the programme be given equal priority with the water supply programme.
5. The Workshop resolved to create a task force within the NAC specifically to deal with the AFRICA 2000 Initiative programme. It was noted that the AFRICA 2000 "village concept" approach would go a long way towards accelerating the provision of safe drinking-water supplies and appropriate sanitary facilities as well as promotion of village-based O&M and the sustainability of the country's WSS systems.
6. The Workshop resolved that meetings/workshops on O&M should be convened annually. These meetings will be coordinated by the NAC, which should also control and monitor the progress on O&M.
7. The subcommittee tasked to develop measurable indicators on O&M should meet and circulate the indicators to all water and sanitation experts and NGOs involved in the sector.

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Again, as with the issues and action plans, it is evident that there is considerable disparity from country to country in the manner in which recommendations have been made, and in their content. No recommendation was common to all workshops, but the two repeated most frequently were:

- The enactment of a sound legal framework;
- The enhancement and establishment of community-based management.

Other points mentioned in several sets of recommendations were:

- Training, involving the identification of institutions and the formulation of programmes;
- Endorsement of decentralization, including ensuring that urban centres have administrative and financial autonomy for sustainability purposes;
- The formation of an intersectoral collaborating body on sustainable water supply and sanitation programmes;
- Improved financial management.

Only one report included a specific recommendation that the full involvement of women and children should be ensured in all stages of projects. Nevertheless, there was evidently a general understanding that this should be the case in view of the support given to community participation and community-based management.

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4. Conclusions

In June 1996, the First Regional Consultation on the AFRICA 2000 Initiative for Water Supply and Sanitation was held in Brazzaville. The goal of the AFRICA 2000 Initiative is to provide safe drinking-water and sanitation for all Africans, through advocacy, innovation and - above all - partnership. This Consultation enunciated the Brazzaville Declaration, endorsed by 108 policy-makers of 46 African Governments, which set out four complementary approaches:

- Priorities to be based on the expressed desires of the people;
- Development to be founded on local skills and resources aimed at producing appropriate solutions;
- Partnerships to be formed among communities, local governments, NGOs, the private sector and development agencies;
- External support to be based on national plans and programmes, not on donor-driven priorities.

The work of the OMWG in promoting, coordinating and facilitating the workshops in Africa on operation and maintenance of water supply and sanitation systems has been carried out with these approaches foremost in mind. In all cases, Core Group representatives and other external resource persons have played a secondary role to the country participants, who have been able to discuss together, in their own countries or in subregional groups, their own perceptions of the priority issues relating to the operation and maintenance of their urban and rural water supply and sanitation systems.

One outcome of all these intensive and broad-ranging discussions is the confirmation that, in the main, the key constraints which had already been postulated apply in equal measure to countries, districts, towns, villages and communities spread throughout Africa, as indeed they do to communities in all other developing parts of the world. The importance of continuing to hold these workshops in other countries or country groupings lies not so much in the expectation of discovering unrecognized constraints as in the scope that they provide for spreading awareness that these common issues abound, that others too are seeking solutions to the same problems, and that it is through sharing information and through partnership that progress can and will be made.

In more specific terms, the overriding impression that remains after studying the reports of these 12 workshops, is that there are two particular foci of undeniable and universal importance to which attention must be paid in any move to improve the operation and maintenance of water supply and sanitation systems. These are, firstly, **human resources development** in all its forms and at all levels and, secondly, **community participation**, including community-based management and the involvement of community members, especially women, in all stages of project planning, implementation and operation. These two topics were stressed in all the reports, if not directly, then by implication, and there is no doubt that the success of any operation and maintenance procedures in water supply and sanitation systems will be largely dependent on the efforts applied to advancing them.

AFRICA 2000 Initiative

Country List:

Algeria
Angola
Botswana
Burkina Faso
Burundi
Cameroon
Cape Verde
Central African Republic
Chad
Comoros
Congo
Côte d'Ivoire
Democratic Republic of Congo
Equatorial Guinea
Eritrea
Ethiopia
Gabon
Gambia
Ghana
Guinea
Guinea-Bissau
Kenya
Lesotho
Liberia
Madagascar
Malawi
Mali
Mauritania
Mauritius
Mozambique
Namibia
Niger
Nigeria
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