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Operation and Maintenance Working Group Report to the Manila Forum of the Water Supply and Sanitation Collaborative Council

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Operation and Maintenance Working Group
Water Supply and Sanitation Collaborative Council

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Contents

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The coordinator and members of the Operation and Maintenance Working Group would also like to express their appreciation to Mr Malcolm Farley who prepared this report and acted as rapporteur of the meetings of the Group and to Mr Ranjith Wirasinha, Executive Secretary of the Water Supply and Sanitation Collaborative Council, for his continuing support to this important process.

Finally, the work of the members of the Core Group should be acknowledged. The hard work of the Core Group's members has been the main driving force that has led to substantial and relevant inputs into the water supply and sanitation sector and was decisive for the major shift of priority which took place in recent years from construction and rehabilitation of works to the inclusion of operation, maintenance and management concerns in development projects.

Preface

The Operation and Maintenance Working Group of the Water Supply and Sanitation Collaborative Council has achieved most of its objectives and targets over the past years. The work of the Group has focused primarily on both the promotion of operation and maintenance and the development of tools covering different aspects of optimization and sustainability of water supply and sanitation facilities.

The Group is now seeking strategies and mechanisms to further promote these tools and have them extensively used by external support agencies and water supply and sanitation agencies. The discussion of this issue at Group meetings led to two major lines of action. First, it was decided that an assessment of the performance of the Operation and Maintenance Working Group be conducted with a view to optimizing its operations and making the most of resources available within the Group and outside it. Secondly, it was agreed that the Group should orient its future work through a decentralized framework in which key regional or subregional agencies would play a major role in disseminating and applying operation and maintenance tools.

On another note, it is important to highlight the success of the Group's new strategy whereby meetings are now organized back-to-back with national or regional operation and maintenance workshops. With this new approach, the momentum created by an Operation and Maintenance Working Group meeting is used to launch a major national or regional initiative on this issue. The National Workshop on Operation and Maintenance of Urban and Rural Water Supply and Sanitation Systems held in New Delhi from 25 to 27 September 1996 is a very successful example of this new strategy.

For the next few years, the 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 ultimate target audience of this work, namely the water supply and sanitation agencies at country level, will require the active and decisive support of the Council's members.

1. Background

The background to the formation of the Operation and Maintenance Working Group (OMWG) has been well documented in previous reports. However, for the sake of completeness, background is repeated here, updated to the present.

At its meeting in Oslo in 1991, the Water Supply and Sanitation Collaborative Council included the Group as one of its seven affiliated working groups. The OMWG's mandate was to promote and facilitate cooperation between external support agencies and developing countries, enabling them to develop tools and methodologies for the formulation, implementation, monitoring and evaluation of programmes to improve their operation and maintenance (O&M) procedures. This would in turn optimize the efficiency of water supply and sanitation services. Since the Oslo meeting the Group has met annually, issuing proceedings of each meeting.

At its meeting in September 1993 in Rabat, the Council recognized that the OMWG had a role of continuing importance to play, and decided that it should be extended as a mandated working group until the meeting of the Council in Barbados in October/November 1995. At that meeting the mandate was extended for a further two years. It will again be reviewed at the next Council meeting, to be held in Manila, in November 1997. The Group's milestones are listed below:

- Group launched during a meeting of external support agencies, The Hague, Netherlands, November 1988;
- Meeting of the Group, Geneva, 19-22 June 1990;
- Meeting on O&M, parallel to the meeting of the Council and external support agencies, New Delhi, India, September 1990;
- Meeting of the Group, Geneva, 26 February - 1 March, 1991;
- Meeting on O&M at the Global Forum of the Council, Oslo, Norway, September 1991 (start of the official relationship with the Council);
- Meeting of the Group, Geneva, 1-5 June 1992;
- Meeting of the Group, Geneva, 1-4 June 1993;
- Special session on O&M at the meeting of the Council, Rabat, September 1993;
- Meeting of the Group, Geneva, 31 May - 3 June 1994;
- Meeting of the Group, Geneva, 30 May - 1 June 1995;

- Special session on O&M at the meeting of the Council, Barbados, November 1995;
- Meeting of the Core Group, Geneva, 26-29 February 1996;
- National Workshop and Meeting of the Group, New Delhi, 23-24 September 1996;
- Meeting of the Core Group, Geneva, February 1997.

