

**OPERATION AND MAINTENANCE OF
RURAL AND URBAN WATER SUPPLY AND SANITATION
SYSTEMS**

A Workshop Report in support of the AFRICA 2000 Initiative



**WORLD HEALTH ORGANIZATION
REGIONAL OFFICE FOR AFRICA
Brazzaville, Congo**



Logo of the Africa 2000 initiative

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**Operation and Maintenance of
Rural and Urban Water Supply Sanitation Systems**

A Workshop Report in support of the AFRICA 2000 Initiative

8 - 12 November 1993
Harare, ZIMBABWE

Prepared by

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The Hague, The Netherlands
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PREFACE

This Workshop on Operation and Maintenance of Rural and Urban Water Supply and Sanitation Systems was sponsored by the World Health Organization / AFRO in support of the AFRICA 2000 Initiative.

Operation and Maintenance of water supply and sanitation systems is one of the priority areas of regional interest to address the real issue of long term sustainability of programmes in the sector. Though operation and maintenance is recognized as one of the major constraints for the sector development, little support has been provided to water agencies for improvements in this field during the past decade. Something concrete must be done in order to improve the situation.

This Workshop has brought together for the first time professionals in the field of operation and maintenance of water supply and sanitation systems from a dozen of countries to share experiences and develop a framework for formulating clear national policies, strategies and plans of action which could be adapted to their respective countries. The principal findings and recommendations of the workshop express a unity of purpose to start operating in a coherent way to address the key issues that have been identified.

A training package : "Management of Operation and Maintenance in Rural Water Supply and Sanitation", that has been prepared jointly by the World Health Organization and the International Water and Sanitation Centre (IRC) has been presented and discussed by the workshop participants. The concepts and approaches of this training package provide a basis to establish a process aimed at improving the level of operation and maintenance in rural water supply and sanitation.

The next step could be to conduct country workshops to prepare country-level action plan and field test the different tools already prepared by the members of the Operation and Maintenance Working Group. This is a priority area which should be considered for funding by national governments and external support agencies.

WHO/AFRO Office
Brazzaville, Congo

ACRONYMS

| | | |
|-------------------|---|--|
| ESAs | : | External Support Agencies |
| NGOs | : | Non-Governmental Organizations |
| O&M | : | Operation and Maintenance |
| O&M WG | : | Operation and Maintenance Working Group |
| WASAMS | : | Water and Sanitation Monitoring System |
| WHO | : | World Health Organization |
| WHO/AFRO | : | World Health Organization Regional Office for Africa |
| WS | : | Water supply |

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The Ministry of Health and Child Welfare of Zimbabwe, through its Director of Environmental Health Services, Mr. Musingarabwi, should be thanked for hosting this Workshop in Zimbabwe, as well as for his excellent leadership in the related activities. The World Health Organization Office from Africa, through its Regional Adviser, Mr. Zawide, should also be thanked for sponsoring this Workshop and coordinating with efficiency a great deal of the administrative and content related activities.

The Workshop had the honour of having its session opened by the Senior Permanent Secretary for Local Government, Rural and Urban Development, of Zimbabwe, Cde W.A. Chiwewe. The Deputy Secretary of Health Support Services of Zimbabwe, Mrs J.C. Kadandara has closed the Workshop with a remarkable speech.

Mr. José Hueb, from the World Health Organization Headquarters, Geneva, has greatly contributed to the success of this Workshop, by advising all parties and acting as the Secretary of the Operation and Maintenance Working Group of the Water Supply and Sanitation Collaborative Council.

The success of this Workshop relied also mainly on the quality of the inputs of all the participants who attended the five days meeting in Harare. They should be thanked for their constructive contribution and hard work, which this report will try to reflect.

This report has been prepared by François Brikké, from the IRC, International Water and Sanitation Centre in The Hague, The Netherlands. Mr. Brikké attended this Workshop as a resource person, representing both IRC and the Operation and Maintenance Working Group, and participated in facilitating the working group sessions. The report has been edited by Mr. Zawide from WHO/AFRO and Mr. Dick de Jong, Publication Officer of IRC. Desk-top-publishing has been done by Mrs Anneke Groenendal.

INTRODUCTION

Another Workshop ! Another meeting !...

However, this Workshop was not just yet another Workshop or another meeting, at least for two reasons. One because of the environment in which this Workshop was being held, the African continent with drastic needs trying to keep in pace with a fast changing world. And two, because the topic it dealt with, the operation and maintenance of rural and urban water supply and sanitation systems, is a major factor in the sustainability of programmes in the sector.

Africa has the most pressing water supply and sanitation needs of all the WHO Regions. Of the 640 million people living in the whole of Africa in 1990, 310 million lacked safe drinking water and 385 million were without adequate sanitation facilities.

The continued existence of hundreds of millions of people living without two of the most basic necessities for a supportive environment and healthy lives constitutes an affront to human sensibilities and a reminder of the heavy responsibilities that weigh upon us.

Despite large investments in the sector during the International Drinking Water and Sanitation Decade (1981-90), needs are still important, and African countries as well as the international community are faced with five major issues :

1. Some of the previous development approaches do not guarantee sustainability of the projects implemented in the field.
2. Development takes time, just as a tree takes time to grow.
3. Africa is faced with an important population growth which makes the needs even more pressing.
4. Economic crisis and political instability are undermining a large part of development efforts.
5. Donors are also faced with budgetary constraints in their home countries, which obliges them to make the investments in Africa more effective.

In 1990, at the World Summit for Children, a total of 71 Heads of States signed a declaration which, among other things, called for universal access to safe drinking water and sanitary means of excreta disposal by the year 2000. To reach this goal in the WHO African Region within the next seven years, an average of 54 million people per year will have to be provided with water supply and 62 million per year with sanitation facilities.

Operation and maintenance of water supply and sanitation facilities in developing countries have been neglected during the past years. For this reason, these facilities, which are considerably costly, do not perform or are not maintained as intended and thus fail to provide the services for which they were constructed.

There are important health implications associated with poor operation and maintenance practices in water supply and sanitation systems, particularly the additional risks brought about by epidemics such as cholera. There is a great risk of contamination of distribution pipelines where there is a combination of intermittent water supply, low pressures in the distribution network, inadequate wastewater collection systems and leaks in pipes.

On the rural side, national governments and external support agencies are increasingly realizing that between 30 and 60 percent of all rural water supply facilities are non operational at any one time, and that the management of water supply and sanitation services and their madequate operation and maintenance are key concerns which strongly influence the standards of living and the health of the populations concerned.

Poor operation and maintenance has been identified as one of the major causes of this situation.

Significant efforts are being made by the World Health Organization and several external agencies in association with the Water Supply and Sanitation Collaborative Council to promote improved operation and maintenance as a strategy to achieve sustainable water supply and sanitation services. In order to make these efforts more effective, a Working Group on Operation and Maintenance was established by the Council at its meeting in Oslo in 1991. A series of tools have been already produced on ways to improve operation and maintenance and have been presented in this Workshop.

Furthermore, the World Health Organization was asked during the 89th session of its Executive Board in January 1993, to initiate an international programme for water and sanitation in Africa, known as the AFRICA 2000 Initiative. It has been endorsed by the Health Ministers of the Region in Gaborone in September 1993, and has been discussed during this Workshop.

The Harare Subregional Workshop on Operation and Maintenance of Urban and Rural Water Supply and Sanitation facilities was a way for experts in the Region to exchange experiences and constraints they are facing within their own countries. These exchanges are important in raising awareness on the importance of operation and maintenance, as well as in acquiring information and formulating possible plans of action.

This Workshop was attended by 40 participants coming from Botswana, Ghana, Kenya, Lesotho, Malawi, Mozambique, Namibia, Nigeria, Swaziland, Tanzania, Zambia and Zimbabwe, as well as representatives from external agencies.

This Workshop was sponsored by the Regional Office for Africa of the World Health Organization and jointly organized by them and the Ministry of Health of Zimbabwe.

PART 1

PRINCIPAL FINDINGS AND RECOMMENDATIONS

1. THE CHALLENGE OF OPERATION AND MAINTENANCE IN AFRICA

1.1 Background

The Water Decade began in Africa in 1981 with the ambitious goal to work towards achieving 100 percent coverage in water supply and sanitation by the end of 1990.

Although more progress in water supply and sanitation occurred in Africa during the Decade than in any comparable period in the past, water and sanitation coverage failed to keep pace with population growth.

Over the period 1981 - 1990, an additional 110 million people were provided with safe drinking water and 80 million with adequate sanitation facilities, but regional population during the period increased by 140 million. It is estimated that 54% of the African Region's population still lacks safe water and 64% is without proper sanitation.

Africa receives less water supply and sanitation investment than any other Region. During the Decade only 10% of global water supply and sanitation investment and only 20% of water supply and sanitation investment from external sources were made in Africa. Despite the significant increase in water supply and sanitation investment in Africa during the Decade, both by donors and national governments, the pace of development has stagnated as old systems break down and go out of service almost as fast as new ones are built.

Unfortunately, too many African countries show little sustainable progress after years of external support mainly because of inadequate resources for operation and maintenance of facilities and insufficient health education of users. As a result, many investment projects have failed to reach their essential objectives of public health improvements and sustainability. The problem has been aggravated by the adverse effects of prolonged drought in 34 countries in Southern Africa and the Sahelian zone, which brought the greatest crisis of the century for water resources in the region, literally leading to the cry "All hands to the pump !" The resurgence of cholera and other water related diseases in the Region are important health effects associated with drought and poor operation and maintenance practices in water supply and sanitation systems.

Conventional water and sanitation projects involve significant hardware components, especially in urban areas. Too often, the search for external financing to cover capital costs deflects attention from consideration of local capacity building through the use of local resources. There is lack of harmony between capital and recurrent budgets. This has led to major weaknesses in operation and maintenance and to overall poor performance of water and sanitation programmes.

In a number of large cities poor operation and maintenance has resulted in more than 50% of water produced, being unaccounted for, resulting in a major financial loss to municipalities and other authorities that pay for collection, treatment and distribution of the lost water. In the rural areas, where supply is frequently provided from boreholes and hand dug wells fitted with pumps, a high percentage of facilities ranging from 30 to 60% have been reported as being out

of order. The deterioration of these valuable physical assets is a major loss to national economies which should be avoided.

Key issues were identified by the Operation and Maintenance Working Group of the Water Supply and Sanitation Collaborative Council in past meetings, which were found to be directly related to the performance of operation and maintenance and with the efficiency and effectiveness of water supply and sanitation services. They include the following :

1. Inadequate data on operation and maintenance
2. Insufficient and inefficient use of funds
3. Poor management of water supply facilities
4. Inappropriate system design
5. Low profile of operation and maintenance
6. Inadequate policies, legal frameworks and overlapping responsibilities
7. Political interference

Data are required for planning and monitoring of O&M, but also to keep managers informed on the causes of breakdowns and the maintenance and costs involved.

A lack of funds restricts the availability of spare parts or repairs, tools and the recruitment and training of competent staff. A lack of accountability in maintenance departments or committees leads to inefficient use of maintenance funds.

Some of the **management constraints**, such as unskilled staff, may be a result of funding limitations, but they are also due to poor management. O&M responsibilities are rarely delegated to individuals, and this can result in a lack of responsibility for the proper use and upkeep of facilities. Management supervision of O&M may be virtually absent in many cases. Management know-how may be not available, especially in cases where staff have mainly been trained as engineers. Furthermore, the management of O&M more and more requires the integration of hardware (technical) and software (social and economical) aspects, which is not a topic being dealt with in conventional training.

If systems are **not technically well designed**, they may be difficult and expensive to operate and maintain efficiently. Initial design must consider long term O&M. Poor design is often compounded by inadequate supervision of construction leading to poorly constructed systems and hence having an impact on future O&M.

The low profile of O&M will mainly cause low priority to be given to O&M, as well as feelings of low status by staff working in O&M. There is a tendency to focus on capital construction, at the expense of maintaining existing supplies.

There is a need for **clear policies**, appropriate legal frameworks and a well defined division of responsibilities to support O&M in the sector. Overlapping responsibilities of staff and departments can divert skills, funds and equipment away from O&M.

Political influences may determine technologies or result in sub-standard systems. The state of national and regional economies can force governments to take decisions which could have an impact.

Effective O&M benefits users, water agencies and countries as a whole. Benefits include improved health and well-being, as well as social, economic and financial advantages.

Users will benefit from improved health through a constant, reliable supply of safe water of sufficient quality for essential hygiene purposes. During periods when a system is broken down, people have to return to their old, often unsafe, sources of water. A nearby improved supply can save water collectors time and energy compared to collecting water from a distant source. A broken down supply means a loss of these important benefits.

Involvement of the users in Operation and Maintenance activities can reduce their dependency on external assistance. Technical and management skills within the community can be enhanced through appropriate training and these can have broad benefits.

Benefits for the water agency include the fact that a reliable water supply encourages users to pay for their supply. This provides the agency with the revenue to fulfill their responsibilities. Involvement of the users in O&M can reduce the day-to-day burden of routine servicing and maintenance often carried out by the water agency.

The Government and country benefit because the existing stock of infrastructure is maintained and preserved. New developments then increase the number of water supply systems rather than merely keep pace with the existing coverage. Functioning water supply schemes contribute to a healthier and more productive population which benefits everyone.

