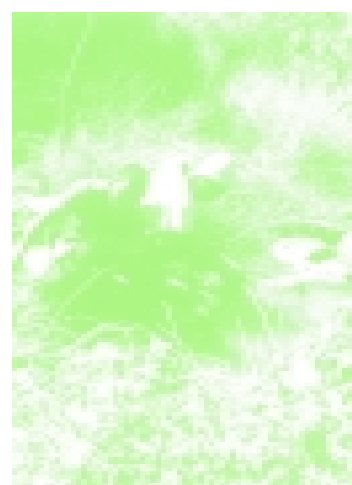


Table of Contents

Water Supply and Sanitation Sector Report Year 2000
Africa Regional Assessment

Foreword	4
Acknowledgements	5
Executive Summary	6
Chapter 1: Introduction	10
Chapter 2: Background to the Regional Water Supply and Sanitation Assessment	12
2.1 The Role of Water Supply and Sanitation Assessments	12
2.2 Previous Assessment Efforts	13
2.3 Objectives of the Year 2000 Africa Regional Assessment	14
2.4 Methodology	15
2.5 Limitations of the Assessment	17
Chapter 3: Regional Setting	18
3.1 Population and Surface Area	18
3.2 Water Resources	18
3.3 Health	19
Chapter 4: Coverage	21
4.1 Coverage Definitions	21
4.2 Regional Coverage	21
4.3 Country Coverage	22
4.4 Operational Aspects	24
4.5 Water Quality	26
4.6 Population Projections	26
4.7 Coverage Trends	27
4.8 Coverage Targets	27
4.9 Water and Sanitation in the Largest African Cities	28
Chapter 5: Costs and Investments	31
5.1 Water Production Costs	31
5.2 Water and Sewerage Tariffs	31
5.3 User Charges	32
5.4 Construction Costs	32
5.5 Sector Investments	33
Chapter 6: Policy, Planning and Institutional Responsibilities	35
6.1 Water Supply and Sanitation Policies	35
6.2 Sector Planning	36
6.3 Institutional Responsibilities	36
Chapter 7: Future Sector Development	38
7.1 A Perspective from the Year 2000	38
7.2 Major Constraints	39
7.3 New Approaches	40
7.3.1 Concepts and Methods	40
7.3.2 Initiatives and Programmes	44
7.4 Lessons Learned	48
7.5 The Way Forward	49
7.5.1 Regional Targets	49
7.5.2 Next Steps	50





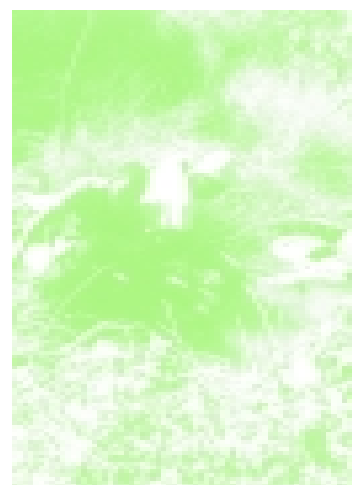
List of Figures and Tables

Figures	53
4.1 Africa Region Coverage of Water Supply and Sanitation, 1999	54
4.2 Global and Regional Water Supply Coverage Trends, 1970-1999	55

Tables	58
3.1 Area and Population, 1999	57
3.2 Water Resources Availability and Usage, 1999	58
3.3 Health Indicators, 1999	59
3.4 Global Estimates of Morbidity and Mortality of Diseases Related to Poor Water Supply and Sanitation	60
4.1 Regional Coverage Status, 1990 and 1999	22
4.2 Country Coverage Status, 1999	59
4.3 Africa Region: House Connections to Water Supply and Sanitation	24
4.4 Population Projections	62
4.5 Global and Regional Coverage Trends, 1970-1999	30
4.6 Coverage Trends and Targets	63
4.7 Water and Sanitation in Large Cities	64
5.1 Production Costs, Tariffs and Charges, 1999	65
5.2 Construction Costs, 1999	66
5.3 Africa Region: Cost Averages, 1999	33
5.4 Sector Investments, 1999	67
7.1 Constraints to Sector Development	69
7.2 Trends in Sector Constraints	69
7.3 Proposed Coverage Targets for Africa	50



ANNEXES	70
Annex A: References	71
Annex B: Definitions	72
Annex C: Additional Data Tables	73
C.1 Levels of Water Supply Services, 1999	73
C.2 Levels of Sanitation Services : 1999	74
C.3 Operational Aspects	75
C.4 Health/Hygiene Education Policy and Water Quality Control	76
C.5 Community Management and Private Sector Investment	78
C.6 National Drinking Water Supply and Sanitation Plans	79
C.7 Institutional Responsibilities	80
Annex D: Acronyms Used in the Report	84



Foreword

On behalf of the WHO Regional Office for Africa, I am very pleased to present the Year 2000 Africa Regional Assessment of the Water Supply and Sanitation Sector. This is the first time that WHO has prepared such a report describing the current status of water supply and sanitation services in the 46 member countries of the Africa Region. It should be seen as a clear sign of WHO's concern for and dedication to improving the lives of all the people of the region.

The publication of this assessment, however, must not be taken as an end point or as the completion of a task. It is, rather, only a starting point for WHO, the governments and peoples of the region and the international development community to take on with greater resolve the enormous challenges revealed by the assessment.

Today, in Africa, over 270 million of our brothers and sisters face each day without safe water to drink and more than 280 million do not have proper facilities for the sanitary disposal of their excreta. This is a tragedy – one that is simply unacceptable and must not be allowed to continue. We must remember that these numbers, which report population totals without life-sustaining water and sanitation services, are not just statistics. They are people. They are men, women and children who have hopes and dreams for their families and for the future. They have a fundamental right to a decent life and a hopeful future. But to ensure this right, they also must have safe and adequate water supplies and adequate forms of sanitation.

I do not doubt that meeting this challenge will be costly - in terms of effort, time and money. But we must not allow ourselves to think that the costs are too great or that we cannot afford them. The people of Africa who drink polluted water and live in contaminated environments know what the costs are. They are paying them right now in the currency of illness, death and stunted lives. The costs of neglecting their needs are far greater than the costs of meeting them.

Together, we can overcome this challenge. I call on all countries of the region and all organizations involved with water and sanitation services to work together in a common effort. There are a number of useful initiatives dedicated to improving water and sanitation services in Africa – AFRICA 2000, the UN System-wide Special Initiative on Africa, the Africa Water Vision for 2025 and others. By cooperating with each other we can multiple our individual strengths and reduce our individual weaknesses. This report points out the problems and the needs. It is now up to us to carry them forward.

I pledge WHO's resolve to work with the countries of the Africa Region on the water and sanitation needs of their peoples. Using this assessment as a starting point, we are prepared to assist countries to carry out their own national assessments and to develop appropriate strategies and plans for expanding water and sanitation services.

The Challenge and the Promise

The people of Africa who drink polluted water and live in contaminated environments know what the costs are. They are paying them right now in the currency of illness, death and stunted lives. The costs of neglecting their needs are far greater than the costs of meeting them.





We also will urge our sister organizations in the United Nations system and our development partners in the donor countries to work closely with us and with the governments of Africa.

This is our common task. We must have a shared vision of the future. Let us show the world what Africa can become.

Dr Ebrahim M. Samba
Regional Director
WHO Regional Office for Africa

Acknowledgements

This report on the year 2000 Water and Sanitation Sector Assessment of the WHO African Region was initiated and sponsored by the Division of Healthy Environments in Sustainable Development. Many people in the countries of the African Region supported the work of this assessment. Special note must be made of the assessment focal points in each country, plus the officials of government agencies and development organizations including the staff of WHO and UNICEF country offices that participated in country-level data collection, compilation and discussions. Mr. Firdu Zawide, WHO Regional Advisor in Water, Sanitation and Health, directed the overall project, which included data collection and preparation of the regional assessment report. Most of the data in this report was organized and compiled by Miss Lusubilo W. Mwamakamba, WHO Intern, while the graphics were prepared by Mr Honorat B. Hounkpatin, WHO Technical Officer. The report was written by Dr Dennis B. Warner, WHO consultant and former head of water supply and sanitation in WHO Headquarters.

Mr. Jose Hueb, the key coordinator of the Global Assessment 2000 process in WHO Headquarters provided great support and encouragement to the development of the Regional Assessment. The United Kingdom Department for International Development (DFID) are to be greatly thanked for making funds available for the preparation of the Regional Assessment 2000 Report.



Executive Summary



This report gives the results of an assessment of the water supply and sanitation sector in the WHO Region of Africa. It is based upon data collected in the countries of the region during 1999 and is considered to be current through 31 December 1999. The report should be seen as a complement to the Year 2000 Global Assessment conducted under the WHO/UNICEF Joint Monitoring Programme. The report also represents the first such assessment of Africa carried out by WHO.

Sector assessments are essential to the management, planning and advocacy of water supply and sanitation services. They provide national governments, sector agencies and donor organizations with the information necessary to determine current needs, formulate priorities and plan programmes. They also provide a foundation upon which advocacy campaigns can be based. Without periodic sector assessments, and the insights they reveal, the planning and management of water and sanitation services cannot take into account all of the relevant problems and opportunities that may be present.

This Year 2000 regional assessment report was prepared with four objectives in mind:

- to present the status of the water and sanitation sector in the region in 1999;
- to serve as a reference document at both regional and country levels;
- to provide other sector-related information; and
- to be a source of advocacy for water and sanitation needs in the region.

Information was collected from several sources and with a number of different methods. A questionnaire was sent to all WHO offices in the region for discussion and completion by representatives of the national government, international organizations and NGOs. Additional information on water and sanitation coverage was drawn from various household-based surveys over the past few years. The design of the assessment emphasized obtaining coverage data from service consumers rather than only service providers, as had been the practice in past global assessments. In addition, definitions were developed for the concepts of access to safe water supply and access to adequate sanitation. The overall design of the assessment was developed by WHO Headquarters, while the collection of data in Africa was under the direction of the WHO Regional Office in Harare. Data processing and analysis were conducted by both Headquarters and the Regional Office.

As in all such wide-ranging investigations, this assessment has limitations. Some of the questions in the questionnaire proved to be difficult to interpret, resulting in responses that at times were contradictory with other information. In addition, the methodology for the collection and compilation of data from government institutions was not standardized, leading to different procedures in some countries for reaching consensus on coverage figures. Where data was obviously erroneous or contradictory, it was deleted from the analysis. Because of these limitations, specific, as opposed to general, data in the assessment should be used with caution.

In the year 2000, the countries in the WHO Africa Region had a total population exceeding 631 million human beings. The 46 countries of the region covered an area of more than 29 million square kilometers. Africa as a whole experiences annual

The good news is that over the past twenty years, both water and sanitation averages have increased markedly from 32% water average in 1980 to 56% in 1999, and from 28% sanitation average in 1980 to 55% in 1999.

If we have a shared vision of the future, we can show the world what Africa can become.



rainfall averaging 740 mm, but this varies from almost nothing in the deserts of Ethiopia and Namibia to more than 4 metres in parts of Liberia and Cameroon. Africa has total renewable water resources of approximately 6,000 m³/yr per person, but again, the availability of this resource varies from country to country. On the health side, Africa has a relatively low life expectancy of 48.6 years, as well as a high infant mortality rate of 93 deaths per 1,000 live births and a child mortality rate of 139 deaths per 1,000 live births.

Water coverage in the region is showing a steady improvement over the years, the situation is however less favorable with regard to sanitation. In 1999, 56% of the 631 million people of the region had access to adequate water supplies and 55% had access to sanitation, meaning excreta disposal facilities. Urban dwellers had coverage rates of 83% in water and 81% in sanitation. Rural inhabitants reported 42% coverage in water and 41% in sanitation. Except for rural sanitation, which showed a decline in progress, all sub-sectors reported higher coverage rates in 1999 than in 1990.

At the country level, urban water coverage usually exceeds rural water coverage, and urban sanitation normally has higher coverage rates than rural sanitation. Fourteen countries, however, reported higher coverage rates in overall sanitation (both urban and rural) than in water. This may be due to the expanded use of community-based and participatory methods to promote sanitation in recent years.

Detailed investigations of the types of services available in the region showed that urban areas enjoyed a much higher rate of house connections for both water and sewer services than did rural areas. Around 51% of the urban population of the region was served with house water connections and 28% with sewer connections. On the other hand, only 3% of rural inhabitants had household water connections, while an insignificant proportion had sewer connections. Large numbers of people in both urban and rural areas are served by public standpipes. Equally large numbers in urban and rural areas use on-site systems for their excreta disposal. Over the years, urban household water connections have risen from 33% in 1970 to 51% in 1999, while urban sewer connections have risen from 8% to 28% during that same period.

Most countries of the region reported that their urban water systems suffered from intermittent supplies, and nearly all stated that some of their rural systems were not operating. Similarly, a majority of countries indicated that no treatment at all was given to sewage from public sewers. Overall, the conclusion is that water and sanitation systems in Africa are experiencing severe operational problems. Rural systems generally are far worse than urban systems. Intermittent operations are a fact of life in many countries.

Limited information on water quality shows that three-fourths of the countries of the region have national drinking-water quality standards, and most countries claim some degree of disinfection of their water supplies, but actual control of water quality is somewhat erratic. Rural systems, in general, have much less effective water quality control than urban systems.

Over the past twenty years, both water and sanitation coverages have increased markedly, from 32% water coverage in 1980 to 56% in 1999, and from 28% sanitation coverage in 1980 to 55% in 1999. Thus, regional water coverage has risen 75% since 1980 and regional sanitation coverage has grown nearly 96% since that date. Only one country experienced declines in overall sanitation coverage over the past



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ten or more years. Countries reported that they had set water supply targets for the year 2010 an average of 20% above their 1999 coverage rates and sanitation targets around 50% higher than 1999 levels. While the water target seems reasonable, the sanitation target appears to be unattainable, given current conditions in the region.

Countries were asked to report on water and sanitation services in their largest city. These urban centers ranged in size from 12,000 (Greater Victoria) to 5,824,000 (Kinshasha). A third of the cities were reported to have 100% water coverage and a quarter had 100% sanitation coverage. At the same time, five cities had water services reaching less than 50% of their populations, while all cities reported sanitation services available to more than 50% of their populations. Water production in these cities ranged from a low of 30 litres per person per day to a high of 345. Unaccounted-for-water, however, was very high, averaging 40%, with highs of 60%.

The costs of producing water averaged US\$ 0.30 per cubic metre, with median water tariffs of US\$ 0.33 per cubic metre. Sewerage tariffs were slightly lower, with a median of US\$ 0.30 per cubic metre. Household water connections had a monthly charge of around US\$ 5.00 per person and standpipe water cost US\$ 1.05 per person per month. Sanitation charges for sewer connections were more difficult to determine, but generally were about US\$ 1.50 per person per month.

Construction costs of water systems were determined to be US\$ 65 per person for household water connections and US\$ 125 per person for sewer connections. Public standpipes for water cost US\$ 30 per person and boreholes with handpumps were reported to be US\$ 21 per person. On-site sanitation systems ranged from US\$ 124 per person (septic tanks) to US\$ 25 per person (simple pit latrines).

Data on investments into the water and sanitation sector showed that external investments exceeded national investments by a two to one ratio. Total external investments averaged US\$ 1,513 million per year, while total internal investments were US\$ 698 million per year. Regionally, more investments from both national and external sources were made into the urban sub-sector than into the rural sub-sector. As would be expected, investments were concentrated in water systems in both the urban and rural sub-sectors.

National policies on water and sanitation vary greatly between countries. Formal water and sanitation policy statements are rare but many countries have unwritten policy guidelines or they rely on policies in areas that are related to water and sanitation, such as community management, water quality standards and health and hygiene education. Most of the countries of the region either have national plans for water supply and sanitation or are in the process of preparing them.

Water and sanitation comprise a very fragmented sector in terms of institutional responsibilities at the national level. Many ministries, public corporations and parastatal organizations can be found in charge of water or sanitation services in the countries. No general pattern of institutional responsibility seems to exist in the region. The Francophone countries, however, have a high degree of private sector participation in their urban water sub-sector.

The results of this assessment pose great challenges to Africa, her institutions and her people. Despite a general improvement in coverage rate and levels of service over the years, there remain 276 million people without safe and adequate water supplies and 284 million without appropriate forms of sanitation. Many constraints block the path to progress. The countries reported that funding limitations are the main

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constraint, as they have been for the last twenty years, while other barriers, in decreasing order of importance, are inadequate operation and maintenance, logistics and inadequate cost-recovery framework.

At the same time, the sector is being aided by new methodologies and new approaches. Chief among these are participatory approaches, especially for sanitation and hygiene education (PHAST), as well as new approaches to community management, private sector participation, low cost technologies and collaboration between institutions. At the regional level, a number of new initiatives have taken up the cause of water and sanitation in Africa. The main regional initiatives are the AFRICA 2000 Initiative for Water Supply and Sanitation, the Water Utility Partnership (WUP), the United Nations System-wide Special Initiative on Africa (UNISA), the Water and Sanitation Africa Initiative (WASAI) and the Africa Water Vision for 2025.

Several important lessons were learned in the course of the regional assessment. These include the need to field test the questionnaire in advance of the assessment, the advisability of assisting countries with guidance on costings and exchange rates, the need to clarify contradictory country responses, and the need to allow sufficient time to carry out the overall assessment.

For the future, the results of this assessment suggest that coverage targets be modest, but attainable. For the year 2010, a regional water target of 67% (compared to the 1999 coverage of 56%) is proposed, while a regional sanitation target of 66% (compared to the 1999 coverage of 55%) is suggested. Furthermore, it is considered reasonable to increase these targets to 77% coverage for water and 76% for sanitation in the year 2020.

To make effective use of this assessment, several immediate steps are suggested:

- The assessment should be widely distributed – to government, development agencies, NGOs and the media.
- Countries of the region should be asked to correct or up-date data contained in the assessment report.
- WHO should assist countries in carrying out their own national sector assessments.
- WHO should assist countries and donor organizations in areas of specific need, especially the unserved urban poor and peri-urban populations, the neglected rural poor, and poor operation and maintenance of existing systems.
- All sector organizations should promote participatory methods for sanitation and hygiene education (PHAST), guidance materials for community management, guidance materials for private sector participation, and integrated low cost technologies.
- All sector organizations should seek to improve collaboration and cooperation with each other and especially with AFRICA 2000, the Water Utility Partnership, the UN System-wide Special Initiative on Africa, and the Water and Sanitation Africa Initiative.
- All sector organizations should consider using the Africa Water Vision for 2025 as an organizing framework for water resources development in Africa.

There have been a number of successful project-based partnerships among WHO, UNICEF, UNDP, The World Bank, Habitat, UNEP, WMO and other agencies that are members of the UNISA Water Cluster.

A new strategy has been formulated for the Cluster that takes into consideration, not only the past constraints, but also the imperatives and opportunities that have been created by recent developments. The new strategy is based on the outcomes of agency consultations held in the Hague in March 2000.





Chapter 1: Introduction

Water is a precious resource. In Africa, it can be a matter of life and death. It can also be a matter of economic survival. Yet it can be both an instrument and a limiting factor in poverty alleviation and economic recovery, lifting people out of the degradation of having to live without access to safe water and sanitation, while at the same time bringing prosperity to all on the continent. Thus all in Africa should be concerned and involved in the conservation and protection of water; all should be involved in thinking about new ways of managing Africa's water resources to improve its efficient, equitable and sustainable use, to the benefit of all. It is for this reason that an African Water Vision at this time is opportune.

This report is the first ever assessment of the water supply and sanitation sector in the WHO Africa Region. It describes the status of water and sanitation services in 46 countries containing 631 million people with an overall surface area of 29 million square kilometers. The region includes 46 of the 56 countries contained in the Africa Region of the United Nations.

The emphasis of this regional assessment is upon coverage, meaning the number of people with access to safe and adequate water supply and adequate means of sanitation. Coverage is the prime indicator of the adequacy of the water and sanitation services people have available to them. All people have drinking water (or they would quickly die) and some method of excreta disposal (or they would more slowly die), but not all water is safe to drink and not all forms of excreta disposal are protective of human health. The task in determining coverage is to first define what is a safe and adequate water supply and what methods of sanitation, or excreta disposal, are considered adequate to protect health.

In addition to coverage, this assessment reviews the costs of water and sanitation services and the prices people pay for them, as well as the investment flows into the sector from both national and external sources. Information is also provided on the operational aspects of systems and the policies that countries follow in developing their water and sanitation sector.

The basic data for this assessment was collected in 1999 as part of the year 2000 global water and sanitation assessment carried out under the WHO/UNICEF Joint Monitoring Programme. WHO has been conducting sector assessments since 1970, and since 1990 WHO and UNICEF have been working together in the Joint Monitoring Programme. This end-of-millennium assessment is a collaborative effort of WHO, UNICEF, the WELL project of Loughborough University (UK) and the British Department for International Development (DFID).

The report is organized in the following manner. Chapter 2 contains the background and history of the assessment as well as the objectives, methodology and limitations to the information presented in the report. Chapter 3 provides basic information that describes some of the demographic, water resources and health conditions in Africa. Chapter 4 is considered the heart of the assessment. It discusses the coverage status of the region from the standpoint of urban and rural populations. Additional information is given on operational and water quality issues of water and sanitation systems, plus historical trends in population growth, coverage trends and future coverage targets. The chapter concludes with a review of water and sanitation conditions in the largest cities of the region.

Chapter 5 assesses information on the costs of producing water, the tariffs people pay for water and the costs of constructing water and sanitation facilities. It also reports on the investments made by national governments and external organizations into the sector. Chapter 6 describes aspects of water and sanitation policy formulation in Africa, the degree of sector planning at the country level and the leading national institutions in water and sanitation development



The general conclusions of the sector are presented in chapter 7. The major constraints holding back progress in the sector are discussed and compared with previous assessments. Promising new concepts and approaches are then reviewed, and the new African initiatives for water and sanitation are described. The chapter ends with a review of potential coverage targets and a list of suggestions for follow up action that were prompted by the assessment.

In general, the report deals with an analysis of the region as a whole in terms of current status and historic trends. Country conditions are not specifically discussed, except to illustrate points related to the regional analysis. Because of time limitations, it was not possible to prepare a sector assessment for each country. However, essential data for each country in the region were compiled into a standard country profile and retained in the second part of the report. These data can be used as the starting point for detailed country analyses in the future.



Chapter 2: Background to the Regional Water Supply and Sanitation Assessment

2.1 The Role of Water Supply and Sanitation Assessments

Periodic assessments of the water supply and sanitation sector have the same function as routine medical check ups that monitor the health of a patient. In both cases, an understanding of present conditions and trends is necessary to determine short-term management actions and long-term strategies.

Sector assessments should not be confused with project evaluations or planning studies. Rather, they are the key points in a continuous process of monitoring, data collection, analysis and reporting. To be most useful, sector assessments should monitor changes in specific indicators over time, such as the number of people having access to water supply services or the number of house connections provided in a city distribution system. The routine collection, compilation and analysis of such data can provide valuable insights into the progress of sector efforts and identify specific problems requiring greater attention.

In the case of the water and sanitation sector, the area of concern may be a city, country, region or the entire world. Sector assessments are usually carried out to assist in three general areas: management, planning and advocacy.

Management

- To assess the current status of the sector.
- To determine past and current trends.
- To identify current shortfalls, problems and immediate needs.
- To conduct current sector operations in an efficient and effective manner.

Planning

- To become aware of new approaches and emerging opportunities.
- To assist in formulating policies, strategies and programmes for the future.
- To assist in mobilizing resources to meet long-term needs.

Advocacy

- To promote better water and sanitation services to the users.
- To alert national officials to critical needs.
- To appeal to external organizations for greater assistance in meeting needs.

Without periodic sector assessments, officials charged with the overall direction of current and future sector operations are basically “blind” to the existence of many problems affecting the implementation of programmes. Often these problems are not evident at the project level, but can be clearly noted when several programmes or the entire country is considered. Typical problems of this type include the failure to meet coverage targets, difficulties in maintaining systems reliability or imbalances between user tariffs and system costs. Sector assessments, therefore, provide sector officials with feedback needed for the management of current operations.

In addition, sector assessments should be the basic framework for long-term planning by providing information on problems, trends and critical needs. The setting of sector objectives and targets is dependent upon estimates of future needs, which can only be determined from assessments of past and present conditions. Moreover, the development of national policies and strategies must take into account not



only the needs of the sector, but also its strengths and weaknesses in implementing water and sanitation programmes. This is particularly true in the identification of resource constraints and in mobilizing the required human and financial resources to implement plans and programmes.

Lastly, sector assessments are the *sine qua non* for effective advocacy. Since advocacy is intended to change things, one must know what kind of a change is desired. The more one knows about both the current status and the desired future state of the sector, the better a message can be shaped to encourage the type of change necessary to reach the desired condition. This is true whether the message advocates change in a single community or the entire Africa Region. In water and sanitation, the users must understand the future condition being promoted, and the message must clearly show that it is more beneficial and desirable to them than their present status. Similarly, advocacy to national officials to encourage greater government attention and priority to water and sanitation, as well as advocacy to external organizations to enlist their support for water and sanitation programmes, can only be effective if there is appropriate information about existing conditions and the type of changes being sought.