2. Purpose and Objectives of the OMWG

The key constraints that are directly related to the performance of O&M, and to the efficiency and effectiveness of water supply and sanitation services have also been documented in previous reports. They are:

- **inadequate data;**
- **insufficient and inefficient use of funds;**
- **poor management of water supply facilities;**
- **inappropriate system design;**
- **low profile;**
- **inadequate policies and legal frameworks;**
- **overlapping responsibilities;**
- **political interference.**

The OMWG's purpose is to address these constraints and, as a response to the demand generated within the water supply and sanitation sector, the Group has developed certain tools to do so. The tools, which are described in Section 4, are intended to support water supply and sanitation agencies and external support agencies whose responsibilities include the task of promoting and implementing programmes to improve the efficiency and effectiveness of water supply and sanitation services through better management practice and improved O&M.

As a strategy for developing tools the Group initiated activities under four main 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.**

During the meeting of the Council at Rabat in September 1993, it was agreed that testing, adjusting, application and use of the tools should be given special emphasis during the coming years. This has continued and, since that meeting, many of the tools have been disseminated — indeed several tools have been in use for a considerable time.

3. Concepts of operation and maintenance

The OMWG's scope of work is being continuously revised to accommodate new **concepts** such as decentralization and networking, and new **issues** such as community management and private sector involvement. The list of priority issues that was prepared by the Group in 1991 has been updated to address new concepts and issues.

The four overriding principles for guiding the development of operation and maintenance, which have been adopted by the Group, can be summarized as follows:

- The provision of safe water is a service and requires a service-oriented attitude by the agencies involved. To ensure long-term sustainability, water should be managed as a commodity in the same way as any other resource. Its use and exploitation should have a financially sound and cost-effective basis, and should be subject to the same legal and regulatory controls as other resources, in order to ensure its conservation, protection and wise utilization.

- 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 the users are willing to finance, operate and maintain to ensure adequate public health standards. Effective demand has to satisfy the priorities of the community at large.

- 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, semi-urban, location, demographic

structure etc.). The responsible agency will be autonomous from government but will manage the system according to technical, financial and administrative guidelines set by national governments. The agency will be transparent and fully accountable to its consumers.

- Sanitation is recognized as an undervalued item in the sector. There is a need for emphasis on sanitation development and on forging close links between water supply and environmental sanitation (solid and liquid waste management) in the planning of new programmes.

The Group also recognizes, however, the legitimate concerns of government to satisfy the basic needs of the disadvantaged segments of their population. Governments may require agencies to provide services at lifeline tariffs for such groups, or may institute temporary subsidies to promote public health and economic development

4. Activities and Outputs

The OMWG has been active in preparing a number of tools which include guidelines, manuals and training packages. While most of these tools have been fully developed and tested, others are still in various stages of preparation. One of the important features of the Group's progress since the last Council report has been the dissemination of tools at national and regional workshops. The principal tools are:[1]

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

Group members have produced 22 case studies describing their experience of different O&M projects and concepts. The studies have been compiled in one document which 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 sufficient guidelines for assessing O&M services in both urban and rural areas, this tool combines a literature and information database with a methodology for assessing O&M status. The tool has been tested by the World Bank in West Africa. A module on sanitation is to be prepared.

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

This document examines the factors that may prevent systems from working efficiently and provides guidelines and solutions for optimization. The guide was published in 1994 as

[1] Further information on these documents can be obtained from the Secretariat of the Operation and Maintenance Working Group, Division of Operational Support in Environmental Health, World Health Organization, 1211 Geneva 27 (Fax: 41 22 791 0746).

an official WHO publication and its distribution has been intensified. The document has been translated into French (official translation) and Portuguese.

Training course package in leakage control

This training and resource package provides another link in the chain of system optimization. It 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 for particular levels of trainee. The package has been reviewed by experts and is now in the final stage of printing and distribution.

Manual on upgrading of water treatment plants

A practical approach to the improvement of water treatment plant performance, this document summarizes 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. A third draft has been prepared and is being reviewed prior to publication.

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

This is the most well developed of the tools; it has now been tested at several national workshops, both by Group members and local agencies. The package provides hands-on material for conducting a course. The material can be adapted to local situations and makes use of local resource persons. A French version is available and a Portuguese version is in first draft.

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

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 one. The document has been developed by EHP (USAID/WASH) and revised by selected members of the OMWG. A French version is available and a Portuguese version is planned.