1.2 Overview of major constraints concerning operation and maintenance in the region as reported by the country representatives participating in the Workshop

| | |
|--|---|
| <p>Zambia</p> <p>Poor statistics of rural areas; overlaps in responsibilities; many actors involved; taking over by communities has been difficult; each one has its own technology; lack of coordination; standardization of Mark II did not succeed; communities do not contribute much apart for labour and materials; lack of skills and capacity of the communities; no standardization or interchangeability between different technologies; lack of clear strategy for water and sanitation; poor training policy; no comprehensive data on rural systems.</p> | <p>Zimbabwe</p> <p>Going through various stages of implementation of new concept of community management and decentralization; no policy on finance; lack of cost recovery system; community-based repairs established but communities are not managing, although they are provided with parts and training; maintenance of piped schemes very expensive, and lack of guidelines.</p> |
| <p>Tanzania</p> <p>Despite changes of policy introduced since 1990, people still used to old policy of free water and government intervening for all O&M; funding is a problem; some projects have still high technology, with high O&M costs; economic decline; inadequate priority setting of activities by the Government; poor data on O&M; lack of involvement of communities; lack of trained personnel; inadequate health education</p> | <p>Mozambique</p> <p>New approach of decentralized maintenance; AFRIDEV introduced, but failed due to drought; training and participation of communities is alright, but spare parts provision is inadequate, and the organization of collecting funds for maintenance is not working well; the number of pumps installed has increased, but it is difficult to know how many are functioning; because of war, many people went to the cities; lack of accurate information.</p> |
| <p>Malawi</p> <p>Community participation has declined, mainly due to urban migration; water quality is poor; use of slow sand filters not adequate; vandalism; government owns piped schemes and has problems of cost recovery, since not enough has been budgeted.</p> | <p>Swaziland</p> <p>Inadequate supplies; communities have little trust in their committees; inaccessibility; revenue collection difficult; collapse of pit latrines; lack of data; inadequate training of communities for management.</p> |
| <p>Nigeria</p> <p>Breakdowns are quite rampant; general unsustainable environment for O&M because of unstable politics and down turn of economy; inflation offsets the system even at rural level; cost sharing concept not yet clear and accepted; investments in the water sector are not looked in a wider perspective of general rural or urban economic development.</p> | <p>Ghana</p> <p>Despite national policy change with intensive educational campaign and a demand driven approach, collection of tariffs is difficult, and recovery insufficient; community management still needs to be pursued and the availability of spare parts is not yet efficient; in general, lack of coordination; overloading of sanitation facilities, because of population growth; priority setting of resource allocations not adequate.</p> |
| <p>Kenya</p> <p>Law on water use not adapted to real situation; despite a certain subsidization from the Treasury, cost recovery is not enough; high costs of spare parts; difficult to maintain adequate stocks of spare parts; passive community involvement in management of WS; lack of qualified operators; shortage of sufficient funding to finance regular rehabilitation/augmentation of water schemes; many water supplies were designed in the early 1970s; in slums poor access to adequate means of excreta disposal;</p> | <p>Lesotho</p> <p>Problems in implementing cost recovery policy, especially when sanctions have to be applied; question of village water ownership surfaces; Communities ignorant of their roles in community management; communities left to operate and carry small repairs and government has the responsibility of big repairs; lack of commitment on sanitation by Government; regarding urban water supply : lack of land management, inadequate policies and poor enforcement of available legislation, and staff movements resulting in a negative capacity building. Environmental hygiene greatly influenced by lack of hygiene education.</p> |
| <p>Namibia</p> <p>Country has very recently adopted a new policy aiming to decentralize O&M activities and make people pay for certain services. Cost recovery is not developed properly; difficult to assess new approach because too recent, but O&M was too centralized in the past and costs of maintaining were too high for the government alone to bear; lack of trained personnel; inappropriate technology.</p> | <p>Botswana</p> <p>Less constraints compared to other countries, except : poor data collection; poor management; not a lot of trained staff; insufficient funds for recurrent expenditures; sanitation is a bit neglected and no one is directly involved</p> |

2. COMMON ISSUES TO BE ADDRESSED

In the light of the present situation regarding the operation and maintenance of water supply and sanitation facilities in the Region and further completed by the country representatives, it appears that there are common issues to be addressed, which all have to certain extent an influence. These include a genuine Government commitment, the capacity of district and rural councils and community organizations, the complexity of the technology, cost recovery mechanisms, a gender approach and community management.

A genuine Government commitment, which includes :

- . A strong political will for handing over responsibilities for rural water supply and sanitation to District and Rural Councils and community organizations to secure sustainability in future project planning.
- . An equitable distribution of resources (financial, human, material) to Districts according to needs for development of water supply and sanitation.
- . Significant investments in the sector to carry out its mandate.
- . Strong sector institutions with efficient organizational framework and adequate staff receiving attractive salaries and benefits competitive with the private sector.
- . Policies and legislation defining the responsibilities of the principal actors (central government, district and rural councils, community organizations, the private sector, donors and NGOs); technology choices and cost recovery.

The capacity of District and Rural Councils and Community Organizations, implying the following points :

- . Leadership aptitude to organize, motivate and educate the communities.
- . Accounting and record keeping skills for the proper collection and disbursement of funds.
- . Mechanical skills from simple caretaker to repair skills for sophisticated machinery. In the case of the latter the community may call upon outside assistance for repairs.
- . Engineering knowledge for planning, design and construction of large water projects for several villages (district level)

The complexity of the technology, meaning that :

- . Technology used should be compatible with the beneficiaries's ability to operate and maintain it.
- . If repairs are too complex the next tier system must assume this responsibility.
- . The communities must be primarily responsible for managing the system even if they require outside mechanical assistance.
- . Spare parts must be readily available either from government agency or private dealers.
- . Standardization and domestic manufacture of spare parts and equipment are means to overcome dependency on imported spare parts and pumps.
- . Government should specify which pumps to accept when negotiating with bilateral donors.

Cost recovery mechanisms, imply that :

- . Beneficiaries must be able to fully cover all operation and maintenance costs.
- . A flat monthly fee may be levied on each family or household.
- . Water may be sold by unit volume at water point.
- . A water tax may be included in the income tax of the population.
- . Financial contribution may be made from sale of agricultural products in the community for operation and maintenance.
- . Where there is no alternative water source, willingness to pay may be high.
- . Improved water supply may not be used if they are streams nearby and if the cost from the improved source is considered high.
- . In kind contribution may be considered by the community.

A Gender approach, includes :

- . The involvement of women in the design, construction, management and utilization of water supply and sanitation systems.
- . Assigning women to specific responsibilities such as financial management, pump operation and repair, upkeep of water points/well sites, and attribution of other or same activities to men.
- . Men and women serving as members of water and sanitation committee.

Finally, **community management** is a concept increasingly being promoted as a way to partially solve the technical and financial problems that most countries are faced with regarding operation and maintenance. Although this approach is relatively new, it gives the opportunity to empower communities with responsibilities and therefore being actors of their own development. This issue is further discussed in the paragraph 6.2.

As community management is a common issue which was addressed by the participants, the Workshop has proposed the following agenda for action to enhance community management:

Agenda for action to enhance community management

- * Strong advocacy by all actors for communities to be given more responsibility for managing their water supply and sanitation facilities.
- * Decentralization of resources and authorities to strengthen regional administrations, district and rural councils and community organizations in water supply and sanitation development.
- * Capacity building of the sector institutions, regional administration, district and rural councils and community organizations.
- * Special training for communities in how to organize and run meetings, communicate health and hygiene messages and improve financial management techniques (in local language).
- * Training communities in low cost technologies and repair skills for hand pumps and pipes, providing the necessary tools for minor repair and preventive maintenance with assurance of a steady supply of spare parts.
- * Developing effective cost recovery mechanisms for community managed water supply and sanitation facilities.
- * Assuring the involvement of women in the design, construction, operation, maintenance, management, utilization and monitoring of water supply and sanitation systems.

- * Carrying out specific hygiene behaviour studies prior to implementing water and sanitation projects.
- * Increasing emphasis on private sector involvement to provide spare parts and technical service for complex technology.
- * Operationalizing the joint WHO/UNICEF water and sanitation monitoring programme by instituting bottom-up participatory data collection and reporting systems and establishing communication links between sector agencies and communities through rural and district councils and regional administrations.
- * Formulating national policies, strategies, legislation and action plans for community management of rural water supply and sanitation systems.

3. RECOMMENDATIONS

In order to respond to the constraints formulated earlier, the participants of the Workshop were divided into four Working Groups (Urban water supply; Rural water supply; Urban sanitation; Rural sanitation), and a series of recommendations were proposed and then discussed and agreed upon in a Plenary Session. The recommendations are listed below:

3.1 Recommendations concerning O&M of Urban Water Supply

Planning issues

1. The Central Government should review its budgetary policies with the allocation of sufficient financial resources to the water supply sanitation sector.
2. A programme should be formulated and implemented dealing with the rehabilitation and replacement of components of the water supply systems where considered appropriate.
3. Preventive maintenance services should be introduced in order to increase the reliability of the systems, reduce the need for corrective maintenance and reduce the overall maintenance costs.
4. The private sector should be involved in the execution of preventive maintenance service specially where it is not cost effective or efficient to carry out these services through the water agencies staff.
5. The water agencies should count on information systems to support the adoption of managerial decisions at all levels.
6. The water agencies should develop sound procedures for the updating of records and plans of the pipe distribution system and other operational units.
7. In order to minimize the problems related to vandalism of the water supply facilities, the provision of appropriate means should be found to provide coverage to populations along the existing structure. In addition, the access to the infrastructure should be limited and controlled.
8. Surveys should be conducted to identify the unaccounted for water component and programmes should be formulated and implemented to minimize these losses to acceptable levels having into account technical and financial factors.
9. Universal metering should be adopted as a strategy to reduce wastage of water, to ensure that the water delivered is efficiently used by the consumers and to achieve a more equitable approach for cost recovery.
10. Meters should be regularly maintained to ensure their functioning according to established specifications. The meters used within the same water supply should be standardized to facilitate its control and maintenance.
11. Public educational campaigns should be organized to increase public awareness on the importance of water use and to promote the ownership concept of infrastructure.
12. Special consideration should be dedicated to water conservation at the level of the consumers. Consumers should be aware of the importance of effective and efficient use of water. The water agencies should encourage the manufacturing of water saving devices and should educate the consumers towards the importance of water conservation.

Financial issues

13. Water agencies be structured to generate revenue to cover O&M costs and long term investments for the achievement of its financial self-sufficiency.
14. The water tariff structure should reflect the need of revenue collection to ensure the coverage of capital and O&M costs. The tariffs should be adjusted within adequate time intervals to ensure the continuous financial sustainability of the water agency.
15. The need for cross-subsidization should be assessed and implemented where appropriate.
16. The tariff should be established according to technical criteria and should not be influenced by political motivation.

Management issues

17. The senior management and administration of the water agencies should be encouraged to offer improved conditions of work to their employees. Adequate salary levels, a plan of career development and a consistent training programme should be common strategies, to ensure increased staff motivation, greater efficiency of the institution and to prevent the loss of personnel towards the private and other sectors.
18. The middle level managers should receive special attention with regard to training, motivation and salaries as they are not severely affected by political changes at the high administrative level of the institutions. Stronger middle level managers would ensure the continuity of the policies and programmes under the implementation by the agency.
19. Decision-makers at the highest possible level should be convinced about the importance of water supply as opposed to other sectors (energy, telecommunication, etc...) to ensure the channelling of appropriate levels of financial resources to improve Water supply coverage and better management practices.
20. The water sector agencies should be better organized to maximize and optimize their operations avoiding overlapping responsibilities and to have better coordination.

3.2 Recommendations concerning O&M of Rural Water Supply

Planning issues

1. Governments should formulate strategies on operation and maintenance development.
2. These strategies should define the role and responsibilities of all actors involved.
3. Strategies should ensure the adequate choice of appropriate technologies including availability of spare parts.
4. Strategies should optimize the handing over procedures after completion of projects.
5. Governments should provide legal tools to implement rural water supply projects and programmes.
6. Governments should improve the coordination of NGOs and donor activities including : registration of assisted projects, reception of progress reports and coordination of choice of technology.

Management, Institutional and Organizational issues

7. A reorganization or adjustment of the institutional framework could be necessary in order to optimize the implementation of a new strategy.
8. Management capacity at all levels (planning and communities) should be improved.
9. Awareness on operation and maintenance issues should be enhanced and sustained at all levels (planning and communities).
10. An appropriate data bank system on O&M for management purposes should be improved or introduced.

Training issues

11. Training capacity for providers, users, mechanics and trainers themselves should be strengthened and adapted to Operation and Maintenance issues, including O&M system development; management and finance; technical issues; health education; gender awareness.

Finance issues

12. An appropriate tariff system covering O&M costs, which communities could sustain, should be established.
13. Revenue collection system should be strengthened.
14. Allocated funds should be used with closer supervision.

3.3 Recommendations concerning O&M of Urban Sanitation

1. Government should review and re - structure sanitation tariffs in urban areas.
2. The funds from sanitation tariffs should be used exclusively for sanitation activities.
3. Governments should initiate sustainable sanitation programmes and approach donors for funding.
4. Data bases and monitoring systems should be established in urban areas for planning and management purposes in sanitation activities.
5. Governments should initiate institutional capacity building activities in urban sanitation (training, procurement,..)
6. Governments should allocate adequate funds and other resources.
7. Urban planners should make available land for residential settlement in conformity with the urban population growth rate.
8. Governments should ensure that the developments in the urban areas adhere to the laid down procedures (in accordance to existing master plans).

3.4 Recommendations concerning O&M of Rural Sanitation

1. Rapid assessment of sanitary facilities should be carried out to update or establish baseline data.
2. Data collection on water supply and sanitation monitoring system should be institutionalized as part of the national monitoring system (in the context of WASAMS).
3. Sanitation training at the community level should be initiated and strengthened in the light of changing technology
4. Capacity building of community based operations and maintenance should be promoted.
5. National leaders should declare one day in a year as a sanitation day.
6. Minimum standards on sanitary facilities should be set up with a view of achieving universal coverage.
7. Ministry of Health should review, update and amend the Public Health Act.
8. Ministry of Health should solicit support from the highest political authority to have the mandate of implementing sanitation programmes.
9. Ministry of Health should initiate and promote activities which will reduce morbidity and mortality from sanitation related diseases.
10. Opportunities should be created for income generating activities to enable villagers to improve and sustain their own sanitary facilities.

3.5 Recommendations concerning the AFRICA 2000 Initiative

General recommendations

1. The Workshop recognizes the value and the need of the AFRICA 2000 Initiative, which proposes :
 - . to increase investments in water supply and sanitation services in Africa, through a cooperative effort of Member States and external donors
 - . to advise on potential development programmes and serve as link between organizations
 - . to carry a rapid needs assessment
 - . to facilitate the priority setting and formulation of strategies through workshops
 - . to raise the public profile of the sector through an innovative communication strategy and close relationship with the media
 - . to support implementing mechanisms, through all existing coordinating mechanisms.
2. This Initiative would be a major achievement in the sector for Africa in the coming years.
3. Operation and Maintenance concerns should be considered as a major component of the AFRICA 2000 Initiative and as a key strategy to ensure the sustainability of the water supply sector in Africa.

4. Priority should be given to the implementation of capacity building programmes to enhance the ability of the water and sanitation sector to effectively implement the activities derives from the AFRICA 2000 Initiative.
5. The Initiative should not only be based on generating more funds, but also in ensuring the effectiveness and efficiency of investments made, therefore ensuring an optimization of the use of resources.