2.2 Previous Assessment Efforts

For nearly forty years WHO has been the main source of information on the status of the water supply and sanitation sector in developing countries. Over this period, WHO and the organizations with which it collaborates have developed systems and procedures for assessing water supply and sanitation conditions and making the information available to policy makers and planners in governments and development agencies, as well as to the media and the general public. Because of the enormous difficulties involved in assessing services that affect every human being on the planet, the resulting data is not always accurate or reliable. However, within the limits of the resources available for the task, the information provided by WHO over the years on global, regional and country level water and sanitation conditions remains the primary source of sector data for most institutions concerned with water and sanitation development.

WHO initiated comprehensive sector monitoring and assessments in the early 1960s with the publication of *Urban Water Supplies in Developing Countries* (Ref. Dieterich, B.H. and J. H. Henderson: 1963). Shortly afterwards, WHO expanded its concerns to monitoring water supply and sanitation in both urban and rural areas. With the help of WHO offices in developing countries, the status of water and sanitation coverage in the developing world was monitored and assessed. The results of these early efforts provided regional and global coverage data for 1970 and 1975, the first years for which such information is available. (Coverage refers to the number of people receiving adequate levels of water supply and sanitation services.)

With the advent of the International Drinking Water Supply and Sanitation Decade, 1981-1990, WHO intensified its efforts on sector monitoring as one of its primary contributions to the Decade. Sector monitoring and assessment were seen to be essential for the planning and financing of Decade activities and the achievement of Decade targets. With financial assistance from UNDP, WHO carried out a baseline assessment of the developing world in 1980 and then followed up with periodic, but similar, assessments for 1983, 1985, 1988 and an end-of-Decade report for 1990 (Refs. WHO: 1983, 1986, 1990, 1992). These assessments went far beyond basic coverage data on the numbers of people with access to safe water and sanitary means of excreta disposal. For the first time, the Decade assessments also monitored system operations, the establishment of Decade targets, socio-economic and health indicators, financial issues and sector investments, staffing and training, and the application of Decade development approaches. WHO offices in developing countries became focal points for the collection of relevant sector data requested in questionnaires developed by WHO Headquarters in Geneva. WHO country staff worked closely with relevant government institutions to assess sector conditions and generate the required information on the status of water and sanitation services in the country.

Given the extent of the task – to monitor and assess water and sanitation in the entire world – the WHO effort during the Decade was a relatively low budget affair. Few countries had formal mechanisms for data collection, and as a result much of the information from this period lacked scientific rigor and was vulnerable to multiple interpretations. Nevertheless, the monitoring data and assessment analyses



published by WHO became the basic reference during the Decade for most policy formulation and strategic planning at the global and regional levels.

In December 1989, WHO and UNICEF agreed to collaborate on global monitoring in order to improve the quality and availability of sector information for planning and management, especially at the country level. The resulting WHO/UNICEF Joint Monitoring Programme (JMP) marked a major reorientation in sector monitoring from a centralized WHO-managed approach intended to produce useful sector statistics to a more decentralized approach focused at the country level intended to develop national capacities to monitor and manage local water and sanitation services. A key element of the new JMP was a series of regional and country workshops to train national officials in the concepts of sector monitoring, data collection, analysis and reporting. WHO and UNICEF also cooperated to maintain the database of global and regional statistics. For this purpose, UNICEF was given primary responsibility for managing data collection operations in the field while WHO was given the lead role in overall data processing and analysis. The statistical results of the JMP are reflected in the global and regional assessments it produced for the years 1990, 1991, 1994 and 2000 (Refs. WHO/UNICEF/WSSCC: 1992, 1993, 1996, 2000).

The assessment reports of the JMP were significantly different from those of WHO in the years leading up to 1990. Whereas the WHO sector assessments resulted in essentially reference documents with large quantities of data and only a moderate degree of analytical discussion, the JMP assessments generally limited their scope of inquiry to coverage and a few other issues (operations, finance). The JMP reports for 1990, 1991 and 1994 provided only a minimum of data and instead concentrated on progress in getting the Joint Monitoring Programme adopted and implemented at the country level. (The 1991 JMP report, in fact, provided no consolidated regional coverage data.) As a result, the JMP reports in the first half of the 1990s had only limited application as reference documents for sector management and planning.

During the latter half of the 1990s, WHO and UNICEF efforts to promote country-level monitoring declined, and the JMP, which was intended to be a mechanism for developing national capabilities for monitoring and managing the water and sanitation sector, lost much of its initial momentum at both the global and country levels.

The approach of year 2000 and the start of a new millennium brought renewed interest within WHO and UNICEF for a more comprehensive sector assessment under the JMP. With financial support from DFID (UK) and technical assistance from the WELL programme of Loughborough University (UK), a new data collection effort was developed and supervised in the field by WHO and UNICEF country offices. The resulting assessment described the status of water and sanitation services at the global and regional levels, but only minimally at the country level. However, the assessment included a wide range of sector-related issues (quality of services, planning, institutional responsibilities, management approaches, costs and tariffs, investments, constraints and largest cities) having considerable potential for future management, planning and advocacy of water and sanitation services.

The sector assessment reports described above were all initiated and produced by the headquarters offices of, first, WHO and then, later, under the JMP by both WHO and UNICEF. Regional and country offices of the two organizations fully cooperated in the overall process, but only a few offices produced their own assessments. At the regional level, the WHO Regional Bureaus for the Americas (AMRO/PAHO) and for the Western Pacific (WPRO) have been the most active, both in participating in global assessments and the development of monitoring methodologies and in preparing their own regional assessments. The best example of a regional assessment is the "Mid-Decade Evaluation of Water Supply and Sanitation in Latin America and the Caribbean", which was produced by (AMRO/PAHO) in 1997 (Ref. PAHO/WHO: 1997).

2.3 Objectives of the Year 2000 Africa Regional Assessment

The Year 2000 Africa Regional Assessment is intended to complement the Year 2000 Global Assessment. In doing so, it has been designed not only to provide additional sector information on the WHO Africa



Region and its countries but also to be selective regarding the information presented.

The overall purpose of the regional assessment is to provide information on the water supply and sanitation sector in Africa that is useful for the improvement of services to people in this region. The primary audience for this report includes national officials at the political, policymaking, planning and management levels and representatives of United Nations organizations, intergovernmental bodies, development banks, donor agencies and non-governmental organizations (NGOs). In addition, the report is expected to be of interest to the media and to those in the general public concerned about the health, quality of life and welfare of the peoples of Africa.

The following are the specific objectives of the regional assessment report:

- 1) To present as complete a picture as possible of the status of water supply and sanitation in the WHO Africa Region in 1999.
- 2) To serve as a reference document for water supply and sanitation coverage statistics at both regional and country levels.
- 3) To provide other sector-related information to assist in planning, managing and financing the sector in order to eventually expand services to all peoples of the region.
- 4) To be a powerful source of advocacy on behalf of the water supply and sanitation needs of the region.



2.4 Methodology

As indicated above, the Year 2000 Africa Regional Assessment is intended to complement the Year 2000 Global Assessment. Although both assessments are drawn from the same overall data base, the report on the global assessment deals with global and regional issues, while this report on the regional assessment is concerned with regional and country issues. Another difference between the two assessments is that the global report uses the United Nations designation of regions and sub-regions and gives great emphasis to sub-regional comparisons in each region. (The United Nations Africa Region consists of 56 nations, including all countries on the continent of Africa plus several nearby island states, while the WHO Africa Region contains 46 nations and excludes the north African states of Egypt, Libya, Morocco, Sudan, Tunisia and Western Sahara as well as Somalia and Djibouti and the island states of Reunion and Saint Helena.) The regional report, on the other hand, is based on the WHO Africa Region; it highlights regional issues and country-level statistics, but gives little consideration to sub-regional comparisons. In this manner, the regional report is consistent with previous WHO sector assessments beginning in 1970. The specific regional basis and emphasis on country data makes this report especially useful for the country support operations of WHO. However, the information contained herein, being readily accessible and focused on the needs of the countries, is equally useful to all organizations concerned with Africa.

The design of the global assessment and the methodology of data collection and basic analysis was developed by the headquarters offices of WHO and UNICEF with assistance from regional offices, DFID (which provided funding support), WELL and various consultants. A number of key concepts were used in the design of the assessment, as follows:

- 1) **Sector questionnaire.** A standard questionnaire of 31 pages was developed as the basic instrument for the compilation of data at regional and country levels (Ref. WHO/UNICEF: 1999). The questionnaire requested country-level information on a variety of sector issues described on 13 separate forms, as follows:



- (1) Country-level contacts
- (2) Government, multilateral or bilateral agency contacts
- (3) Existing sources of population-based data
- (4) National census data
- (5) Inventory of national reports
- (6) Official service coverage
- (7) General planning
- (8) Institutional responsibilities
- (9) Costs and tariffs
- (10) Investments and external contributions
- (11) Major constraints to sector development
- (12) New approaches
- (13) Health aspects

Definitions of terms used in the questionnaire and explanatory notes for completing the forms were included in the questionnaire document.

2) *Definitions of water supply and sanitation coverage.* In all global assessments prior to 1999, information was collected on “adequate and safe water supply” and “appropriate sanitation”, but no universal criteria were used to control the use of these terms at country level. Both WHO and UNICEF considered that externally-imposed definitions were inappropriate to the highly variable conditions found between countries. Since perceptions of “adequate”, “safe” and “appropriate” varied from country to country, each country was allowed to define these terms and apply national definitions to their monitoring activities. This approach to letting countries define what constitutes access continued under the JMP through the 1994 global assessment. It is worth noting that the concept of “safe” water supply was stressed in all assessments prior to 1999. Furthermore, the 1994 JMP assessment reported that countries in general regarded excreta disposal facilities to be adequate if they broke the faecal-human transmission route. It is clear, therefore, that despite the absence of firm definitions in previous assessments, water supply and sanitation were always considered in health terms.

The Year 2000 Global Assessment applied standard definitions to water supply and sanitation for the first time. These definitions, however, were based primarily upon technology and access, or distance, to a facility. Water supply coverage included services by either household connections or access within one kilometer to a constructed public water point (standpipe, borehole with handpump, protected wells, protected springs, rainwater collection) where at least 20 litres of safe water per person per day were available. Sanitation coverage was defined as a household connected to a public sewer or the availability of a constructed on-site disposal system (septic tank, pour-flush, VIP or pit latrine).

3) *Sources of data.* Previous global assessments were based upon coverage data supplied by government agencies and service utilities, in other words, the *service providers*. Because of the different perspectives between service providers regarding coverage, the data provided by them were not always consistent or reliable. The Year 2000 assessment shifted its approach to emphasize the users of water and sanitation facilities, meaning the *service consumers*. Household surveys, being user-based, were considered to be free of many of the biases affecting organizational responses. Therefore, the assessment drew heavily from existing sources of population-based data on access to water supply and sanitation, including national census reports, Demographic Health Surveys (DHS) and the Multi-Indicator Cluster Surveys (MICS) used by UNICEF to develop National Plans of Action at the country level. The latter two surveys are relatively recent developments that have had strong international support and application in many developing countries.

4) *Data collection.* Questionnaires were sent to all WHO regional and country offices in the 46 countries of the WHO Africa Region. At the country level, the WHO focal point for water



supply and sanitation was responsible for the overall coordination of data collection. This involved overseeing the collection of existing studies, reports, data and other information relevant to the assessment, convening review meetings with representatives of government institutions, UNICEF and other organizations knowledgeable about the sector, and reaching consensus on service coverage statistics. The information reported on the questionnaire was the result of this process of data collection, review and agreement. The questionnaire responses were returned to the WHO Regional Office by all 46 countries and were used in the assessment of global, regional and country conditions. Most countries completed the questionnaire in full, but a small number submitted only minimal information.

- 5) *Data analysis.* The final analysis of the questionnaire data, as well as the information from household-based surveys, was carried out by WHO, UNICEF and WELL. Where necessary, questionnaire data was adjusted to account for household survey information. The resulting statistics reflected not only current coverage conditions but also produced best-fit curves for the historical progress of water and sanitation in each country.

2.5 Limitations of the Assessment

Undertaking global and regional sector assessments on the basis of data collected in the countries is an extremely difficult task because of the methodological and logistical problems involved. The Year 2000 assessment at both global and regional levels was designed to minimize problems of past assessments and to produce more accurate and reliable information. The resulting reports represent the best effort to date to make available information that is essential for the development of the water and sanitation sector. Nevertheless, the results of the assessment should not be used unquestioningly but should be considered in light of their limitations. The major limitations of the assessment are the following:

- *Questionnaire.* The questionnaire was very ambitious and requested information on a large number of sector issues. The explanations and definitions of terms were not always clear, causing some questions to be interpreted by respondents in different ways. In most cases the questions were answered properly, but in a few instances obviously incorrect or unrealistic responses were given, or no answer was provided. Some of these ambiguities could have been detected in advance if the questionnaire had been field-tested before being sent to the WHO regional and country offices. Because of the special attention given to coverage data, they are probably the least ambiguous items in the questionnaire. Nevertheless, coverage data from previous assessments should be viewed with caution, as described in chapter 2.4, and taken as indicators of sector trends rather than absolute reflections of sector conditions. More difficulties of questionnaire interpretation tended to occur on issues that are not normally measured, such as diarrhoeal diseases, basic service charges and operational aspects. Responses also may be questionable regarding sector investments, partly because of the difficulty of compiling such data and partly because governments sometimes are reluctant to divulge financial information. Questions that resulted in responses that were clearly contradictory were not included in the regional assessment. To minimize inconsistencies in sources of questionnaire data, standard United Nations sources were used to provide a number of country indicators, especially demographic and health statistics.
- *Data collection and analysis.* There was no formal methodology for the collection and compilation of sector data from government institutions or for the integration of household surveys with the questionnaire data. The instructions for the collection of data at country level did not indicate how data drawn from different sources should be compiled into country statistics other than by consensus between relevant organizations and agreement by government. Thus, it is possible that from one country to the next different methods were used to determine coverage and other sector characteristics. In addition, it appears that coverage figures derived from household surveys (*service consumers*) tend to be higher than those obtained in the traditional manner, i.e., from government institutions (*service providers*). This can be seen in a comparison of global and regional coverage data for 1990, 1994 and 1999. No explanation is currently available for this apparent bias.



Chapter 3: Regional Setting

3.1 Population and Surface Area

In the Year 2000, world population totaled 6 billion human beings for the first time, while the population of the 46 countries in the WHO Africa Region reached 631 million. (The population of the slightly larger UN Africa Region in 2000 was 784 million.) Over the past 20 years, the population of the WHO Africa Region has risen more than two-thirds from the 368 million recorded in 1980 and currently is growing at 2.46% annually (Ref. United Nations: 1999).

The African population is very young, with a median age of less than 18 years, while the rest of the world has a median age of 27 years. Africa is also very poor. The United Nations has designated 48 states as “least developed countries”, of which 29 are located within the WHO Africa Region.

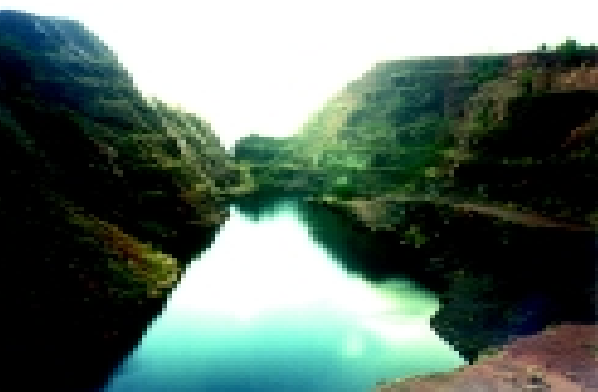
Africa is a region of immense diversity. Over the 29 million square kilometres of the WHO Africa Region are found mountain ranges, deserts, swamplands, tropical forests, temperate grasslands and scrub plains, as well as some of the most notable rivers and freshwater lakes in the world. This diversity of topography is matched by an equally diverse distribution of natural resources, climatic regimes and, of course, population.

Among the 46 countries of the region, physical areas range from the small island states of Seychelles, Sao Tome & Principe, Mauritius, Comores and Cape Verde, all of which are less than 4 thousand km² in area, to the large continental states of Algeria and the Democratic Republic of the Congo, both of which exceed 2.3 million km². Country populations show an equally wide range, varying between 78 thousand in the Seychelles to 112 million in Nigeria. Overall, the region currently has an average population density of 26 people per km², but this varies by a factor of several hundred between low density countries, such as Namibia (2 persons/km²), and high density countries, such as Mauritius (568 persons/km²). Physical areas and estimates of population for the countries of the region are shown in Table 3.1. It should be noted that 64%, or almost two-thirds, of the regional population is rural.

This diversity in size, population and natural resources between countries of the region has had great influence on the state of water supply and sanitation development in Africa.

3.2 Water Resources

It has been said that “water is life” and “sanitation is health”. There is no doubt that the relationships between water supply, sanitation and human health are intimately linked to the availability and condition of water resources in a country. First, all water supply services draw upon available water resources, and second, sanitation, whether it uses water as a cleansing or transporting medium, has the potential to create serious degradation of natural water resources. Thus, water supply and sanitation services must be seen as both users and protectors of the nation’s water resources.



More than any other single feature, water, especially its availability and quality, determines where and how people live in Africa. Overall, Africa averages 740 mm of rainfall, 587 mm of evaporation and 153 mm of river runoff annually (Ref. Gleick, P.H : 1993). However, the diversity of water resources in the region varies between some of the driest to some of the wettest areas on Earth. Rainfall (snowfall and other forms of precipitation are not a factor in Africa) is rare in the northern parts of the Sahalian countries and in the deserts of Ethiopia and Namibia. In the Saharan areas of Algeria, rainfall is as little as 50 mm/yr,



while over most of Mauritania it averages only 130 mm/yr. At the other extreme, rainfalls exceeding 4 metres per year have been recorded in parts of Liberia and Cameroon. Annual totals are further marked by wet and dry seasonal patterns and long-term variations over most of the region. Because of the wide diversity throughout the region, it is not possible to generalize either rainfall totals or seasonal patterns over Africa.



A basic indicator of the availability of water in a country is the amount of renewable water resources that occurs annually. This refers to the average quantity of fresh water resources renewably available over a year from rainfall within a country's borders. It does not include river inflows or outflows to other countries, but it is adjusted for evaporation. The Africa Region, for example, has total renewable water resources of nearly 4,000 km³/yr, or approximately 6,000 m³/yr per person. When this is calculated on a country basis, the disparity in available renewable water resources can be seen. The smallest annual volumes, generally only 1 to 2 km³/yr, occur in small island states (Cape Verde, Comores, Mauritius), and the largest volume (over 1,000 km³/yr), is found, as to be expected, in the Democratic Republic of the Congo (DRC). But country size is less important in determining renewable water resources than is the magnitude and seasonal patterns of rainfall. Congo, with only 7% the area of the DRC, has 80% the annual renewable water resources of its much larger neighbor. Country data on annual renewable water resources and other aspects of total water use are shown in Table 3.2.

Of greater importance than total water resources is the amount currently being withdrawn for use. Total water use is the sum of domestic, industrial and agricultural usage. The largest users of water are Madagascar, which employs nearly all the water in agriculture, and South Africa, which is the largest user of water for industrial purposes. Countries that use relatively small amounts of water on a per capita basis (Equatorial Guinea, Comores, Guinea Bissau) tend to allocate the largest share to the domestic sub-sector, which is dominated by water supply services. In general, the domestic sub-sector accounts for less than one-third of the total water withdrawals in each country, as shown in Table 3.2. Because growth in all sub-sectors requires additional water, it is expected that future development will be marked by greater competition for available water resources between domestic, industrial and agricultural uses.



3.3 Health

Among the many reasons for improving water supply and sanitation services, the protection of human health stands out as the primary rationale. Without safe and potable water to drink and to use in food preparation, people are vulnerable to a devastating array of health risks, from the waterborne diseases of cholera, typhoid and other diarrhoeal infections, to the water-related vector borne illnesses of guinea worm and schistosomiasis. Sanitation plays an even greater role in protecting health. Without a clean environment and without the sanitary disposal of human excreta, the risk of illness from intestinal worms (helminths) and insect vectors (mosquitoes transmitting dengue fever and flies transmitting trachoma) rises precipitously. Sanitation is so important that it is nearly impossible to maintain safe drinking water supplies in highly





polluted environments. For sanitation, the three most essential rules are to dispose of human excreta in a sanitary manner such that it does not come into contact with water supplies, food or small children.

Health conditions in Africa can be quickly assessed with several standard indicators, shown in Table 3.3. A more sensitive indicator of the health effects of water and sanitation is the mortality rate of infants and children. The two classic indicators here are the mortality rate of infants less than one year and the mortality rate of children under the age of five years. The infant mortality rate for the region is 93 per 1,000 live births, while the child mortality rate (which incorporates the infant rate) is 139 per 1,000 live births (Ref. United Nations: 1999). As before, the variation between countries is very large. Mauritius has the lowest infant and child mortality rates, 15 and 18, respectively, while Algeria is second with 44 and 51, respectively. Unfortunately, too many countries have infant mortality rates above 125 and child mortality rates above 200. Malawi reports rates of 138 and 170, and Sierra Leone suffers from rates of 170 infant deaths and 263 child deaths per 1,000 live births.

Box 1 Cholera

In Africa 155 children die every hour of everyday from sanitation, hygiene and water related diseases. The number of cholera cases reported from Africa is increasing every year. A total of 187,545 cholera cases and 8,051 deaths were officially reported in 1999 in the African Region.

Many other indicators can be used to illustrate the relationship between water, sanitation and health and the deadly linkage between poor water and sanitation services in Africa and high rates of infectious disease. Table 3.4 provides global statistics linking the major environmental sanitation-related diseases to water supply and sanitation conditions.



Chapter 4: Coverage

4.1 Coverage Definitions

Coverage is the heart of sector assessments of water and sanitation. It refers to the proportion of people served with adequate levels of water supply and sanitation services. The key indicators of coverage include data at global, regional and country levels that are disaggregated into urban and rural areas and further broken down into types of services provided.

In the Year 2000 assessment, access to water is defined in terms of technology, walking distance and availability of water. It includes both private connections (house and yard taps) as well as public water points (standpipes, handpumps, protected wells, protected springs, rainwater collection) within one kilometer with at least 20 litres per day of safe water available for each person dependent upon the water point.

Access to adequate sanitation is defined in terms of technologies that safely dispose of human excreta. It includes flush toilets connected to public sewers as well as a variety of on-site disposal systems (septic tanks, pour flush latrines, VIP latrines, simple pit latrines).

Systems must be functioning to provide adequate services. For water supplies, piped systems must operate at 50% of design capacity or more on a daily basis, while handpumps must operate at least 70% of the time and experience no breakdowns longer than two weeks. Sanitation facilities must be structurally sound and operating in a manner that encourages use. Definitions of coverage indicators are contained in Annex B.

Coverage statistics for the Year 2000 assessment are based on data collected in 1999 and population estimates for 2000. This regional report, and the parallel global report, therefore, are designed to provide sector assessments as of 31 December 1999.

4.2 Regional Coverage

In the WHO Africa Region, a total of 56% of the 631 million people of the region had access to adequate levels of water supply. This represents a significant improvement over 1990 data that show only 49% with access to water. Access to sanitation however did not show favorable results, only 55% of the population in 1999 had access to sanitation whereas, 56% had access to sanitation in 1990. As shown in Table 4.1, regional improvements occurred in urban water (from 81% to 83%), rural water (from 36% to 42%) and urban sanitation (from 79% to 81%). Only rural sanitation (41%) failed to show a change from 1990.

The unfavorable regional sanitation statistics is in harmony with the general impressions of most professionals working in the sector who believe that overall sanitation progress in the region has been disappointing because of funding cutbacks, programme reductions and civil disturbances affecting many countries. Regional improvements however have occurred in the water supply sector, perhaps one explanation for these improvements can be found in the innovative development approaches introduced during the International Drinking Water Supply and Sanitation Decade, 1981-1990. The cumulative effects of these approaches may have strongly influenced sector activities during the 1990s and thereby overcome many of the problems of the last decade. (The limitations of the data and the assessment methodology should also be kept in mind when comparing statistics from different periods in time. See chapter 2.5 for a discussion of these limitations.)

Further information on long-term trends in the region is given in chapter 4.6.



Table 4.1: Regional Coverage Status, 1990 and 1999

Service Area	1990 Coverage Status				1999 Coverage Status			
	Total Pop	Pop Served	Pop Unserved	% Pop Served	Total Pop	Pop Served	Pop Unserved	%Pop Served
Global	<i>(76% of regional population represented)</i>				<i>(89% of regional population represented)</i>			
Urban water	2292	2176	116	95	2845	2663	182	94
Rural water	2974	1964	1010	66	3210	2285	925	71
Total water	5266	4140	1126	79	6055	4948	1107	82
Urban sanitation	2292	1865	427	81	2845	2437	408	86
Rural sanitation	2974	1021	1953	35	3210	1207	2003	38
Total sanitation	5266	2886	2380	55	6055	3644	2411	60
Africa	<i>(68% of regional population represented)</i>				<i>(99% of regional population represented)</i>			
Urban water	143	116	27	81	224	186	38	83
Rural water	346	124	222	36	407	169	238	42
Total water	489	239	250	49	631	355	276	56
Urban sanitation	143	113	30	79	224	182	42	81
Rural sanitation	346	162	184	47	407	166	241	41
Total sanitation	489	276	213	56	631	347	284	55

Sources:

Global = WHO/UNICEF JMP data

Africa = WHO data

4.3 Country Coverage

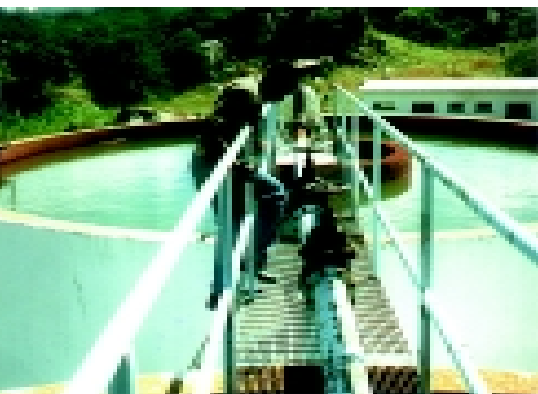


Of the 46 countries in the WHO Africa Region, 42 provided coverage data (only Liberia, Sao Tome & Principe, Seychelles and Swaziland submitted no coverage data, although they submitted information on other aspects of the assessment). The available country data, therefore, represents 99% of the population of the region.