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

This tool aims to inform users of the O&M implications, including cost factors, of selecting a particular water supply and sanitation technology. The document has been printed and is now in process of distribution. A Portuguese version is in preparation.

Manual on field network survey

This is a new activity, for which terms of reference have been prepared. The Group's aim is to prepare a manual on measurement and monitoring techniques for use in the field, in order to better understand how a network operates. As with all the tools produced by the Group, this will be part of an 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 O&M of handpumps — including technology choice, costs, spares etc. — is being prepared by SKAT in partnership with the OMWG.

The OMWG has also conducted or coordinated a number of regional and country activities. These have included **national and regional workshops** to promote O&M, and support to national and regional agencies in setting up training centres for O&M activities. One example of a national workshop was the one held in New Delhi, in September 1996, immediately following the meeting of the OMWG. The aim of the workshop was to bring the expertise of Group members directly to the Indian water sector. Two separate workshops were held — one for urban and one for rural practitioners. The workshops had a high profile; they were aimed at senior decision-makers and were attended by key persons from each state. It was agreed that the workshops were timely and there was a high level of enthusiasm from participants. One of the key features of the success of the workshops was the high degree of preparatory work and the use of professional facilitators during each working group session. Both workshops led to specific recommendations being made. These included one on the setting up of two national task forces for O&M, which was accepted at national government level.

Another major feature of the Group's activities is the provision of 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 (A recurrent training course on the management of rural water supply and sanitation systems has been established for the African lusophone countries under the auspices of the Government of Mozambique through DNA, with financial support from the Swiss Development Cooperation. Courses on leakage control and the management of urban systems are being organized by the same institution with the assistance of the OMWG);

- training courses on rural water supply and sanitation for francophone Africa conducted regularly by the IRC in partnership with the Ecole Inter Etats Techniciens Superieurs de l'Hydraulique et de l'Equipement Rural (EIER), Ouagadougou, Burkina Faso;

- courses on leakage control and the management of rural water supply and sanitation for trainers at ONEP in Morocco, in partnership with the French Cooperation. Courses will be offered to African countries.

These activities are listed and described more fully in Annex III.

Other initiatives activated by the OMWG include:

- assessment of the Group's activities and effectiveness;
- decentralization of the Group and creation of an O&M network;
- promotion of O&M by means of posters, a document for policy-makers, and publicity material for the O&M tools.

These initiatives are described below.

5. Assessment of the OMWG

The OMWG has agreed that, as sector requirements evolve (e.g. private sector involvement), so the Group's scope is evolving too. An **evaluation** of the scope of work and past activities and an **assessment** of planned future operations are therefore required to give the Group a new focus and direction based on experience to date.

The aims of the assessment would be:

- to review what has been achieved;
- to assess the scope of the work and the tools produced;
- to assess the impact made by the tools;
- to re-think the scope of work.

The assessment should emphasize the future of the OMWG, bringing its activities in line with sector development and the recommendations of the last Council meeting in Barbados.

It was emphasized that the assessment procedure should be positive and forward-looking, and should not slow the pace of implementation of tools at country level.

The assessment was a major item on the agenda of the OMWG meeting in New Delhi, where it was discussed in working group sessions. To assist these discussions, certain preparatory material was produced, namely:

- a framework TOR for assessment;
- a discussion document describing past activities and their impact.

Following the working group debate, recommendations were discussed in plenary and then referred to the meeting of the Core Group in February 1997.

Prior to the Core Group meeting a questionnaire was prepared for distribution to water utilities and the users of the tools — the clients of the OMWG — and the first step was to identify institutions that have used the tools.

The Core Group concluded that the assessment is a necessary stage of the OMWG's evolutionary process, and is an opportunity both to look back at the past 10 years and to look forward to the future. It was agreed that the assessment should:

- be linked to the promotion of tools;
- evaluate what has been produced, not the work of the OMWG;
- gauge how successful the OMWG has been as a guide for future direction.

A questionnaire would be designed which should:

- be limited to a "client satisfaction" survey;
- be sent to all OMWG members;
- be sent to a sample of clients who have used the tools;
- be applied at the GTZ/OMWG workshop in Namibia in May 1997.

