African Ministers' Council on Water

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Pan African Water Sector Monitoring and Evaluation Assessment

Volume 1: Main Report

African Water Facility
Facilité africaine de l'eau
Mobilising Resources for Water in Africa

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This document, published in two volumes, was prepared by the African Water Facility (AWF) at the request of the African Ministers' Council on Water (AMCOW).

Acknowledgements:

The African Development Bank acknowledges the significant work undertaken by the lead authors, Messrs Michael McGarry and Per Unheim of Cowater International Inc, Canada. The immense contribution of the ad-hoc Pan African M&E Working Group comprising representatives of AMCOW TAC, UN Water Africa, GWP and ANEW is acknowledged.

This publication is undertaken with the financial support of the AWF. The preparation of this document was coordinated by Peter Akari, Chief Water Policy Officer of the AWF, with support from the Water and Sanitation Department of the African Development Bank and the AWF.

Logo

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Graphical Conceptualization
African Development Bank, External Relations and Communication Unit in cooperation with ZAZA Création

Photo Credits
Cowater International, Canada
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Printing
ZAZA Création and Finzi Usines

Preparation and Printing Coordination
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List of Acronyms

AfDB	African Development Bank
AMCOW	African Ministerial Council on Water
ANAC	Agence nationale de l'aviation civile
ANBO	African Network of Basin Organizations
ANHR	Agence nationale de l'Hydraulique Rurale
ANSD	Agence nationale de la statistique et de la démographie
AQUASTAT	FAO's Global Information System on Water and Agriculture
ASECNA	Agence pour la sécurité de la navigation aérienne
ASUFOR	Agence pour la sécurité de la navigation aérienne
AWF	African Water Facility
BFP	Brigades de forages et puits (Senegal)
CBO	Community-based organization
CEDARE	Centre for Environment and Development for the Arab Region & Europe
CICOS	International Commission of the Congo-Oubangui-Sangha Basin
CNC	Comité national de coordination
CRDA	Commissariats régionaux du développement agricole
DAS	Direction de l'Assainissement
DEM	Direction de l'exploitation et de maintenance
DG-BGTH	Direction Générale des Barrages et de Grands Travaux Hydrauliques
DG-GREE	Direction Générale du Génie Rurale et de l'Exploitation des Eaux
DGE	Direction Générale de l'Énergie/l'Environnement
DGH	Direction Générale de l'Hydraulique
DGPRE	Direction de Gestion et de la Planification des Ressources en Eau
DGRE	Direction Générale des Ressources en Eau
DHG	Direction de l'Hygiène Générale
DHMPE	Direction de l'Hygiène du Milieu et de la Protection de l'Environnement
DHR	Direction de l'Hydraulique Rurale
DHS	Demographic and Health Surveys

DHU	Direction de l'Hydraulique Urbain
DWD	Directorate of Water Development (Uganda)
DWR	Department of Water Resources
DWRM	Directorate of Water Resources Management
EAC	East African Community
ECOWAS-WRCU	Economic Community of West African States' Water Resources Coordination Unit
EMWIS	Euro-Mediterranean Water Information System on Know-how in the Water Sector
FAO	Food and Agricultural Organization
GIS	Geographic Information System
GPA	Governance and Public Administration
GRSEN	Direction générale de recherche scientifique
GWP	Global Water Partnership
HDI	Human Development Index
HSA	Health Surveillance Assistant
IGAD	Inter-Governmental Authority for Development
INBO	International Network of Basin Organizations
IOW	International Office for Water
IT	Information Technology
IWRM	Integrated Water Resources Management
JMP	Joint Monitoring Program
M&E	Monitoring and evaluation
MBS	Malawi Bureau of Standards
MDGs	Millennium Development Goals
MEDD	Ministry of the Environment and Sustainable Development (Tunisia)
MEH	Ministère de l'énergie et d'hydraulique (Congo-Brazzaville)
MHRHN	Ministère de l'hydraulique rurale et du réseau hydrographique nationale
MICS	Multiple Indicator Cluster Surveys
MIS	Management Information System