Table 4.2 presents the coverage status for countries of the region in terms of percent served among both urban and rural populations. Country-specific figures for actual populations served, along with other sector details, can be found in the Country Profiles contained in chapter 8.

Several features of country statistics are worth noting:

- 1) First, urban water coverage usually exceeds rural water coverage (with the exception of Angola, Cape Verde, Guinea Bissau, Mauritania and Sierra Leone), and urban sanitation coverage usually exceeds rural sanitation coverage (with the exception of Ghana and Sierra Leone). This reflects the long-term bias in the sector for greater investments in urban services than in rural facilities. Second, total water coverage usually exceeds total sanitation coverage (with the exception of Angola, Cameroon, Chad, Comores, Equatorial Guinea, Guinea, Kenya, Lesotho, Malawi, Mali, Nigeria, Tanzania, Uganda and Zambia). This also reflects a long-standing bias towards water systems, which are



always public and community-based, as opposed to sanitation systems, which usually are private and household-based.

It is significant, however, that a total of fourteen countries (noted above) reported greater coverage in total sanitation than in total water. This was not the case in any of the previous assessments and may be the consequence of two major trends: (1) recent emphasis upon participatory actions associated with low cost, community-based systems, and (2) rapid urban population growth, especially in peri urban and slum areas. In the first trend, major efforts have been made over the last ten years to develop and apply innovative methods of involving communities in the improvement of their water and sanitation services. Participatory community-based methods usually result in low-cost solutions that the users strongly support and have an interest in maintaining. As these methods are particularly applicable to both small community systems and to individual household facilities, they tend to be used in rural areas where sanitation needs are the greatest. Moreover, most of the countries that reported greater sanitation coverage than water coverage have been the recipients in recent years of participatory community-based water and sanitation programmes. The result is that sanitation, for the first time and in limited areas, is beginning to receive more attention than water supply.

In the second trend, urban populations are soaring worldwide as people move from rural to urban areas in search of economic opportunities. In Africa, the annual growth rate of urban areas is at least twice that of rural areas. Most large African cities today have a reasonably modern centre and a few exclusive residential areas where water and sanitation services are high tech and high cost (piped water and sewerage or septic tanks), and a growing periphery of sprawling slums where water and sanitation services, if they exist at all, are minimal and normally inoperative (public standpipes, water vendors and pit latrines). In all but a few cities, the population growth of these urban agglomerations far outstrips the capacity of municipal administrations to provide adequate water and sanitation services. Rural areas, on the other hand, generally do not have such critical population pressures and more often are the beneficiaries of participatory community-based activities that favour sanitation.

- 2) A second feature of country statistics in Africa is the high rates of coverage found in the small island states. Comores and Mauritius reported almost full coverage for both water and sanitation. Cape Verde had nearly full coverage in rural water and urban sanitation, but much lower rates in urban water (64%) and rural sanitation (32%). With a few exceptions, the coverage rates tend to be considerably lower on the large island state of Madagascar and on the African continent.
- 3) A third feature of country data is that water and sanitation coverage can be broken down further into the type of service provided. For water supply, access can be through private connections or public water points. If the latter, they should be within one kilometer of the house and have a daily minimum of 20 litres of water available to all users. Similarly, access to sanitation can be through house sewer connections or by means of on-site disposal systems. Chapter 4.1 describes in greater detail the types of water and sanitation services considered in determining coverage.

Responses to questions on levels of services indicated some problems with understanding the questionnaire. For water supply technologies, 75% of the countries provided data, but two countries gave contradictory information that could not be used. For sanitation technologies, 80% of the countries reported, but there were contradictory responses from six of them. The regional statistics given here are based in most cases upon the median values of country data.

As would be expected, the overall data showed that urban dwellers had much higher rates of house connections, both water and sewer, than did rural inhabitants. House water connections generally served around 51% of the urban population and less than 3% of the rural population. At the same time public water points provided services to around 32% of urbanites and 40% of those in rural areas.



On the sanitation technologies, house connections, meaning public sewers, were reported to serve approximately 28% of the urban population but very few rural inhabitants. A total of 21 countries reported no service by public sewers in their rural areas, yet at the same time several countries claimed significant (and perhaps unbelievable) rural sewer connections: Algeria (11%), Mauritania (19%) and Zambia (53%)! On-site disposal systems were claimed to reach 53% of the urban population and about 35% of the rural population. (Country data on levels of services are found in Annex C.1 and C.2.)

Table 4.3 shows the general growth of urban house connections since 1970. Over the past thirty years, urban house connections have grown modestly from 33% in 1970 to the 51% reported in 1999. Urban sewer connections have done much better proportionally, rising from only 8% in 1970 to the 1999 level of 28%. Although data on house connections are not complete and are not considered to be very accurate, the available information does show that there has been a general rise over the years in the proportion of urban inhabitants in Africa whose houses are connected to piped water supplies and public sewers.

It should be noted that private house connections, whether water pipes or sewers, do not necessarily convey any special health benefits beyond those obtained from properly designed and maintained public water points and on-site disposal systems. House connections, on the other hand, do provide greater privacy, convenience and status, and for these reasons they are generally desirable. The public health objectives, however, can be equally achieved through the provision of the lower cost systems that are not brought directly into the house.

Table 4.3: Africa Region: House Connections to Water Supply and Sanitation (% Population Served)

Type of Service	1970	1980	1990	1999
Urban Water Supply				
House Connection	33	29	49 ³	51
Public Water Point ¹	33	37	20 ³	32
Total urban water	66	66	82	83
Urban Sanitation				
Sewer Connection	8	11	32	28
Other System ²	39	43	41	53
Total urban sanitation	47	54	72	81

Notes:

1970 – 1999 : Data from WHO assessments. Public water point¹ defined as a standpipe. Other sanitation system² not defined.

1999 : Data from WHO/UNICEF JMP assessment. Public water point¹ and other sanitation system² defined in Annex B.

Coverage data for 1990 for house connection³ and public water point³ do not add up to official total urban water.



4.4 Operational Aspects

During the Year 2000 assessment, information was collected on a number of operational indicators of water and sanitation systems. One of the more common water supply problems in many developing countries is intermittent services. When piped supplies are interrupted, water pressure drops to zero (and may even become negative), thus allowing contaminated groundwater to enter the pipes and eventually reach the consumer when pressure



returns. Contamination of the supply is avoided by maintaining pressure in the pipes at all times.

Information reported on the operational aspects of the sector should be viewed with some caution. The questionnaire was sometimes unclear; the requested data are usually very difficult to obtain; and only two-thirds of the countries responded to the questions on operations (see Part II of the report: Country Profiles). The following discussion attempts to be mindful of these limitations.

A majority of countries reported that their urban water systems seriously suffered from intermittent supplies, while a third claimed little or no problem maintaining continuous water services. Half of the countries reporting problems stated that more than 75% of their urban systems were subject to intermittent operations. Five countries (Angola, Ghana, Guinea Bissau, Mauritius, Namibia) said that all of their urban systems were subject to intermittent services.

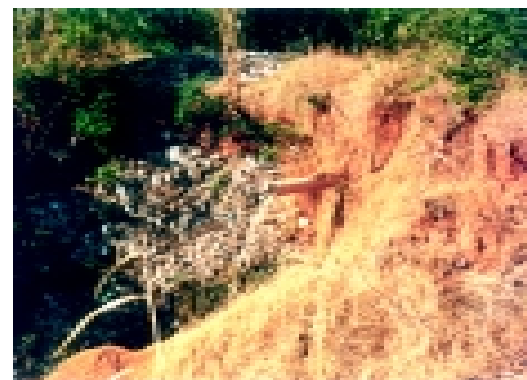
Related to intermittent services in urban areas is the number of hours in which water is available. Sixty percent of the countries claimed that water was available continuously (24 hrs/day), while the remainder remarked that urban water services varied between 2 and 22 hours per day. In general, there was reasonable consistency between reports of intermittent operations and water services that were not continuous.

Another measure of urban water supplies is the proportion of systems using disinfection. Most countries reported that all of their urban systems practice disinfection. (The type of disinfection was not queried.) Around 40% indicated that some systems did not use disinfection, while two countries (Equatorial Guinea and Guinea Bissau) claimed that none of their urban water systems used disinfection. Again, there was a consistent pattern of responses: countries that reported continuous services and 24-hour supply operations also tended to practice disinfection in their urban systems.

In rural areas, water services are usually provided by piped systems with public standpipes or by handpumps on either boreholes or dug wells. Nearly all reporting countries indicated that some of their rural water systems were not functioning (although four countries claimed that all of their systems were operating). More than a quarter of these claimed that over 50% of their rural water systems were out of order.

Lastly, urban sanitation can be assessed by the proportion of wastewater carried by public sewers that is subject to treatment. More than half of the countries stated that no treatment is provided for sewage from public sewers and less than a third claimed some treatment. The remainder (Benin, Lesotho Namibia, Seychelles), around one-seventh of the total, said that all of their sewage is treated.

As in other areas previously noted, data on the operational aspects of water and sanitation systems is not considered to be very reliable. (Country data on operational aspects are found in Annex C.3.) Many of the results reported here appear to be more positive about the status of water and sanitation services in Africa than is the general impression of experienced sector professionals. What is not in doubt, however, is the overall picture of the operational aspects of water and sanitation services in the region. Without citing specific statistics, one can say that water and sanitation systems in Africa are experiencing severe operational problems. The responses, however, are often contradictory. The majority of urban water systems operate intermittently, and in some countries all urban systems are subject to intermittent operations. On the other hand, a majority of countries claimed to provide urban water 24 hours per day, but a significant minority reported that daily water availability was severely restricted. Most countries claimed that all of their urban systems practice disinfection, but again a large minority



reported little or no disinfection of urban water taking place. Rural water services are, if anything, even more problematic. Nearly all countries reported some systems out of order, with a significant number claiming that more than half of all rural water systems were not functioning. And finally, wastewater from public sewers receives no treatment in most countries of the region.

4.5 Water Quality

Only limited information is available regarding water quality. Because of a lack of readily-available data and the difficulties of generalizing such data over an entire country, reliable assessment indicators of water quality have not been adopted into common use. There is a growing awareness, however, that drinking water quality should be a measurable aspect of coverage, but to date no clear criteria have been found to complement the existing indicators used to define access to water.

Countries were asked several questions about their national drinking-water quality standards. Nearly three-fourths of the countries of the Africa Region have established official standards, and the vast majority indicates that their national standards are comparable with the International Drinking-Water Quality Guidelines developed by WHO. Only three countries (Benin, Chad and Comoros) claim their standards are more strict than the WHO guidelines, while five countries (Equatorial Guinea, Lesotho, Malawi, Sao Tome & Principe and Zambia) say their standards are less strict. No information is available on national comparisons of particular water quality parameters.

Some qualitative information also is available on the effectiveness of drinking-water quality control at the country level. When asked whether water quality control was effective for urban systems, replies from 60% of the responding countries said the control was effective, with the remaining 40% claiming it was not. Rural water systems were seen to be much less effective, as only a third of the responding countries indicated satisfactory water quality control; the other two-thirds perceived the control to be not effective. (Country data on water quality control are found in Annex C.4.)

In general, drinking-water quality control in Africa is limited in application and sporadic in operation. The previous section indicated that all countries claim some degree of disinfection of urban water systems. Only a few, however, can claim that all urban systems are disinfected, and even fewer can claim continuous operation of disinfection processes. In rural areas, water quality control is even more limited than in urban areas. Furthermore, quality control processes in rural systems are more likely to be non-functional than basic water delivery processes. As indicated above, there is great need to identify clear and measurable indicators to gauge drinking-water quality as part of sector assessments. Having such indicators will not only provide a better picture of water quality and actual coverage conditions, but also will place increased emphasis upon the need for governments and their water agencies to consider water quality in the provision of both urban and rural services.

4.6 Population Projections

The planning of future sector policies, strategies and programmes requires not only an understanding of current conditions, but also of past trends and future needs. In water and sanitation planning, future demands based on population estimates are crucial elements in decision-making. The population of the WHO Africa Region is currently (Year 2000) 631 million, but in 2010 it will be 790 million and in 2030 it will total 1.17 billion, according to medium-fertility estimates of the United Nations (Ref. United Nations: 1999).

The challenge facing sector planners is to determine the need, timing and level of services for selected planning periods. Table 3.1 indicated current populations and annual growth rates for the countries of the region. The current rate of increase of population in the Africa Region is 2.46% annually, but some countries are growing at less than 1% per year (Guinea, Mauritius) while others are expanding at more than 7% annually (Liberia, Rwanda). The extraordinarily high growth rates currently experienced by Liberia and Rwanda are due more to massive population movements caused by civil wars than by



normal population increases, but there are numerous other countries with current population growth rates exceeding 3% per year (Angola, Eritrea, Gambia, Madagascar, Niger and Sierra Leone).

Table 4.4 presents population projections for the African countries for ten-year intervals between 1980 and 2030, based on medium fertility estimates¹. Although only one country currently has more than 100 million people (Nigeria, 112 million), by the year 2030 there will be three countries exceeding that total (Nigeria, 197 million; Ethiopia, 128 million; DRC, 117 million) and another six countries will have at least 40 million inhabitants. All of these people will need, and will expect as a matter of basic right, access to safe water supply and adequate sanitation.

4.7 Coverage Trends

Previous assessments provide an opportunity to review trends in coverage that may be occurring in the region. Table 4.5 shows total global and regional water and sanitation coverage for Africa for each of the years in which assessments were made, namely, 1970, 1975, 1980, 1983, 1985, 1988, 1990, 1994 and 1999. Despite occasional inconsistencies in data from year to year, the table does show a general trend of overall improvement in water and sanitation coverage over time.

Table 4.6 presents coverage information for the countries of Africa since 1980, with total water and sanitation coverage given for the years 1980, 1990 and 2000. For water supply, the regional coverage mean has risen from 32% in 1980 to 49% in 1990 to 56% in 2000. The comparable sanitation figures for these years are 28%, 56% and a slight decline in 2000 resulting to 55%. It is notable however that more than half the population of Africa has now access to safe water supply and adequate sanitation.

Another way of viewing recent trends in Table 4.6 is to observe that regional water supply coverage has risen 75% since 1980¹ and 14% since 1990, while regional sanitation has expanded nearly 96% since 1980 but declined approximately by 2% since 1990. Again, these figures should be taken with a degree of caution as only half the countries of the region reported their coverage figures in 1980 and 1990. Countries which have reported coverage data for the period covered are shown in Table 4.6.

A number of countries have made outstanding advances in meeting their water and sanitation needs over the 20-year period. Mali raised its water coverage from 6% to 65% and Guinea Bissau expanded water coverage from 10% to 49%. Country-level sanitation progress over the past 20 years has been even more remarkable than that achieved in water supply. Six countries (Cape Verde, Guinea, Guinea Bissau, Togo, Lesotho and Mali) expanded sanitation coverage more than three-fold since 1980. One country (Rwanda) however, reported sanitation coverage reductions since 1980. The case of Rwanda is very tragic, in 1980 Rwanda reported 51% sanitation coverage, but by 2000 it was only 8%. For Rwanda, the causes of its sanitation decline are obvious.

Further details on individual country coverage trends, including urban and rural breakdowns of data, are contained in Part II of this report.

4.8 Coverage Targets

Countries were asked to indicate their coverage targets for the year 2010. A total of 21 countries responded with water targets and 16 countries with sanitation targets. In a few cases, the question was not well understood as several countries reported targets that were lower than their 1999 coverage figures. For those that provided consistent future targets, the results are shown in Table 4.6 in terms of percent coverage for both water and sanitation. More detailed country information on urban and rural targets, where it exists, is shown in Part II of the report.

¹ These estimates take into account the demographic impact of HIV/AIDS in Africa. The overall impact is significantly reducing both life expectancies and the estimated future populations in the region. For example, the average life expectancy at birth in the nine African countries where HIV prevalence is currently 10% or more is projected to be 17 years less in the period 2015-2020 than if AIDS were not present. (Ref. UN:1999)



For water supply, country targets for the year 2010 range between no change and nearly doubling the year 2000 coverage rate. The average target increase for the region is approximately 20%, which corresponds to a regional water supply target for the year 2010 of 67%.

For sanitation, the range of country targets is much greater than for water. Country sanitation targets range from no change to an increase exceeding 150%. Rwanda goes even further and sets its 2010 sanitation target at 73% coverage, which is a nine-fold increase over current coverage. On average, however, country sanitation targets call for a 50% increase over the year 2000. This corresponds to a regional sanitation target for the year 2010 of 83%. Such a huge increase in coverage in a ten-year span is not likely to occur, given the immense problems Africa must overcome.

Setting a regional water target of 67% for the year 2010 is reasonable, given that the year 2000 coverage is at 56%. On the other hand, setting a regional sanitation target of 83% for 2010 may not be reasonable, given that current coverage is only 55%.

An alternative set of targets for the entire African continent was recently proposed at the Second World Water Forum (Ref. Second World Water Forum: 2000). For the year 2005, the Second World Water Forum called for the proportions of people without access to safe water supply or to adequate sanitation to be reduced by 25% in both water and sanitation. This corresponds to Africa targets of 67% for water and 66% for sanitation in 2005. For the year 2015, the Second World Water Forum called for a reduction of 75% in the current proportion of people in need of safe water and a reduction of 70% in those needing sanitation. These reductions correspond to overall Africa targets of 89% for water and 87% for sanitation. On the basis of these figures, therefore, the Africa targets for 2010, which were not specifically cited by the Second World Water Forum, can be estimated to be between 75% and 80% coverage in water and sanitation. Such high coverage targets may be possible in a world of political stability, economic growth and major sector investments, but they are not likely to be achieved given the historical trends and current prospects for Africa.

4.9 Water and Sanitation in the Largest African Cities

As a means of obtaining better insight into some of the most urgent sector issues, the Year 2000 assessment for the first time looked into the water and sanitation conditions in the largest city in each country. Urbanization in Africa currently exceeds 5 percent per year, the most rapid of all the regions of the world, and the largest cities tend to exhibit the most serious problems resulting from this growth rate. Among other problems, water and sanitation services can be hard pressed to meet the needs of expanding populations.

A total of 43 countries provided information on their largest city for the assessment, as shown in Table 4.7. The populations ranged from tiny Greater Victoria in the Seychelles (12,000) to giant Kinshasa in the Democratic Republic of the Congo (5,824,000). There is no common size among Africa's major cities; 17 urban areas exceed one million in population, with three cities greater than 3 million (Kinshasa, Luanda, Dar es Salaam). (Nigeria did not report on its largest city). At the other end of the scale, four cities are smaller than 50,000 (Greater Victoria, Moroni, Banjul, Sao Tome).

Water and sanitation coverage varies widely between cities. Ten cities, almost a third of those reporting, claimed 100% water supply coverage, and another third indicated that coverage was greater than 75% of their populations. Five cities (Bangui, Bissau, Maseru, Conakry, Luanda), however, reported water coverage under 50%. The regional average for water was 76%.

Sanitation coverage, if anything was slightly better than water coverage. Six cities, a quarter of those reporting, claimed 100% coverage, with nearly all of the remaining cities reporting 80% coverage or higher. No city reported sanitation coverage less than 50%. The regional average for sanitation was 81%.



Information on water and sewer house connections, although incomplete, indicates that the largest cities lag behind both regional and national averages for house connections in urban areas. Overall, perhaps 32% of the population in the largest cities is served with house water connections and around 17% are connected to public sewers. This compares unfavourably with regional averages for total urban population of approximately 51% household water connections and 28% household sewer connections. The lag in providing the highest levels of service is undoubtedly influenced by the high population growth rates almost all of the largest cities are experiencing.

Relatively complete information was provided on the production of water in the largest cities. The lowest rates of production were 30 litres per person per day (Luanda, Abidjan, Asmara) and the highest reported rate was 345 litres per person per day (Sao Tome). Four other cities had production rates above 200 litres per person per day (Gabarone, Lusaka, Windhoek, Port Louis) and two other cities had rates of 40 litres per person per day (Ouagadougou, Addis Ababa). There did not appear to be any particular pattern or cause for high versus low rates of water production. The regional average was approximately 98 litres per person per day.

Unaccounted-for-water losses is one of the standard measures of the operational efficiency of a water supply system. Africa, unhappily, has some extremely high loss rates for the water produced in its largest cities. The greatest reported losses, in terms of the proportion of the total water supplied to the distribution system, are 60% (Luanda, Dar es Salaam), and nearly half of all reporting countries indicate loss rates around 40% or higher. The questionnaire may have been a bit ambiguous on this issue as two countries reported zero losses and a third only 5% unaccounted-for-water. These figures are not realistic for Africa or, indeed, for any major urban system.

Additional information on individual cities is contained in Part II of the report.



Table 4.5: Global and Regional Coverage Trends, 1970 - 1999

Service Area	Population Served (%)								
	1970	1975	1980	1983	1985	1988	1990	1994	1999
Global									
Urban water	65	74	73	74	75	83	95	82	94
Rural water	13	20	32	39	42	57	66	70	71
Total water	-	-	46	-	54	65	79	75	82
Urban sanitation	54	50	49	52	59	67	81	63	86
Rural sanitation	9	11	13	14	16	19	35	18	38
Total sanitation	-	-	39	-	31	37	55	34	60
Africa									
Urban water	66	68	66	61	78	83	81	-	83
Rural water	13	21	22	26	25	31	36	-	42
Total water	-	-	32	-	40	46	49	-	56
Urban sanitation	47	75	54	68	73	54	79	-	81
Rural sanitation	23	28	20	25	25	21	47	-	41
Total sanitation	-	-	28	-	38	30	56	-	55

Notes:

- (1) Global coverage: data for 1970-1988 taken from WHO assessments; data from 1990-1999 taken from WHO/UNICEF JMP assessments.
- (2) Regional coverage: refers to WHO Region for Africa. All data for 1970-1999 taken from WHO assessments.
- (3) (-) = no calculation made



Chapter 5: Costs and Investments

Increasingly, water supply and sanitation services are being viewed in economic terms and decisions on the provision of services are being made on the basis of costs and revenues. This concept was strongly articulated by the Dublin Principles, which were developed at the International Conference on Water, held in Dublin (Ireland) in January 1992:

Water has an economic value in all its competing uses and should be recognized as an economic good. Within this principle, it is vital to recognize first the basic right of all human beings to have access to clean water and sanitation at an affordable price.

Sector assessments, therefore, must take account of resources used in the planning, construction and operation of water and sanitation facilities. The key indicators include the unit costs of constructing facilities and producing water, the rates or tariffs charged for water and sanitation services and the levels of investment in the sector. For comparison purposes, all costs in this assessment are converted into US dollar equivalents. The data reported here are indicative of broad averages and general trends, but because of a lack of response on some questions, the difficulty of determining representative values for varying rate scales and the common problems of estimating investment totals, the results should be used with caution.

5.1 Water Production Costs

The cost of producing water varies between countries according to the availability of water, the design of facilities and the efficiency of operation. The questionnaire asked about the average cost of water production/distribution but did not state whether these costs referred to both urban and rural systems or to urban systems alone and to what extent the production costs included all capital investments or only average recurrent expenses. Most responses appear to be based upon urban systems and recurrent costs. Information from the countries indicated that unit production costs ranged between lows of less than US\$ 0.10 per cubic metre (Algeria, Angola, Cote d'Ivoire, Tanzania, Uganda, Zambia) to highs exceeding US\$ 1.00 per cubic metre (Botswana, Seychelles, Sierra Leone, Rwanda, Ghana). Based on reports from 80% of the countries, the median cost of producing water was approximately US\$ 0.30 per cubic metre.

Water production costs reported by countries, as well as data on tariffs and monthly charges, are shown in Table 5.1.

5.2 Water and Sewerage Tariffs

Tariffs are the unit prices charged to customers for water and sewer services. The questionnaire asked for the average water tariff, including domestic, commercial and industrial use, as well as the average sewerage tariff. It did not indicate whether the average should refer to initial, minimum-use rates or some other tariff level. Given that most water and sewer tariff schedules vary (either increase or decrease) with increasing use of water or discharge of wastewater, the "average" tariff can be interpreted, and calculated, in different ways.

Responses from 80% of the countries of the region revealed that the highest water tariffs were above US\$ 0.80 per cubic metre (Nigeria, Rwanda, Botswana) and the lowest were below US\$ 0.10 per cubic metre (Angola, Ethiopia, Sao Tome & Principe). The median water tariff for the region was approximately US\$ 0.33 per cubic metre.