An action plan for carrying out the assessment was agreed, as follows:

- the OMWG's **track record** would be assessed in terms of its promotion of O&M, the number of its outputs and the number of its contacts;

- the OMWG's **impact** would be measured by client satisfaction;

- the O&M **needs** would be assessed as perceived by beneficiaries.

Preliminary findings, which will include the assessment process and planning, will be presented to the Council meeting in Manila. The assessment methodology will include the questionnaire sent to OMWG members and a sample of clients. Results will be based on a data collection desk study and limited discussions with members of interest groups such as producers of tools.

6. Decentralization of the OMWG into a network

The Group acknowledges that its activities and the tools it has produced are being well received. The Group's efforts to promote O&M and to support the implementation of the tools at national and regional levels have been very successful. Indeed, demand for the tools is increasing. It is this demand that has led to some difficulties with the existing arrangements for dissemination of the tools. With increased promotional activity the need has arisen for faster response in responding to requests.

The Group believes that the clients' requests for tools will be best serviced by decentralizing the OMWG into a network. At the OMWG meeting in New Delhi, members were asked to consider the strengths and weaknesses of three options:

Option 1 - The present setup. This is a centralized system with WHO headquarters at the core. All activities are organized and controlled by the OMWG and its secretariat in Geneva, which disseminates tools to regional training centres, and which also initiates implementation of projects at country level.

Option 2 - One activity per site. This option proposes a centralized activity centre for each activity, with Geneva as the administrative core. Each activity centre could be located anywhere in the world.

Option 3 - Task forces at several regional sites, each covering a range of activities. This option would retain a strong Group secretariat at the core, but not necessarily in Geneva, with regional centres and resource centres radiating from the hub. There would be an initial stage and a final stage, during which strong links would be increasingly forged between the regional centres, and with the resource centres.

Working groups considered each of these three options. The general aim of the discussions was to ensure the sustainability of the OMWG and to ensure that it reaches its objectives. The working groups were asked to;

- specify the advantages and disadvantages of each option;
- identify aspects (e.g. financial, political) of each option;
- add proposals for modification;
- produce a layout of the preferred design.

The strengths of **Option 1** were its global vision, simplicity and informality, with little bureaucracy, relatively low cost, and no need to increase capacity. However, its weaknesses were felt to include low visibility and remoteness from the action, with low capacity for interaction with field activities and local experts.

Option 2 was found to be unworkable and was modified by the working group which suggested a global forum at the highest level, carrying out monitoring and providing feedback to and from a central OMWG. The existing secretariat would be retained and would have a strong facilitating role with regional and country partners. A further tier would be a partnership of regional and country institutions, each distributing the Group's tools.

Option 3 implies the formation of a number of decentralized institutions, each responsible for product delivery, forming a bridge between WHO headquarters and activities at country level. The new setup would utilize existing structures and links while acknowledging the autonomy of network partners. Governance would be by a forum, and leadership by a core group and secretariat.

The results of the working group discussions at the New Delhi meeting were circulated to OMWG members, and the issue was debated at the Core Group meeting in February 1997. The preferred option was a model with a strong OMWG core but also with strong interlinked regional centres. The OMWG would initiate the transfer of materials and ideas via a task force.

The OMWG believes that the elements to be considered in a model of decentralization include:

- a high-level global forum to act as governance;
- a secretariat based in Geneva, but possibly rotated;
- an O&M core group;
- training institutes such as ONEP and DNA;
- technical resource centres;
- a consultative group;
- regional centres, such as focal O&M centres and centres of excellence;
- country O&M centres;
- a decentralization task force.

The OMWG made the following suggestions:

- the responsibilities of the OMWG core group need to be reviewed and updated;
- promotional work needs to be carried out with institutions to find out their resources, technical competence and areas of expertise;
- ITNs in developing countries are well qualified to be support agencies.

The OMWG should not strictly follow one model, but should be demand-driven - i.e. the OMWG should support any group that is willing to become a support centre.

A strong core group and secretariat still have major roles in the decentralization process both for introducing changes in O&M and for developing policies and strategies. Rotation of the secretariat could be considered if a viable alternative were offered.

There is a need to create awareness of the OMWG within agencies, and strategies are needed to encourage institutions to become decentralized support centres.

Agencies that enter into an agreement should have credibility, interest and commitment. There must be a mechanism for approving of agencies that apply. The criteria for selecting suitable agencies are as follows:

- willingness to enter into an informal agreement (e.g. an expansion of the role of WHO Collaborating Centres);
- capability to raise sufficient financial resources;
- well established with suitable expertise;
- ability to prepare an action plan and commitment to implement it within a four-year time scale.