Putting AFRICA 2000 into practice

6. AFRICA 2000 Initiative should constitute a Secretariat at Regional level, with contact persons in each country, representing one or several ministry.
7. Nomination of a focal point (contact person) in each country for channelizing information, and acting as a communication agent between the country and the Regional Secretariat.
8. The Africa 2000 Secretariat should facilitate the mobilization of resources required. The system should be effective as to reach all relevant actors in the process.
9. The AFRICA 2000 Initiative should promote the conducting of national water supply and sanitation sector assessment and should establish guidelines as well as facilitate a development process, on the different issues affecting the performance of the water and sanitation agencies (community management/participation, cost recovery, O&M, design, etc..., including water conservation and environmental protection).
10. Each country should :
 - . carry a national needs assessment on Operation and Maintenance of urban and rural water supply and sanitation systems
 - . set up mechanisms for the training of local personnel in the implementation of Operation and Maintenance
 - . intensify continuous Health and Hygiene Education to communities
 - . exchange visits between implementing countries to share experience, strengths, weaknesses and problems
 - . solicit political commitment in Operations and Maintenance of water and sanitation activities
 - . consider a specific budget for water and sanitation.

PART 2
WORKSHOP REPORT

4. THE OBJECTIVES OF THE WORKSHOP

The general objectives of the Workshop were :

- a. to exchange information and experience on major constraints of the current situation of operation and maintenance among the countries in the Region worst hit by drought and cholera epidemics.
- b. to seek ways and propose concrete initiatives and a series of activities to improve the operation and maintenance of water supply and sanitation facilities.
- c. to familiarize the participants on works carried out to date by the Water and Sanitation Collaborative Council, and especially of the Operation and Maintenance Working Group in order to field test the tools developed in their respective countries to improve operation and maintenance services. The tools already developed and which are in the process of preparation by the Working group on Operation and Maintenance are as follows :
 - * Training course package in management of operation and maintenance of rural water supply and sanitation
 - * Training course package in leakage control
 - * Selected case studies on operation and maintenance of water supply and sanitation systems
 - * Assessment of operation and maintenance status of urban and rural water supply and sanitation systems
 - * Guidelines for the management of operation and maintenance of urban water supply systems
 - * Guidance on optimization of drinking water treatment plants
 - * Guidance material on models of management systems for the operation and maintenance of rural water supply facilities

The specific objectives of the Workshop were :

- a. to formulate priorities, strategies and action plan to improve the current situation of operation and maintenance of water supply and sanitation systems at all levels.
- b. to draft policy guidance for agencies responsible for water supply and sanitation to give higher profile to operation and maintenance sub-sector
- c. to identify a focal point or advisory group to promote national efforts and coordinate external support agencies for development of operation and maintenance in the region in the framework of "Africa 2000 : Initiative on an International Programme for water and Sanitation in Africa".

5. THE OPERATION AND MAINTENANCE WORKING GROUP

5.1 Background

In 1988, to focus attention on operation and maintenance, WHO assisted by IRC held a one day informal working session in The Hague, with External Support Agencies (ESAs) representatives. A working group was established with the objective of improving the performance of operation and maintenance.

The Water Supply and Sanitation Collaborative Council, during its meeting, in Oslo, in 1991, designated the working group on operation and maintenance of urban and rural water supply and sanitation systems (O&M WG) as one of its sponsored working groups. The working group was entrusted with the mandate to develop a joint cooperation process involving (ESAs) and developing countries to develop tools and methodologies for the formulation, implementation, monitoring and evaluation of programmes for the improvement of operation and maintenance and optimization of water supply and sanitation services.

In September 1993, at the meeting of the Collaborative Council in Rabat, it was recognized that the O&M WG still had an important role to play and that it should be extended as a mandated working group until the next meeting of the Council in November 1995.

The Group consists of both an Advisory Committee (10 to 20 members) of professionals active in the sector and a consultative group of representatives from ESAs and water agencies in Member States (about 80 members).

Key issues were identified by the O&M WG in past meetings, which were found to be directly related to the performance of operation and maintenance and with the efficiency and effectiveness of the water supply and sanitation services. They include the following :

1. Inadequate data on operation and maintenance
2. Insufficient and inefficient use of funds
3. Poor management of water supply facilities
4. Inappropriate system design
5. Low profile of operation and maintenance
6. Inadequate policies, legal frameworks and overlapping responsibilities
7. Political interference

The development of key activities was proposed as a strategy to provide the water supply and sanitation sector with tools to facilitate the conducting of action to overcome such constraints. These activities were grouped under the four main headings reflecting the priority issues identified :

- * Policy formulation, collaboration and coordination;
- * Enhance profile of operation and maintenance at global and national levels
- * Management improvement; and
- * Data collection and operation and maintenance monitoring.

The Operation and Maintenance Working Group has prepared different tools of relevance for sector development and which are described in paragraph 5.2.

These tools are intended to support water agencies and external support agencies in their task of promoting and implementing programmes to improve the efficiency and effectiveness of water supply and sanitation services. Some of these tools are available for those interested in applying and further developing them whilst others are in a process of testing and/or revision.

During the meeting of the Water Supply and Sanitation Collaborative Council at Rabat, September 1993, it was agreed that testing, application and use of the above tools should be given emphasis during the forthcoming years.

5.2 Achievements

Different tools (guidelines, manuals, training packages) have been prepared by members of the Operation and Maintenance Working Group. Whilst some of these tools have been fully developed and tested others are ongoing as indicated below:

TOOL 1

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

DESCRIPTION

Several case studies covering different aspects of assets management and sustainability of water supply and sanitation systems have been prepared by members of the operation and maintenance working group and were presented at the Group's meetings. Similarly, several case studies were presented at workshops which without being planned or organized by the Group were strongly influenced by the O&M conceptual framework developed since the start of this process of cooperation shared by external support agencies and water agencies in developing countries. These case studies provided the basis for the preparation of this document which should be of great interest to those dealing with development activities, specially in aspects of water supply and sanitation assets management.

STATUS

This useful and interesting document has been finalized by Dr. Harry McPherson and is now printed and ready for distribution. A total of 22 case studies describing concepts on Operation and Maintenance and O&M case studies have been included in this compendium.

TOOL 2

Development of tools for assessment of operation and maintenance status of urban and rural water supply and sanitation

DESCRIPTION

As a response to lack of sufficient guidelines on how to assess operation and maintenance services in both urban and rural areas, the Operation and Maintenance Working Group concurred that the development of tools and methodologies on this issue should facilitate the work of those responsible for project evaluation. The ultimate beneficiaries of the methodology and the tools for the assessment of O&M status are the projects conducted by external support agencies and the O&M services under the responsibility of the water supply and sanitation institutions in developing countries. The methodology proposed has a considerable degree of flexibility to accommodate the special needs of the different potential users.

STATUS

Do. A. Cotton from WEDC and Mr J. Janssens from the World Bank have finalized a revised draft document. This report addresses performance measurement of operation and maintenance for urban and rural water supplies and **proposes a list of performance indicators** to assist in the assessment of the status of O&M.

TOOL 3

Development of guidelines for the management of operation and maintenance of urban water supply and sanitation systems

DESCRIPTION

This document, prepared by WHO, is intended to assist urban water supply and sanitation institutions in developing countries and ESAs to formulate and implement technical and institutional development strategies to strengthen O&M and to improve the overall performance of the urban water and sanitation services. It provides a framework integrating different factors, activities and programmes involved in a process of optimization of water supply and sanitation facilities. The adoption of the principles and the application of this document should contribute to improved management practices and to the optimization of the installed capacity of water supply and sanitation systems.

STATUS

The document has been revised by WHO's editors and is ready to be published as an official WHO publication.

TOOL 4

Training course package on leakage control

DESCRIPTION

This activity is being developed in connection with the above activity. It should be regarded as part of an overall approach for the optimization of water supply and sanitation facilities. Leakage control activities should be developed as part of a comprehensive programme which addresses the overall constraints faced by a water supply agency and not as an isolated effort.

This training package prepared by the WRC adopts a logical and "user-friendly" approach to training water practitioners at a range of levels, from senior managers to leak inspectors. Each module can be varied in content depending on the depth of knowledge required for a particular level of trainee. For example, engineers and managers could explore in detail the institutional and financial aspects of leakage control, and would benefit from a cost benefit exercise to select and develop an appropriate policy. Engineers and technicians responsible for managing a system and detecting leaks would benefit from an understanding of these principles, but the main thrust of their programme would be based on those modules with a more practical and technical approach to system management.

STATUS

A draft package has been prepared by the Water Research Centre. A revision of the package and the preparation of a number of sets to allow the conducting of testing exercises are activities yet to be carried out.

TOOL 5

Preparation of guidance materials on optimization of drinking water treatment plants

DESCRIPTION

This document is a practical approach to the improvement of water treatment plant performance. It summarizes several years of field experience in upgrading and improving a wide range of water treatment plants throughout the world. The document deals not only with procedures for optimization of the capacity of treatment plants but also with measures to improve the quality control of the effluent water. It is being developed by WHO.

STATUS

A final technical revision is being conducted. After the completion of this revision the document will be handed over to WHO's editors for editorial revision and publication. This document should be available for wide distribution by December 1994.

TOOL 6

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

DESCRIPTION

The document "Models of management systems for the operation and maintenance of rural water supply and sanitation facilities" was prepared by the Water and Sanitation for Health Project (WASH) under the sponsorship of the U. S. Agency for International Development in collaboration and coordination with the Operation and Maintenance Working Group.

The document considers the many issues and actors that influence the development of operation and maintenance management systems for rural water supply and sanitation facilities in developing countries. It describes models in eight representative countries (Botswana, Yemen, Sudan, Belize, Tunisia, Indonesia, Benin, and Costa Rica) and offers guidance to planners and designers in selecting the most appropriate one.

STATUS

This document has been finalized, printed and distributed by WASH.

TOOL 7

Development of a Resource Training Package on management of operation and maintenance of rural water supply and sanitation

DESCRIPTION

This resource training package sponsored by WHO, prepared by the IRC and tested by GTZ in Namibia has been devised to raise the level of training in O&M in rural areas. It is further described in paragraph 5.3

STATUS

This document is ready for distribution and application by ESAs or water agencies in developing countries.

5.3 The Resource Training Package : "Management of Operation and Maintenance in Rural water a Supply and Sanitation"

The Resource Training Package is designed to be a guide for the trainer/facilitator who is going to conduct a course. Its structure is flexible enough to be adapted to local situations and needs. The package is in a binder format containing about 350 pages, because of the numerous resource documents attached, mainly due to the fact that availability and accessibility of such documents are not always easy in developing countries. The target audience for the course is designed to be working level managers including engineers, health and socio-economic specialists as well as other specialists involved in the water and sanitation sector.

The general objective of the course is to contribute to improved management of rural water supply and sanitation programmes by enhancing the ability to sustain adequate operation and maintenance activities. The specific objectives are :

- * to raise awareness on how to assess O&M needs and constraints at programme level
- * to identify strategies to ensure operation and maintenance on a sustained basis
- * to develop and overview of tools, methods and demonstration related to key issues of O&M
- * to identify O&M requirements for different service options
- * to identify roles and actors in operation and maintenance
- * to develop indicators to monitor operation and maintenance
- * to develop individual or group action plans

The course is divided into three parts. The first part called "Facing O&M" is a thinking process, which tries to achieve a common understanding of operation and maintenance, using a problem analysis method. The second part called "Knowing more about O&M" is learning process, where the most important issues are addressed in detail through presentations and lectures. The third part called "Planning for O&M" is a planning process, where the participants have to develop an individual action plan concerning Operation and Maintenance management in their programme or department.

From experience, it has become clear that participants benefit the most of a course if they work towards a product. Therefore they are expected to produce an action plan or a strategy paper at the end of the course which will be presented to all the other participants.

COURSE CONTENT

PART 1 : FACING O&M

MODULE 1 : INTRODUCTION

- 1.1 : Introduction of course to participants
- 1.2 : Presentations

MODULE 2 : THE CHALLENGE OF O&M

- 2.1 : Concepts and trends
- 2.2 : Links between health, water and sanitation

MODULE 3 : O&M ISSUES

- 3.1 : Analysis of constraints
- 3.2 : Identification of strategies

PART 2 : KNOWING MORE ABOUT O&M

MODULE 4 : O&M TECHNICAL REQUIREMENTS

- 4.1 : A systematic approach, with VIP latrines
- 4.2 : Water supply
- 4.3 : Water distribution and treatment

MODULE 5 : O&M ORGANIZATIONAL AND FINANCIAL REQUIREMENTS

- 5.1 : Actors and roles
- 5.2 : Management models
- 5.3 : Cost estimation and cost recovery

MODULE 6 : TOWARDS SUSTAINABILITY

- 6.1 : Community management
- 6.2 : Gender issue
- 6.3 : Local financing
- 6.4 : Human resource development
- 6.5 : Spare parts provision

MODULE 7 : TOWARDS SOUND MANAGEMENT

- 7.1 : Information and communication
- 7.2 : Monitoring
- 7.3 : Planning

PART 3 : PLANNING FOR O&M

MODULE 8 : ACTION PLAN / CONCLUSION

- 8.1 : Methodology for planning
- 8.2 : Individual assignment
- 8.3 : Writing-up and presentations
- 8.4 : Evaluation and conclusion

Annex : Field visit guide

6. IMPORTANT ISSUES CONCERNING OPERATION AND MAINTENANCE

6.1 Community management

Experience in many developing countries during and since the International Drinking water Supply and sanitation Decade (1981 - 1990) shows that even the best run water agencies cannot successfully implement, operate and maintain a network of widely dispersed water systems without the involvement and commitment of users. Despite the best endeavours of central agencies, staff, transport and budgets have become overstretched, leading to broken down systems, dissatisfied consumers and demoralized agency personnel.

(From "Community Management Today, the role of communities in the management of improved water supply systems, Occasional paper N.20, IRC, International Water and Sanitation Centre, The Hague, 1993).

At the same time, evidence is accumulating that properly supported communities have both the ability and the willingness to manage their own water systems. Agency resources currently swallowed up in the provision and maintenance of inefficient services can thereby be diverted to a much more effective facilitating role, bringing greater cost-effectiveness and more widespread and sustainable benefits.

Empowerment of communities, new roles for technical agencies, involvement of NGOs, and encouragement of private sector initiatives will only happen if governments back them.

The present management of Rural Water Supply facilities in the African region varies from highly centralized government agencies to community systems owned and operated by local organizations. Between these two extremes there are management models that include participation by government agencies, communities and private entities.

Case studies presented and submitted to the workshop, in order to illustrate the different management systems have been selected from eight countries : Botswana, Ghana, Malawi, Lesotho, Zimbabwe, Kenya, Niger and Togo.