Sewerage tariffs were difficult to determine as less than half of the countries provided information. The questionnaire may have been somewhat ambiguous on the issue of tariffs as it did not inquire about combined water and sewer tariffs. On the basis of reported data, tariffs for sewerage have a range similar to that of piped water and a median value around US\$ 0.30 per cubic metre.



Water and sewer tariffs for countries of the region are shown in Table 5.1.

5.3 User Charges

Average monthly charges for water can be based either on periodic billings for house connections or from payments to vendors at public standpipes. The questionnaire requested the basic monthly price paid by each per person for both water and sanitation services. It appears that some countries, which reported inordinately high average charges, may have interpreted the question to mean the price paid per household. For house water connections, the reported charges ranged from lows of less than US\$ 0.50 per person per month (Sierra Leone, Ethiopia, Sao Tome & Principe) to highs above US\$10 per person per month (Algeria, Uganda, Burkina Faso, Zambia) with a median value around US\$ 5.00 per person per month. For public standpipes, monthly charges were between US\$ 0.25 per person per month (DRC, Guinea, Lesotho, Malawi, Niger, Sierra Leone) and US\$ 5.00 or more per person per month (Tanzania, Cote d'Ivoire, Gabon, Burkina Faso, Mauritania). The median charge for standpipe water was approximately US\$ 1.05 per person per month.

Charges for sanitation were more difficult to determine as only a third of the countries responded to this issue. Connections to public sewers had reported charges ranging from lows of under US\$ 0.50 per person per month (Sierra Leone, Benin, Mauritania, Kenya) to highs over US\$ 10.00 per person per month (Lesotho, Uganda) with a median charge of US\$ 1.50 per person per month. For on-site disposal systems, the limited data gave lows of US\$ 0.25 or less per person per month (Sierra Leone, Benin, DRC, Malawi) and highs exceeding US\$ 3.00 per person per month (Lesotho, Senegal). The median on-site sanitation charge was around US\$ 0.60.

User charges for both water and sanitation systems are given in Table 5.1.

5.4 Construction Costs

Construction costs are the capital investments to build water and sanitation facilities. Table 5.2 presents the average construction costs per person served for the main types of water and sanitation technologies. Cost information on water technologies was received from one-half to two-thirds of the countries, but on sanitation technologies less than half of the countries replied. There appeared to be considerable difficulty in interpreting some of the questions. For example, the questionnaire asked for the per capita costs of systems with house connections, e.g. water production and distribution systems as well as public sewers, but it did not indicate whether it sought only the marginal cost of a house connection or some cost based upon the capital value of the entire system. The wide range of responses suggests that the reported figures were not determined in a standard manner. The reported per capita costs often varied by a factor of several hundred between countries. This problem appears to affect both water and sanitation technologies, especially the latter.

For water supply systems, the reported cost of installing house connections ranged from less than US\$ 30 per person (DRC, Senegal, Seychelles) to above US\$ 300 per person (Sao Tome & Principe, Ghana, Central African Republic, Angola). The median cost of house connections was around US\$ 65 per person, but the range of responses was so wide that this value is seriously suspected.

Public standpipes had costs ranging from lows under US\$ 5 per person (8 countries) to highs over US\$ 100 per person (Ghana, Rwanda, Angola), with a median of around US\$ 30 per person. The costs of boreholes with handpumps ranged from under US\$10 per person to over US\$ 60 per person, with a median of US\$ 21 per person. And lastly, the costs of protected wells varied widely between just a few US dollars per person to more than several hundred. The median cost of protected wells was around US\$ 40 per person.

The costs of constructing sanitation systems were equally dispersed over a wide range. Connections to sewer systems were less than US\$ 20 per person (Uganda, Central African Republic, Zambia) to more than US\$ 400 per person (Ghana, Mauritius, Botswana) with a median of US\$ 125 per person.



Table 5.3: Africa Region: Cost Averages, 1999

Cost Factor	General Range of Values	Median
Costs/rates (US\$/m³)		
Water production/distribution	0.10 – 1.00	0.30
Water tariff	0.10 – 0.80	0.33
Sewage tariff	0.10 – 0.80	0.30
Monthly water charge (US\$/cap)		
House connection	0.50 – 10.00	5.00
Public standpipe	0.25 – 5.00	1.05
Monthly sanitation charge (US\$/cap)		
Sewer connection	0.50 – 10.00	1.50
On-site system	0.25 – 3.00	0.60
Construction costs: water (US\$/cap)		
Household water connection	30 – 300	65
Public standpipe	5 – 100	30
Borehole with handpump	10 – 60	21
Protected well	3 – 200	40
Construction costs: sanitation (US\$/cap)		
Household sewer connection	20 – 400	125
Septic tank	25 – 800	124
VIP latrine	25 – 300	35
Simple pit latrine	5 – 100	25

Source: JMP (1999)

On-site sanitation costs for the region also varied greatly between countries. Septic tanks were reported to cost from less than US\$ 25 per person (Zambia, Uganda, Malawi) to more than US\$ 800 per person (Senegal, Mauritius) with a median value of US\$ 124 per person. VIP latrines ranged from under US\$ 25 per person to more than several hundred with a median of US\$ 35 per person. And finally simple pit latrines varied in cost from under US\$ 5 per person to over US\$ 100 per person with a median cost of about US\$ 25 per person.

Because of the great variations in reported costs between countries, and sometimes within countries, the regional median values, shown in Table 5.3, are not very reliable and should be used with caution. Individual country values may assist in suggesting country-level costs, but they should be confirmed against local conditions. WHO would appreciate comments from the users of this document regarding the validity of the cost information contained herein.

Additional information on the costs of various water and sanitation technologies is given in the country profiles in Part II of this report.

5.5 Sector Investments

Just as coverage is the standard output measure for the water and sanitation sector, investments are the standard input measure. Investments may include funds, materials, equipment and labour. They



are normally assessed in equivalent monetary terms for ease of calculation and comparison with other economic activities. In the water and sanitation sector, total investments include all expenditures of the country as well as those of external agencies for the construction and operation of facilities. National investments consist of funds, labour and materials, while external investments include grants, materials and other forms of aid from international, multilateral and bilateral sources.

For the purposes of the Year 2000 assessment, information was requested of each country on the average annual investments in water and sanitation from both national and external sources. All reported investments were recorded in equivalent US dollars. Overall, more than two-thirds of the countries responded to inquiries on sector investments. Of the responding countries, all but one (Zimbabwe) reported that they received external investments to complement national investments.

Accurate information on sector investments, whether internal funds or external funds, is often difficult to obtain, and this assessment was no exception. Records are not always accessible that classify total national investments into four different sub-sectors (urban water, rural water, urban sanitation, rural sanitation) involving multiple government institutions. In addition, governments sometimes are reluctant to provide details of the sources and amounts of external funding. And lastly, some country respondents may have misinterpreted the questionnaire when it requested that annual investments be expressed in equivalent thousand US dollars and, instead, reported million US dollars.

The total of all external investments into the water and sanitation sector far exceeded national investments by a ratio of three to one. For the countries that provided data, external investments totaled US\$ 2,405 million annually, while national investments amounted to only US\$ 825 million per year. This dependency upon external support continues a pattern that has existed in most African countries for nearly 40 years.

As would be expected from a consideration of country sizes, populations and states of development, sector investments varied greatly between countries. National investments into overall water and sanitation ranged from less than US\$ 1 million per year in ten countries to the US\$ 264 million per year provided by giant Nigeria. Even some relatively small countries reported significant annual national investment totals: Zimbabwe (US\$ 81 million); Comores (US\$ 68 million); Namibia (US\$ 58 million).

On a region-wide basis, more national investments are made annually into urban water than rural water (US\$625 million to US\$ 159 million), and more into urban sanitation than rural sanitation (US\$ 127 million to US\$ 47 million). The dominance of the urban sub-sector over the rural sub-sector in national water and sanitation investments is clearly shown by these figures.

External investments into the region are influenced by country size, need and strategic importance of the recipient country to donor institutions. The pattern of urban dominance in national investments is found also in external investments. Urban water received an average of US\$ 1,216 million per year compared to US\$ 335 million annually for rural water. Moreover, urban sanitation was provided with US\$ 303 million per year, while rural sanitation received only US\$ 83 million annually.

The investment data reported by the countries is shown in Table 5.4. As in the case of other sector data that appear to contain numerous inconsistencies, specific figures and totals in Table 5.4 should be used with considerable caution. The information is most useful in illustrating major sector imbalances in the allocation of investments. Several key points arise from these data: (1) there is need for greater national investment into the overall sector to more closely match external investments and (2) both national and external investments should give greater priority to the rural water and sanitation sub-sectors.



Chapter 6: Policy, Planning and Institutional Responsibilities

6.1 Water Supply and Sanitation Policies

National policies in the water and sanitation sector are shaped by two influential forces: national needs for water and sanitation services and pressures exerted by international development agencies and lending institutions. In countries where sector needs are well known, clearly defined and the information is readily available, there usually exists a government responsive to these needs. One of the signs of this responsiveness is the presence of national policies for water and sanitation that spell out national concerns, sector priorities and overall goals. Having formal policies assists governments in formulating long-term plans, mobilizing resources and approaching international development agencies and donors. The international organizations, in turn, often encourage countries to establish sector policies as a precondition for financial and technical assistance.

Although all countries of the region have some type of guiding policies for water and sanitation development, not all have legal enactments or formal written statements for the sector. In fact, countries with formal water and sanitation policies are in a minority. The majority of countries in the Africa Region draw their water and sanitation policy guidance from general development policies, national development plans or, in some cases, water acts. Depending how a country organizes its water sector, formal written policies may not be needed, as long as the country is clear about what it wants to do about water and sanitation services. Several examples can be shown to illustrate sector development with formal policies

Box 2: Water and Sanitation Development in the Presence of Formal Sector Policies (Central African Republic).

The Government of the Central African Republic has a National Policy and Strategy for Water Supply and Sanitation, which was adopted in 1993 and updated in 1995. The water sector has high priority among political leaders in the country. The policy calls for the provision of water supply to 60% of the people in urban areas and 50% of those in rural areas by the year 2000, and to make sanitation services available to 55% of the population by the year 2000. An Action Plan has been prepared for water and sanitation development up to the year 2005. Coordination of government agencies, international organizations and NGOs is facilitated by a National Action Committee, which has a permanent secretariat.

Box 3: Water and Sanitation Development in the Absence of Formal Sector Policies (Zimbabwe).

The Government of Zimbabwe does not have a published water supply and sanitation policy but, instead, relies on guiding principles formulated by water sector agencies and contained in a Water Master Plan for overall sectoral development. Despite the absence of formal policies, water and sanitation enjoy a very high political profile. There is a general government policy to provide potable water within a reasonable walking distance in rural areas and to provide piped water within the household in urban areas. The general sanitation policy is to ensure that every household has access to safe sanitation facilities. There are a series of sectoral action committees at the national, provincial and district levels that work with government agencies to facilitate water and sanitation development.

Box 4: Water and Sanitation Development on the Basis of a Water Code (Guinea Bissau).

The Government of Guinea Bissau has developed a water code for the provision of water supply and sanitation. This code was formulated within the framework of the development programme of the country, which is intended to attract financial resources, assist in sector coordination and support capacity building. The government policy is to provide potable water to urban areas on a cost recovery basis and to rural areas using community participation and demand responsive approaches. For sanitation, rainwater drainage and individual sanitation systems are promoted in urban, suburban and peri-urban areas, while latrines are promoted through social communication in rural areas.



(Box 1), without formal policies (Box 2) and with a water code (Box 3).

Another aspect which contributes to de facto policy formulation for water and sanitation is the establishment of policies, standards and programmes in areas that are associated with the sector. National water quality standards are one example (see Annex C.4). The establishment and enforcement of such standards provides limits, or boundaries, to unwritten policies dealing with coverage and access to water and sanitation. In the Africa Region, most countries (nearly three-fourths) have established national standards for drinking water quality. Unfortunately, the enforcement of these standards is generally very weak, and therefore water quality is not as strong an influence on water policies as would be expected.

Another example is the existence of national policies for community management of rural water and sanitation facilities. Nearly 80% of the countries reported that they had such a policy, and a quarter of them claimed that close to 100% of their rural villages were managing their water and sanitation systems. Another quarter of the countries reported that approximately half of their villages were managing facilities. (Country data on national policies for community management are found in Annex C.5.)

The existence of health policies and programmes can also shape water and sanitation policies. Hygiene education is the basis for changing sanitation-related behaviours and encouraging people to adopt more sanitary forms of excreta disposal. In the course of the regional sector assessment, almost all countries (except for Burundi, Equatorial Guinea, Mauritius) reported that they had a national policy for incorporating health and hygiene education in the primary school curricula. When asked what percentage of schools had incorporated health education into their curriculum, 80% of the countries claimed that it had been accomplished in all schools.

6.2 Sector Planning

National planning for water and sanitation has been a standard feature of the sector since the International Drinking Water and Sanitation Decade, 1981-1990. During that period, Decade plans were prepared for nearly all countries of the region, setting out national needs, priorities, goals and targets (usually for 1990, but occasionally for the year 2000). Since the conclusion of the Decade in 1990, the emphasis has shifted from one of developing overall country plans for water and sanitation to more specific sub-sector or programme plans that can be used as the basis for operational activities.

There remains, however, strong support for the traditional national plan pioneered during the Decade. A total of 16 countries reported that they had prepared national plans for water supply and/or sanitation during the 1990s. Another 11 countries said they were in the process of preparing plans, which in most cases were scheduled for completion by 2002. (Country data on national development plans are found in Annex C.6.)

6.3 Institutional Responsibilities

It is a well established fact that the water and sanitation sector in most countries is extremely fragmented among many government ministries, research institutes, levels of government and parastatal institutions. It is not uncommon to find a dozen or more government bodies involved in the planning, implementation, operation or regulation of either water or sanitation or both. Divisions occur in the sector between water and sanitation, between urban and rural and between financially-viable and subsidized systems.

When asked to identify the agencies responsible for water and sanitation at the national level, the countries responded with numerous governmental organizations. The most common institutions with lead responsibilities in urban water supply are ministries of water or of energy or of the environment. For urban sanitation, ministries remain important but municipalities and local authorities are common. In a large number of countries specialized organizations, such as water and sewerage authorities, water boards and public corporations, are responsible for urban water and sanitation services. In rural areas,



ministries are dominant, particularly ministries of water and of health, but specialized agencies, local authorities and even NGOs play a major role. Anglophone countries generally rely on the main ministries to be responsible for water and sanitation, while in Francophone countries there is a greater tendency to set up specialized governmental or parastatal institutions to carry out these duties.

As an example of the different approaches of countries, one can compare Kenya and the Democratic Republic of the Congo (DRC). In Kenya, urban water is in charge of the Ministry of Water Resources and the local authorities; rural water is handled by the Ministry of Water Resources and the private sector; urban sanitation by the private sector and the Ministry of Local Authorities; and rural sanitation by the Ministry of Health. In the DRC, REGIDESO (the parastatal water agency) and SNHR (the government water office) are responsible for both urban and rural water supply; OVD (the government office for urban public works) oversees urban sanitation; and the Ministry of Public Health is in charge of rural sanitation. In both countries, there are other organizations involved in the sector, including many NGOs, but the leading roles are taken by the above institutions. (Country data on leading sector institutions are found in Annex C.7.)

Box 5 Institutional Arrangement for Waste Management in Botswana

The latest and most significant government directed development in the Water Supply and Sanitation sector in Botswana had been the establishment of a Sanitation and Waste Management Department within the Ministry of Local Government, Land and Mining and to revive the inter-ministerial water and sanitation committee. Some of the objectives of the new department are:

- To promote and coordinate the development of manpower and institutional capacity within local government system in order to effectively design, implement and maintain sanitation programme.
- Accelerate sewerage and on-site infrastructure developments to provide adequate reception for wastes generated from the mushrooming national housing stock from the industries and from the commercial enterprise, and
- To promote and conserve the environment and water resources by developing solid waste management activities in both rural and urban areas.

There is a growing movement towards innovative forms of ownership, management and operation of water and sanitation facilities. NGOs have been very active in many countries of the region for many years. Their role, however, is usually limited to the capital development of systems; they do not normally own, manage or operate systems after construction is completed.

Private sector participation is beginning to take hold in the region. Around 40% of the countries reported that some form of private sector involvement is allowed in the water and sanitation sector. The main activity is in the area of concessions, which includes agreements to build, operate and transfer ownership. Four countries (Cameroon, Cote d'Ivoire, Gabon, Ghana) reported that 100% of their urban water systems were involved in concessions of some kind. In addition, one country (Central African Republic) indicated that all of its urban water systems were under private sector management contracts, while another (Mali) reported that 70% of its urban water systems were under management contracts and 30% under concessions. The high degree of private sector participation in Francophone countries of the region is a reflection of the active international business strategies French water companies have followed in recent years.

Although a small amount of private sector involvement is occurring in rural areas, the main thrust of innovative institutional development has been focused on community management of water and sanitation systems. As pointed out in chapter 6.1, 80% of the countries of the region have a national policy on community management of rural water and sanitation facilities. In half of these countries, the majority of villages manage their own systems. In a quarter of the countries, all rural systems are managed by their communities.

Annex C.5 contains country data on both private sector participation and rural community management.



Chapter 7: Future Sector Development

7.1 A Perspective from the Year 2000

The year 2000 assessment marks the end of a remarkable era for Africa. Whatever period one takes – the last millennium, the last century or the last forty years during which most countries of the region gained their independence – major forces have shaped the lives of the peoples of Africa. Changes in their health and welfare have been some of the more far-reaching consequences of the political, economic and developmental forces affecting Africa, and indeed the entire world. Now at the start of a new millennium, the countries of Africa face unprecedented challenges to feed, clothe and house their rapidly growing populations – and to ensure safe and adequate supplies of water and sanitary means of excreta disposal.

This assessment can assist in meeting these challenges by providing an understanding of past trends, current conditions and future needs in the water and sanitation sector. It can provide some guidance for setting priorities and allocating resources. And, very importantly, it can help Africa to tell the rest of the world how it can participate in the crucial and urgent task of meeting the water and sanitation needs of hundreds of millions of people.

Water and sanitation sector assessments are relatively new in the developing world. Experience at gauging the status and needs of entire regions is only 30 years old. At the same time, modern concepts of water and sanitation themselves are very young – less than a century old in most areas of the world and in no country more than 150 years. It should be remembered that piped water supplies were not introduced into the industrialized countries until the second half of the nineteenth century, and waterborne sewage systems were not widely adopted until the end of the century. It was the combined pressures of a growing knowledge of public health, increased public demand for convenient and esthetically-pleasing systems and the development of new materials and technologies that allowed the rapid expansion of urban water and sanitation systems in the industrialized nations. Even then, most of these countries were unable to provide modern services to their rural populations until the mid-twentieth century. The provision of nearly full water and sanitation coverage in the industrialized world, therefore, is relatively recent and for the most part has occurred during the last century.

The challenge before Africa now is to find ways to provide services to all of its people. Africa must bring forth the political will and mobilize its own human and material resources to meet the needs identified so clearly by this assessment. Although the main burden of this task will fall on the people of Africa, the region is not alone. History shows that other countries and other institutions will respond with financial, material and human assistance if the needs can be well defined and if Africa itself demonstrates determination to solve its problems. This assessment can be a valuable tool in framing the case for greater international cooperation on Africa's water and sanitation needs.

In taking on this challenge of providing water and sanitation services to all its people, Africa should not let itself be seduced by models and methods that have been successful elsewhere. Experience also shows that unthinking conformity to concepts, technologies or processes developed and refined under vastly different economic and socio-cultural conditions usually results in eventual failure. Africa, and the countries within her, must find its own way to develop its water and sanitation sector. This way is best described in the four complementary approaches of AFRICA 2000, as stated by the Brazzaville Declaration²:

- Priorities to be based on the expressed desires of the people;
- Development to be based on local skills and resources aimed at producing appropriate solutions;

² WHO (1996). **The Brazzaville Declaration**. First Regional AFRICA 2000 Consultation, held in Brazzaville (Congo), 24-26 June 1996.



- Partnerships to be formed among communities, local governments, NGOs, the private sector and development agencies; and
- External support to be based on national plans and programmes, and not on donor-driven priorities.

How Africa chooses to act is the key determinant in the future progress of the water and sanitation sector. The regional assessment provides some additional insights into the current constraints as well as the future opportunities.

7.2 Major Constraints

Each country faces a unique set of problems in the water and sanitation sector. There are, of course, many common problems that exist across the region, but the particular mix of constraints will be different and unique to each country. Identifying these constraints provides a picture of the problems faced by both individual countries and the region as a whole. By comparing the pattern of constraints as it changes over time, it is possible to gauge the changing needs of the region.

WHO has assessed these constraints since the first Decade sector assessment in 1980. Over the years the list of constraints has remained constant but the perceived severity of individual constraints in holding back sector progress has changed. The list includes constraints in operations, management, funding, policy development, institutional support and others. Table 7.1 contains the results of the Year 2000 assessment. A total of 18 constraints are ranked in the order that the countries of the region considered them very severe, severe or moderate. A ranking index, in which very severe equals 3 points, severe equals 2 points and moderate is given one point, is used to determine the overall importance of the constraints to the region.

As shown in Table 7.1, *funding limitations* are the most critical constraint in Africa. A total of 31 countries indicated it to be “very severe”, giving it a ranking index of 116. The next most important constraint was *inadequate operation and maintenance*, followed by *logistics* and then *inadequate cost-recovery framework*. It is worth noting that all four of these constraints are resource-based problems, as opposed to constraints arising from institutional limitations or management shortcomings. This tends to support complaints from the countries that available resources are inadequate for current needs and the levels of external support for water and sanitation development in the region have diminished since the end of the Water Decade in 1990.

Previous regional assessments resulted in very similar conclusions. Since the first Africa Region assessment was made in 1980, *funding limitations* have always been the most serious problem perceived by the countries. Table 7.2 shows the results of the previous assessments in 1980, 1983, 1985, 1988 and 1990 with the relative rankings for each year. An overall ranking for each constraint can be calculated by taking the sum of the rankings for each assessment year. The rankings for 1999 mirror closely the average rankings for the earlier assessments. After *funding limitations*, the next most serious constraint over the years is *logistics*, followed by *inadequate operation and maintenance*. The fourth-ranked constraint is *inadequate or outmoded legal framework*, while the fifth-ranked difficulty is *inappropriate institutional framework*. The only new trend that can be seen in a comparison of constraints over the years is the increased importance now given to the non-technological problems of *inadequate cost recovery framework*, *insufficient health education efforts* and *non-involvement of communities*.

The conclusion of this comparison of rankings of constraints is that the problems facing Africa have remained essentially the same over the past 30 years. They are related for the most part to inadequate resources – financial, human and material. The problems of shortages of funds, poor operation and maintenance, and difficulties with logistics can cripple a sector and the institutions and communities working within it. These problems, however, need not be crippling and they should not be excuses for inaction. Africa has within itself, after all, the talent, spirit and creativity to overcome such problems.



Box 6: Ghana's Experience with Unaccounted-for Water

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

Reduction of UFW-Stages

A. *Implement systems*

Stage 1 Implement an integrated management information system encompassing:

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

B. *Define the Problem*

Stage 2 Quantify and narrow down UfW

Stage 3 Identify and quantify components of UfW

C. *Reduce/eliminate the problem*

Stage 4 Network-related causes of UfW

Stage 5 Management-related components of UfW

Stage 6 Remaining major non-visible leakage

The seeds of new ideas and innovative ways of ensuring water and sanitation services have been planted are, even now, beginning to show results.

7.3 New Approaches

The collection and analysis of data for this regional assessment has highlighted the importance of innovative ideas and new initiatives to meeting the water and sanitation needs of the sector. Two categories of new approaches can be seen operating in Africa today. The first consists of conceptual and methodological tools that are used in preparing and implementing water and sanitation programmes. These include community management, participatory methods for hygiene education and sanitation, involvement of the private sector, low cost technologies and collaboration. The second involves new organizational and collaborative initiatives for galvanizing greater effort in addressing Africa's water and sanitation needs. Together, these new approaches, both methodological tools and organizational initiatives, represent the future direction in which Africa must move.

7.3.1 Concepts and Methods

- **Community Management**

The second Dublin Principle³ stated that: *water development and management should be based on a participatory approach, involving users, planners and policy makers at all levels.* This means that decisions should be taken at the lowest appropriate level with full public consultation and involvement of users in the planning, implementation and management of water and sanitation projects. Community management goes far beyond the traditional definition of community participation. It is much more than the provision of labour and the contribution of materials; rather, it is based upon the concepts of ownership, control and responsibility for the development process. It is a recognition that the people in

³ United Nations (1992). **Dublin Declaration.** International Conference on Water, Dublin (Ireland), January 1992.



the community have not only the capability of managing their development services, but also the basic responsibility for their success or failure.

Africa is beginning to recognize the potential of letting communities manage their own water and sanitation development. Chapter 6.1 pointed out that nearly 80% of the countries in the WHO Africa region had a national policy on community management and that a quarter of these countries reported that almost all of their rural villages were managing their own water and sanitation facilities. As time passes and more communities take up management of the development process and the water and sanitation systems in it, the benefits of community management will become even more attractive to governments and development agencies.

Box 7

Community management of water supply and sanitation facilities

Cote d'Ivoire
A new policy was established based on community participation covering management of operation and maintenance of water supply and sanitation systems. Some 7,600 new committees are already functional in addition to 8,600 existing ones.