MIWD	Ministry of Irrigation and Water Development (Malawi)
MLGRD	Ministry of Local Government and Rural Development (Malawi)
MoH	Ministry of Health
MoU	Memorandum of Understanding
MRS	Ministère de la recherche scientifique (Congo-Brazzaville)
MSE	Mean Squared Error
MSP	Ministère de la santé et de la population (Congo-Brazzaville)
MWE	Ministry of Water and Environment (Uganda)
NBI	Nile Basin Initiative
NFP	National Focal Point
NGO	Non-governmental organization
NWIS	National Water Information System(s)
NWSC	National Water and Sewerage Corporation (Uganda)
O&M	Operation and maintenance
OMVS	Organisation pour la mise en valeur du fleuve Sénégal
ONAS ONAS	Office Nationale de l'Assainissement de Sénégal OR Office Nationale de l'Assainissement (Tunisie)
PAGIRE	Plan d'action de gestion intégrée des ressources en eau
PCU	Program Coordination Unit
PEPAM	Programme d'eau potable et d'assainissement du millénaire
PRSP	Poverty Reduction Strategy Paper
RBO	River basin organization
REC	Regional Economic Community
RMC	Regional Member Country
RWSS	Rural water supply and sanitation
SADC	Southern African Development Community
SDE	Sénégalaise des eaux
SIMS	Sector Information and Monitoring Systems
SINEAU	Système d'information nationale de l'eau de la Tunisie
SNDE	Société nationale de distribution de l'eau (Congo-Brazzaville)
SONEDE	Société nationale de l'exploitation et de distribution des eaux (Tunisia)
SONES	Société nationale des eaux du Sénégal
SRB	Senegal River basin
SSWG	Sector Stakeholder Working Group

SYGREAU	Système de gestion des ressources en eau
SWAP	Sector-wide approach
TA	Technical Assistance
TAC	Technical Advisory Committee
TOR	Terms of reference
TWRM	Transboundary water resources management
UDBS	Unified Database System
UNDP	United Nations Development Program
UNECA	United Nations Economic Commission for Africa
UNICEF	United Nations' Children's Fund
VFM	Value for Money
VWC	Village Water Committee
WHO	World Health Organization
WPM	Water Point Mapping
WRD	Water Resources Department (Malawi)
WRM	Water Resources Management
WSP	Water and Sanitation Program (World Bank)
WSS	Water supply and sanitation
WSSD	Water Supply and Sanitation Department (Malawi)
WUA	Water Users' Association

Preamble

The importance to water sector development of strengthening national monitoring and evaluation (M&E) systems across Africa cannot be overemphazised. Relevant and reliable information is essential to ensure proper management of water resources and to track progress towards achievement of high level development targets such as the MDGs.

A principal conclusion of this study has been that water sector M&E is deficient in almost every African country. Furthermore, the failure of M&E systems in most countries has brought enormous opportunity costs in terms of poor distribution of services, increased poverty and ineffective use of scarce resources. As a result, better M&E systems are badly needed for planning and managing the sector.

Monitoring and evaluation are now recognized as indispensable performance management tools, vital in helping ascertain achievement of development objectives at national, regional and international levels as part of a results-based management effort. More effective M&E systems lead to improved service provision, better sector planning and management, and accurate tracking of progress towards the MDGs and the African Water Vision 2025.

Supporting water sector M&E at the national and regional level is one of the priority activities of the African Water Facility (AWF). In order to provide more effective M&E support to countries and to adequately harmonize, coordinate and align M&E activities at the regional level, the African Ministerial Council on Water (AMCOW) requested the AWF to support their efforts in implementing a pan-African monitoring and evaluation initiative. In response to this request, the AWF has led the development of this Assessment document which reviews the status of water sector M&E systems across Africa, prepares a framework to guide their development at national and regional levels, and provides an action plan and related tools for implementation. This document is supported by a second volume, which sets out a template for undertaking detailed M&E Country Assessments.

This pan-African Water Sector M&E Assessment was reviewed and endorsed by AMCOW at the 7th Ordinary Session in Abuja in August 2009, and AMCOW has mandated that the associated Action Plan be implemented in partnership with all key stakeholders. As a result, the AWF and other partners are now using the outcomes of this assessment to guide interventions in sector monitoring and evaluation at national and regional levels. Ultimately, all African countries will be supported to develop country-level monitoring and evaluation systems that incorporates water, sanitation and integrated water resources management, and which ensures the full integration of gender and environmental considerations in these systems.

The Bank is pleased to offer this important assessment as a contribution to efforts at improving monitoring and evaluation of Africa's water sector.

The African Ministers' Council on Water

Preface

Water sector M&E has been considered the weakest link in progress towards the Millennium Development Goals (MDGs) in Africa as it faces several challenges at the national and regional levels. At the Paris conference on RWSS on April 1, 2005, African Ministers in charge of water and finance committed to the establishment of a regional mechanism for tracking progress towards the achievement of the MDGs for water and sanitation in rural Africa. The proposed mechanism was to be hosted by the African Development Bank (AfDB). Part of this commitment also implied a greater emphasis on the management of resources by results and the evaluation of the impact of investments in the water sector in Africa. The 1st Governing Council meeting of the African Water Facility (AWF) in July 2005 subsequently agreed that water sector M&E as well as Information and Knowledge Management should be the priority areas of intervention by the AWF as it starts its operations. Capacity building among regional member countries (RMCs) to cope with the challenges of data collection, analysis, M&E and reporting therefore became one of the major areas of investment for the AWF over the following years.