BOTSWANA: The District Council Water Maintenance Units (WMUs) and Water Departments (WDs) have primary responsibility for O&M , and work in coordination with the water engineer and his staff at the Ministry of Local Government and Lands (MLGL) and the Department of Water Affairs (DWA) within the Ministry of Mineral Resources and Water Affairs (MMRWA). They are empowered to contract with the private sector for purchase of equipment supplies and services. Village organisations have little or no responsibility for their Water systems, except to appoint a pump operator who is paid by the District Council. This two - tier management system has proven effective in Botswana due to the strength of the economy that enables the government to bear the cost of water supply services. Its proximity to South African provides access to supplies and services that are difficult to obtain in other parts of Africa.

GHANA: A new strategy for community management of rural water supplies has been field tested in Bolgatanga Community management project since 1988. The project designed to ascertain if communities are willing and able to assume management responsibilities for their water supply points with tariff collection being an important element. A management structure that fits into existing local institutional structure has been established which aims to involve all community members. The Water and Sanitation Management Committee (WASANC) is the main community based action group responsible for the day to day management of the Water and Sanitation facilities. It comprises seven members of whom at least three are women. Training programmes have been organized for Village based technical personnel and for the committee members on basic repair and management skills in order to prepare them to better undertake maintenance and repair activities. A simple accounting and banking system has been instituted by the communities with the assistance of the project to eliminate the misuse of funds collected by community members.

MALAWI: Community based management approaches have been developed and demonstrated for ground water and gravity fed piped water schemes in rural and per urban areas. Community participation has been promoted during the planning, implementation and management of the water schemes. Efforts were directed at maximizing the involvement of communities, especially women in decision making. The communities were encouraged to appreciate that they were in partnership with the development agency. Community organisations were assisted with training in simple accounting and financial management. They set up their regulatory mechanisms for utilizing the funds collected from the communities. Agreements were also drawn up between the development authority and the communities in division of responsibilities. Greater emphasis was placed on sharing information and experiences through workshops and study tours at a national level between sector organisations and projects, and at regional level inter related projects from neighbouring countries.

LESOTHO: The Village Water Supply Section: (VWSS) in the Ministry of Rural Development has overall responsibility for maintenance and stock of spare parts. It is implementing a system of cost recovery which aims to recover at least 50% of the direct costs of maintenance and it is striving to get private sector involvement to the maximum possible. The technology in use includes spring protection, gravity system, hand pumps and power pumping system. The appropriate system for a particular community is chosen on the basis of availability of water sources, the population size and the operation and maintenance requirements. Standards for level of service, design, construction, materials and equipment have been developed to minimize operation and maintenance costs. The Village Health Committees have adopted multi-sectoral approach to motivate the communities for mobilizing of local resources. The women were the driving force for the success of the project.

ZIMBABWE: Community participation is a cornerstone of the Integrated Rural Water Supply and Sanitation (IRWSS) project in Zimbabwe. Local communities contribute to all facilities local materials, labour and food for well sinkers. The community also digs the first three meters of a well before handing it over to project well sinkers for blasting and completion. communities participate in the selection of sites for new water points, and provide volunteers for training as pumps caretakers, and members of village water point committees. A three tier operation and maintenance system is implemented as an essential part of the project. The three tiers are:

- District Maintenance Team (DDF)
- Pumps Minder (DDF : operating at ward level)
- Pump Caretaker (Village - elected community support to O & M)

The integrated approach is based on decentralized project planning and implementation. The fora for planning and implementation of projects are the Water and Sanitation: Sub-Committees of District and Provincial Development Committees. At a later stage the NAC (at National Level) approve proposals prepared by the districts. All sector ministries are members of these committees.

KENYA: The new orientation of rural water supply projects in Kenya emphasizes the need for government to be no more the provider of water but a facilitator of community managed water supplies. The Communities are to be involved in planning and decision making with regard to siting, choice of technology and cost sharing. The communities are to be mobilized, organized and trained during the planning phase in order to take full responsibility of the management of the schemes when completed. Existing government schemes will be gradually handed over to, the beneficiaries for the management of the scheme 'on full cost recovery basis after acquiring the necessary technical and managerial skill.

The government will train communities and give necessary technical backup services when needed. The Water Ministry will be a technical adviser on water development for Government, Municipalities and the community and will prepare technical standards and guidelines concerning water development.

NIGER: A management committee is responsible for community water supply including operation and maintenance. The committee consists of a diverse team composed of pump minder, hygiene educators, treasurer, secretary, accountant democratically elected by the communities. As a rule government officials are not included in the management committee. Water fee is collected at water point on daily basis at a rate of 5 CFA per pole (= 10 litres). In addition individuals pay a water tax of 100 CFA per year as a contribution to the regional water fund. The use of the funds is closely monitored by the communities. There is coordination with the Water and Health Departments in the preparation of regional master plan for water resources development and in water quality monitoring. This approach has enabled communities to be self-sufficient in managing their water supplies.

TOGO: In Togo men and women share responsibilities in the construction and operation of rural water supplies. The women provide food and collect local materials (stones, gravel, sand) during the construction phase and the men carry out the physical activity such as digging of wells and installation of pumps. After completion of the facilities the women are responsible for maintain the cleanliness of the water point and the surrounding areas while the men look after preventive maintenance and minor repair of pumps.

6.2 The role of the private sector in rural areas

(references : Jan Davis 1994, The Operation and Maintenance of Rural Water Supplies, IRC, The Hague, The Netherlands; and WASH Technical report N.57, 1989, Approaches for private sector involvement in rural water supply systems)

There has been an increasing trend towards the greater involvement of the private sector in both the construction and upkeep of water supplies. In particular, this brings potential advantages of flexibility and cost effectiveness to operation and maintenance activities. However, private sector involvement may be limited by the poor profit margin in scattered rural communities. Where little or no competition exists, charges are likely to be higher rather than lower. Therefore, the impact of the private sector will very much depend on circumstances.

Resistance to include the private sector involvement may come from the government and the private firms themselves. Among public services, water supply is one in which the private sector has been least involved. The regulation of water resources and water delivery have traditionally been considered the domain of the government.

Moving certain functions from the public to the private sector may leave a surplus of personnel. Private companies will tend to shun public contracts if they believe that business practices will not be fair and open and that they will not be paid promptly for services rendered.

The lack of spare parts has been a major constraint in the sustainability of water supplies. In some cases it has led to the complete abandonment of schemes. The private sector has a potentially crucial role in the provision of spare parts. Local manufacture can be stimulated through mobilizing local entrepreneurship and ensuring the right environment.

Who constitutes the private sector ?

The private sector encompasses a range of individuals and companies from the village blacksmith to international companies manufacturing pumps and diesel generators. They all have a part to play in supporting operation and maintenance.

| Actors in the private sector | O&M support role |
|---|---|
| International and national manufacturers and suppliers | Design and manufacture of pumps and other equipment for operation and maintenance at the village level. Supply spare parts and consumable (e.g. chlorine) |
| International and national consultants | Design schemes for community management. Develop community/agency managed O&M systems. Provide O&M training. |
| International and national contractors | Rehabilitate and extend 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 | Provide banking facilities for O&M funds. Provide credit facilities for irregular high cost items and for the expansion or modification of facilities |

The partnership approach aims to put more of the decision making power concerning O&M in the hands of user communities. This should give communities greater freedom to decide how

they operate and maintain their water supplies and who they involve in the work : the water agency or the private sector.

Large community schemes serving several communities may decide to contract operation and maintenance to the private sector. Alternatively, communities might operate a system themselves but arrange a preventive maintenance and repair contract with an external body. Small schemes are unlikely to provide enough work to employ full-time staff and may rely on local artisans for periodic maintenance.

The potential for private sector involvement in Rural Water Supply Systems (from WASH Technical Report N.57)

| Activity | Good | Possible | Poor |
|--|------|----------|------|
| National water sector policy | | | X |
| Water Resource regulation and planning | | | X |
| Construction standards | | | X |
| Capital investments | | X | |
| Set tariff level | | X | |
| Training | | X | |
| Education | | X | |
| Site selection | X | | |
| Well and distribution system siting | X | | |
| Technical design of pump, pipes, etc | X | | |
| Construction supervision | X | | |
| Well construction/drilling | X | | |
| Provision of materials | X | | |
| Fabrication of materials | X | | |
| Skilled labour components | X | | |
| Unskilled labour components | X | | |
| Operation | X | | |
| Preventive maintenance | X | | |
| Repair | X | | |
| Tariff collection | X | | |

Note : The appropriate form for the inclusion of the private sector will depend on the policy and regulatory environment.

Mechanisms for involvement of the private sector

The involvement of local craftsmanship can be promoted by strengthening the local capacity (training), or by facilitating the purchase of spare parts (by subsidizing prices), or setting up micro-credit schemes which can help the development of activities at local level. Communities who manage their own systems should be made aware of the ways to deal with the private sector, and on ways to settle contracts. However, a contract is a legal agreement between two legal parties, and in many cases the legal status of the community, or the group of persons managing their scheme is not clear or even not existent.

Furthermore, at a slightly larger scale, there are five major mechanisms, short of divestiture, for increasing private sector participation : (extracts from WASH Technical report N.57)

1. Monopoly franchises :

Franchising is a comprehensive form of private sector involvement. The franchise company raises its own capital, owns and operates equipment, and provides the service under contract for a fee to the public sector. A public body monitors performance and regulates the fee structure.

2. Management contracts :

Some public services are operated under a contract that turns management over to a contractor but maintains government ownership of capital assets. The approach allows government to change contractors without having to replace all capital equipment.

3. Contracts from the public agencies :

The most common form of public agency/private sector collaboration is a contract for specific services. The public agency announces the goods or services to be tendered and invites private firms to bid, usually awarding the contract on the basis of cost and timely performance.

4. Vouchers and grants :

In cases where the government does not want to be directly involved in providing goods or services but wants to be sure these are distributed equitably, it may resort to a voucher or grant system. The government selects a private company to furnish goods or services to the public at below market cost, thereby subsidizing costs.

5. Consumer cooperatives :

Cooperatives are a way to organize local participation in the provision of services. They are self governing and designed to serve the interests of their members. Government can help by providing management assistance, grants, or credit.

6.3 Monitoring and evaluation through WASAMS

WASAMS is a sector management tool. It has been developed to improve monitoring at the country level through systematic coordinated reporting within the framework of sector strategies and goals. It was designed to facilitate the collection and aggregation of data from the lowest level of administration, through to national level.

The system has been developed as an open ended "add-on" to the broader CESI+ Country Statistics Monitoring System (CESTAT) developed during the International Drinking Water Supply and sanitation Decade by WHO, for the purpose of monitoring the water supply and sanitation sector and has therefore the potential for continuous modification, expansion and upgrading to correspond to specific country needs. The limited number of core indicators remain a permanent feature to ensure regional and global standardization.

The WASAMS computer application is an information management system developed on relational data base. It is primarily intended to facilitate water supply and sanitation sector monitoring, planning and management at country level. The system was developed in 1990-1991 in response to needs for enhancement of sector monitoring at country level identified during review of the sector situation at the end of the International Drinking Water Supply and Sanitation Decade, by WHO and UNICEF.

The microcomputer application is an on-line, interactive, real time and menu driven system. As a user you will find out that there are built-in controls and validations for most of fields and there are also "look-up and/or select" functions to help you to enter or edit information.

The system operates on three data bases : PRODUCTION, SIMULATION and TEST / CONTROL. The "production data base" is where the verified data is stored. The "simulation data base" is a subset or full copy of the first one. It can be freely modified for analysing the resulting changes - simulations. The "test/control data base" is used to load data received and to examine it. Once it is checked and eventually corrected it can be moved to the "production data base".

Countries without the WASAMS computer application will operate for an interim period on the basis of hard-copy questionnaires. Those with WASAMS computer application will use its data entry programmes at central level to enter the information, while operating with the hard-copy questionnaires at lower administrative levels. The decentralization of computer use to lower administrative level is the objective.

Some of the main WASAMS features

- * Data collecting, analysis and reporting by country political/administrative sub - levels
- * Flexible regional sub-divisioning
- * National, regional and local reporting
- * Financial figures can be given in local currency
- * Utilities for download/upload, data export/import, data merge, printout of a blank questionnaire, extensive data purge or achieving, and more.
- * Maps

6.4 AFRICA 2000

AFRICA 2000 is an initiative for an International Programme for Water Supply and Sanitation in Africa. It invites the WHO Regional Office for Africa to initiate and lead an international cooperative effort for the rapid increase of investments for expanding water supply and sanitation coverage in Africa.

Despite the efforts and achievements of the International Drinking Water Supply and Sanitation Decade (1981-1990), current coverage rates in the whole of Africa remain unacceptably low.

Universal water supply and sanitation coverage in Africa will require a considerable number of new investments. For the whole continent, which had 640 million inhabitants in 1990, UNICEF estimated that for universal coverage by the year 2000 to be achieved, US \$ 42 billion divided equally among urban, peri-urban and rural areas will be needed for water supply, and US \$ 34 billion for sanitation, 85% of which will be for urban areas and the rest for rural areas. The absorptive capacity of most of the countries of the Region is too weak to support the goal of universal access by the year 2000.

In the past, there often was excessive emphasis placed on governments "providing" water supply and sanitation services for communities, and on external agencies "giving" funds to projects. There is now growing consensus that a new partnership must be developed between the providers or sponsors of services and the users. Communities must be more involved in the management of the development process by participating in planning, implementation, financing and operation of water supply and sanitation services. At the same time, governments and other national bodies must guide communities into choosing and supporting systems which are both acceptable and sustainable. Finally, external organizations need to coordinate their efforts and gear them to meet African priorities for water supply and sanitation in 1990s.

Though external donor agencies play an important role in Africa its magnitude tends to be exaggerated. Despite the large sums invested in African water supply and sanitation systems by these donors over the years, the pace of development has stagnated as old systems break down and go out of service almost as fast as new ones are set up. Unfortunately, too many African countries show little sustainable progress after years of external support. Because of inadequate resources for operation and maintenance of facilities and insufficient health education of users, many investment projects have failed to attain their major objective of sustained public health improvement. These difficulties have been compounded in recent years by the shift of emphasis towards smaller software dominated projects.

Software support includes health education, promotion of community development, epidemiological planning and water quality surveillance, all of which have been shown to be profitable investments. The software costs are relatively low compared to the cost of providing water pipes and pumps. However, preference for software projects as against more integrated, large scale activities has sometimes resulted in neglect of the permanent institutions and funding mechanisms which are prerequisites for the sustainability of water supply and sanitation development.