Malawi
The government has introduced Community Based Management (CBM) and Village Operation and Maintenance (VLOM) systems in the communities, while the communities organized themselves into Village Health & Water Committees. Through these efforts some of the communities have *Water Point Funds*, which are readily available to purchase fast-wearing parts for water hand-pumps.

Zimbabwe
The AFRICA 2000 programme focuses on villages to empower the beneficiaries to be managers of community projects and to ensure that there is 100% coverage with safe water supply and sanitation in the village. Latrine builders have been replaced by women. Female builders are found to be as competent as their counterparts and have proven to be very reliable.

- **Participatory Methods for Hygiene Education and Sanitation**

Human behaviours lie at the roots of most illness caused by poor environmental sanitation. Improving sanitation conditions, which are generally the responsibility of households, and changing human behaviours, which are inextricably linked to personal choices, have always been the most difficult aspects of water and sanitation development. In recent years, however, considerable attention has been given to linking participatory concepts to changes in behaviours related to sanitation.

The most notable of these new approaches is called Participatory Hygiene and Sanitation Transformation (PHAST), which is an innovative approach using participatory techniques to promote beneficial hygiene behaviours, sanitation improvements and community management of water and sanitation facilities. It builds on people's innate ability to address and resolve their own problems. By promoting health awareness and understanding, it helps to empower communities to manage their water uses and to control sanitation-related diseases.

PHAST is adapted from the SARAR methodology of participatory development, which was developed in the 1970s and 1980s in order to enable people to identify their problems, plan for change and then implement and monitor that change. SARAR stands for *Self-esteem, Associative*



strengths, Resourcefulness, Action-planning and Responsibility. Its two main principles are that people solve their own problems best in a participatory group process and that the group collectively has enough information and experience to begin to address its own problems. SARAR is applicable to a wide range of developmental concerns. PHAST takes the principles and techniques of SARAR and applies them to problems of sanitation and hygiene behaviours at the community level. Its basic purpose is to help communities develop the capacity to take charge of their environmental sanitation needs, to control sanitation-related diseases and to promote health awareness and understanding. In addition, PHAST promotes a new awareness of the complex interaction between technological and behavioural elements. It does not promise rapid change, but rather leads to sustainable benefits through a series of incremental improvements. In the process of doing this, PHAST leads to environmental improvements and positive behavioural changes.

PHAST employs a variety of techniques to assist the participatory learning process. Workshops are held both to train PHAST facilitators and to develop tools and materials for use in the community environments.

PHAST is a joint project of WHO and the UNDP-World Bank Water and Sanitation Program. Initiated in 1993, it was developed in collaboration with the health, water and sanitation ministries of the governments of Botswana, Kenya, Uganda and Zimbabwe. Other collaborating institutions include the UNICEF country offices in Botswana, Kenya, Uganda and Zimbabwe, the Swedish International Development Agency (SIDA), Danish International Development Agency (DANIDA) and a number of national and international NGOs. PHAST was pilot tested in Botswana, Ethiopia, Kenya, Mozambique, Uganda and Zimbabwe between 1994-1998 and now is the basis of an Africa Support Network and a Regional Task Force for participatory approaches in hygiene and sanitation.

- **Involvement of the Private Sector**

In the past, all water supply and sanitation development in Africa was the responsibility of either the central or local government. Large urban projects were determined by the availability of external donor

Box 8

PHAST Initiative

United Republic of Tanzania

The United Republic of Tanzania has pioneered the implementation of PHAST by building on the PROWESS/SARAR approach. PHAST has been applied in some rural water supply and sanitation programmes. Training workshops have been held in refugee-affected districts of Kigoma and in seven cholera-affected districts. There is strong advocacy for the use of the PHAST approach in promoting market-place sanitation, school health and food hygiene through the healthy city project in Dar es Salaam. Water committees have also been established in rural areas to manage water supplies through the use of participatory methods.

Swaziland

PHAST has been incorporated in the rural water supply sanitation sector co-ordination policy of 1998 and there was an official launching of PHAST in the kingdom by her Royal Highness Inkhosikati La Motsa on August 1999. Her Royal Highness is Patron for hygiene, environment, sanitation and water supply.

Zimbabwe

As from mid-1995, the PHAST approach has been institutionalized in Zimbabwe and is now an official Ministry of Health programme. Within the Ministry of Health participatory approaches have been found useful not only in hygiene education but also for the control of diseases such as malaria, TB and scabies. Participatory methods are also widely used by other agencies and NGOs as a standard approach in promotion, training and awareness creation for several development activities. Specifically, they have been used for mobilizing communities, land use planning, wild life and environmental management, poverty alleviation, food security programmes, and community-based management.



funding and technical assistance, while most rural projects were the result of some form of cost-sharing between rural communities and government agencies. Most projects were supply-driven, that is, the nature and timing of projects depended on the available resources and planning decisions of the government organizations responsible for project implementation. The private sector was rarely involved in this process, except as a supplier of equipment and materials to government. Communities had, at best, only marginal influence over the process, except as a possible source of labour and some materials.

As a result of the water-related concepts articulated at Dublin in January 1992, and later that year at the Rio "Earth Summit", the contrasting social and economic roles of water began to be seen in a new light. At about the same time, a growing awareness of the interrelationships between water as an economic good, the need for participatory approaches and the potential of community management began to highlight the potential role of the private sector in water and sanitation development. Since then, there has been a small, but growing, involvement of the private sector, especially in urban water supplies. Chapter 6.3 indicated that 40% of the countries in the WHO Africa Region allow some form of private sector participation in the water and sanitation sector. Most of this activity occurs in urban water systems with concessionary agreements to build, operate and transfer ownership. Four countries reported that all of their urban water systems were involved in concessions of some kind, while a few others reported the presence of management contracts. The Francophone countries of Africa have incorporated the private sector into their water services much more intensively than have the Anglophone countries.

To date, most of the private sector involvement in Africa is limited to urban water systems where governmental decisions allowed the private sector to become active. In the future, private sector involvement in the rural areas will depend more upon the management roles the communities themselves will play in improving their water and sanitation services.

- **Low Cost Technologies**

Reducing the cost of water and sanitation technologies has always been a major preoccupation of sector engineers and technicians. Over the years, significant reductions in costs have been achieved – in materials (plastic pipes and valves), equipment (simple, but robust handpumps) and in designs (small bore sewers, rooftop rainwater collection, ferrocement storage tanks, VIP latrines). Today, a wide range of proven low-cost technologies are available for use in sector applications. Further improvements remain possible, especially in the areas of water treatment and disinfection and in excreta disposal and handling technologies.

However, technologies by themselves cannot drive the development process. They need to be supported by appropriate methods for cost recovery, hygiene awareness, behaviour change and management control. This is where the major challenge to technology and technological development is found. Those involved in the planning and design of water and sanitation services need to consider how to integrate technologies into the new social, financial and management concepts and present them in an understandable manner to the users of the systems.

- **Collaboration**

Collaboration has become one of the common "buzzwords" of the current era. It means different things to different individuals as well as to different organizations. What is not at question is the widespread and growing interest in collaboration in the water and sanitation sector. As described in the next section (chapter 7.3.2), all of the new organizational initiatives in Africa either are based upon or strongly support collaboration between organizations as a means of strengthening efforts to expand water and sanitation services. This interest in collaboration can be seen at the regional



level, with large international and national organizations trying to work together on inter-country problems, and at the community level, with much-smaller community groups, NGOs and local leaders trying to develop a critical mass to undertake an improvement project.

The difficulty with collaboration is that it takes time, effort and a willingness to make oneself or the organization vulnerable to actions of the intended collaborating partner. In situations which are highly competitive, such as programmes or needs of competing organizations, collaboration often is seen in negative rather than positive terms. Despite these drawbacks, collaboration between governments, organizations and individuals is currently in the ascendancy, although the concept still remains honored more in words than in actions. Nevertheless, collaboration in Africa is essential for regional progress in water and sanitation. No country or organization, and even less so, no community, can do it alone, without partners, and achieve safe water supply and adequate sanitation. The challenge in this area is to encourage a steady growth of collaborative links between the most logical partners at whatever level they may occur. The concept of collaboration needs to be developed into an automatic precondition for advancement of the sector.

7.3.2 Initiatives and Programmes

A number of new initiatives and partnerships have been established in the last decade to meet the water and sanitation needs of Africa. For the most part, these are not funding instruments or capital development programmes, but rather attempts to mobilize the governments and people of Africa and the world through advocacy, awareness raising, information sharing, partnerships and, most of all, by looking at water and sanitation in new ways. The following are the main initiatives in the order in which they were established.

- **AFRICA 2000 Initiative for Water Supply and Sanitation**



The AFRICA 2000 Initiative for Water Supply and Sanitation was requested by ministers of health of the 46 countries in the WHO Africa Region at the 43rd WHO Regional Committee for Africa in September 1993. One year later the initiative was formally launched at the 44th Regional Committee. The objectives of AFRICA 2000 are to expand water and sanitation services through greater country leadership, increased reliance on African solutions and enhanced partnerships between countries and development agencies.

To date, all countries of the region have appointed AFRICA 2000 focal points and most of the countries have held AFRICA 2000 national consultations to review their water and sanitation needs and set out action plans for the immediate future. AFRICA 2000 activities have been initiated in most of the countries of the region. WHO provides the secretariat for the initiative through its Regional Office in Harare.

In June 1996, the First Regional Consultation of the AFRICA 2000 Initiative was held in Brazzaville. Representatives from 46 African countries plus representatives of UN agencies, bilateral agencies and NGOs attended. The primary outcome of the consultation was the Brazzaville Declaration which called for priorities based on the expressed desires of the people, mobilization of local resources for affordable solutions, new partnerships for health and development, and leadership by African governments, not donor priorities. In addition, the consultation endorsed a seven-point action programme that included the recommendation that AFRICA 2000 be linked to other initiatives in Africa. The Brazzaville Declaration and the recommendations were sent to the Heads of State of all African countries.



Box 9

Actions on the AFRICA 2000 Initiative

Zimbabwe launched a case study to assess the impact of AFRICA 2000 in Bodo village in 1998. The main finding was the remarkable decline of water and sanitation-related diseases in Bodo village since the inception of the AFRICA 2000 project. The newly constructed latrines are well kept and properly used by the villagers, who vow never to revert to using the bush.

Algeria is moving forward with its National Committee and integration of the Brazzaville Declaration objectives into an action plan for the control of water-borne diseases.

Madagascar has promoted AFRICA 2000 through education and hygiene projects aimed at health centres and schools. Hygiene, which emphasizes the link with health, has now found a place in school curricula.

The Second AFRICA 2000 Regional Meeting took place in Harare in September 1998 immediately before the Africa Consultative Forum. The main objectives of the meeting were to review country progress in implementing the AFRICA 2000 Initiative and to formulate a plan of action for the region. One major outcome of the meeting was a 14-point Framework for Action intended to assist countries in their programmes under the Initiative and to promote cooperation at all levels of the water and sanitation sector. Another outcome was a series of recommendations to WHO and governments for further action on the AFRICA 2000 Initiative, technical cooperation and information exchange.

The AFRICA 2000 Initiative continues as an organizing framework for both consultation and action by countries of the region. WHO has structured its programmatic assistance in water supply and sanitation to support country efforts under the Initiative.

• Water Utility Partnership

The Water Utility Partnership (WUP) is an initiative of the World Bank and several African institutions (Union of African Water Suppliers, Abidjan; CREPA, Ouagadougou; and TREND, Kumasi). It is intended to strengthen the water supply and sanitation sector in Africa by building upon the water and sanitation utilities that exist in nearly all countries of the continent. Launched in August 1995 with initial financial support of the World Bank, the WUP is concerned primarily with extending water and sanitation services in urban and peri-urban areas, with a particular emphasis on the poor. WUP has a secretariat in Abidjan and is supervised by a Steering Committee.

Membership in WUP is on a partnership basis among water utilities, donors, NGOs, and training and research institutes. It operates as a network for gathering, disseminating and exchanging experiences and it serves as a catalyst to improve sector performance at national and regional levels. The objectives of the WUP are to improve the performance of water and sanitation utilities; to develop collaboration between utilities, NGOs and related groups, particularly in underserved settlements; to strengthen NGOs providing water and sanitation services to underprivileged populations; and to establish collaboration with other organizations and to coordinate external support.



The emphasis of WUP is on the institutional capacity building of utilities in the urban and peri-urban areas. WUP provides training, advocacy, technical advisory services and information as an additional component to existing projects funded by external donor organizations. WUP activities must meet four criteria: regional in nature, use of best practices, catalyst to other activities and development of networking.

The initial three-year programme (1996 – 1998) of WUP had six projects and a projected budget of US\$ 7,600,000. Funds were provided by the WUP partners, the World Bank, external donor agencies and the private sector. The WUP is currently on its second programme cycle.

- **United Nations System-wide Special Initiative on Africa**

The UN System-wide Special Initiative on Africa (UNSI) was born out of a request by the UN Secretary-General Boutros Boutros-Ghali for a major United Nations effort to raise the priority given to development on the African continent. The Initiative was formally launched by the United Nations in March 1996. It started out with five programme components: water, food security, governance, social and human development, and resource mobilization. After numerous meetings and consultations within the UN system, four priority areas were set in out in 1996 to act as a framework for the water sector: (1) assuring sustainable use of and equitable access to freshwater, (2) household water security, (3) freshwater assessments and (4) water for food production. Various UN agencies became associated with these components on the basis of their ability to provide leadership and programmatic support.

The household water security component is designed to have a major impact on the water and sanitation sector. It has an objective of assisting African countries to provide at least 80% of their population with access to safe water supply and sanitation within the next decade. UNSIA estimates that this objective will require approximately US\$ 700 million a year, of which two-thirds can be generated internally and the remainder from external sources. These funds are to be in addition to the current estimated expenditure of US\$ 1,300 million per year being spent on water and sanitation in Africa. Over the ten-year implementation period, this effort will require approximately US\$ 2,500 million in external resources and US\$ 4,500 million in internal resources. The lead agencies in this component are UNICEF, WHO, UNDP, World Bank and UNESCO. A technical working group, or Water Cluster, composed of the lead UN agencies, plus UNEP, UNCHS, ECA and WMO, has responsibility for developing modalities for implementation of the household water security component.

Current efforts of the UNSIA/Water Cluster are directed towards the development of an implementation strategy that involves the main challenges facing Africa today: strengthening governance of water resources, improving water wisdom and meeting urgent water needs. Contained within the third challenge is the component of household water security. The agencies participating in this component have made significant progress in implementing joint activities in four areas: (1) community management of water and sanitation systems, (2) promotion of participatory hygiene education and sanitation methodologies, (3) coordination and monitoring and (4) capacity building in operation and maintenance, water quality monitoring and development of guidelines. For the immediate future, the Water Cluster is developing a work plan based upon a strategy of improving collaboration among UN agencies and strengthening collaborative frameworks to bring about visible results on the ground.



- **Water and Sanitation Africa Initiative (WASAI)**

In November 1995, the Water Supply and Sanitation Collaborative Council (WSSCC) established a Working Group on Water Supply and Sanitation Development in Africa in



order to encourage greater collaboration in the expansion of services in Africa. The WSSCC was founded in 1991 to be a forum for professionals concerned with water supply and sanitation development in the developing countries. It promotes collaboration and cooperation between individuals, communities, governments, NGOs, the private sector and international development organizations.

The Working Group brought together representatives of the African countries and external organizations to work on the identification of the water supply and sanitation needs of the continent and to formulate ways to address these needs. The main efforts of the Working Group in the first years of its operation were information exchange and awareness raising. The Working Group organized and sponsored the Africa Consultative Forum, held in Abidjan in October 1998, which brought together ministers and technical officials of African governments and representatives of international development organizations, NGOs and the private sector to develop an agenda for action on water supply and sanitation in Africa. One of the main outputs of the consultation was the formation of the Water and Sanitation Africa Initiative (WASAI), which is a collaborative effort between the WSSCC, African governments and external support agencies to promote water and sanitation development in Africa and to work closely with other initiatives having the same objective.

- **Africa Water Vision for 2025**

The most recent and most encompassing water initiative for Africa is the Africa Water Vision for 2025. In March 1997, the First World Water Forum, held in Marrakech, asked the World Water Council to develop a World Water Vision for the year 2025. This request was a response to a growing concern among water professionals that the existing management of water resources had led to a water crisis in many countries and that without a change in approach a global water crisis was inevitable. The World Water Council undertook a three-year participatory process involving research, stakeholder consultations, workshops and information exchange in many countries around the world to develop the Vision and a complementary Framework for Action. In the course of this effort, Africa Water Vision meetings were held in several African countries and culminated in consultations in Gaborone in November 1999 and Abidjan in February 2000.

The World Water Vision for 2025 was presented at the Second World Water Forum, held in The Hague in March 2000. One of the key outcomes of this forum was the formulation of an African Water Vision for 2025, an associated Framework for Action and a set of milestones and targets for actions needed in Africa. It was noted that the key challenges facing African governments included (1) how to meet the water supply and sanitation needs, (2) how to arrest the increasing water scarcity in parts of the continent and (3) how to ensure water security for life, development and the environment. The resulting Water Vision for Africa was defined as:

An Africa where there is an equitable and sustainable use and management of water resources for poverty alleviation, socio-economic development, regional cooperation, and the environment.

The Vision called for a radical change in approach in meeting the numerous water-related problems of Africa. This change involved new ways of decision-making, information exchange, cooperation and teamwork. It also outlined ten desired outcomes for Africa, the first of which stated: *There is sustainable access to safe and adequate water supply and sanitation to meet basic needs of all.* The other outcomes dealt with water resources development and the generation of political will, institutional development, human resources and public awareness.

Associated with the Africa Water Vision was a Framework for Action that consisted of four broad classes of activities: (1) strengthening governance of water resources, (2) improving water wisdom, (3) meeting urgent water needs



and (4) strengthening the financial base for the desired water future. In addition, milestones and targets were set out to define intermediate goals to be reached by different administrative levels at stated times. Under *meeting urgent water needs*, the targets for water supply and sanitation were defined in the following terms: the proportion of people without access to safe and adequate water supply were to be reduced by 25% in 2005, by 75% in 2015, and by 95% in 2025; and the proportion of people without access to safe and adequate sanitation were to be reduced by 25% in 2005, by 70% in 2015, and by 95% in 2025. Moreover, financing for water supply and sanitation was to include full cost recovery, service differentiation and a range of service options (with safety nets for the poor) in 60% of the countries of Africa by 2005 and 100% of the countries by 2015.

Proposed Actions towards Vision 2025:

- Building awareness and consensus.
- Creating enabling environment for international cooperation.
- Responding to immediate water problems.
- Creating framework for integrated water resources management.
- Building capacity.
- Identifying vision drivers.

It was estimated that a minimum of US\$ 20 billion would be required per year for implementation of the Framework for Action in Africa. The endorsement of the Vision by the OAU, the ECA and the ADB was considered important to the success of the initiative.

- **Other Initiatives**

A number of other initiatives have relevance to the future of water supply and sanitation in Africa. The most significant is the Global Water Partnership (GWP), which was established by UNDP, the World Bank and a group of national development agencies in 1996 to promote and support integrated water resources management, including water supply and sanitation, in all regions of the world. The GWP has set up regional water partnerships in Africa, Asia and Latin America among national governments, external development organizations and the private sector. Countries that work with the GWP and adhere to GWP-endorsed guidelines for water resources development are assisted in the preparation and financing of national and regional water programmes.

Other influential initiatives include the UNDP-World Bank Water and Sanitation Programme, which was established more than 15 years ago to develop innovative and low-cost approaches to meeting the water and sanitation needs of the poor and underserved. This program is supported by UNDP, the World Bank and around a dozen bilateral donor agencies to work. It has sub-regional offices in Nairobi and Abidjan and currently works in approximately 15 African countries.

Lastly, the water and environmental sanitation (WES) programme of UNICEF, while not strictly a new initiative, is the most extensive of its kind in Africa. UNICEF has WES activities in nearly all African countries. It emphasizes participatory, community-based water and sanitation activities in rural and peri-urban areas.

7.4 Lessons Learned from the Year 2000 Assessment

The Year 2000 assessment contained many new features from previous global and regional assessments. Some of the more important features relate to the design of the assessment, which included a re-designed questionnaire, incorporation of household-based survey information and a larger group of participating organizations. In preparing the Year 2000 Africa Regional assessment, several difficulties arose in analyzing the information provided by the countries. Attempts to mitigate these problems suggested several lessons that may be useful for future assessments.

- The questionnaire proved to have a number of questions that were difficult to interpret without proper guidance. Some of the ambiguities that occurred in the questionnaire, and later in the



data collection, could have been detected and eliminated by field testing the questionnaire. Field tests in one or two countries would assist in identifying potential problems and providing feedback for revising the questionnaire before it is sent to the countries for the actual sector assessment.

- Data requested on costs and investments seems to have had many problems, one of which may be in calculating US dollar equivalents for the unit costs, tariffs, monthly charges and investment totals. A list of official exchange rates for converting local costs into US dollar equivalents would help country-based respondents in calculating the correct dollar amounts.
- Data that requires mathematical processing before it can be reported, such as coverage percentages, unit costs, investment totals, etc., are subject to both conceptual misunderstanding and arithmetic errors at the country level. Simple examples of the calculations required for various numerical responses would assist the respondents to determine the correct figures.
- Despite all attempts to anticipate and minimize problems, data sent from the countries occasionally is unrealistic or in contradiction to other information. Initial screening of the questionnaires and basic processing of the data sent to the regional office would identify the most serious of such data problems. This could be followed by an inquiry back to the country requesting clarification or modification of the problematic data.
- Major sector assessments cannot be carried out in haste. Time is needed to design the assessment, develop and field test the data collection instruments, process the data and analyze the results. The total amount of time depends on the nature of the assessment, but certainly a global, as well as a regional, assessment cannot be adequately developed and implemented in less than two years from the start of design to publication of the final results. Sufficient time should be allowed for all aspects of the assessment to be carried out. If the start date is delayed, the completion date should be similarly delayed.

7.5 The Way Forward

7.5.1 Regional Targets

Future development of the water and sanitation sector in Africa depends more on the responses of individual countries to the needs within their borders than to the generosity of international donors. This is to say that water and sanitation sector development will be what the countries of Africa want it to be. One powerful aspect of a country's vision for its development is the targets it sets and works towards.

Country-based coverage targets for the year 2010 were discussed in chapter 4.8. Countries that reported targets for the year 2010 projected an overall increase in water supply coverage of approximately 20% and an increase in sanitation coverage by 50%. As discussed earlier, the water supply target is reasonable as an overall regional value, but the sanitation target is probably unrealistic given the many constraints affecting the region.

When the projected coverage increase of 20% in water is applied to the current coverage value of 56%, a regional target of 67% coverage for water in the year 2010 results. If a similar coverage increase is allowed for sanitation, i.e. a 20% increase rather than



the 50% projected by the countries, the regional coverage rises from the current 55% to a target value of around 66% for the year 2010. Projecting these targets even further into the future, it would seem reasonable to expect another 15% to 20% increase in the following ten years (from 2010 to 2020). This would result in regional target values of 77% for water and 76% for sanitation in the year 2020. Any further projections would be pure speculation.

It was noted in chapter 4.8 that the Second World Water Forum, held in The Hague in March 2000, proposed water and sanitation targets for the African continent for the years leading up to 2025. The targets were not expressed in terms of percentage of people served, but rather as the percentage of unserved that would be reduced in specific years. In the year 2005, the proportion of people without access to either adequate water or sanitation would be reduced by 25%. In 2015, those without access to water would be reduced by 75% and those without sanitation by 70%. The final target was established for 2025: a reduction of 95% in those without either water or sanitation. By taking the coverage percentages of 1999 for the WHO Africa Region as a baseline, the reductions noted above were converted to coverage targets for the years 2005, 2015 and 2025, as shown in Table 7.3. Also included in Table 7.3 are the targets projected for the WHO Africa Region in the year 2000 assessment.

Table 7.3: Proposed Coverage Targets for the WHO Africa Region

Targets	Year (% Population Served)						
	2000 (Current)	2005	2010	2015	2020	2025	2030
Second World Water Forum							
Water supply	56	67	-	89	-	98	-
Sanitation	55	66	-	87	-	98	-
Year 2000 Regional Assessment							
Water supply	56	-	67	-	77	-	?
Sanitation	55	-	66	-	76	-	?

7.5.2 Next Steps

As pointed out in chapter 2.1, the purpose of sector assessments is to assist in the areas of management, planning and advocacy. The Year 2000 Africa Regional Assessment is an instrument for creating new realities. If used well, it can become a powerful tool for changing the current status of the water and sanitation sector in Africa to some higher level of services. If used poorly, or not used at all, it might as well be relegated to the dustbin of forgotten statistical studies.

How this assessment is used will be the primary determinant of how relevant it is to the water and sanitation needs of Africa. This assessment is not perfect; in many areas it is not very accurate or reliable as a gauge of actual conditions. However, it is the best attempt to date to describe a sector involving two crucial life-supporting services affecting some 631 million people scattered over 29 million square kilometers. Despite the weaknesses of the regional assessment, the very act of conducting such an assessment signals to the countries, the external development agencies and the general public that water and sanitation is a sector of importance that deserves attention. The results of the assessment, showing the immense needs of the region, underscore the urgency of the situation and give further credibility to the process of conducting periodic sector assessments. By conducting such assessments, one learns how to improve them in the future. Therefore, the Year 2000 Africa Regional Assessment should be seen as both a response to the need for sector information and as another learning experience for the organizations participating in the process.