Dissemination of documents is also to be considered, particularly with regard to whether they should be free or should be sold to recover costs. In this connection:

- any agency that takes on dissemination of documents should consider the cost of production and postage;
- it is difficult to identify institutions within the membership of the OMWG. National workshops are the best means of identifying local agencies and donors for document production and dissemination that could be paid for out of project funds.

The **tools** are the copyright of WHO. This enables WHO to distribute the tools and materials to agencies for printing and distribution. The present financial commitment by WHO to comply with requests from agencies is unsustainable. A mechanism is needed to deal with future requests for multiple copies.

An active **network** of contact organizations and experts is already being coordinated by the OMWG. This has been invaluable in assisting the preparation, testing and dissemination of tools to date. However, it was felt by the Group that to fulfil its objectives of decentralized dissemination of tools the network should be expanded and its database operated and maintained by an external agency. This would allow dissemination to take place in a systematic and sustainable manner. The members of the network will be interlinked through a computerized information system containing the different categories of membership of the network. These are:

- a consultative group, comprising professionals who deal with O&M issues and who are potential users of the tools;

- the OMWG, comprising around 30 experts representing ESAs and WSS agencies in developing countries;

- the OMWG Core Group, comprising a small group of OMWG members who are responsible for putting into action the recommendations of the Consultative Group and the OMWG.

7. Promotion of O&M

WHO has been assisting the Group to develop a strategy for promoting O&M and for creating awareness of the Group's tools and activities.

The strategy requirements are:

- definition of objectives;
- definition of target audience;
- 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 about "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.

To support this strategy a **promotional toolkit** has been developed by WHO. It consists of a double-pocket folder containing:

- a leaflet for policy-makers;
- individual leaflets for each tool (five have been prepared so far);
- two posters;
- other materials of relevance to specific target audiences.

Other suggestions made by the OMWG in connection with the toolkit include:

- creation of separate toolkits for policy-makers and project managers;
- development 10-15 key messages of good O&M policy, for inclusion in the folders;
- highlighting urban and rural concepts and distinguishing them in the key messages;
- the need to develop a dissemination strategy.

The members of the OMWG at the New Delhi meeting suggested that the OMWG should be careful in promoting the use of training packages without placing conditions on their use or dissemination. The Group has also recommended that the promotional toolkits should be distributed at the WSSCC meeting in Manila.

8. Future Activities

Until now the work of the OMWG has been to promote best O&M practice by organizing regional or national seminars and workshops and by developing, promoting and disseminating tools. The focus of the Group's activities in the future will be to develop a more proactive role in the application of the tools. This will be done by collaborating with national and regional agencies that wish to implement training packages and pilot studies within their projects.

While some of the tools are fully developed and are being used by client organizations, others are still in the final stages of development. One of the Group's tasks in the coming year will be to finalize these tools. This may involve testing and reviewing certain tools, converting manuals into training packages, and translating tools — some of which are already available in French, Spanish and Portuguese — into other languages.

As the focus of the sector evolves, so the Group must be prepared to evolve too. The assessment of the Group's activities, and the findings regarding its successes and failures, will guide the direction the Group will take in the coming years. This will inevitably include the development of new tools. At the Council meeting in Barbados in 1995, it was recommended that the Group should develop several new tools to complement existing ones in order to reflect this changing focus and needs of the sector. These new tools are:

- guidelines to assist the management of asset-holding companies in monitoring the performance of private sector O&M contractors;
- guidelines for O&M in rural sectors under private management;
- a guide to the preparation of O&M manuals for use by managers and staff of water agencies;
- training packages for equipment, and guidelines for the development of training packages relating to O&M equipment, spares, stock systems etc.
- guides for O&M in sewerage, sanitation and drainage.

These recommendations were discussed at the New Delhi meeting of the OMWG, and at the Core Group meeting in February 1997. Many manuals and guidelines are already available and it was suggested that a first step should be to review these. Members also offered help in compiling guidelines for private sector involvement. Other OMWG members offered to contribute documents and case study material.

A consultative group of OMWG volunteers is required to review existing documents on best practice and to decide which should be included in an OMWG "catalogue". Each entry in the catalogue will have a brief descriptive paragraph. IRC will draw up a proposal for the preparation of the catalogue, which will be presented to the Manila meeting.