In this regard and in view of the mandate given to the AfDB in Paris, the Bank prepared Terms of Reference (TORs) in October 2005 to undertake a diagnostic study with the view to establishing a regional mechanism for M&E. At the same time, the French Ministry of Foreign Affairs prepared TORs to undertake a similar study and had already selected consultants. As these studies had similar objectives, AfDB decided to delay its study and collaborate with the French Ministry of Foreign Affairs on its study so as to utilize the outcomes to pursue its mandate. The draft final report from the French study was disseminated and examined at the Entebbe AMCOW TAC and Executive Committee (EXCO) meetings from February 15-17, 2006.

AMCOW requested that AWF take the lead in finalizing the report in collaboration with the French consultant. The report was finalized and resubmitted to the AMCOW TAC, which considered this preliminary study as a prior contribution to the establishment of a regional mechanism, which was mostly related to the institutional aspects of the water sector M&E development. AMCOW recommended that the AWF should take the lead to develop a regional water sector M&E framework drawing on the first part of the main report and the first annex as background and rationale, and to incorporate relevant sections of some of the annexes to avoid duplication. The Entebbe AMCOW meetings also mandated the AWF to take the lead in subsequent activities for establishment of the regional M&E mechanism and to chart the way forward towards the harmonization of M&E standards, methods, and indicators.

As recommended by the February 2006 AMCOW TAC Meeting, the AWF formalized the stakeholders M&E Working Group to support the AWF to implement short-term actions agreed at a September 2006 regional consultative meeting in Tunis. The AWF convened the first meeting of this working group on March 16, 2007 to review the final draft Tunis Action Plan, the TORs of the Pan African M&E Assessment, and the Regional M&E conceptual approach developed from the outcomes of the Tunis Meeting, and propose modalities for country M&E assessments and immediate support. Following a competitive bidding process, the AWF then contracted Cowater International Inc., in November 2007 to provide the following outputs: i) a Pan-African M&E Assessment Report; ii) a Rapid M&E Assessment Template for undertaking detailed M&E Country Assessments in selected African countries; and, iii) a national, sub-regional and regional M&E Framework and Action Plan.

This publication represents a condensed version of the Pan African M&E Assessment's final report. It is being published in parallel with the rapid assessment template noted above.

Executive Summary

This Pan African M&E Assessment report was prepared through desk research, field studies in five focus countries (Malawi, Senegal, Congo-Brazzaville, Tunisia and Uganda) and visits to selected regional, international and river basin organizations (RBOs): the Euro-Mediterranean Water Information System on Know-how in the Water Sector (EMWIS), the Joint Monitoring Program (JMP), the Water and Sanitation Program-Africa (WSP-Africa), the Nile Basin Initiative (NBI), and the Organization for the Development of the Senegal River Basin (OMVS).

Chapter 1 provides an overview of the state of water sector M&E systems across Africa and the reasoning behind the need for their systematic improvement. This macro-level review is informed and supported by country- and organization-level reviews and assessments focusing on the M&E systems within the five focus countries and selected institutions.

Chapter 2 presents a generic framework developed during this study and refined through discussions with AfDB staff and other relevant stakeholders. It is intended to serve as a tool for the harmonized development of national, sub-regional and regional water sector M&E systems that draw on national and sub-regional organizations such as regional economic communities (RECs) and respond to AMCOW's recently defined reporting requirements to the African Union (AU). Combined, these M&E systems are designed to lead to improved service provision, more effective sector planning and management and improved tracking of progress towards the MDGs and the African Water Vision 2025.

The report's final chapter outlines an action plan for the strengthening and harmonization of country-level, sub-regional and regional M&E systems Africa-wide. A step-by-step work plan is presented therein for supporting national efforts at M&E strengthening. It is comprised of: i) rapid assessments of country M&E systems across Africa; ii) orientation to sector information and monitoring systems (SIMS) and M&E systems development at the country level; iii) needs identification, workshops and project proposal development, iv) project funding and hands-on M&E strengthening accompanied by technical assistance (TA) and training; and v) overall monitoring, coordination and financing by the AWF. The Action Plan is supported by a suggested approach and TORs for the application of the Rapid M&E Assessment Template developed by the Consultant and published separately as the Pan African Water Sector M&E Assessment – Volume 2: Rapid Assessment Template. It is to be used in the first phase of the AWF/AMCOW-led M&E strengthening initiative. An indicative budget for this first phase has also been drafted and included in this chapter.