This assessment is not a study designed to produce recommendations for future actions. However, the data in the assessment and the analyses done with them do give rise to suggestions for the next steps that should be taken. Four areas of suggestions can be considered:

(1) Year 2000 Africa Regional Assessment:

- WHO should distribute the regional assessment widely – to countries, governments and development organizations, such as the UN agencies, regional development banks, bilateral development agencies and NGOs. Furthermore, the assessment should be made available to the media (TV, radio, newspapers, periodicals) and to libraries and other sources of reference information. WHO and its partner institutions also should reach out to the general public with press releases, publicity and simplified versions of the assessment.
- WHO should request corrections, revisions and submission of missing data from the countries in Africa and from the development organizations that work within them. This new data should be used either to revise a draft version of the assessment or to up-date a second edition in the near future.

(2) Country Support:

- WHO should assist countries in conducting their own national assessments of water supply and sanitation services. The information collected in the regional assessment can serve as a starting point for more detailed national assessments.
- WHO should assist countries and donor organizations to focus on specific needs identified in the assessment. These include
 - unserved urban poor and peri-urban populations
 - neglected rural poor
 - poor operation and maintenance of existing systems

(3) Tools and Methods:

- All sector organizations, including government institutions, international development agencies, NGOs and the private sector, should actively promote and encourage the development and use of the following:
 - participatory methods for hygiene education, behaviour change and sanitation (PHAST)
 - guidance materials for community management of water and sanitation services based on African experiences
 - guidance materials for private sector participation in water and sanitation development based on African experiences
 - low cost technologies that are integrated into prevailing social, financial and management conditions
 - Tools and techniques for applying gender participation, and poverty sensitive, demand responsive approaches.

Collaboration:

- All sector organizations, including government institutions, international development agencies, NGOs and the private sector, should actively seek to improve their collaboration and cooperation with each other. In particular, greater collaboration should be undertaken with the major water and sanitation initiatives in Africa, namely, AFRICA 2000, the Water Utility Partnership (WUP),



the United Nations System-wide Special Initiative on Africa (UNSI), and the Water and Sanitation Africa Initiative (WASAI).

- All sector organizations, including government institutions, international development-agencies, NGOs and the private sector, should consider using the Africa Water Vision for 2025 as an organizing framework for water resources development in Africa. In addition, the Vision should be considered as a guide to breaking many of the constraints that have restricted progress in the water supply and sanitation sector.

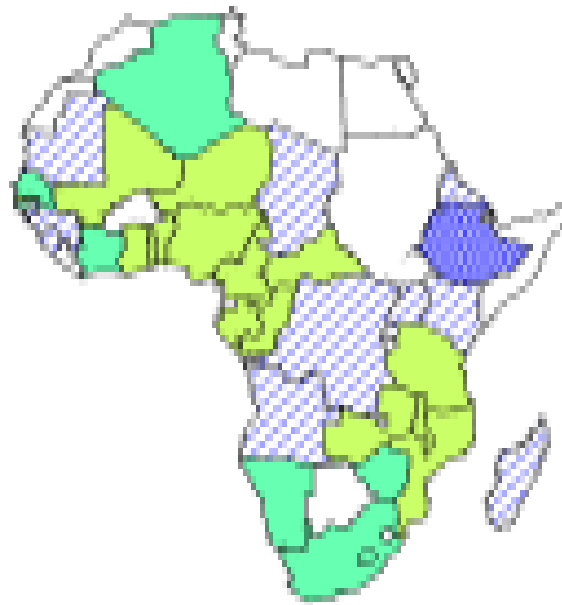




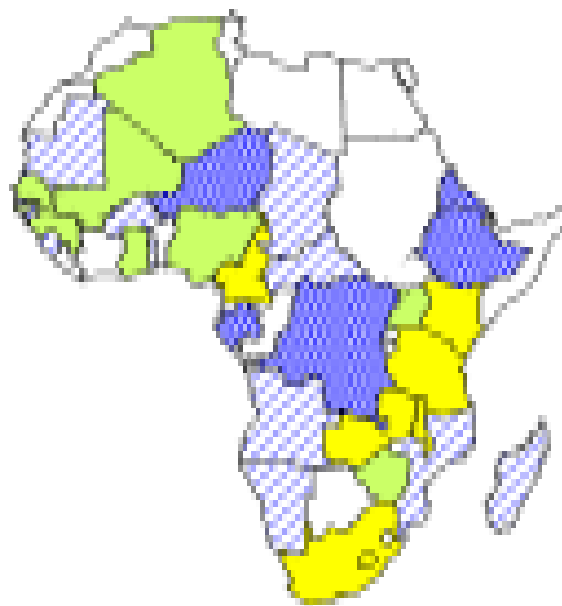
LIST OF FIGURES



Figure 4.1: Regional Water Supply and Sanitation Coverage



Water Coverage (%)

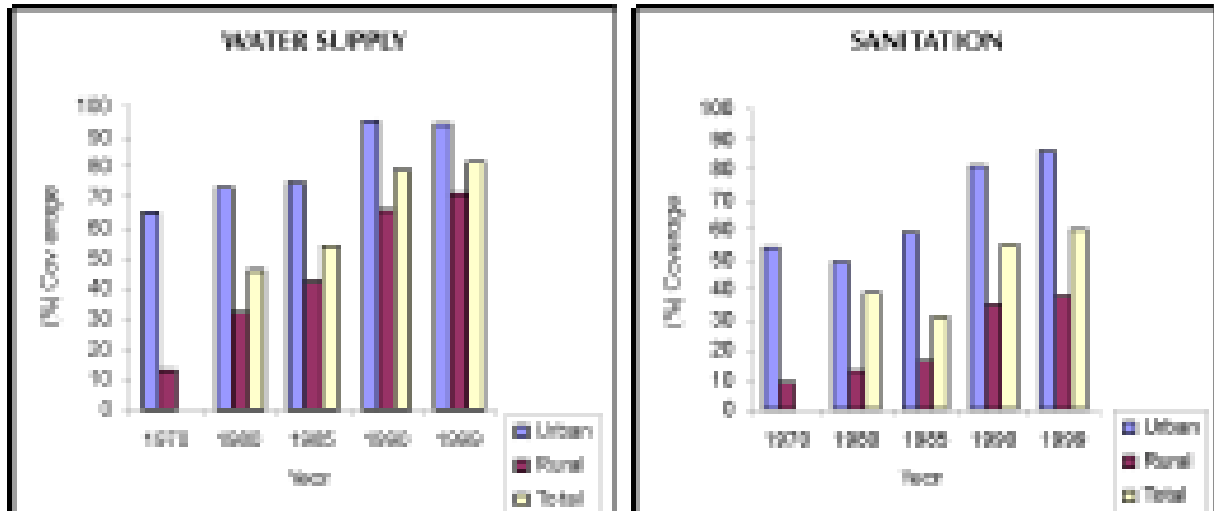


Sanitation Coverage (%)

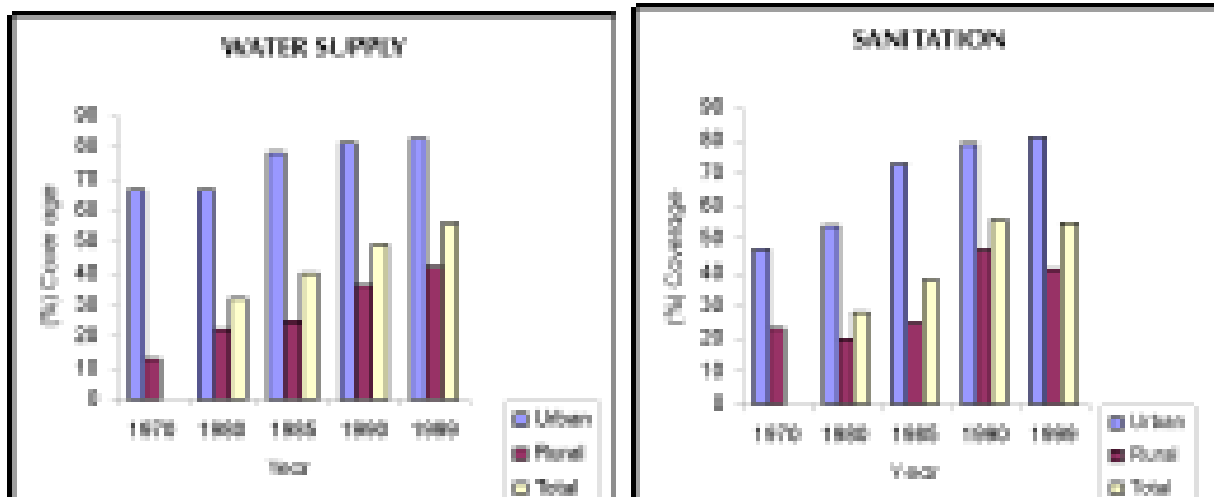


Fig. 4.2 : Global and Regional Water Supply and Sanitation Coverage Trends

GLOBAL COVERAGE



AFRICA REGIONAL COVERAGE





LIST OF TABLES



Table 3.1: Area and Population, 1999

Country	Area (1000 km ²)	Urban Population (in 1000s)	Rural Population (in 1000s)	Total Population (in 1000s)	Population Growth Rate (%/yr)
Algeria	2,382	18,969	12,502	31,471	2.3
Angola	1,250	4,404	8,474	12,878	3.2
Benin	113	2,577	3,520	6,097	2.7
Botswana	582	815	807	1,622	1.9
Burkina Faso	274	2,204	9,733	11,937	2.7
Burundi	28.0	600	6,095	6,695	1.7
Cameroon	475	7,379	7,706	15,085	2.7
Cape Verde	4.03	266	162	428	-
Central Afr.Rep.	623	1,489	2,126	3,615	1.9
Chad	1,284	1,820	5,831	7,651	2.6
Comores	2.23	231	464	695	2.7
Congo	342	1,841	1,103	2,944	2.8
Cote d'Ivoire	322	6,854	7,932	14,786	1.8
Dem.Rep.of Congo	2,345	15,641	36,014	51,655	2.6
Equatorial Guinea	28.05	218	234	452	2.5
Eritrea	125	722	3,129	3,851	3.8
Ethiopia	1,097	11,042	51,523	62,565	2.5
Gabon	268	998	228	1,226	2.6
Gambia	11.3	424	882	1,306	3.2
Ghana	239	7,753	12,460	20,213	2.7
Guinea	246	2,435	4,995	7,430	0.8
Guinea Bissau	36.1	288	925	1,213	2.2
Kenya	580	9,957	20,123	30,080	2.0
Lesotho	30.0	602	1,551	2,153	2.2
Liberia	97.8	1,416	1,738	3,154	8.2
Madagascar	592	4,721	11,221	15,942	3.0
Malawi	118	2,723	8,202	10,925	2.4
Mali	1,240	3,375	7,859	11,234	2.4
Mauritania	1,206	1,541	1,128	2,669	2.7
Mauritius	2.00	478	680	1,158	0.8
Mozambique	799	7,917	11,764	19,681	2.5
Namibia	827	533	1,193	1,726	2.2
Niger	1,267	2,207	8,523	10,730	3.2
Nigeria	927	49,050	62,456	111,506	2.4
Rwanda	10.6	476	7,257	7,733	7.7
SaoTome&Principe	1.01	69	78	147	-
Senegal	197	4,498	4,983	9,481	2.6
Seychelles	0.45	49	28	77	-
Sierra Leone	72.0	1,779	3,076	4,855	3.0
South Africa	1,221	20,330	20,047	40,377	1.5
Swaziland	17.4	266	742	1,008	2.9
Tanzania	945	11,021	22,496	33,517	2.3
Togo	57.0	1,540	3,089	4,629	2.6
Uganda	241	3,083	18,695	21,778	2.8
Zambia	753	3,632	5,537	9,169	2.3
Zimbabwe	391	4,121	7,548	11,669	1.4
Region	29,096	224,354	406,859	631,213	2.46

(-) = No data provided

Sources: Data on areas = Africa Sector Review Vol 2 Draft Main Report ; Data on population & growth rates = UN World Population Prospects



Table 3.2: Water Resources Availability and Usage

Country	Rainfall (mm/yr)	Renewable Water Resources (km ³ /yr)	Total Water Usage (km ³ /yr)	Per Capita Usage (m ³ /cap /yr)	Domestic Use (%)	Industrial Use (%)	Agricultural Use (%)
Algeria	1,200	19	3.00	161	22	4	74
Angola	650	158	0.48	43	14	10	76
Benin	890	26	0.11	26	28	14	58
Botswana	450	18	0.09	98	5	10	85
Burkina Faso	350	28	0.15	20	28	5	67
Burundi	-	3.6	0.10	20	36	0	64
Cameroon	3,000	208	0.40	30	46	19	35
Cape Verde	-	< 1	0.04	148	9	2	89
Central Afr.Rep.	900	141	0.07	27	21	5	74
Chad	-	38	0.18	35	16	2	82
Comores	-	1.02	0.01	15	48	5	47
Congo	1,750	802	0.04	20	62	27	11
Cote d'Ivoire	1,300	74	0.71	68	22	11	67
Dem.Rep.of Congo	1,500	1,019	0.70	22	58	25	17
Equatorial Guinea	2,005	30	0.01	11	81	13	6
Eritrea	550	-	-	-	-	-	-
Ethiopia	-	110	2.21	48	11	3	86
Gabon	-	164	0.06	51	72	22	6
Gambia	950	22	0.02	33	7	2	91
Ghana	2,000	53	0.30	35	35	13	52
Guinea	-	226	0.74	115	10	3	87
Guinea Bissau	1,800	31	0.01	18	31	6	63
Kenya	-	15	1.09	48	27	11	62
Lesotho	-	4.0	0.05	34	22	22	56
Liberia	-	232	0.13	54	27	13	60
Madagascar	1,400	40	16.30	1,675	1	0	99
Malawi	-	9.0	0.16	22	34	17	49
Mali	1,400	62	1.36	159	2	1	97
Mauritania	< 130	7.4	0.73	473	12	4	84
Mauritius	2,100	2.2	0.36	415	16	7	77
Mozambique	600	58	0.76	53	24	10	66
Namibia	450	9	0	77	6	12	82
Niger	560	44	0.29	44	21	5	74
Nigeria	1,975	308	3.63	44	31	15	54
Rwanda	1,200	6.3	0.15	23	24	8	68
SaoTome&Principe	2,848	-	-	-	-	-	-
Senegal	1,400	35	1.36	201	5	3	92
Seychelles	2,335	-	-	-	-	-	-
Sierra Leone	-	160	0.37	99	7	4	89
South Africa	-	50	9.20	404	16	17	67
Swaziland	-	6.96	0.29	414	5	2	93
Tanzania	700	76	0.48	36	21	5	74
Togo	1,300	12	0.09	40	62	13	25
Uganda	1,180	66	0.20	20	32	8	60
Zambia	800	96	0.36	86	63	11	26
Zimbabwe	600	23	1.22	129	14	7	79
Region	856		144	244	7	5	88

(-) = No data provided;

Sources: all data except rainfall = Water in Crisis: A guide to the World's Fresh Water Resources; Data on rainfall = Africa Sector Review Vol 2



Table 3.3: Health Indicators

Country	Life Expectancy at Birth (yrs)	Infant Mortality Rate/1000 Live Births (IMR)	Child Mortality Rate/1000 Live Births (CMR)
Algeria	68.9	44	51
Angola	46.5	125	208
Benin	53.4	88	133
Botswana	47.4	58	107
Burkina Faso	44.4	99	171
Burundi	42.4	119	179
Cameroon	54.7	74	114
Cape Verde	68.9	56	64
Central Afr.Rep.	44.9	98	157
Chad	47.2	112	174
Comores	58.8	76	106
Congo	48.6	90	132
Cote d'Ivoire	50.8	90	139
Dem.Rep.of Congo	46.7	87	136
Equatorial Guinea	50.0	108	177
Eritrea	50.8	91	146
Ethiopia	43.3	115	184
Gabon	52.4	87	135
Gambia	47.0	122	203
Ghana	60.0	66	101
Guinea	46.5	124	207
Guinea Bissau	45.0	130	203
Kenya	52.0	66	104
Lesotho	56.0	93	130
Liberia	47.3	116	174
Madagascar	57.5	82	116
Malawi	39.3	138	220
Mali	53.3	118	236
Mauritania	53.5	92	148
Mauritius	71.4	15	18
Mozambique	45.2	114	183
Namibia	52.4	65	122
Niger	48.5	115	190
Nigeria	50.0	81	147
Rwanda	40.5	124	202
SaoTome&Principe	64.0	64	138
Senegal	52.3	63	115
Seychelles	71.7	NMF	NMF
Sierra Leone	37.2	170	263
South Africa	54.7	59	87
Swaziland	60.2	65	100
Tanzania	47.9	81	130
Togo	48.8	84	129
Uganda	39.6	107	173
Zambia	40.0	82	147
Zimbabwe	44.1	69	117
Region	48.6	93	139

NMF = No Meaningful Figure

Sources: All data except from Sao Tome & Principe and Seychelles = UN World Population Prospects; Data On Sao Tome & Seychelles = JMP



Table 3.4: Global Estimates of Morbidity and Mortality of Diseases Related to Poor Water Supply and Sanitation

Diseases	Morbidity (episodes/year or cases)	Mortality (deaths/year)	Relationship of Diseases to Environmental Sanitation
Diarrhoeal diseases, including dysentery	4,002,000,000 episodes/yr	2,473,000	Strongly related to unsanitary excreta disposal, poor personal hygiene, unsafe drinking water
Typhoid fever	16,000,000 episodes/yr	600,000	Strongly related to drinking water and food contaminated by human excreta, poor personal hygiene
Dengue and dengue haemorrhagic fever	3,100,000 episodes/yr	138,000	Strongly related to unsanitary solid waste disposal
Amoebiasis	48,000,000 episodes/yr	70,000	Related to unsanitary excreta disposal, poor personal hygiene, food contaminated by human excreta
Hookworms	151,000,000 cases	65,000	Strongly related to soil contaminated by human excreta, poor personal hygiene
Ascariasis	250,000,000 cases	60,000	Related to unsanitary disposal of human faeces, food contaminated by soil containing human faeces, poor personal hygiene
Schistosomiasis	200,000,000 cases	20,000	Strongly related to unsanitary excreta disposal and absence of nearby sources of safe water
Trichuriasis	45,530,000 cases	10,000	Related to soil contaminated by human faeces, poor personal hygiene
Cholera	120,000 episodes/yr	6,000	Strongly related to drinking water contaminated by human faeces
Giardiasis	500,000 episodes/yr	-	Strongly related to drinking water contaminated by human faecal matter, poor personal hygiene
Trachoma	152,420,000 cases	-	Related to poor personal hygiene, lack of soap and water
Dracunculiasis	130,000 cases	-	Strongly related to drinking water containing infected copopods

Source: WHO, *The World Health Report 1997*



Table 4.2: Country Coverage Status, 1999

Country	Population (in 000s)	Urban Water (%)	Rural Water (%)	Total Water (%)	Urban Sanitation (%)	Rural Sanitation (%)	Total Sanitation (%)
Algeria	31,471	98	88	94	90	47	73
Angola	12,878	34	40	38	70	30	44
Benin	6,097	74	55	63	46	6	23
Botswana	1,622	100	-	-	-	-	-
Burkina Faso	11,937	84	-	-	88	16	29
Burundi	6,695	96	-	-	79	-	-
Cameroon	15,085	82	42	62	99	85	92
Cape Verde	428	64	89	74	95	32	71
Central Afr.Rep.	3,615	80	46	60	43	23	31
Chad	7,651	31	26	27	81	13	29
Comores	695	98	95	96	98	98	98
Congo	2,944	71	17	51	14	-	-
Cote d'Ivoire	14,786	90	65	77	-	-	-
Dem.Rep.of Congo	51,655	89	26	45	53	6	20
Equatorial Guinea	452	45	42	43	60	46	53
Eritrea	3,851	63	42	46	66	1	13
Ethiopia	62,565	77	13	24	58	6	15
Gabon	1,226	73	55	70	25	4	21
Gambia	1,306	80	53	62	41	35	37
Ghana	20,213	87	49	64	62	64	63
Guinea	7,430	72	36	48	94	41	58
Guinea Bissau	1,213	29	55	49	88	34	47
Kenya	30,080	87	31	49	96	81	86
Lesotho	2,153	98	88	91	93	92	92
Liberia	3,154	-	-	-	-	-	-
Madagascar	15,942	85	31	47	70	30	42
Malawi	10,925	95	44	57	96	70	77
Mali	11,234	74	61	65	93	58	69
Mauritania	2,669	34	40	37	44	19	33
Mauritius	1,158	100	100	100	100	99	99
Mozambique	19,681	86	43	60	69	26	43
Namibia	1,726	100	67	77	96	17	41
Niger	10,730	70	56	59	79	5	20
Nigeria	111,506	81	39	57	85	45	63
Rwanda	7,733	60	40	41	12	8	8
SaoTome&Principe	147	-	-	-	-	-	-
Senegal	9,481	92	65	78	94	48	70
Seychelles	77	-	-	-	-	-	-
Sierra Leone	4,855	23	31	28	23	31	28
South Africa	40,377	92	80	86	99	73	86
Swaziland	1,008	-	-	-	-	-	-
Tanzania	33,517	80	42	54	98	86	90
Togo	4,629	85	38	54	69	17	34
Uganda	21,778	72	46	50	96	72	75
Zambia	9,169	88	48	64	99	64	78
Zimbabwe	11,669	100	77	85	99	51	68
Region	631,213	83	42	56	81	41	55

(-) = No data provided; Source: JMP



Table 4.4: Population Projections (in thousands)

Country	1980	1990	2000	2010	2020	2030
Algeria	18,740	24,936	31,471	38,304	43,853	49,382
Angola	7,019	9,231	12,878	17,236	22,357	27,837
Benin	3,459	4,660	6,097	7,903	10,029	12,129
Botswana	906	1,276	1,622	1,832	2,111	2,361
Burkina Faso	6,909	9,061	11,937	15,751	20,649	26,049
Burundi	4,130	5,456	6,695	8,497	10,544	12,498
Cameroon	8,655	11,472	15,085	19,240	23,948	28,917
Cape Verde	289	342	428	529	625	717
Central Afr.Rep.	2,313	2,943	3,615	4,333	5,232	6,152
Chad	4,477	5,745	7,651	9,887	12,547	15,206
Comores	388	527	695	896	1,093	1,257
Congo	1,669	2,219	2,944	3,858	5,034	6,346
Cote d'Ivoire	8,194	11,635	14,786	18,200	21,813	24,777
Dem.Rep.of Congo	27,009	37,364	51,655	69,389	92,263	117,338
Equatorial Guinea	217	352	452	575	719	869
Eritrea	2,382	2,888	3,851	4,910	6,102	7,185
Ethiopia	36,375	48,092	62,565	79,944	102,935	127,816
Gabon	692	935	1,226	1,507	1,817	2,139
Gambia	641	921	1,306	1,651	1,989	2,303
Ghana	10,833	15,128	20,213	26,367	33,374	40,206
Guinea	4,461	5,755	7,430	9,247	11,523	13,381
Guinea Bissau	795	973	1,213	1,481	1,778	2,115
Kenya	16,632	23,532	30,080	35,205	39,719	43,916
Lesotho	1,346	1,722	2,513	2,610	3,201	3,793
Liberia	1,876	2,579	3,154	4,444	5,853	7,395
Madagascar	8,873	11,632	15,942	20,692	26,165	31,592
Malawi	6,183	9,335	10,925	13,912	17,820	22,084
Mali	6,863	8,843	11,234	14,558	18,946	23,631
Mauritania	1,551	2,026	2,669	3,456	4,328	5,180
Mauritius	966	1,057	1,158	1,256	1,344	1,407
Mozambique	12,905	14,198	19,681	23,117	27,775	33,508
Namibia	1,029	1,350	1,726	1,916	2,177	2,495
Niger	5,586	7,732	10,730	14,486	19,058	23,915
Nigeria	65,561	87,030	111,506	138,698	168,223	197,134
Rwanda	5,163	6,987	7,733	9,535	11,529	13,160
SaoTome&Principe	-	119	147	-	-	-
Senegal	5,538	7,327	9,481	12,166	15,212	18,193
Seychelles	-	69	77	-	-	-
Sierra Leone	3,236	3,994	4,855	6,018	7,375	8,781
South Africa	27,576	34,012	40,377	42,515	44,571	47,644
Swaziland	560	753	1,008	1,310	1,631	1,923
Tanzania	18,581	25,470	33,517	42,235	52,513	63,118
Togo	2,615	3,512	4,629	5,953	7,610	9,307
Uganda	13,120	16,457	21,778	29,831	39,409	49,221
Zambia	5,738	7,239	9,169	11,427	14,248	16,804
Zimbabwe	7,126	9,863	11,669	12,863	14,310	15,853
Region	368,367	488,769	631,213	789,740	975,352	1,167,034

(-) = No data provided

Source: UN World Population Prospects.