Conventional water supply and sanitation projects involve significant hardware components, especially in urban projects. Too often the search for external financing to cover capital costs diverts attention from the development of local capacities through the use of labour, management skills and materials, as well as the need to harmonize capital and recurrent budgets. This led to major weaknesses in operation and maintenance, and the overall poor performance of water supply and sanitation programmes.

The above scenario emphasizes the need for WHO and its Member States to respond to changes in the development process. Current planning and implementation efforts in Africa show growing response to local needs through the use of primary health care teams, national sanitary engineers and the district level focus approach. Although local needs must remain a priority, the continued expansion of water supply and sanitation coverage at all levels will require new approaches to community involvement, government direction and external agency support.

AFRICA 2000 in brief

| | |
|--------------------------|---|
| Goal | To achieve universal access to water supply and sanitation in Africa by the year 2000 |
| Objectives | <ul style="list-style-type: none"> * To increase awareness throughout the world of the magnitude of the water supply and sanitation needs in Africa * To establish a consensus among African Member States regarding joint actions to meet their water supply and sanitation needs * To create a new partnership between African Member States and external development organizations regarding water supply and sanitation in Africa * To increase internal and external resources for water supply and sanitation development in order to accelerate the sustainable expansion of water supply and sanitation services in Africa |
| Strategic actions | <p>WHO Task Force, who would develop an operational plan for mobilizing Member States and external donors in a well publicized, cooperative effort to increase investments in water supply and sanitation in Africa.</p> <p>External Task Force, composed of representatives of UN organizations, bilateral donor agencies and NGOs, as well as Member States of the African Region, who would advise on potential development programmes and serve as a link between organizations.</p> <p>Needs assessment could be carried out in every participating African country.</p> <p>Priority setting. Sub-regional workshops could be held to review the water supply and sanitation needs of countries having common problems, outline priorities and formulate subregional strategies. The priorities established at these workshops should be respected by both national governments and donor, organizations.</p> <p>Public profile. Every opportunity should be seized to bring the needs and potential solutions to the attention of national and international policy-makers, donor groups, and the general public.</p> <p>Implementing mechanisms. Full use should be made of all existing coordinating mechanisms within WHO, as well as joint programmes with other development agencies, the General Assembly of the United Nations, the ACC, the Inter-secretariat Group for Water Resources, the Inter-agency Steering Committee for Water Supply and Sanitation, the Water Supply and Sanitation Collaborative Council, the African Ministerial Conference on Environment, the Commission of European Communities, etc..</p> |

7. COUNTRY PRESENTATIONS

The following country presentations have been submitted to the workshop by the country representatives, and have been compiled as far as possible into a similar format.

7.1 Botswana

(completed with additional information gathered from "Models of management systems for the operation and maintenance of rural water supply and sanitation facilities, WASH Technical report N.71)

Facts

In general, the O&M management system in Botswana is very effective. No more than 10 percent of the water systems are out of service at any one time, and response to breakdowns is on the order of two to four days. The population of Botswana is just over a one million. With a reserve of several days of elevated water storage, some villages continue to have water during breakdowns. The single most important factor in the success of the O&M program in Botswana is that the government can afford to bear costs. Other significant factors include equipment standardization, availability of spare parts, and good communication among different personnel at various levels.

National O&M policy

In Botswana, a few national government employees have sole responsibility for all O&M activities (Pump Operators, Senior Operator and Chief Technician from the District Council Water Maintenance Units or the Water Department, Water Engineer at the Ministry of Local Government and Lands).

Since the construction, operation, and maintenance of rural water facilities in Botswana are the responsibility of the central and regional governments, community organizations have no formal role in operation and maintenance. However, each village has a Village Development Committee and a Village Health Committee which, through the District Council and elected members of the National Assembly, can lobby for improved service.

Experience

The current phase of rural water supply construction is drawing to a close with the completion of the Swedish International Development Authority (SIDA) supported Village Water Supply Program. The focus is the rehabilitation of systems constructed early in the late 70s. The completion of this program will also mean scaling down of donor assistance in the sector. Over the past several years, donor support has largely been in the form of technical assistance, with all capital and recurrent costs being met by the Government of Botswana. At present, there is no serious consideration of introducing water user fees in the villages. However difficulties could arise from the government's assumption of complete responsibility. Rural dwellers have gained high expectations of service at no cost.

7.2 Ghana

Facts

The Ghana Water and Sewerage Corporation (GWSC) is the Government Organization responsible for Urban and Rural water supplies, and sewerage and sewage disposal. The Urban water coverage is about 76% and rural water coverage 46%. Rural water refers to systems like small pipe-borne systems, mechanized boreholes fitted with handpumps, hand-dug wells with rope and bucket, and rain water harvesting. The Sanitation coverage is about 61% for Urban and 11% for Rural. In Ghana a rural community is defined as a community with population below 5,000.

National O&M policy

In spite of the high technical success of the centralized maintenance system being run by the GWSC, there is a lot to worry about the sustainability of the O&M system, because of difficulties in collecting tariff due. The Government has therefore decided to introduce community management as a new strategy for the management of rural water supply and sanitation, and approved the raising of the status of the Rural Water Department of GWSC to that of a division. The need to involve the private sector and the beneficiary communities in the O&M of handpumps has been recognized. This means that the tariff system (c 270.00 per household per month) will be abolished and consumer communities will be asked to pay for actual services rendered by repair men. The GWSC will monitor, facilitate and supervise the activities of the private sector. With this the Government through GWSC will become a Promoter instead of a Provider of services. This will also be in line with the Ghana Government's decentralization policy which is going-on. A number of principles have been identified as pre-conditions for effective and sustainable O&M :

1. The provision and rehabilitation of water systems should be demand driven. Communities should determine the type and level of service which they can afford to operate and maintain.
2. In principle, water supply should be considered as an economic commodity and managed in accordance with good business practices. However, the lifeline provision of water must be assured for the poorest communities who cannot afford to pay.
3. Women must be fully involved and supported to assume a pivotal role in all stages of O&M.
4. O&M of water supply systems should be managed by financially viable and transparent agencies responsible to the local users.
5. Effective control of water systems should be vested in the local communities responsible for their O&M.
6. An enabling environment should be promoted to intensify the involvement of the private sector and NGOs in O&M.

Experience

2,700 handpumps (Monarch and Moyno) were provided by the Canadian Development Agency (CIDA) in the Northern part and completed in 1979. The KFW of Germany provided 3090 handpumps (Ghana modified India Mark II, and Moyno which were latter replaced by India Mark II), in the Central and Southern part, and completed in 1981. The type of O&M system was a centralised one.

A water and sanitation conference was held in Accra in 1987, during which Community Participation was identified as crucial as it leads to self-reliance, promotion of ownership as well as sustainability of the system. It became the policy of GWSC to include intensive animation/education of beneficiary communities in all new projects. User communities were called upon to pay a commitment fee before benefiting the project, including an initial deposit for O&M. Projects from JICA (Japanese International Cooperation Agency) in the Northern and western part, from CFD (Caisse Française de Développement) in Central Region, from UNDP/World Bank in the eastern and Volta regions, from Danida in the Volta regions, were modeled under the same policy and the later ones are being executed as Pilot Projects to test the principles of Community Management.

The World Bank is assisting GWSC to implement a pilot scheme in three regions.

7.3 Kenya

Facts

In 1990, only 50% of population had access to a public sewer, septic tank or pour flush latrine, ventilated improved pit latrine or simple pit latrine, with interprovincial variations (Central province 60% and Eastern province 26%).

Water supplies in Kenya are operated and maintained by three main groups:

1. Government organizations namely the Water Department within the Ministry of Land Reclamation, Regional and Water Development; the National Water Conservation and Pipeline Corporation, a State Corporation within the Ministry of Water Development and eleven municipal councils within the Ministry of Local Government and Urban Development. These three control over 80% of water operations in the country.
2. Self-help groups mainly operate simple rural water supplies most of them gravity schemes.
3. Institutional water supplies are mainly run by public institutions such as schools which are far from government water supplies (deep ground water with submersible pumps)

Nearly 54% of Kenya's present population (25 million) has access to improved water supply (75% urban and 50% rural). However, Kenya has experienced a prolonged drought for the last 3 consecutive years. This has been compounded by the high population growth estimated at 3.5% p.a.

National O&M Policy

The operations of water supplies in Kenya is governed by the Water Act CAP 372, laws of Kenya. After consultation with the Kenya's Water Board, the Minister in charge of water affairs appoints water undertakers who are responsible for the provision of an adequate supply of water. According to the Water Act, no local authority shall supply more than two households or more than 5m³ of water a day, unless it is a water undertaker. Similarly, no person shall supply more than 20 households or more than 50 m³ of water a day, for domestic purposes or more than 100 m³ a day for other purposes. These conditions do not apply for the supply of water on the premises of any hospital, factory, school, hotel, brewery, research station or any other public institution.

All the appointed water undertakers are required by law to use a water tariff that has been approved by the Minister in charge of Water Affairs.

Experience

The Water Department by far is the largest actor in rural and urban water supply development, including O&M, which operates and maintain over 680 water supplies spread over the country. The budgeting for funds is done centrally. 70% of the Ministry's recurrent budget goes towards meeting personnel costs and 25% for O&M. Out of an annual budget of 988 million Kshs, 72 million Kshs are obtained from water sales.

The National Water Conservation and Pipeline Corporation is supposed to operate and maintain commercially viable large water supplies. All the municipal councils who are undertakers operate their water supplies from the revenue they collect from water sales. In fact most of the councils collect so much money that water revenue is used to finance other activities of the councils. Slum areas are found in virtually all urban centres characterized by poor access to adequate means of excreta disposal (56%). The major difficulty in providing adequate sanitation in flood prone areas is devising an adequate and cost-effective means of excreta disposal. High water levels prevent pit latrines from providing a solution. Pit latrines are the only means of adequate sanitation found in Kenya's arid and semi-arid land areas.

7.4 Lesotho

Facts

For water borne systems, water and sewerage authority (WASA) in urban areas is charged with the full responsibility of operating and maintaining such facilities. There are two organizations dealing with water supplies :

1. The Water and Sewerage Authority (WASA) is responsible for services in the urban areas.
2. The Village Water Supply Section (VWSS) is the Governmental organization responsible for water services in the rural communities. But there are other NGOs which are providing water supplies to certain villages, especially handpumps, with a lack of coordination.

51% of rural population have access to improved water supply systems.

O&M organization

Operations and small repairs of rural systems are left to the communities while maintenance has been Governmental responsibility. Communities provide only unskilled labour requirements for construction of a system. They are asked to apply for water supply, form a village water committee (VWC) and to contribute money which they have to keep in a bank account. "Bylaws" which are meant to govern the system are to be formed by individual community. The cash contribution is to be used to pay for any future maintenance requirements.

When systems are completed they are left to the communities to operate and do all minor repair works which can be handled by the trained village waterminders. Major repairs are to be reported to the district offices for attendance by the District maintenance crews, which used to be free of charge. Gradually a cost recovery policy was introduced, meant to recover only up to 50% of the repair costs. All repair works which are more than one year old will partly be paid for by the communities.

A new unit has been introduced within the VWSS of village affairs, which is to provide support through Village Liaison Officers, linking the communities directly with VWSS.

Experience in sanitation

Administration of sanitation has for some years been a problem because of lack of central planning and involvement of line organization whenever a project is piloted or incepted. Because the government and other organizations are not subsidising the sanitary facilities, affordability is one other set back.

Urban Sanitation Improvement Team (USIT) was incepted in order to facilitate low cost sanitation systems within the peri-urban settlements and to replace bucket system. Mesuru City Council (MCC) being the mother body taking care of all the urban activities has little to offer except to direct affected organizations to undertake controlling measures.

In rural sanitation, individual householders built latrines after the massive campaign undertaken by the Environmental section of the Ministry of Health and Social Welfare. A number of organizations are involved in sanitation, among which :

- * National Rural Sanitation Project (NRSP)
- * GRASSROOTS Initiated Support (GRISP)
- * CARE Lesotho
- * Plenty Canada
- * World Vision
- * ISRP (School latrines)

But because of a lack of policy guidelines, such organizations do not consult NRSP, hence the Programme's implementation strategies are overlooked.

A pilot project was started in Mohales' Hoek in October 1993 by the GOL, with support from UNICEF, USAID and IRBD, in order to design-test and develop institutional capacity for rural sanitation programmes that would be integrated with rural water supply and primary health care programmes.

7.5 Malawi

Facts

Over 90% of the about 10,000 boreholes that have been drilled in the country are fitted with handpumps and serve the rural communities. The rest are fitted with powered pumps and serve small towns, institutions or are privately owned. The handpumps are targeted to serve 74% of the rural population by 1996.

National policy

Malawi's National Policy on Rural Groundwater supplies is to provide adequate potable water through the construction of boreholes and shallow wells that are handed over to the user communities and operate through a Village Level Operation and Maintenance system VLOM. This system ensures reduction in maintenance costs borne by government.

In 1981/2 the department of water affairs initiated a programme of Integrated Projects for Rural Groundwater Supplies. The Approach was based on a high degree of community involvement in both construction and maintenance of the facilities. A national workshop on strategies for operation and maintenance of rural groundwater supplies was held in Malawi in 1986.

The main objectives were to review the findings of the handpump testing and maintenance monitoring in the Livulezi Project. The workshop concluded that self help was to play a major role in the maintenance of wells and boreholes. The workshop further concluded the need to restructure the maintenance system. Central government would continue to play a major role in planning and monitoring.

The recommended national procedures and requirements have been drawn up. Community based management activities can only be successful if facilities are handed over in good condition and that handpumps are suitable for village level maintenance.

The Malawi Government is todate instituting the VLOM system wherever possible i.e. where conditions are in favour for community based management. New boreholes drilled for rural communities are chiefly equipped with manageable handpumps as the AFRIDEV. User communities are trained on the repairs.

There is a national and regional level steering committees and the methodology outlining the implementation of VLOM has been developed.

Experience

However, despite considerable investment of manpower and financial resources in maintenance, it is estimated that 3,000 to 4,000 pumps are out of order at any one time, with severe consequences to the users.

In order to address this problem, Malawi with the assistance from the UNDP embarked on a community based management of rural water supplies project in 1989. The main project activities started in 1991, with the principal objective to develop procedures and co-ordinate, monitor and render technical assistance to activities promoting community-based management.