One of the most effective means of encouraging the formation of national O&M programmes is to combine the annual OMWG meeting with a national workshop. This was done in New Delhi in 1996, when national workshops on urban and rural water supply and sanitation were held following the OMWG meeting. As the OMWG meeting was attended by Indian representatives, this became a catalyst for motivating the discussion at the national workshops. A direct outcome of the workshops was the setting up of national task forces to activate O&M in both urban and rural WSS sectors. The Group has decided that this should be the pattern of future OMWG meetings and some suitable venues for 1998 were proposed at the last meeting of the OMWG Core Group.

The Group intends to continue to pursue the decentralization and to support the creation of an O&M network.

9. Recommendations

The future activities of the Group, as listed in Section 7, demonstrate its evolution from operating in a highly centralized manner to identifying regional or national institutions that would take over many of the activities currently conducted by the Group's secretariat. The OMWG is clearly at a crucial stage of its development. It will need support from the Council to complete this major task of transferring responsibilities to potential collaborating institutions.

It is therefore recommended that, in the interests of the continuance of O&M best practice and in view of the need to complete the process of decentralization, the WSSCC should mandate the Group for a further two years.

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Annex III

Operation and Maintenance Working Group

Progress Report

Development and Distribution of Tools

ACTIVITY	STATUS
Reprinting and distribution of the compendium of selected case studies on O&M of water supply and sanitation systems	Additional copies printed and distributed. WHO, Italy
Tools for assessment of operation and maintenance status of urban and rural water supply and sanitation	Module on water supply available (300 additional copies prepared). This module is being tested by the WB in West Africa. Module on sanitation still to be prepared. WHO, WB, WEDC
Operation and maintenance of urban water supply and sanitation systems: a guide for managers	Document prepared by WHO: distribution to be intensified. Document available through the publication department of WHO
Training course package on leakage control	Document published and printed and in process of distribution. WHO
Preparation of a manual on upgrading of water treatment plants	Final draft prepared. Document yet to be published, printed and distributed. WHO
Training course package on management of operation and maintenance of rural water supply and sanitation	Additional copies of the English version available. French version available. First draft of Portuguese version available. IRC, WHO, SDC, UNICEF, UNDP/WB, Italy, Dutch, GTZ (CAPRE), CEPIS
Characterization and evaluation of models of management systems for the operation and maintenance of rural water supply and sanitation facilities	Additional copies prepared and distributed. EHP, Italy, WHO
Manual on linking technology choice with operation and maintenance in the context of small community water supplies	Document printed and ready for distribution. Copies and distribution to be performed by the IRC on behalf of the OMWG. Translation into French, Spanish and Portuguese in preparation. IRC, DGIS, WHO
Manual on field network survey	Terms of reference prepared. Preparation of manual not yet started. WHO, Italy, DGIS, GTZ
Manual on operation and maintenance of handpumps	Document under preparation by SKAT in partnership with the Operation and Maintenance Working Group

Regional and Country-Level Activities - From June 1995

ACTIVITY	STATUS
Working group session at the meeting of the Water Supply and Sanitation Collaborative Council, Barbados, November 1995	Barbados, November 1995 Session recommended the continuation of the Group in association with the WSSCC for the period 1995-1997
Participation of the OMWG's coordinator at the First Regional Meeting of the WSSCC for Latin America	Developed in Quito, Ecuador, 16-18 October 1996. Organized by the WSSCC in cooperation with PAHO/CEPIS, GTZ, CAPRE, ANDESAPA
Subregional workshop on operation, maintenance and management of O&M for the African lusophone countries	Maputo, Mozambique, 29-30 September 1995 SDC/SKAT, Italy, WHO
Regional workshop on strengthening leakage control programmes (Eastern Mediterranean Region)	Alexandria, 4-8 June 1995 WHO/EMRO
Regional workshop on management of urban water supply and sanitation systems, Kuala Lumpur, WHO Western Pacific Regional Office	Organized by WHO/EHP (Environmental Health Programme), Kuala Lumpur, 21-25 August 1995 WHO, EHP, Italy
National workshop on operation maintenance and management of water supply and sanitation systems, DNA, Mozambique	Maputo, Mozambique, 26-28 September 1995 SDC/SKAT, Italy, WHO
National workshop on O&M in New Delhi	National conference organized in New Delhi, 25-27 September 1996, after the meeting of the OMWG, 23-24 September 1996. SDC/SKAT, Italy, WB/UNDP, UNICEF