Table 4.6: Coverage Trends and Targets

Country	Water (% served)				Sanitation (% served)			
	1980	1990	2000 2010	Target	1980	1990	2000	Target 2010
Algeria	-	-	94	NMF	-	-	73	-
Angola	21	-	38	-	19	-	44	-
Benin	20	-	63	-	24	20	23	-
Botswana	-	95	-	100	-	61	-	100
Burkina Faso	30	53	-	-	10	24	29	-
Burundi	24	65	-	-	35	89	-	-
Cameroon	-	52	62	-	-	87	92	-
Cape Verde	50	-	74	-	19	-	71	-
Central Afr.Rep.	-	59	60	^b 75	-	30	31	^b 70
Chad	-	-	27	NMF	-	18	29	NMF
Comores	-	88	96	-	-	98	98	-
Congo	-	-	51	-	-	-	-	-
Cote d'Ivoire	-	65	77	NMF	-	49	-	-
Dem.Rep.of Congo	-	-	45	-	-	-	20	-
Equatorial Guinea	-	-	43	-	-	-	53	-
Eritrea	-	-	46	-	-	-	13	-
Ethiopia	-	22	24	-	-	13	15	-
Gabon	-	-	70	NMF	-	-	21	NMF
Gambia	-	-	62	-	-	-	37	-
Ghana	47	56	64	^a 89	27	60	63	^a 65
Guinea	17	45	48	-	13	55	58	-
Guinea Bissau	10	-	49	-	14	-	47	-
Kenya	26	40	49	78	30	84	86	NMF
Lesotho	14	-	91	-	14	-	92	-
Liberia	-	-	-	NMF	-	-	-	NMF
Madagascar	22	44	47	^b 50	-	36	42	^b 30
Malawi	41	49	57	67	83	73	77	NMF
Mali	6	55	65	^b 100	13	70	69	NMF
Mauritania	84	37	37	-	-	30	33	-
Mauritius	99	100	100	100	94	100	99	-
Mozambique	-	-	60	64	-	-	43	-
Namibia	-	72	77	87	-	33	41	87
Niger	33	53	59	-	7	15	20	-
Nigeria	-	49	57	80	-	60	63	-
Rwanda	54	-	41	73	51	-	8	73
SaoTome&Principe	-	-	-	NMF	-	-	-	NMF
Senegal	42	72	78	-	33	57	70	-
Seychelles	-	-	-	-	-	-	-	-
Sierra Leone	16	-	28	53	13	-	28	73
South Africa	-	-	86	-	-	-	86	-
Swaziland	-	-	-	86	-	-	-	^b 88
Tanzania	-	50	54	-	-	88	90	-
Togo	42	51	54	68	14	37	34	58
Uganda	-	44	50	-	-	84	75	-
Zambia	-	52	64	-	-	63	78	-
Zimbabwe	-	77	85	-	-	64	68	-
Region	32	49	56		28	56	55	

* ^a Urban target ; ^b Rural target; NMF = No Meaningful Figure; (-) = No data provided
Source: JMP (1999)



Table 4.7: Water and Sanitation in Large Cities, 1999

City/Country	Population (in 000s) (%)	Population Served		Water Production (l/cap/day)	Unaccounted for Water (%)	Water Connections (%)	Sewer Connections (%)
		Water (%)	Sanitation				
Alger (Alg)	2,354	NMF	NMF	-	-	-	-
Luanda (Ang)	4,000	50	62	30	60	18	17
Cotonou (Ben)	667	81	83	62	41	81	0.2
Gaborone (Bots)	133	100	99	286	20	43	33
Ouagadougou (Bur. F)	965	80	100	40	5	27	
Bujumbura (Bur)	314	98	85	178	45	55	75
Douala (Cam)	2,000	-	-	-	-	-	-
Cape Verde	-	-	-	-	-	-	-
Bangui (CAR)	661	24	-	43	41	12	-
N'djamena (Chad)	750	100	NMF	-	44	7	NMF
Moroni (Com)	45	100	100	160	38	32	-
Brazzaville (Con)	938	77	79	94	-	63	-
Abidjan (Cot)	3,323	NMF	NMF	30	15	NMF	-
Kinshasa (DRC)	5,824	87	NMF	86	47	72	NMF
Malabo (Eq. G)	64	93	NMF	-	-	37	NMF
Asmara (Eri.)	349	NMF	NMF	30	35	NMF	-
Addis Ababa (Eth)	2,444	98	NMF	40	40	4	NMF
Libreville (Gab)	508	100	100	181	18	31	-
Banjul (Gam)	41	100	100	-	-	100	-
Accra (Ghan)	1,371	95	NMF	135	51	25	NMF
Conakry (Gui)	1,700	37	71	62	47	33	8
Bissau (Gui. B)	249	29	88	49	35	21	1
Nairobi (Ken)	2,086	100	99	189	40	78	30
Maseru (Les)	272	35.6	89	81	32	26	6
Monrovia (Lib)	219	NMF	NMF	NMF	35	NMF	NMF
Antananarivo (ma)	1,288	57	54.5	85	39	22	-
Blantyre (Malawi)	800	66	56	-	-	41	6
Bamako (Mali)	1,016	NMF	NMF	136	0	NMF	NMF
Nouakchott (Mau)	698	100	NMF	-	-	30	5
Pourt Louis (Maur)	147	NMF	NMF	200	45	NMF	NMF
Maputo (Moz)	967	99	96	133	34	22	25
Windhoek (Nam)	271	100	100	214	11	83	83
Niamey (Niger)	569	100	100	97	0	33	5
Nigeria	-	-	-	-	-	-	-
Kigali (Rwan)	445	NMF	NMF	118	-	NMF	NMF
S. Tomé (Sao)	40	-	NMF	345	0.42	-	-
Dakar (Sen)	1,925	78	78	128	26	63	26
Greater Vic. (Sey)	12	100	100	140	26	100	29
Free Town (Sie)	1,270	NMF	NMF	-	-	-	-
South Africa	-	-	-	-	-	-	-
Mbabane (Swa)	94	75	97	100	32	38	47
Dar-es-salaam(Tan)	3,000	61	98	150	60	7.3	5
Lome (Tog)	806	67	80	66	28	55	1.02
Kampala (Uga)	1,200	-	-	110	45	-	-
Lusaka (Zam)	1,212	81	NMF	225	56	26	NMF
Harare (Zim)	2,380	NMF	NMF	156	30	NMF	NMF
Region	1,149	76	81	98		32	17

(-) = No data provided; NMF= No Meaningful Figure

Source: JMP (1999)



Table 5.1: Production Costs, Tariffs and Charges, 1999

Country	Water Production Cost (US\$/m3)	Tariffs (US\$/m3)		Water Use Charges (US\$/cap/mon)		Sanitation Charges (US\$/cap/mon)	
		Water	Sewerage	House Connection	Public Standpost	Sewerage	On-Site Disposal
Algeria	0.06	0.12	-	^a 0.50	-	-	-
Angola	0.04	0.08	-	0.80	1.05	-	-
Benin	0.66	0.43	7.6	1.5	1.25	0.28	0.13
Botswana	NMF	NMF	-	NMF	-	-	-
Burkina Faso	0.80	0.64	NMF	NMF	7.14	-	0.30
Burundi	0.28	0.17	0.015	-	-	-	-
Cameroon	-	-	-	-	-	-	-
Cape Verde	-	-	-	-	-	-	-
Central Afr.Rep.	0.16	0.61	-	6.74	0.5	-	-
Chad	0.34	-	-	-	-	-	-
Comores	0.42	0.55	-	15	-	-	-
Congo	0.56	0.20	-	4.40	-	-	-
Cote d'Ivoire	0.07	0.54	-	5.5	12.5	-	-
Dem.Rep.of Congo	0.65	0.71	-	0.6	0.2	-	0.14
Equatorial Guinea	-	NMF	-	NMF	-	-	-
Eritrea	0.30	0.43	-	2.86	1.43	-	-
Ethiopia	0.20	0.10	0.62	0.36	1.43	-	-
Gabon	-	0.41	23	6.09	8	-	0.63
Gambia	0.24	0.35	0.42	0.94	0.36	1.72	0.66
Ghana	1.01	0.46	0.17	5.6	2.4	-	-
Guinea	0.87	0.66	-	0.93	0.23	-	-
Guinea Bissau	-	0.28	-	8.4	-	-	-
Kenya	0.30	0.43	0.12	0.58	0.35	0.40	-
Lesotho	0.46	0.52	0.50	NMF	0.25	NMF	NMF
Liberia	NMF	NMF	NMF	NMF	NMF	NMF	NMF
Madagascar	0.23	0.27	-	8.5	-	-	-
Malawi	0.25	0.20	0.80	7.14	0.24	1.00	0.25
Mali	0.45	0.32	-	1.6	1	-	-
Mauritania	0.25	0.57	0.05	2.20	4.80	0.36	-
Mauritius	0.27	0.18	12	5	-	1.00	-
Mozambique	-	0.26	-	5.95	1.08	-	-
Namibia	0.37	0.29	0.41	2.21	0.44	6.08	0.44
Niger	0.32	-	-	1.4	0.08	-	-
Nigeria	NMF	NMF	NMF	NMF	NMF	-	-
Rwanda	1.02	0.90	-	0.46	0.30	-	-
SaoTome&Principe	-	0.10	-	1.4	-	-	-
Senegal	0.27	0.66	0.06	0.94	0.70	1.16	3.35
Seychelles	2	2	1	2.3	-	-	-
Sierra Leone	1.20	0.30	0.15	0.20	0.05	0.05	0.01
South Africa	-	-	-	-	-	-	-
Swaziland	-	-	-	-	-	-	-
Tanzania	0.1	0.2	0.12	6.15	NMF	3.8	0.6
Togo	0.60	0.52	-	6.50	-	2.70	2.08
Uganda	NMF	0.56	0.52	NMF	NMF	NMF	-
Zambia	0.09	-	-	10.00	1.0	6.00	-
Zimbabwe	0.24	0.10	0.05	2	1	1.50	-
Region	0.30	0.33	0.30	5.00	1.05	1.50	0.60

^a Total water supply ; (-) = No data provided; NMF = No Meaningful Figure

Source: JMP (1999)



Table 5.2: Construction Costs, 1999

Country	Water Supply (US\$/cap)				Sanitation (US\$/cap)			
	House Connection	Public Standpost	Borehole Hand- pump	Protected Well	Sewerage	Septic Tank	VIP Latrine	Simple Latrine
Algeria	-	-	-	-	-	-	-	-
Angola	300	120	-	-	230	-	-	-
Benin	-	67	30	42	-	97	28	17
Botswana	36	33	NMF	200	409	-	NMF	-
Burkina Faso	36	3.04	21	-	-	-	-	-
Burundi	50	42	9.4	9.4	30	187	19	9.36
Cameroon	-	-	-	-	-	-	-	-
Cape Verde	-	-	-	-	-	-	-	-
Central Afr.Rep.	310	8	-	1-3	11-16	-	-	-
Chad	182	-	-	-	-	-	-	-
Comores	-	-	21	80	-	95	-	15
Congo	240	80	-	55	-	190	90	45
Cote d'Ivoire	62	3.33	25	-	-	-	-	-
Dem.Rep.of Congo	7.5	4.0	14	3	-	34	14	9
Equatorial Guinea	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF
Eritrea	31	19	6.14	1.79	-	-	-	-
Ethiopia	46	59	7.64	4.93	-	-	123	37
Gabon	-	-	64	-	-	124	107	40
Gambia	-	-	-	-	-	-	-	-
Ghana	350	280	41	-	1250	-	60	-
Guinea	217	1.75	44	20	-	-	20	11
Guinea Bissau	-	-	40	12	-	-	-	5
Kenya	-	30	39	24	250	97	40	25
Lesotho	40	-	-	-	100	166	-	-
Liberia	102	5.5	210	112	125	208	75	75
Madagascar	-	-	-	-	-	-	-	-
Malawi	82	50	15	2.00	15	25	7.50	5.00
Mali	66	-	30	-	-	-	-	-
Mauritania	31	4.2	-	-	-	-	-	-
Mauritius	60	-	NMF	400	280-480	800	240	160
Mozambique	200	50	20	-	308	-	-	-
Namibia	186	67	20	10	152	-	-	-
Niger	-	-	48	48	-	-	32	4-8
Nigeria	255	NMF	NMF	203	-	-	-	-
Rwanda	148	134	7.46	-	-	-	-	-
Sao Tome&Principe	400	1.5	1.35	-	-	142	-	45
Senegal	12.0	1.3	40	7.1	-	893	27	7.1
Seychelles	30	-	-	-	-	-	-	50
Sierra Leone	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF
South Africa	-	-	-	-	-	-	-	-
Swaziland	-	-	-	-	-	-	-	-
Tanzania	-	-	-	-	-	-	-	-
Togo	NMF	NMF	4.2	14	NMF	NMF	-	-
Uganda	-	-	-	-	11	5.93	14	87
Zambia	59	-	22	-	20	-	28	8
Zimbabwe	65	-	6	-	26	15	35	25
Region	65	30	21	40	125	124	35	25

(-) = No data provided; NMF = No Meaningful Figure; Source: JMP (1999)





Table 5.4: Average Annual Sector Investments, 1990 - 1999

Country	National Funds (1000 US\$)					External Funds (1000 US\$)					Overall Total (1000US\$)
	Urban Water	Rural Water	Urban Sanitation	Rural Sanitation	Total National	Urban Water	Rural Water	Urban Sanitation	Rural Sanitation	Total External	
Algeria	^a 828		^b 346		1,174	-	-	-	-	NMF	-
Angola	4,719	1,539	3,300	385	9,943	75,189	5,345	51,750	1,336	133,620	143,563
Benin	453	391	38	91	973	4,075	5,897	342	194	10,508	11,481
Botswana	162	45	56	16	279	-	-	-	15	15	294
Burkina Faso	116	760	-	-	876	5,038	11,733	24	12	16,807	17,683
Burundi	-	-	-	-	-	-	-	-	-	-	-
Cameroon	-	-	-	-	-	-	-	-	-	-	-
Cape Verde	-	-	-	-	-	-	-	-	-	-	-
Central Afr.Rep.	52	2,080	-	-	2,132	22,060	48,440	6,577	-	77,077	79,209
Chad	-	-	-	-	-	11,954	70,193	-	-	82,147	82,147
Comores	-	-	52	16	68	-	-	208	64	272	340
Congo	2,429	665	-	-	3,094	204	763	-	-	967	4,061
Cote d'Ivoire	9,333	1,417	-	-	10,750	4,000	9,333	-	-	13,333	24,083
Dem.Rep.of Congo	59	-	-	-	59	782	-	-	-	782	841
Equatorial Guinea	38	-	-	-	38	76	88	-	29	193	231
Eritrea	1,785	1,785	-	-	3,571	9,214	2,724	-	-	11,938	15,509
Ethiopia	61,732	31,332	26,456	13,428	132,948	19,507	2,660	8,360	1,140	31,667	164,615
Gabon	^c 83,645	7,962	-	-	91,607	-	6,370	-	-	-	97,979
Gambia	-	-	-	-	-	-	-	-	-	-	-
Ghana	6,800	7,400	800	350	15,350	30,000	13,700	7,200	6,750	57,650	73,000
Guinea	972	^d 702	21		1,695	8,090	^e 16,947	174		25,211	26,906
Guinea Bissau	1,000	5,223	191	243	6,657	9,998	52,226	1,906	2,336	66,466	73,123
Kenya	13,547	10,868	2,936	2,000	29,351	28,653	10,853	8,400	151	48,057	77,408
Lesotho	1,577	1,656	1,750	789	5,772	6,356	3,793	3,670	3,619	17,438	23,210
Liberia	-	-	-	-	-	300	178	216	15	709	709
Madagascar	3,898	6,919	-	-	10,817	-	606	39	-	645	11,463
Malawi	-	-	-	-	-	-	-	-	-	-	-
Mali	^f 1,000				1,000	49	157	-	-	207	1,207
Mauritania	5,559	273	820	-	6,652	3,301	4,138	-	-	7,439	14,091
Mauritius	^g 26,000	-	15,000		41,000	-	-	-	-	-	-

Table 5.4: Average Annual Sector Investments, 1990 - 1999 (continued)

Country	National Funds (1000 US\$)					External Funds (1000 US\$)					Overall Total (1000US\$)
	Urban Water	Rural Water	Urban Sanitation	Rural Sanitation	Total National	Urban Water	Rural Water	Urban Sanitation	Rural Sanitation	Total External	
Mozambique	-	-	-	-	-	-	-	-	-	-	-
Namibia	^h 39,808	^d 18,450	-	-	58,268	^h 7,467	ⁱ 7,233	-	-	14,700	72,968
Niger	-	-	-	-	-	-	-	-	-	-	-
Nigeria	233,001	26,545	4,085	60	263,693	148,498	27,742	2,000	36	178,276	441,967
Rwanda	652	183	62	0.447	898	5,870	1,644	565	8	8,088	8,986
Sao Tome&Principe	8	8	-	301	317	7,585	425	-	238	8,249	8,566
Senegal	625	1,164	89	-	1,878	17,394	6,919	1,006	144	25,464	27,343
Seychelles	10	-	11	-	21	40	-	25	-	65	86
Sierra Leone	950	1,000	400	350	2,700	3,600	6,500	2,500	1,500	14,100	16,800
South Africa	-	-	-	-	-	-	-	-	-	-	-
Swaziland	18	45	6	100	169	25	175	9	60	269	438
Tanzania	794	1,332	190	46	2,362	2,121	2,720	597	117	5,555	7,917
Togo	41	41	50	-	133	3,154	4,047	-	-	7,202	7,335
Uganda	2,093	1,676	-	419	4,188	23,740	11,421	-	1,269	36,430	40,618
Zambia	-	-	-	-	2,614	-	-	-	-	20,219	22,832
Zimbabwe	23,000	28,000	18,000	12,000	81,000	-	-	-	-	-	-
Region	526,704	159,461	74,659	30,594	791,418	458,340	334,970	95,568	19,033	907,911	1,699,329

^a amount for urban & rural water supplies

^b amount for urban & rural sanitation

^c total amount for urban water supplies from both external & national resources

^d amount for both rural water and sanitation from national resources

^e amount for both rural water and sanitation from external resources

^f total amount for urban and rural water supplies as well as sanitation

^g total amount for urban water supplies and rural sanitation

^h amount for both urban water and sanitation

ⁱ amount for both rural water and sanitation from external resources

(-) = No data provided; NMP = No Meaningful Figure

Source: JMP (1999)



Table 7.1: Constraints to Sector Development

Constraints	No. of Countries Indicating Constraint ^a			Ranking Index ^b
	Very Severe	Severe	Moderate	
Funding limitations	31	10	3	116
Inadequate operation and maintenance	18	20	5	99
Logistics	21	13	7	96
Inadequate cost recovery framework	19	15	8	95
Insufficient health education efforts	14	18	10	88
Non-involvement of communities	7	22	13	78
Inadequate or outmoded legal framework	9	14	13	68
Inappropriate institutional framework	6	17	15	67
Intermittent water service	7	13	18	65
Lack of definite government policy for sector development	7	9	20	59
Lack of planning and design criteria	6	11	18	58
Inappropriate technology	3	12	22	52
Insufficiency of trained personnel at the professional level	9	7	9	50
Inadequate water resources	4	10	18	50
Import restrictions	5	6	20	47
Insufficient knowledge of water resources	0	8	25	41
Insufficiency of trained personnel at the sub-professional level	4	7	11	37
Insufficiency of trained personnel	5	5	7	32

^aNumber of reporting countries = 45

^bRanking Index = (No. very severe x 3) + (No. severe x 2) + (No. moderate x 1)

Source: JMP (1999)

Table 7.2: Trends in Sector Constraints

Constraints	Rank						Sum Of Ranks
	1980	1983	1985	1988	1990	1999	
Funding limitations	1	1	1	1	1	1	6
Inadequate operation and maintenance	13	2	4	3	3	2	27
Logistics	3	3	2	2	4	3	17
Inadequate cost recovery framework	2	17	13	17	2	4	55
Insufficient health education efforts	17	13	3	13	13	5	64
Non-involvement of communities	7	4	17	4	17	6	55
Inadequate or outmoded legal framework	9	5	7	9	5	7	42
Inappropriate institutional framework	8	7	8	7	7	8	45
Intermittent water service	16	8	15	5	9	9	62
Lack of definite government policy for sector development	4	9	9	16	6	10	54
Lack of planning and design criteria	11	16	16	6	8	11	68
Inappropriate technology	15	6	5	8	16	12	62
Insufficiency of trained personnel at the professional level	12	15	10	10	10	13	70
Inadequate water resources	5	12	14	12	12	14	69
Import restrictions	10	10	12	14	11	15	72
Insufficient knowledge of water resources	6	11	6	11	15	16	65
Insufficiency of trained personnel at the sub-professional level	14	14	11	15	14	17	85

Source: WHO





Annex A: References

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Annex B: Definitions

Urban population: The population living within urban centers according to national criteria.

Rural population: The population living outside urban centers according to national criteria.

Water supply coverage: Defined in terms of access to water, based upon the type of technology employed, distance from the house and quantity available. Access includes (1) household water connections which can have either taps within the house or within a private plot of land, or (2) public water points, including public standpipes, boreholes with handpumps, protected dug wells, protected springs, rainwater collection or other locally defined technologies. Reasonable access to a public water point is broadly defined as the availability of at least 20 litres per person per day of safe water from a public water point located within one kilometer of the user's dwelling.

Sanitation coverage: Defined in terms of access to a sanitation technology that provides for adequate disposal of human excreta. This can be any private or shared excreta disposal system that hygienically separates human excreta from human contact. Access can be (1) a household piped connection to a public sewer or (2) an on-site sanitation system, including septic tanks, pour flush latrines, VIP latrines, simple pit latrines or other locally defined technologies.

Functioning water systems: (1) piped systems leading to house connections, yard taps or standpipes should operate at greater than 50% design capacity on a daily basis; (2) handpumps should operate more than 70% of the time and should experience no breakdown periods greater than two weeks.

Functioning sanitation systems: the facility is structurally and operationally sound and is attractive for and encourages use.

NMF: No meaningful figure. Information was provided but it had problems and could not be used.