One of the projects which has achieved a high degree of community involvement is the Karonga groundwater project. By March 1992, VLOM concept in Karonga started to function, with the communities having a maintenance fund, pump attendants maintaining pumps and government technical assistant able to assist and advise on major repairs only. Spare parts are locally available for purchase and 20% of all households have a latrine with a sandplat.

7.6 Mozambique

Facts

An estimated 28% of population living in rural areas have access to a safe drinking water. This low coverage is justified by isolation of many rural areas caused by the war which also destroyed many water infrastructure.

National O&M Policy

The National Rural Water Supply Programme (PRONAR) decided to establish a unique policy in rural water supply activities in the country. The established policy is one source of potable water for 500 persons or 100 families within a distance of 500 metres from their residence areas.

Another important policy is the standardization of handpumps throughout the country to ensure ease of maintenance, repair and access to spare parts as well as to introduce decentralized maintenance. Thus PRONAR has encouraged the local manufacture of the "VLOM" handpump AFRIDEV. To guarantee the success of its Rural Water Supply Programme, PRONAR has designed and introduced as policy, a Community Participation and Education Component. This ensures that the community participates in the planning, construction and maintenance of the new source of potable water.

Experience

PRONAR has planned to start the introduction of the AFRIDEV handpumps in small pilot areas. Based on the results, extension to other parts of the country would follow. However, this approach has failed.

Due to the recent severe drought, it was decided to import in mass AFRIDEV handpumps to be installed on water points which up to then never had been equipped with pumps, on new water points and to replace existing obsolete handpumps. As much as possible it was tried to train field (community) workers in installing of handpumps, and in training community to maintain the pumps, a complete new approach for the field workers. Although with difficulties, in certain provinces this decentralized maintenance system, has shown to be successful: the community is able to maintain the pump. However, in terms of distribution of spare parts and organization within the community for collecting and managing money for maintenance, no system exists yet.

7.7 Namibia

Facts

By 1990, the results of survey by UNICEF of water supply availability and sanitation situation indicated that 95.2% of the population in the Rural North have no toilet and that it takes 102 minutes to get water source during dry season. The 1990 UNDP sponsored water and sanitation review revealed that only about 60% of Namibian's total population had access to safe water supplies through boreholes.

National O&M policy

Government is committed to provide on a grant basis the investment cost for the development and improvement of facilities in addition to contributions from the community. It will also set-up the necessary support structures in form provision of affordable spare parts supplies, technical advise and quality monitoring. Sustainability provides for a strong sense of community involvement and ownership as well as community-based O&M. Apart from community involvement in the planning and decision-making process, commitment will be expected to be demonstrated before project construction activities are commenced.

In addition, technology would be suited to local needs, conditions and resources in order to provide for financial responsibility in terms of cash, kind and labour. A project has therefore been developed with the following goals :

- * to develop the managerial, technical and operational capacity of the institutions responsible for the execution of the investments and the O&M and management of systems
- * to formulate and develop national financing and tariff mechanism systems oriented to the channelling of resources to the sector within the framework of economic efficiency, social equity, and financial and institutional autonomy of the entities of the sector
- * to implement the information management systems necessary for the monitoring and evaluation of Plan of Water for all Namibians and to support the decision-making process at the national level and the level of each institution
- * to identify, promote and transfer appropriate and low-cost technologies and design criteria for drinking water and rural sanitation and for medium-sized and small cities
- * to optimize the execution of the rural projects with emphasis on the scattered population, as well as on peri-urban areas through the strategies of Primary Health Care, with particular attention to community participation
- * to train the professional, technical, auxiliary and community personnel required for the attainment of the goals.

A Monitoring and Evaluation Team will also be set up for routine data collection, analysis and feedback to community. The indicator for water component would be a percentage of the population living 200 metres of source of potable water. The indicator for the sanitation component would be percentage of population living within 50 metres of a pit latrine/toilet.

Sanitation

Because of the magnitude of the diarrhoeal problem the Environmental Health Unit envisages to promote the construction of V.I.P latrines in cooperation with the community, at this stage at least demonstration latrines to create awareness among the population in need.

7.8 Nigeria

Facts

The Federal Ministry of Water Resources and Rural Development has a primary responsibility in both the rural and urban areas. It directs policy matters, plans, coordinates, monitors and evaluates.

- a) it is primarily involved in rural water supply implementation
- b) it focuses attention on health promotion through control and prevention of water and sanitation related diseases
- c) it serves as external verifier to urban and rural water sources and treatment of water to ensure its quality
- d) it appreciates "demand driven" approach by some agencies but it pursues and emphasizes health conditionality
- e) it believes in health as an essential objective of development

- f) it pursues provision of safe water for drinking, enough to maintain personal hygiene and hygienic food preparation
- g) it provides safe water and adequate sanitation as a priority need to disease endemic areas and a condition without political considerations
- h) it acknowledges that water can be a friend and an enemy at the same time
- i) it understands "cost recovery" situation and implications but practices "cost sharing" for now
- j) it understands that water and sanitation has about 70% software component i.e. training, health education, community involvement, women in development and 30% hardware i.e. borehole drilling , etc.

O&M experience in RUSAFIYA Project

There was maintenance, education and training conducted among the communities. It was more of novelty when it should have been acquired and practised culture. Maintenance culture becomes self selling and attractive in a community when they can see, in place, what they have long wished to have. Anxiety to learn and inquisitiveness involved will decline when there is too much gap between mobilization, motivation, health education, etc. of such software and physical operation and achievement of the hardware. Health education on personal hygiene has relative meaning and understanding when water as an essential tool of interpretation is available. Maintenance skill and acquisition of it by training is an ongoing and an interface from active operation period to when such facilities are being used. It has a bearing to availability and affordability of spare parts. More important, preventive maintenance is crucial and cost saving effective.

7.9 Swaziland

Facts

The Water and Sewerage Board deals with urban water supply and sanitation affairs. The Rural Water Supply Board (RWSB) deals with rural water supply and sanitation affairs in partnership with the Ministry of Health, Health Inspectorate Unit. The RWSB is in the process of institution building in the O&M section. The section is being formalised and is being decentralised. It has a central unit which deals with major maintenance work and regional sections which deal with minor work and preventive maintenance work. The RWSB is being assisted by the UNDP for this exercise.

O&M experiences

The O&M of rural water supply schemes is carried out at three levels :

1. RWSB Central Maintenance Crew level
2. RWSB Regional Maintenance Crew level
3. Community Based Pump Operator/Water minders level

The RWSB currently has a central maintenance office and workshop at the Matsapha RWSB depot. The four regional construction depots also have a small O&M section which deals with minor maintenance problems and preventive maintenance within their regions. The community based O&M personnel deal with minor maintenance which can be said to be village level maintenance problems. The first people to deal with water supply problems are the community

based personnel who report whatever they cannot deal with to the Central Maintenance section. Private concerns like manufacturers of pumps and motors deal with whatever the central maintenance crew cannot deal with.

The GoS presently assists communities by securing donors and loans for constructing water supply schemes. It also assists in maintaining the staff of the RWSB and either departments which form the water and sanitation sector. The GoS started off by funding all maintenance activities carried out by the RWSB but has now shifted the responsibility of funding RWSB maintenance activities to communities. This has been done by asking the communities to pay for operation costs like energy costs and also maintenance costs like replacement parts for broken down parts. The GoS still pays for RWSB labour and transport costs.

The RWSB and the HI Unit carry out formal training seminars and workshops for communities prior to handing over water supply schemes. The training is for water committees on management of their schemes and also for Water Minders and Pump Minders and Pump attendants on O&M. On the sanitation side, the RHM are also involved throughout the construction of pit latrines. They assist all the members of the community in building concrete slabs for their latrines and advise them on superstructure.

The staff of the RWSB is regularly trained by pump, motor and pipe and fittings manufacturers in-country and in the Republic of South Africa. The RWSB is a GoS department which is not an income generating body. The communities that it serves do not have enough money to pay for the construction of their water supply schemes. The RWSB depends entirely on the GoS and foreign donors for funds.

7.10 Tanzania

Facts

To date about 46% of the 20.2 million rural population and 67% of 3.6 million of the urban population have access to reliable sources of safe and clean water. Results for the Latinisation campaign is encouraging. It is reported that about 85% and 90% of the households in rural and urban areas respectively are having latrines near home and are using them.

National policy for O&M

A National Water Policy was officially launched in Nov, 1991. This policy is an official guide for water and sanitation activities in the country. The policy aims at encouraging people to construct, operate and maintain their own water schemes, increase health and productivity to the population by providing safe and adequate water supply and sanitation services. It also highlights the major concepts of beneficiary participation, sustainability, community based management.

It has now been decided officially that beneficiaries pay for the water they use. For the Urban Water Supplies the Government has introduced a system where Urban Water Supplies are supposed to be self sufficient through improvement of revenue collection and improved management. Simple and appropriate technology should be used whenever possible.

To enable full participation of the community in the water and sanitation activities, committees have been formed in most of the villages. In these committees of about six people, it is a requirement that women membership must be half of the total members.

7.11 Zambia

Facts

Rural

It is estimated that about 50% of the installations are operational. The other 50% are not in use either due to breakdowns or abandonment. The coverage of 200 people per well is assumed in Zambia. However, there is only 22% coverage for people with safe and clean water in the rural areas. Until recently, the Department of Water Affairs has been the major player in the development of Rural Water Supply systems. Other players involved are :

- Ministry of Local Government and Housing
- Ministry of Health
- Ministry of Social Welfare and Community Development
- Donor agencies
- Non-Government Organizations

Due to a lack of clear guidelines these organizations or institutions have been operating almost independently of each other. A high degree of confusion resulted and caused a lot of overlaps in responsibilities.

Urban

Like in Rural Water Supply and Sanitation systems, statistics on the current situation are not readily available. Urban water supply are managed by the following institutions :

- Ministry of Energy and Water Development(45 township)
- Ministry of Local Government and Housing (Large townships, Municipal and City Councils)
- Ministry of Works and Supply (Schools, Military camps and some district centres sanitation)
- Ministry of Health for primary health education and water quality surveillance
- Ministry of Environment and Natural Resources (for establishment of standards for effluent into receiving waters)
- Private organizations such as mining companies and Railways are responsible for areas of their operations
- The National Commission for Development Planning (NCDP) is responsible for overall development planning, determination of inter-sectoral investment priorities and donor coordination

National O&M policy

Rural

Presently, there is no clear policy as to which institution should be responsible for the O&M of rural water supply systems. However, the Department of Water Affairs is still performing both responsibilities of development and maintenance of the systems.

For systems constructed by donor agency and NGOs, the communities are in principle required to take charge of O&M. Due to lack of skills and capacity, communities are unable to maintain the systems. The Department of Water Affairs ends up taking up the responsibility of the systems.

Urban

Local authorities are mandated by the Local Government Act of 1991 to supply water to establish and maintain services for the disposal of sewage, solid waste and other effluent in areas of their jurisdiction.

At present most of the financial resources invested in Urban Water Supply and Sanitation is from external sources. The Central Government is still financing the O&M of most urban water supply and sanitation systems.

Having recognized the problems in the Water Supply and Sanitation Sector, the Government of Zambia started thinking the direction of reviewing the sector.

The first move has been to improve co-ordination among the key players in the sector in order to accelerate the implementation of planned projects and to rehabilitate existing infrastructure. Secondly the government initiated studies leading to a more effective organization of water supply and sanitation sector. The Task Force and Programme Coordination Unit (PCU) have been established to undertake the first and second initiative respectively. A Community Management and Monitoring Unit has been set up under UNICEF.

7.12 Zimbabwe

(Additional information collected from a paper presented by Mr. Zanamwe from DDF, at the Regional Workshop on Operation Maintenance of rural water supplies in Malawi, September 1993)

Facts

The majority (75%) of the country's 57 districts have in the last three years undertaken major water supply programmes on either small or large scale levels. Small scale borehole drilling and well digging programmes (averaging 20 new water points per annum) have been implemented in districts through Government's Public Sector Investment Programme and Non Governmental Organization funding. While large scale integrated water and sanitation programmes have enabled many districts (35) to develop an average 50 new water points on annual basis through an inter-ministerial approach. The communal total of handpump fitted pumps has increased statistically available water points from 12,000 to about 25,000 by the end of 1992, representing 76% of the communal area people having access to improved potable water.

O&M national policy

Before 1986, water was free for all. During this period, the development of primary water supply infrastructures was carried out by the Government agencies and External Support Agencies, as the responsibility of maintaining primary water supplies was left unclearly defined, ending up with a mixture of maintenance structures, with a lot of overlaps and inefficiencies.

During the 1986/1990 period, it was suggested in the national Water master Plan that a three - tier maintenance system be established for handpump maintenance comprising of a District Maintenance Team, Pump minder and Water point Committee. At the same time the responsibility for maintaining all handpumps, piped water schemes and dams in the communal areas was given to DDF Water Division through its district level O&M Section. Necessary structures were established at Head Office, Provincial and district levels for water supply maintenance. Of particular interest was the Field Officer and the District Maintenance team at district level who became responsible for the actual maintenance and repair of handpumps. The water point committees, comprising of four community members with 50% women membership, also became the third tier. Its initial roles were to carry out daily routine check of operational condition of handpump and its surrounding and submit break down reports to the pumpminder. Although this was essentially a centrally directed programme it did represent a significant attempt at decentralization.

The post 1990 period is a distinguished period in the maintenance of communal handpumps as the Government realize the high financial burden associated with the maintenance of water supplies. All the country's districts introduced and strengthened the pumpminder system as the effectiveness of the District Maintenance Team was weakened by the dismantling of the District maintenance gang. A total of 573 DDF paid pump minders are deployed in the communal areas responsible for maintenance and repair of all handpump installed water supplies. development of the pump minder system is however limited to the communal areas, with the Resettlement and State land areas still being overlooked.

During this period, the water sector adopted standard but somehow "inflexible" technology options. The model B Bushpump, a result of years of designing and testing was adopted as the appropriate handpump for the country. Subsequent innovation and wide scale testing of a Simple Weight Instrument for Lifting (SIWIL), developed for lifting pipes, was carried out late 1990. This greatly improved the maintenance capacity of pumpminders and has laid an ideal foundation for community based maintenance.

Experience

As a result of sky rocketing prices of spares and shrinking resources in real terms for maintenance and rapid provision of new infrastructure the DDF began discussing the possibility of increasing the participation and involvement of the community in the maintenance of handpumps. This has been done through the establishment and demonstration of community based maintenance for handpump fitted water supplies.