Regional and Country-Level Activities (contd.) - From June 1995

ACTIVITY	STATUS
National workshop on leakage control, Islamabad, Pakistan, organized by WHO's Regional Office for the Eastern Mediterranean	Islamabad, 26-30 November 1995 WHO, Italy
National workshop on management of urban water supply and sanitation systems in Bangladesh	Activity organized by WHO/Bangladesh, Dhaka, 17-18 September 1996 WHO, UNDP/WB, Italy, local ESAs
Participation of the Coordinator of the OMWG at the first meeting of the National Task Force on Operation and Maintenance of Urban Water Supply and Sewerage Systems	Organized by the Ministry of Urban Affairs and Employment of India New Delhi, 4 September 1997
Workshop on management of urban water supply and sanitation systems in China and Vietnam	China: 17-20 March 1997 Vietnam: 25-28 March 1997 WHO/WPRO, Italy
Training course in Eritrea on management of rural WSS; preparation of an action plan on O&M	Training package on management of rural WSS to be used as a source document. Dates not yet defined Italy, WHO
National workshop on O&M in Botswana, Ghana, Kenya, Lesotho, Malawi, Swaziland and Zimbabwe in cooperation with WHO's initiative on AFRICA 2000; preparation of national O&M action plans	Zimbabwe: 25-29 November 1996 Ghana: 12-14 November 1996 Kenya: 21-22 November 1996 Zambia: 21-24 April 1997 Botswana: 16-19 September 1997 Malawi: 23-26 September 1997 Swaziland: 7-10 October 1997 Lesotho: 14-17 October 1997 Sponsorship: Italy, WHO

Regional and Country-Level Activities - From June 1995

ACTIVITY	STATUS
Regional workshop on O&M of water supply and sanitation systems; incorporating O&M concerns into GTZ's projects in Africa	Workshop attended by representatives of GTZ projects 12 African countries. Namibia 19-22 May 1997 GTZ, WHO
Participation of the OMWG at the meeting of the Council's Eastern European Group	The focus of the meeting of the Eastern European Group was on O&M Romania, 14-15 April 1997
Participation of the Coordinator of the OMWG at the Congress of the International Water Supply Association (IWSA), Madrid	IWSA Congress: 20-26 Sept. 97, Presentation on the OMWG: 24 Sept. 1997
Training course on leakage control, organized by ONEP in collaboration with the OMWG. This is a course to be conducted recurrently as part of a comprehensive agreement between WHO and ONEP and will include additional training activities	Morocco, 31 March-11 April 1997; invitations to francophone countries of Africa. Financial support from France ONEP, NANCIE, WHO
Training course on management of O&M of rural water supply and sanitation systems as part of an agreement with the Water and Sanitation Training Institute of Mozambique	Maputo, Mozambique, 3-29 March 1997 Financial support from the Swiss Development Cooperation. IRC, SDC, WHO

Involvement of Training Centres in O&M Activities

ACTIVITY	STATUS
Establishment of training courses in Mozambique on O&M at the DNA's training centre, as follow-up to the Regional O&M workshop on the lusophone initiative	Training of trainers for the establishment of courses on management of rural systems, leakage control, and management of urban systems. The first course on management of rural systems took place in March 1997 WHO, IRC, UNDP/WB
Establishment of training courses at ONEP as a cooperative effort between WHO, OMWG, ONEP, IRC	Establishment of courses at ONEP, Morocco, for trainers, on leakage control and management of rural WSS, to be offered to African countries. First course on leakage control took place from 31 March to 11 April 1997
Establishment of training courses at environmental health centres in Indonesia and Thailand	Under discussion with Dr Magara, Institute of Public Health, Japan

Working Group Operations - From June 1995

ACTIVITY	STATUS
O&M network	Database prepared by CERFE. Updating of members ongoing.
Promotion of O&M	Ongoing
Preparation of promotional posters	Two posters prepared
Promotional document for policy-makers	Document available
Fliers on the O&M tools	Five fliers prepared.
Core group meeting of the OMWG	26-28 February 1997
Global Forum of the Water Supply and Sanitation Collaborative Council	Manila, Philippines, 3-7 November 1997