Annex C: Table C.1: Levels of Water Supply Services, 1999

Country	Urban Pop (000s)	House Taps (%)	Public Water Point (%)	Urban Pop Served (%)	Rural Pop (000s)	House Taps (%)	Public Water Point (%)	Rural Pop Served (%)
Algeria	18,969	81	8	98	12,502	21	55	88
Angola	4,404	22	24	34	8,474	0.01	22	40
Benin	2,577	49	-	74	3,520	0	52	55
Botswana	815	82	18	100	807	9	76	-
Burkina Faso	2,204	15	83	84	9,733	0.2	89	-
Burundi	600	51	45	96	6,095	3	58	-
Cameroon	7,379	-	-	82	7,706	-	-	42
Cape Verde	266	NMF	NMF	64	162	NMF	NMF	89
Central Afr.Rep.	1,489	8	12	80	2,126	-	35	46
Chad	1,820	10	41	31	5,831	0	17	26
Comores	231	48	50	98	464	20	75	95
Congo	1,621	58	13	71	1,181	5	12	17
Cote d'Ivoire	6,854	10	79	90	7,932	2	86	65
Dem.Rep.of Congo	15,641	53	21	89	36,014	-	24	26
Equatorial Guinea	218	15	30	45	234	0	42	42
Eritrea	722	-	-	63	3,129	-	-	42
Ethiopia	11,042	73	8	77	51,523	4	11	13
Gabon	998	46	27	73	228	-	56	55
Gambia	424	75	5	80	882	0	53	53
Ghana	7,753	31	40	87	12,460	-	-	49
Guinea	2,435	29	32	72	4,995	-	62	36
Guinea Bissau	288	20	8	29	925	0	55	55
Kenya	9,957	58	36	87	20,123	12	28	31
Lesotho	602	32	20	98	1,551	-	-	88
Liberia	1,416	NMF	NMF	-	1,738	NMF	NMF	-
Madagascar	4,721	-	-	85	11,221	-	-	31
Malawi	2,723	61	26	95	8,202	0	48	44
Mali	3,375	-	-	74	7,859	-	-	61
Mauritania	1,541	86	-	34	1,128	41	0	40
Mauritius	478	98	2	100	680	84	16	100
Mozambique	7,917	35	60	86	11,764	1	76	43
Namibia	533	82	18	100	1,193	0	34	67
Niger	2,207	-	-	70	8,523	-	56	56
Nigeria	49,050	16	42	81	62,456	15	24	39
Rwanda	476	59	1	60	7,257	3	37	40
SaoTome&Principe	69	-	-	-	78	-	-	-
Senegal	4,498	51	21	92	4,983	-	-	65
Seychelles	26	100	-	-	52	75	0	-
Sierra Leone	1,779	-	-	23	3,076	-	-	31
South Africa	20,330	-	-	92	20,047	-	-	80
Swaziland	334	41	48	-	649	5	35	-
Tanzania	11,021	18	60	80	22,496	1	35	42
Togo	1,540	19	63	85	3,089	1	45	38
Uganda	3,083	10	63	72	18,695	2	19	46
Zambia	3,632	47	35	88	5,537	2	26	48
Zimbabwe	4,121	96	3	100	7,548	2	75	77
Region	224,354	51	32	83	406,859	3	40	42

(-) = No data provided; NMF= No Meaningful Figure
Source: JMP (1999)



Table C.2: Levels of Sanitation Services, 1999

Country	Urban Pop (000s)	Public Sewers (%)	Other System (%)	Urban Pop Served (%)	Rural Pop (000s)	Public Sewers (%)	Other System (%)	Rural Pop Served (%)
Algeria	18,969	78	12	90	12,502	11	36	47
Angola	4,404	7	18	70	8,474	-	15	30
Benin	2,577	0.1	53	46	3,520	0	9	6
Botswana	815	34	53	-	807	5	28	-
Burkina Faso	2,204	0	88	88	9,733	0	16	16
Burundi	600	4	75	79	6,095	0	50	-
Cameroon	7,379	-	-	99	7,706	-	-	85
Cape Verde	266	NMF	NMF	95	162	NMF	NMF	32
Central Afr.Rep.	1,489	-	-	43	2,126	-	-	23
Chad	1,820	0	2	81	5,831	0	0.30	13
Comores	231	-	98	98	464	0	98	98
Congo	1,621	-	14	14	1,181	-	-	-
Cote d'Ivoire	6,854	11	81	-	7,932	0	43	-
Dem.Rep.of Congo	15,641	4	53	53	36,014	0.1	6	6
Equatorial Guinea	218	25	36	60	234	0	46	46
Eritrea	722	-	-	66	3,129	-	-	1
Ethiopia	11,042	NMF	NMF	58	51,523	0	6	6
Gabon	998	-	25	25	228	0	4	4
Gambia	424	34	7	41	882	0	35	35
Ghana	7,753	47	40	62	12,460	0	15	64
Guinea	2,435	8	86	94	4,995	0	41	41
Guinea Bissau	288	1	87	88	925	0	34	34
Kenya	9,957	28	69	96	20,123	0.4	81	81
Lesotho	602	NMF	NMF	93	1,551	NMF	NMF	92
Liberia	1,416	NMF	NMF	-	1,738	NMF	NMF	-
Madagascar	4,721	-	-	70	11,221	-	-	30
Malawi	2,723	7	37	96	8,202	0	48	70
Mali	3,375	NMF	NMF	93	7,859	-	-	58
Mauritania	1,541	44	-	44	1,128	19	0	19
Mauritius	478	42	58	100	680	2	97	99
Mozambique	7,917	12	58	69	11,764	1	25	26
Namibia	533	84	12	96	1,193	0	17	17
Niger	2,207	0	79	79	8,523	0	5	5
Nigeria	49,050	-	50	85	62,456	-	39	45
Rwanda	476	-	12	12	7,257	0	8	8
SaoTome&Principe	69	-	-	-	78	-	-	-
Senegal	4,498	14	56	94	4,983	0	13	48
Seychelles	26	NMF	NMF	-	52	NMF	NMF	-
Sierra Leone	1,779	6	18	23	3,076	0	31	31
South Africa	20,330	-	-	99	20,047	-	-	73
Swaziland	334	49	47	-	649	0	63	-
Tanzania	11,021	3	93	98	22,496	0.3	84	86
Togo	1,540	4	66	69	3,089	0	27	17
Uganda	3,083	10	86	96	18,695	0.2	72	72
Zambia	3,632	76	23	99	5,537	53	11	64
Zimbabwe	4,121	92	7	99	7,548	NMF	NMF	51
Region	224,354	28	53	81	406,859	NMF	35	41

(-) = No data provided; NMF= No Meaningful Figure

Source: JMP (1999)



Table C.3 : Operational Aspects

Country	Percentage of urban water systems providing Intermittent supply (%)	Typical number of hours per day when available in urban areas. (hrs/day)	Percentage of urban drinking-water systems using disinfection. (%)	Percentage of rural water supplies functioning. (%)	Treatment of Wastewater from Public Sewers (%)
Algeria	-	-	-	-	-
Angola	100	8	34	47	-
Benin	0	24	100	95	100
Botswana	0	24	100	100	95
Burkina Faso	0	24	100	100	0
Burundi	0	24	100	-	0
Cameroun	-	24	100	-	-
Cape Verde	-	-	-	-	-
Cent. African Rep.	0	24	100	88	-
Chad	-	-	100	-	0
Comores	95	20	5.3	100	-
Cote d'Ivoire	0	24	100	63	-
Congo Brazzaville	16	24	100	60	0
Dem Rep. Congo	60	2.36	100	40	0
Equatorial Guinea	40	2.5	0	42.3	0
Eritrea	-	-	-	-	-
Ethiopia	-	8	-	0	-
Gabon	0	24	100	0	0
Gambia	0	24	100	60	0
Ghana	100	20	95	35	1.5
Guinea	0	24	24	93	0
Guinea Bissau	100	-	0	55	0
Kenya	57	16	79	92	76
Lesotho	0.1	24	100	-	100
Liberia	5.1	-	-	4.2	-
Madagascar	60	24	60-100	70	0
Malawi	10	24	100	80	90
Mali	-	-	-	72	0
Mauritania	-	24	9.1	31	5
Mauritius	100	6	100	100	20
Namibia	100	24	85	95-100	100
Niger	-	24	11	67	0
Nigeria	-	-	-	50	-
Rwanda	0	-	100	40	-
Sao Tome & Principe	90	10	-	60	0
Senegal	8.9	-	100	94.4	6.3
Seychelles	-	-	100	100	100
Sierra Leone	35	22	100	25	0
South Africa	-	-	-	-	-
Swaziland	-	-	100	60	-
Tanzania	75	14	65	70	2.5
Togo	82	24	100	76.8	0
Uganda	-	-	-	70	-
Zambia	81.3	8	27.5	72	-
Zimbabwe	-	24	98.2	88	90

(-) = No Data Provided.

Source : JMP (1999)



Table C.4 : Health/Hygiene Education Policy and Water Quality Control

Country	Health Policy		Water Quality Control		
	Established policy on incorporating health and hygiene education in primary School curricula.	Percentage of schools that have health education incorporated in their curriculum (%)	Established Official National Drinking-Water quality standards	Comparison of National standards with WHO Guidelines for Drinking Water Quality.	Rate of effectiveness of the control of drinking-water quality.
Algeria	Yes	100	Yes	Same parameters with WHO	More effective in urban systems
Angola	Yes	30 schools in 9 provinces	Yes	Same parameters with WHO	Not as effective in both urban & rural
Benin	-	-	Yes	More strict than WHO	Not as effective in both urban & rural
Botswana	Yes	100	Yes	Same parameters with WHO	More effective in urban systems
Burkina Faso	Yes	100	Yes	Same parameters with WHO	More effective in urban systems
Burundi	No	-	No	-	More effective in urban systems
Cameroun	Yes	-	Yes	-	Not effective in both urban & rural
Cape Verde	-	-	-	-	-
Central African Rep.	No	100	Yes	Same parameters with WHO	More effective in urban systems.
Chad	Yes	80	Yes	More strict than WHO	Not as effective in urban systems.
Comores	No	14	Yes	More strict than WHO	-
Congo	No	-	No	-	Not as effective in both urban & rural
Cote d'Ivoire	Yes	100	Yes	Same parameters with WHO	Not as effective in both urban & rural
Democratic Rep. Of Congo	Yes	100	No	-	Not as effective in both urban & rural
Equat. Guinea	No	-	Yes	Less strict than WHO	Not as effective in both urban & rural
Eritrea	Yes	100	Yes	Same parameters with WHO	Not as effective in both urban & rural
Ethiopia	Yes	100	Yes	Same parameters with WHO	Not as effective in both urban & rural
Gabon	Yes	100	Yes	Same parameters with WHO	More effective in urban systems
Gambia	Yes	90	Yes	Same parameters with WHO	Effective in both urban & rural
Chana	Yes	85	Yes	Same parameters with WHO	Effective in both urban & rural
Guinea	Yes	100	Yes	More strict than WHO	More effective in rural systems
Guinea Bissau	Yes	-	Yes	Same parameters with WHO	Not as effective in both systems
Kenya	Yes	100	Yes	Same parameters with WHO	More effective in urban systems
Lesotho	Yes	100	Yes	Less strict than WHO	More effective in urban systems
Liberia	No	-	Yes	Same parameters with WHO	Not as effective in rural systems
Madagascar	-	-	Yes	Same parameters with WHO	More effective in urban systems





Table C.4 : Health/Hygiene Education Policy and Water Quality Control (continued)

Country	Health Policy		Water Quality Control		
	Established policy on incorporating health and hygiene education in primary School curricula.	Percentage of schools that have health education incorporated in their curriculum (%)	Established Official National Drinking-Water quality standards	Comparison of National standards with WHO Guidelines for Drinking Water Quality.	Rate of effectiveness of the control of drinking-water quality.
Malawi	Yes	100	Yes	Less strict than WHO	More effective in urban systems
Mali	Yes	-	No	-	Not as effective in both urban & rural
Mauritania	Yes	-	Yes	Same parameters with WHO	Not as effective in both urban & rural
Mauritius	Yes	100	Yes	Same parameters with WHO	Effective in both urban & rural
Mozambique	-	-	-	-	-
Namibia	Yes	100	Yes	Same parameters with WHO	Effective in both urban & rural
Niger	No	-	Yes	Same parameters with WHO	More effective in urban systems
Nigeria	-	-	No	-	More effective in urban systems.
Rwanda	Yes	100	Yes	Same parameters with WHO	More effective in urban systems.
Sao Tome & Principe	Yes	100	Yes	Less strict than WHO	-
Senegal	Yes	-	Yes	Same parameters with WHO	Effective in urban systems.
Seychelles	Yes	100	Yes	Same parameters with WHO	Effective in both urban & rural.
Sierra Leone	Yes	100	Yes	Same parameters with WHO	More effective in urban systems
South Africa	-	-	-	-	-
Swaziland	Yes	40	Yes	Same parameters with WHO	Effective in both urban & rural.
Tanzania	Yes	100	Yes	Less strict than WHO	Not as effective in rural systems.
Togo	Yes	100	-	-	-
Uganda	Yes	100	Yes	Same parameters with WHO	More effective in urban systems.
Zambia	Yes	80	Yes	Same parameters with WHO	More effective in both urban & rural
Zimbabwe	Yes	100	Yes	Same parameters with WHO	More effective in urban systems.

(-) = No Data Provided

Source : JMP (1999)

Table C.5: Community Management & Private Sector Involvement

Country	Community Management of Rural WSS		Involvement of the Private Sector (% Systems Managed)						
	National Policy	Rural Villages Manage WSS (%)	Public Provision	Service Contract	Management Contract	Leasing	Concessions	Private Entrepreneurship	Other
Algeria	No	-	100	NA	NA	NA	NA	NA	NA
Angola	No	11	100	NA	NA	NA	NA	NA	NA
Benin	Yes	100	100	NA	NA	NA	NA	NA	NA
Botswana	No	0	50	NA	NA	NA	NA	50	NA
Burkina Faso	Yes	100	97	3	0.03	NA	NA	NA	NA
Burundi	Yes	100	100	NA	NA	NA	NA	NA	NA
Cameroon	Yes	-	NA	NA	NA	NA	100	NA	NA
Cape Verde	-	-	-	-	-	-	-	-	-
Central Afr.Rep.	Yes	100	NA	NA	100	NA	NA	NA	NA
Chad	Yes	80	100	NA	NA	NA	NA	NA	NA
Comores	Yes	10	NA	NA	NA	5	NA	NA	NA
Congo	Yes	5	100	NA	NA	NA	NA	NA	NA
Cote d'Ivoire	Yes	56	NA	NA	NA	NA	100	NA	NA
Dem.Rep.of Congo	Yes	-	100	NA	NA	NA	NA	NA	NA
Equatorial Guinea	Yes	100	NA	NA	NA	NA	NA	NA	NA
Eritrea	Yes	100	100	NA	NA	NA	NA	NA	NA
Ethiopia	Yes	< 1	100	NA	NA	NA	NA	NA	NA
Gabon	Yes	100	NA	NA	NA	NA	100	NA	NA
Gambia	No	50	100	NA	NA	NA	NA	NA	NA
Ghana	Yes	33	100	NA	NA	NA	100 (year 2000)	NA	NA
Guinea	Yes	61	49	NA	NA	NA	NA	51	NA
Guinea Bissau	Yes	-	-	-	-	-	-	-	-
Kenya	Yes	42	99	NA	NA	NA	NA	NA	Commercialise 1.5%
Lesotho	Yes	-	100	NA	NA	NA	NA	NA	NA
Liberia	No	0	NA	NA	5	NA	NA	NA	NA
Madagascar	Yes	-	100	NA	NA	NA	NA	NA	NA
Malawi	Yes	80	100	NA	NA	NA	NA	NA	NA
Mali	Yes	100	NA	NA	70	NA	30	NA	NA
Mauritania	Yes	100	-	-	-	-	-	-	-
Mauritius	Yes	0.2	NA	2	NA	NA	NA	NA	NA
Mozambique	Yes	-	100	NA	NA	NA	NA	NA	NA
Namibia	Yes	0	NA	NA	NA	NA	NA	NA	NA
Niger	Yes	44	NA	NA	NA	NA	NA	NA	100 % Private Entrepren but Partly Gov. owned
Nigeria	Yes	-	-	-	-	-	-	-	-
Rwanda	Yes	27	100	NA	NA	NA	NA	NA	NA
Sao Tome &Principe	Yes	1.8	100	NA	NA	NA	NA	NA	NA
Senegal	Yes	49	100	NA	NA	NA	NA	NA	NA
Seychelles	No	0	NA	NA	NA	NA	NA	NA	Finance & building 2%
Sierra Leone	Yes	12	0.2	5	12	NA	NA	NA	NA
South Africa	-	-	-	-	-	-	-	-	-
Swaziland	Yes	75	NA	NA	NA	NA	NA	NA	Company Town System 15%
Tanzania	Yes	15	100	NA	NA	NA	NA	NA	NA
Togo	-	45	100	NA	NA	NA	NA	NA	NA
Uganda	No	-	-	-	-	-	-	-	-
Zambia	Yes	-	100	-	-	-	-	-	-
Zimbabwe	No	21	90	2	-	-	-	-	-

(-) = No Data Provided

(NA) = Not Applicable

Source: JMP (1999)



Table C.6: National Drinking Water Supply and Sanitation Plans

Country	Completed	Date	Being Prepared	Expected date of Completion
Algeria	NA	NA	Yes	2020
Angola	NA	NA	Yes	2000
Benin	-	-	-	-
Botswana	-	1990	-	June 6, 1999
Burkina Faso	NA	NA	Yes	-
Burundi	-	-	-	-
Cameroon	-	-	-	-
Cape Verde	-	-	-	-
Central Afr.Rep.	NA	NA	Yes	2001
Chad	NA	NA	Yes	2002
Comores	Yes	July 1998	NA	NA
Congo	NA	NA	Yes	2000
Cote d'Ivoire	Yes	-	-	2002
Dem.Rep.of Congo	Yes	Nov, 1998	NA	NA
Equatorial Guinea	-	-	-	-
Eritrea	NA	NA	NA	NA
Ethiopia	-	-	-	2000
Gabon	Yes	1997 (water)	NA	NA
Gambia	-	-	-	-
Ghana	-	1998 (water)	-	-
Guinea	NA	NA	Yes	NMF
Guinea Bissau	Yes	Dec, 1997	NA	NA
Kenya	Yes	1998	NA	NA
Lesotho	Yes	1995	NA	NA
Liberia	-	-	-	June 30, 1999
Madagascar	Yes (water)	-	Yes	Jan, 1999
Malawi	-	1994 (sanitation)	NA	NA
Mali	Yes	1991, 1996	NA	NA
Mauritania	NA	NA	Yes	1999
Mauritius	-	-	-	-
Mozambique	Yes	1998	NA	NA
Namibia	Yes (water)	1993	Yes (sanitation)	1999
Niger	-	-	-	-
Nigeria	Yes	1995	NA	NA
Rwanda	-	-	-	-
SaoTome&Principe	Yes	Jan, 1998	NA	NA
Senegal	Yes	1995 & 1999	NA	NA
Seychelles	NA	NA	-	2000
Sierra Leone	Yes	1982	Yes	NMF
South Africa	-	-	-	-
Swaziland	Yes	Nov 1998 (rural) Short term. 1996 (rural) Long term.	Yes	March 2000/01
Tanzania	-	June, 1999	NA	NA
Togo	-	1983	NA	NA
Uganda	Yes	-	Yes	Aug, 1999 (rural Water)
Zambia	Yes	1998	NA	NA
Zimbabwe	NA	1985	Yes	2005

(-) = No data provided

(NA) = Not Applicable

Source: JMP (1999)



Table C.7: Institutional Responsibilities

Country	Urban Water	Rural Water	Urban Sanitation	Rural Sanitation
Algeria	NMF	NMF	NMF	NMF
Angola	Min. da Energia e Aguas	Min. da Energia e Aguas. Direcções Provincias de Aguas e Empresas e Hidroninas.	Serviços Corunitários dos Governos Provinciais.	Min. da Energia e Aguas Empresas Fiscalizadoras
Benin	Société Béninoise d'Electricité et d'eau	Direction de l'Hydraulique	Direction de l'Hygiène et de l'Assainissement de Base.	Direction de l'Hygiène et de l'Assainissement de Base.
Botswana	Water Utilities Corp.	Dept. of Water Affairs	Min. of Local Govt. Lands & Housing.	Local Authorities.
Burkina Faso	Office National de l'Eau et de l'Assainissement	NMF	NMF	NMF
Burundi	Min. de l' Energie et des Mines	Min. du Déve loppement Communal et de l'Artisanat	Min. de l'Intérieur et de la Sécurité Publique	Min. du Déve loppement Communal et de l'Artisanat
Cameroun	NMF	NMF	NMF	NMF
Cape Verde	-	-	-	-
Cent. African Rep.	NMF	NMF	NMF	NMF
Chad	Direction de l'Hydraulique/Min de l'Environnement et de l'Eau	Direction de l'Hydraulique/Min de l'Environnement et de l'Eau	Division Hygiène Milieu et Assainissement/Min. de la Santé Publique	Division Hygiène Milieu et Assainissement/Min. de la Santé Publique
Comores	NMF	NMF	NMF	NMF
Congo	Min. de l'Energie et de l'Hydraulique Société Nationale de Distribution D'Eau	Min. de l'Energie et de l'Hydraulique	Communes Urbaines	Min. de la Santé et de l'Action Humanitaire
Cote d' Ivoire	NMF	NMF	NMF	NMF





Table C.7: Institutional Responsibilities (continued)

Dem. Rep. Congo	REGIDESO S.N.H.R	REGIDESO S.N.H.R	O.V.D	Min. de la Sante Publique
Equatorial Guinea	NMF	NMF	NMF	Organisme Non Gouvernemental
Eritrea	-	-	-	-
Ethiopia	Min. of Water Resources	Min. of Water Resources Min. of Health	Min. of Health Min. of Urban Dev & Works Min. of Water Resources	Min. of Health
Gabon	Min. de l'Interieur, de la Sécurité Publique et de la Décentralisation Société d'Energie et d'Eau du Gabon	Min. de l'Interieur, de la Sécurité Publique et de la Décentralisation Société d'Energie et d'Eau du Gabon Min. des Mines, de l'Energie, du Pétrole et des Ressources Hydrauliques	Min. de l'Interieur, de la Sécurité Publique et de la Décentralisation Min. de l'Equipement et de la Construction.	Min. de l'Interieur, de la Sécurité Publique et de la Décentralisation. Min. du Planification, de la Programmation, du Développement et de l'Aménagement du Territoire
Gambia	Dept. of Water Resources Nat'l Water and Electricity Corp. Private Sector	Village Dev. Committee Nat'l Water and Electricity Corp. Private Sector	Nat'l Environment Agency Private Sector	Nat'l Environment Agency Village Dev. Committee
Ghana	Ghana Water & Sewerage Corp	Comm. Water & San Agency	Metro/Municipal/District Assemblies	Comm. Water & San Agency
Guinea	Société Nationale des Eaun de Guinée Société d'Exploitation des Eaun de Guinée	Service National d'Aménagement Des Points d'Eau Bénéficiaires	Direction Nationale de l'Amenagement des Territoires Urbaines. Société d'Exploitation des Eaun de Guinée	Service National d'Aménagement Des Points d'Eau Min. de la Santé
Guinea Bissau	Direcção Geral Dos Recursos Naturais E Ambiente Empresas	Direcção Geral Dos Recursos Naturais E Ambiente Empresas Colectividades Locais	Municípios Min. do Equipamento Social	Direcção Geral Dos Recursos Naturais E Ambiente Direcção Geral De Saúde Pública Colectividades Locais

Table C.7: Institutional Responsibilities (continued)

Kenya	Min. of Water Resources Local Authorities	Min. of Water Resources Private Sector	Private Sector Min. of Local Authorities	Min. of Health
Lesotho	Water and Sewerage Authority	Dept. of Rural Water Supply	Water & Sewerage Authority	Nat'l Rural San Programme
Liberia	NMF	NMF	NMF	NMF
Madagascar	Comité Nationale de l'Eau et de L'Assainissement	Comité Nationale de l'Eau et de L'Assainissement	Min. de l'Aménagement du Territoire et de la Villa	Min. de la Santé
Malawi	Blantyre, Lilongwe, Southern Region, Central Region & Northern Region Water Boards	Min. of Water Dev	Min. of Local Gov't	Min. of Health
Mali	NMF	NMF	NMF	NMF
Mauritania	SONELEC Min. de l'Hydraulique et de l'Energie	Min. de l'Hydraulique et de l'Energie Direction de l'Hydraulique	Min. de l'Hydraulique et de l'Energie SONELEC	Communes
Mauritius	The Central Water Authority for Water Supply	The Central Water Authority for Water Supply	Min. of Public Utilities & Waste Water Authority	Min. of Health and Quality of Life Min. of Local Gov't
Mozambique	NMF	NMF	NMF	NMF
Namibia	Min. of Agri, Water & Rural Dev Min. of Regional, Local Gov't & Housing	Min. of Agri, Water & Rural Dev	Min. of Regional. Local Gov't & Housing	Min. of Health & Social Services
Niger	Société Nationale des Eaux	Min. de l'Hydraulique et de L'Environnement Comités de gestion des Points d'Eau	Min. de la Santé Publique Min. de l'Équipement et des Infrastructures Collectivités	Min. de la Santé Publique
Nigeria	Federal Min. of Water Resources	Federal Min. of Water Resources	Federal Min. of Water Resources	Federal Min. of Water Resources





Table C.7: Institutional Responsibilities (continued)

Rwanda	Mi n. de l'Energie, de l'Eau et des Ressources Naturelles	Mi n. de l'Energie, de l'Eau et des Ressources Naturelles	NMF	NMF
Sao Tome & Principe	Empresa de Agua E Electricidade	Ministério da Economia	Direcção de Obras Públicas E Urbanismo	Ministério da Economia
Senegal	Société nationale des Eaux du Sénégal	NMF	NMF	NMF
Seychelles	Public Utilities Corp	Public Utilities Corp	Public Utilities Corp	Public Utilities Corp Min. of Health
Sierra Leone	NMF	NMF	NMF	NMF
South Africa	NMF	NMF	NMF	NMF
Swaziland	Swaziland Water Services Corp	NMF	Swaziland Water Services Corp	Min. of Health & Social Welfare
Tanzania	Min. of Water	Min. of Water	Min. of Water Min. of Regional Admin. & Local Gov't	Min. of Water
Togo	Direction Générale du Plan Développement	Direction Générale du Plan Développement	Direction Générale du Plan Développement	Division de la Salubrité Publique et du Génie Sanitaire
Uganda	Nat'l Water & Sewerage Corp	Min. of Natural Resources	Nat'l Water & Sewerage Corp	Min. of natural Resources Min. of Local Gov't UNICEF
Zambia	Min. of Local Gov't & Housing Local Authorities	Min. of Local Gov't & Housing Min. of Energy & Water Dev. Local Authorities	Local Authorities	Min. of Local Gov't & Housing Local Authorities Min. of Health
Zimbabwe	Urban Local Authorities	National Action Committee Rural District Councils	Urban Local Authorities	National Action Committee Rural District Councils

(-) = No Data Provided

NMF = No Meaningful Figure; Source: JMP (1999)

Acronyms Used in the Report

ADB	African Development Bank
AIDS	Acquired Immunity Deficiency Syndrome
AMRO	American Regional Office
CREPA	Centre Régional Pour l'Eau Potable et l'Assainissement. (Centre for Drinking Water and Affordable Sanitation)
CBM	Community Based Management
DANIDA	Danish International Development Agency
DFID	Department for International Development
DHS	Demographic Health Survey
DRC	Democratic Republic of Congo
ECA	Economic Commission for Africa
GWP	Global Water Partnership
HIV	Human Immunodeficiency Virus
JMP	Joint Monitoring Program
MICS	Multi-Indicator Cluster Surveys
NGO	Non Governmental Organization
OAU	Organization for African Unity
PAHO	Pan African Health Organization
PHAST	Participatory Hygiene and Sanitation Transformation
PROWWESS	Promotion of the Role of Women in Water and Environmental Sanitation Services
SARAR	Self esteem, Associative Strength, Resourcefulness, Action-planning and Responsibility
SIDA	Swedish International Development Agency
UNCHS	United Nations Centre for Human Settlements
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Economic Fund
UNSI	United Nations System-wide Special Initiative on Africa
WASAI	Water and Sanitation African Initiative
WES	Water and Environmental Sanitation
WHO	World Health Organization
WMO	World Meteorological Organization
WPRO	Western Pacific Regional Office
WSSCC	Water Supply and Sanitation Collaborative Council
WUP	Water Utility Partnership
VLOM	Village Operation and Maintenance
VIP	Ventilated Improved Pit Latrine