Introduction of the community based maintenance which began under the country's structural adjustment programme was made through financial support from UNICEF. The support was mainly in the purchase and provision of required handpump maintenance tools and equipment, training of the village level bushpump mechanics and promotion of the strategy among different rural water related agencies.

The District Development Fund, a technical arm of the Ministry of Local Government Rural and urban Development responsible for the provision and maintenance of primary water supplies in communal areas, is the lead agency in the implementation of the project.

The principle on which Community Based Maintenance is based is that the Community assumes responsibility for maintenance and therefore they make the detailed decisions on how the system will operate. The Government, through DDF and other agencies paly a facilitating role in the process.

ANNEX I

Agenda of the Workshop

**PROGRAMME OF THE WORKSHOP ON OPERATION AND MAINTENANCE
OF RURAL, AND URBAN WATER SUPPLY AND SANITATION SYSTEMS**

HARARE, 8 - 12 NOVEMBER 1993

Monday, 8 November 1993

| | | | |
|-------------|---|---|--|
| 0800 - 0900 | - | Registration | |
| 0900 - 0915 | - | Welcome address by Chairman of the workshop organizing Committee | Mr Musingarabwi |
| 0915 - 0940 | - | Opening address by Permanent Secretary Ministry of Local Government Rural and Urban Development | Mr W Chiwewe |
| 0940 - 0955 | - | Reading of message from WHO Regional Director/AFRO | (WR/Zimbabwe) |
| 0955 - 1000 | - | Vote of Thanks | One of the participants |
| 1000 - 1030 | - | Tea / Coffee Break | |
| 1030 - 1045 | - | Introduction of participants, Nomination of Chairman and Rapporteur | |
| 1045 - 1100 | - | Objectives of the Workshop | (AFRO) |
| 1100 - 1130 | - | Presentation on background of the Operation and Maintenance Working Group | (HQ) |
| 1130 - 1200 | - | Presentation of country experience on operation and maintenance | Zambia |
| 1200 - 1330 | - | Lunch | |
| 1330 - 1530 | - | Presentation of country experience | Zimbabwe, Tanzania, Swaziland, Mozambique and Malawi |
| 1530 - 1545 | - | Tea/coffee Break | |
| 1545 - 1600 | - | Plenary discussions | |
| 1800 - 2000 | - | RECEPTION | |

Tuesday, 9 November 1993

- | | | | |
|-------------|---|---|---|
| 0800 - 1000 | - | Presentation of country experience | Nigeria, Ghana, Kenia, Lesotho, Namibia, Botswana |
| 1000 - 1030 | - | Tea / Coffee Break | |
| 1030 - 1045 | - | Plenary Discussions | |
| 1045 - 1115 | - | Plenary presentation ongoing activities of the Operation and Maintenance Group | (HQ) |
| 1115 - 1130 | - | Plenary presentation of AFRO's collaborative programme in the water supply and sanitation sector with Member States in the Region | (AFRO) |
| 1130 - 1200 | - | Plenary discussions | |
| 1200 - 1330 | - | Lunch | |
| 1330 - 1430 | - | Plenary discussions of key issues of operation and maintenance | |
| 1430 - 1500 | - | Sector and institutional aspects | (HQ) |
| 1500 - 1515 | - | Tea / Coffee Break | |
| 1515 - 1545 | - | Development of tools for monitoring and evaluation of the operation and maintenance of water supply and sanitation systems on the basis of WASAMS | (AFRO) |
| 1545 - 1615 | - | Community management and the role of the private sector in operation and maintenance | (AFRO) |
| 1615 - 1645 | - | Discussion | |
| 1600 - 1700 | - | Working group session | |

Group 1

Formulation of priorities, strategies and action plan to improve the current situation of operation and maintenance

Group 2

Drafting policy guidance to give higher profile to operation and maintenance

Group 3

Identification of focal point or advisory group to promote and coordinate national and external support agencies' efforts for development of operation and maintenance at regional or sub-regional level in the context of "Africa 2000" Initiative

Wednesday, 10 November 1993

0830 - 1630 - **FIELD TRIP RURAL/URBAN
(Packed Lunch)**

Thursday, 11 November 1993

0800 - 1000 - Finalizing working group session

1000 - 1030 - **Coffee Break / Tea Break**

1030 - 1200 - Plenary presentation of group work and discussion

1200 - 1330 - **Lunch**

1330 - 1530 - Presentation of the draft consolidated report of the working groups which should include recommendations to be made to national and external support agencies to improve operation and maintenance performance at all level.

Friday, 12 November 1993

0800 - 1000 - Plenary discussion and adoption of recommendations and priority activities to be implemented at national sub-regional levels to improve operation and maintenance performance in the coming two years 1994-1995.

1000 - 1030 **Coffee Break / Tea Break**

1015 - 1200 Plenary discussion on ways and means of implementing priority national and sub-regional activities.

1200 - 1215 - Closing address the Permanent Secretary Ministry of Health and Child Welfare

1215 - 1220 - Vote of thanks (representative of participants)

1220 - 1330 - **LUNCH AND DEPARTURE**

ANNEX II

Opening and closing speeches

SPEECH BY THE SENIOR PERMENANT SECRETARY FOR LOCAL GOVERNMENT, RURAL AND URBAN DEVELOPMENT, CDE. W.A. CHIWEWE AT THE OFFICIAL OPENING OF THE INTERCOUNTRY WORKSHOP ON OPERATION AND MAINTENANCE OF RURAL AND URBAN WATER SUPPLY FACILITIES FOR DROUGHT AND CHOLERA AFFECTED AREAS: MONOMOTAPA HOTEL : 8 - 12 NOVEMBER 1993 : ZIMBABWE

Mr Chairman
WHO Representatives Distinguished Delegates
Ladies and Gentlemen

I feel honoured to address you today and to officially open your Workshop.

May I also take this opportunity to welcome visitors and delegates from other countries. I hope you are already feeling at home, and sharing with us our hopes for a normal rainy season. The overcast skies and the early albeit scattered rains live us the needed assurance that we may have a normal season. Such a weather as we have today is most fitting as a background to a workshop on water and drought mitigation.

We in Zimbabwe feel greatly honoured to play host to this Workshop and do hope that you will find our hospitality and our facilities satisfactory enough, at least to cover hour basic needs. The World Health Organisation and the Zimbabwe Ministry of Health and Child welfare are the joint organisers of your Workshop and I wish them success in the management and outcome of this Workshop.

Mr. Chairman, I am informed that the Water Decade began in Africa in 1981, with the noble objective to achieve a 100% coverage in water supply and sanitation by the end of 1990. Much progress has been achieved ever since. However, the 100% coverage in water and sanitation has not been achieved as a result of rising populations and frequent droughts. The most severely affected is the Southern African sub-region. The rising costs of hardware components has also contributed to the failure to achieve the original objective for the decade.

It is common knowledge that much of the investment into the water and sanitation sector came from the international funding agencies and other non-governmental organisation. National Governments too have pumped large sums of money into this sector.

Inspite of all these efforts, water for all remains a far cry. Perhaps we have not put the emphasis where it should be National Governments and international agencies have tended over the years to want to spend their money on behalf of the people. Too often, we use our own personnel, our own vehicles, our own equipment and indeed pay ourselves from our own money in our efforts to improve the accessibility of water to the people. The experiences of the 1981 - 1990 decade should awaken us to the reality that unless we give money to the people, give them vehicles, equipment and train them so that they themselves own, manage, operate and maintain the hardware components which is needed for the water and sanitation sector, our investment in water and sanitation will, massive though it may be, not yield the desired result. What is worse is that this may actually turn out to be money wasted as pumps break down, boreholes collapse, and all along, the people, the users feel distant from what is to be done.

Investment in water and sanitation should involve the users of these facilities. Accordingly, investment planning in this sector should commit funds explicitly for such matters as:

- (a) sector promotion and mass mobilization;
- (b) repair and maintenance training;
- (c) hardware components per project;
- (d) mobility and communication;
- (e) accounting and management;
- (f) personnel expenses.

The actual work should take place at the local authority level. Line Ministries, multilateral and bilateral agencies and non-governmental organisations should spend the least amount of money on their staff. Their work should restrict itself to standards setting, monitoring, evaluation and technical advice. When we give advice, it is important that we do so as a method of training. In my view, the best way to advise is to train for selfreliance. All too often, we slant our advices in such a manner that we remain permanently as advisers, and this is not good enough,

There has been talk about community based maintenance and I agree with this trend of thought. However, for us in Zimbabwe, and I believe for those with well established local government systems, it is necessary that the community based maintenance be part of the local government systems and structures. Efforts to fragment local authority structures and therefore to finance and support fragmented social entities can only be counter productive. Our investment in and support for the water and sanitation sector here in Zimbabwe would yield dividends if we lend our financing and support to the local authorities already in place ;and through the appropriate Government Ministries.

Mr Chairman, the challenges for the "Africa 2000: Initiative on an International Programme for Water Supply and Sanitation in Africa" are

**CAPACITY -
BUILDING FOR PEOPLE EMPOWERMENT
PEOPLE OWNERSHIP AND PARTICIPATION
PEOPLE-DIRECTED FUNDING**

and in facing the challenges, it is paramount, if only for economy in the use of resources, to reduce the involvement and expenditure in respect of programme staff, so that much of the investment will be on capacity building in local authorities to enable them to operate and maintain their water and sanitation facilities more efficiently and effectively, on their own behalf,

With these words, I wish to declare your Conference, officially open.

Thank you.

**MESSAGE FROM DR G.L. MONEKOSSO, REGIONAL DIRECTOR OF THE
WORLD HEALTH ORGANIZATION FOR AFRICA, AT THE OPENING OF THE
INTERCOUNTRY WORKSHOP ON OPERATION AND MAINTENANCE OF
RURAL AND URBAN WATER SUPPLY AND SANITATION SYSTEMS, HARARE,
8 - 12 NOVEMBER 1993**

Mr Chairman,
Distinguished delegates,
Ladies and gentlemen,

First of all we would like to express our gratitude and appreciation to the Government of Zimbabwe for the interest shown in hosting this workshop which we have the pleasure to sponsor.

We note with particular admiration the exemplary manner in which our professionals from Headquarters, Regional Office, Country Office and national experts of the host country, and from UNICEF country office have been able to work together to exchange their experiences with their counterparts in other African countries having common problems in Community Water Supply and Sanitation. We wish to place on record our debt of gratitude to all of them for doing their job with great delight and dedication.

The objective of your meeting is to review the major constraints of the water supply and sanitation sector in our Region and formulate policy guidelines, coherent strategies and action plan to place operation and maintenance in proper perspective for the achievement of long term sustainability and economic viability.

As you all know during the International Drinking Water Supply and Sanitation Decade (1981-1990) major efforts have been made to increase investment in the sector. Regrettably many water supply systems failed to provide the full service they were designed to deliver due to a variety of operation and maintenance problems. Although it is estimated that additional 110 million people were provided with safe drinking water and 80 million with adequate sanitation facilities, regional population increased by 140 million during this time. Therefore the fact remains that there are more people in the African Region without adequate water supply and sanitation service at present than there were in 1980. The pace of progress in service coverage has fallen far short of that hoped for by most national Governments donors and the unserved population.

At the end of the decade we have come to witness that many water supply and sanitation investment projects have proved to be neither sustainable nor replicable. While new schemes are under construction the problem of keeping existing systems in operational condition continued to grow and in some countries the construction of new facilities is not keeping pace with failure of existing ones. Inadequacy of maintenance funding is usually assumed to be the cause of the problem since capital development is given preference over recurrent operations both by national Governments and external support agencies. More over, recurrent funding for operation and maintenance is rarely assured once new projects are completed. As a result the new systems may not be sustainable. Other causes may include in appropriate choice of

technology, lack of spare parts and equipment, weakness of management capability and lack of trained manpower in Operation and Maintenance.

A cooperative effort between national Governments and External Support Agencies is required to promote adequate Operation and Maintenance of water supply systems so that more people can be served on a sustainable basis.

In many countries maintenance of systems has depended heavily on central Government both for finance and technical support. As more systems are built to cope with the growth of the population, pressures on Government spending are becoming more acute, hence there are doubts about the prospects of sustaining schemes that have been built as well as extending services to those still unserved, unless a different approach is taken. During the decade we have come to know that conventional top-down approaches, with central Governments and external agencies taking dominant roles have no place especially in rural and peri-urban water supply and sanitation projects. Where people regard a water supply scheme not as their own undertaking but as something done for them by the Government or donor, they do not feel responsible for the maintenance and repair of the schemes. It is now widely accepted that all parties involved in the development of the sector should recognize the principle that it is the local people who have to play the most important role in decision making. Local preferences and local ability and willingness to commit resources both financial and nonfinancial should be an integral part of an effective strategy.

The local people should play a leading role in planning, constructing, financing, operating and maintaining rural water supply and sanitation projects. The Government has a vital role in spreading information through schools, health facilities, training programmes, radio and television on the importance for health of safe water and improved hygiene practice. It has to help communities to identify and overcome the technical, financial, managerial constraints that limit the capacity of the communities to improve its water supply conditions. In addition, the Government has a vital role in training professionals, technicians, and community members in the technical managerial, and financial skills needed to construct, operate, and manage improved water supply facilities.

The private sector including community organizations can also be used successfully to reduce construction costs and to improve the standard of maintenance. Special technical services, materials which are not locally available and specialized maintenance tasks could be contracted to the private sector. Another potentially important role for the private sector in the African Region is the provision of financial services to help communities to organize charging (cost recovery) systems and to operate revolving funds. Agricultural credit banks and other finance institutions operating in rural areas may enter into these markets with the help of Government and external support agencies.

In many countries of the Region community based non-governmental organizations (NGOs) are actively engaged in developing water supplies that respond to local needs and capacities. NGOs can play a valuable role in identifying improvements that community members want because of their familiarity with the local residents and their knowledge of the community. Their experience will be beneficial to Government and donors in the planning, constructing, operating and maintaining water supply facilities. Women in our Region have a considerable vested interest in seeing water supply improvements successfully implemented. Even if increased participation of women in water supply projects is not an end in itself, it is a

fruitful way of increasing the likelihood of success in such projects. It is now recognized that strengthening the institutions responsible for maintaining water systems require greater inclusion of women who have a primary interest in sustaining the community's investment. In many countries of our Region only recently systematic efforts have been made to include women in project planning, maintenance and upkeep. The results have generally been encouraging. Experience also shows that where women are trained to manage and maintain community water systems, they often perform better than men, because they are more accustomed to voluntary work and they are more trusted to administer funds honestly. Further more because of women's central role in household hygiene, food preparation and child care the health benefits of improving community water supply becomes more pronounced when hygiene education and sanitation activities are part of the water project. Poverty alleviation is also possible in that better health, saved time, greater productivity are among the requirements for raising the living standard of the poor.

In conclusion for the years ahead there is reason both for concern and for hope. Concern because many countries in our Region have yet to lay a foundation that will permit rural people to meet their needs for improved water supplies and sanitation; hope because there is a resource of tremendous potential, energy and ingenuity which if effectively harnessed will permit rural people to meet their needs for improved water supply and sanitation; the people themselves in the unserved communities. Some countries have shown how this can be done during the International Conference on Community Health in Africa held in Brazzaville in September 1992. No one can predict how much progress can be achieved if local people's aspirations, initiatives, persistence and self-interest are fostered.

On its part WHO/AFRO will develop an operational plan for mobilizing Member States and external donors in a well publicized cooperative effort to increase investments in water supply and sanitation services in Africa in the framework of, "Africa 2000. Initiative on an International Programme for Water Supply and Sanitation in Africa,II which has been endorsed by the Forty-third Session of the Regional Committee for Africa in September 1993. This initiative will be the guiding principle in creating a new partnership among African Member States, external development organizations and, the communities in accelerating the sustainable expansion of water supply and sanitation services in Africa in the decade of the 1990s.

This initiative will be complemented by the District Health for All Package within the context of the African Health Development Framework by allocating catalytic funds from WHO Regional Programme Budget in support of community based health related intervention which includes capacity building of communities to operate and maintain their Water Supply and Sanitation Systems on sustainable basis. All of you have to be involved in translating this initiative from rhetoric into reality.

I wish all participants success in the work which you will be devoting yourselves in the next few days.

Thank you.

11 november 1993

**INTERCOUNTRY WORKSHOP ON OPERATION AND MAINTENANCE OF
RURAL AND URBAN WATER SUPPLY FACILITIES OF CHOLERA AFFECTED
AREAS: MONOMATAPA: 8 - 12 NOVEMBER 1993**

Mr chairman
Distinguished Delegates
Course Participants
Ladies and Gentleman

Good health is basic to human welfare and a fundamental objective of social and economic development. Yet most of our countries lag far behind in the operation and maintenance of Rural and Urban Water Supply facilities right across the continent of Africa and more so in cholera affected areas. The mortality and morbidity rates caused by preventable diseases such as diarrhoea diseases from poor and inadequate water supplies are high and are a major concern to most people attending this conference.

The potential health and economic benefits to be accrued by improving the public health environment in general and provide safe and adequate water supplies in the rural and urban areas should be the normal practice. But in most cases it is the exception, otherwise we would not be spending a whole week discussing the operation and maintenance of Rural an Urban Water Supply facilities. It is imperative that we provide safe and adequate water that is accessible to our populations and can help reduce the unacceptable high levels of children who die from diarrhoeal diseases of populations being constantly subjected to outbreaks of cholera and the lives lost during such outbreaks.

The challenge for Zimbabwe and I hope most of the countries in Africa is to increase the ability of individuals and households to exercise greater control over their own health so as to minimise suffering and reduce morbidity and mortality rates at a faster rate than in the past.

Most of us, have our roots in the Rural areas. Most of us know the congestion in our urban arias which is increasing by the day. When we evaluate what has been achieved over decades we are very aware that more needs to be done to provide environmental security to our people. Many Health forum have urged national and local governments to provide more resources to the provision of adequate and safe water supplies and sanitation. One appreciates the achievements that have been make but it is tell too little. It is our hope that the momentum will be sustained over the next few years and if possible accelerate provision of adequate clean water and sanitation to every household. We cannot continue with the state of affairs that exist in our rural areas today.

Zimbabwe has given greater priority to preventive and primary health care activities. We have restructured the health care delivery system and are now strengthening management of the health sector in order for the health care system to be more responsive to the health needs of our people and be "consumer friendly".

The role of the public sector in bringing about change in most settings is pivotal to the achievement of our overall goals and objectives. For rational decisions to be made and resources allocated to priority areas identified, we need, epidemiological data that is provided promptly and accurately, we need to strengthen our health planning systems, give health education in language that is understood by most people and must ensure that our people understand the public health regulations, licensing laws and the prevention of communicable disease activities and their importance to the achievement of good health. High levels of mortality and morbidity are costing our countries dearly in terms of quality of life and the capacity to build our human resources.

The Ministry of Health and Child Welfare in Zimbabwe has decentralised its management and health care delivery systems. For us to attain our objectives we need adequate resources which are managed well and accounted for. To enable us to achieve our goals we need a workforce that is healthy and skilled in the various specialised areas of our operations.

We also need to move in unison with our communities. These communities must be healthy and alert to their needs. They are unable to advise us if they have poor health which increases their suffering and reduces their ability to cope with the daily needs for survival. Our health care system cannot be effectively managed unless we have officers skilled not only in policy analysis, but also in planning, programming and budgeting. This area needs to be strengthened and a start has been made.

Mr Chairman, it is my hope that when discussing the issues on the operation and maintenance of Rural and Urban Water Supply facilities of Cholera Affected areas the target group expected to sustain this programme was identified and related issues well articulated. The sustainability of this programme relies heavily on women.

It is also my hope that appropriate technology to lighten their burden in providing water for their families has been put on the agenda in developing the plans for this programme.

The household burden carried by women whose health is already compromised by frequent childbirth, poor nutrition, hypertension and poverty, cannot now be left on the shelf. The success of our health programmes also depend on the quality and status of the health and welfare of women.

The programmes geared to make the burden carried by women lighter have been slow and it is my belief that lack of progress in the education and emancipation of women is one of the major causes of our inability to achieve a higher standard of health and a better quality of life. We need to improve the operations and maintenance of Rural and Urban Water Supply facilities of cholera affected areas. We also need to ensure the sustainability of that programme and this can be done by educating all members of our communities and more so the women who will operate and maintain these facilities.

Accessibility of water points is mandatory if a family is to have adequate water for all its needs. We cannot be satisfied to see women travelling many kilometres with water buckets on their heads to fetch water for their families. It is cruel to treat one sector of our population in this way. If men did this kind of work daily; we would have had water points by the homestead if not in the house many years ago.

Educate a woman you educate a whole nation. Educate a man you indeed educate an individual. This is true of our continent. We hope to change that state of affairs in order to accelerate our "take off" to the 21st century and give a better quality of life to all our people.

I would like to thank the W.I.O. Afro Region and all the organisers for enabling this workshop to take place.

I also want to wish all of you a safe journey back to your respective countries and destinations. It is also my hope that this programme will be constantly monitored. With these few remarks, I now have the pleasure to declare this workshop officially closed

I thank you.

MRS. J.C. KADANDARA
DEPUTY SECRETARY: HEALTH SUPPORT SERVICE

For: SECRETARY FOR HEALTH AND CHILD WELFARE:

ANNEX III

Plans of action : Urban and Rural Sanitation

PLAN OF ACTION : URBAN - SANITATION

| OBJECTIVE | TARGET | ACTIVITIES | ACTORS | EXPECTED OUTPUT |
|---|---|--|---|--|
| 1. To do situational analysis in sampled urban areas | Donor Agencies, Urban Community, Policy Makers, Sanitation Department | <ul style="list-style-type: none"> - Data collection using WHO checklist as appropriate - Prepare report - Disseminate information | Consultants MOH & CW MLGRUD MOI Donor | Availability of Information Preparation of plan of action |
| 2. To mobilize resources, funds for operation and maintenance | Urban Community, Donor Agency, Government | <ul style="list-style-type: none"> - Organize Donor meeting - Dialogue with Ministry in charge of Local Government | MOH & CW MOW MOCs | Meeting held Resource available |
| 3. To create public awareness on the problems of urban sanitation and possible solution | Urban Community, Local Government | <ul style="list-style-type: none"> - Dramatize in popular theatre - Use of Mass Media - Develop Education AC messages material - Preparation and dissemination | MOH & CW MLGRUD MOW MOEc Donor Agencies | <ul style="list-style-type: none"> - Cleanliness in urban area - Resources increased |
| 4. To review and enforce public health law | Urban Community | <ul style="list-style-type: none"> - Review the existing public health act - Reinforce the reviewed public health act - Presentation to legislators | MOH & CW LGRUD Consultant | Enforcement of revised, updated and effective law |
| 5. Local Authorities to implement approved urban plan | Urban area development | <ul style="list-style-type: none"> - Regular inspection - Demolition of displaced structures - Prosecution of defaulters - Reviewing blocked plan | Local Authorities | <ul style="list-style-type: none"> - Properly planned and developed urban areas - Improved sanitation in urban area |
| 6. To upgrade the existing urban sanitation Department | Staff and equipment of sanitary department | <ul style="list-style-type: none"> - Training of staff at all levels to a maximum level - Procurement of equipment and other supplies | Donor Agencies LGRUD | <ul style="list-style-type: none"> - Well trained and motivated staff available - Availability of equipment and supplies |

PLAN OF ACTION : RURAL - SANITATION

| OBJECTIVE | TARGET | ACTIVITIES | ACTORS | EXPECTED OUTPUT |
|---|---|---|---|--|
| 1. To carry out a situation analysis of sanitary facilities | Households and other existing institutions e.g. schools, markets, etc. | Develop questionnaire training of staff (Community Health Workers). Pre-testing of questionnaire administering the pre-tested instrument. | Community members, Health workers, Community Development workers. Local Government Politicians, Mass Media | Baseline Data on communities for planning purposes |
| 2. Re-orientation of health workers and training of communities on skills | Health staff communities, e.g. local builders | Preparation of training programme and (procurement of) training material. Identify TOTs field demonstrations, monitoring and evaluation. | Environmental Health Officer and Technicians. Communities e.g. local builders. Community leaders, donors and Non-Governmental Organizations | Availability of knowledge and skill in the community |
| 3. To mobilize internal and external resources | Households, Local Authorities, NGOs | Form/strengthen committees. Formulation of procedure on resource management. | Community Committee members, Local leaders, District Officers, NGOs | Availability of manpower, money and materials |
| 4. To advocate for political commitment | Councillors, Local political leaders, different community organizations, Youth/Women's groups, Traditional authorities (Chiefs) | Organise sanitary campaign rallies. Commissioning successful sanitation projects. Organise functions. | Health workers, Local authorities, Influential leaders, Traditional healers | Recognition and genuine support. Creation of sanitation demand |
| 5. To attain minimum acceptable standards on sanitation facilities | Planners, designers, beneficiaries, donors | Setting criteria, acceptable minimum requirements. Form regulation for latrine construction. Promote operational research. Monitoring and evaluation. | Health workers, community members, donors, designers, planners | Minimum acceptable affordable sanitary technology |
| 6. Strengthen or designate responsibility in sanitation implementation | Central Government, International organization, Water and sanitation committees | Designate special Government Institution to be responsible for sanitation. Define roles of relevant actors. | Central Government, International agencies, interested groups | Improved accountability and implementation |
| 7. To assess health impact | Households and other existing institutions. | Formulation of research programme e.g. identification of project area development of questionnaire. Analysis of results of the research. | Health workers NGOs, Community members, Consultants, Research institutes/Units | Justification for more funds. Improved support, modification of the programme basing on results of the research operation. Creation of a data bank |
| 8. To improve quality of living | Households community organizations/groups. Local Authorities, Funding Agencies, Central Government. | Health mobilization/Education training skills. Creation of community co-operatives. Recreation of implementation. | Health workers, individual households, NGPs, Local Authorities, Community groups and Central Government | Self-reliance, reduction of poverty |

ANNEX IV

Rapid assessment of water supply and sanitation

RAPID ASSESSMENT OF WATER SUPPLY AND SANITATION IN CHOLERA AFFECTED DISTRICT

DISTRICT:

LOCATION:

DIVISION:

HOUSEHOLD NUMBER:

SUB-LOCATION:

DATE:

VILLAGE:

NAME OF HOUSEHOLD HEAD:
.....

WATER SUPPLY

1. Main source of water for the household:

- | | |
|---------------------|-----------------------|
| 1. River, Lake | 2. Piped water |
| 3. Protected spring | 4. Unprotected spring |
| 5. Open well | 6. Protected well |
| 7. Roof catchment | 8. Dam |
| 9. Borehole | 10. Kiosk |

2. Is the water adequate throughout the year?

- | | |
|--------|-------|
| 1. Yes | 2. No |
|--------|-------|

3. What are the number of days per month without water?

4. For how many months per year does the water system operate without stopping?

5. What is the distance to the nearest drinking water point?

1. in the house/compound
2. < 1 km
3. 1 - 2 km
4. 3 - 4 km
5. 5 or more km

6. How is the water conveyed?

- | | |
|-------------|------------------|
| 1. On foot | 2. Oxen/donkey |
| 3. Handcart | 4. Motor Vehicle |
| 5. Bicycle | 6. Tap in house |
| 7. Vendor | |

7. Who operates and maintains the water system?

1. Self
2. Community
3. Government
4. Private/donor
5. N/A

EXCRETA DISPOSAL:

8. What type of excreta disposal facility is available for the household?

1. Sewer
2. ordinary latrine
3. VIP Latrine
4. Pour flush
5. Aqua privy
6. Bucket latrine
7. Septic tank
8. Communal Latrine
9. None

9. If you are using a facility for excreta disposal is it satisfactory?

1. Yes
2. No

10. If none in number 8, what are the prohibiting factors (constraints) that make you not construct one?

1. High cost (lack of funds)
2. Soil profile (e.i. soil being too loose or rocky)
3. Does not see the need for one
4. other (specify)

11. What was the cost of constructing your latrine/

1. < Ksh 3000
2. Ksh 3000 - 6000
3. Ksh 6000 - 10000
4. Ksh 10000

12. (for those household with latrines): Do all members of your family (household) use it?

1. Yes
2. No

13. If no in Number U, what hinders some/all from using it?

1. Age: too young/old
2. Beliefs: customs/taboo etc

14. If you do not use the latrine, how do you dispose of your excretal matter?
1. In the bush
 2. Through cat method
 3. Behind the house
 4. Designate hygienic place eg paper or pot) and later disposed of in the latrine.
15. The household is generally (observe): (include criteria used)
1. Poor
 2. Medium
 3. Rich
16. What are the two common diseases found in the household
1. malaria
 2. Bilharzia
 3. Eye diseases
 4. Intestinal worms
 5. Scabies
 6. Diarrhoea

Name of Interviewer: Signature:

Name of Supervisor: Signature:

ANNEX V

List of participants

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