The Executive Summary from this point onwards summarizes the main findings and recommendations discussed in this report. It is structured by chapter and in accordance with the layout of the main report itself.

1 Overview of Water Sector M&E in Africa

Water Resources Management & Water Supply and Sanitation M&E

African countries can generally be grouped into three broad categories with respect to the calibre of their M&E systems: strong, intermediate and weak. Apart from a few countries that could be described as having strong though not advanced M&E systems, most countries could be described as falling into the weak category, and some into the intermediate. Typically, the weak countries have systems that are project-based and fragmented, have little capacity to gather, analyze and report, lack national frameworks for M&E, and suffer from a paucity of demand for the information they offer. Many evaluations have been undertaken, but they again are of projects and serve mainly the purposes of donors and do little to support sector planning, budgeting and management processes. Intermediate M&E systems have substantial weaknesses that are recognized as such and are being upgraded over time. As a result, they offer the best potential for early improvement at reasonable cost and are recommended for inclusion in any AWF initiative.

Even within those few countries considered to have strong M&E systems, however, there are failings that undermine monitoring and the use of information in sector planning and management. The overall conclusion drawn from this analysis is that while M&E is essential for successful sector operation, including effective funding, it is in an early stage of development. Furthermore, the vast majority of countries will need substantial effort, guidance and resources to create even the basis for effective water sector monitoring. This observation is reinforced by the following analysis of M&E systems in the sector's two primary domains: water resources management (WRM) and water supply and sanitation (WSS).

With respect to integrated water resources M&E, many of the intermediate level countries are reforming their sectors and are introducing integrated river basin management approaches. With these reforms have come renewed efforts in M&E that are still in their early stages and vary widely in quality. Moreover, priority given to water resources M&E is still low and suffers in competition with other demands for scarce resources. The other overriding constraint to the growth of water resources M&E systems in general is the lack of demand for information by management that is typically inexperienced in the use of management information systems (MIS). As a result, water resources information in these countries is typically fragmented, unreliable and out-of-date. Finally, while demand for information may be lacking in countries where IWRM is not practiced, indicators, tools and methods for basic water resources monitoring are relatively well known and standardized.

The same is not true for WSS. In a single country it is common to see a variety of indicators and methods of data collection used to measure the same parameter, which renders comparative analysis impossible. Most countries now have or are preparing sector policies, setting standards and defining indicators that are promoting harmonization, but the process is far from complete. Most data are collected, analyzed and stored by the service providing agencies and apex ministries, such as ministries of water and/or agriculture and local government. These agencies often estimate coverage using the 'capacity' of systems built rather than determining access to services through direct household observation surveys. This introduces inaccuracies that severely limit use of the information in sector planning and management.

There are notable exceptions, however, such as the WSS M&E systems that have been developed in Uganda (golden indicators) and Malawi (water point mapping). Holistic and integrated approaches on a nation-wide scale such as the use of golden indicators in Uganda were found to be highly beneficial in harmonizing indicators and monitoring methodology. Interestingly, however, no country has been identified as having a functional central sector-wide database and/or MIS, although Senegal is building one and Uganda is rehabilitating its own. Nevertheless, these countries have succeeded without a central MIS because their sub-sectors work together in teams to prepare their annual sector performance assessments and conducting joint sector reviews.

Trends in Water Sector M&E:

- **Sector-wide approaches:** Where it exists, M&E is strongly influenced by sector-wide approaches (SWAps). SWAps not only integrate the WRM and WSS sub-sectors but also set in motion a process of performance reviews on which resource allocation is based and in which all sector stakeholders are involved. This creates a regular demand for monitoring information from the highest levels of management and all stakeholders across the sector. Driven by this demand, the M&E system is given the priority required to ensure its sustainability by being integrated into sector programming processes.

- **Accountability:** This assessment also observed increasing demands by the Auditors General (AGs) of donor countries for increased transparency and accountability as aid shifts gradually away from exclusively project-based support to sector earmarked or direct budgetary support mechanisms. This strongly emphasises the need to create and/or strengthen M&E systems in the water sector, which is highly dependent on external funding in most African countries. Monitoring inputs, outputs and outcomes is one way by which donors can assure their taxpayers of accountability. M&E will therefore become increasingly important in the years to come as the transparency and accountability of the budgetary support mechanism becomes more widely scrutinized in donor countries.

- **Climate Change Monitoring:** The past two decades have also witnessed an apparent increase in extreme weather events and the publication of research that has shed considerable new light on climate change and its effects on the world's most vulnerable populations. Since Africa is predicted to be one of the regions in the world most vulnerable to the impact of climate change over the next century, it is becoming increasingly important for African countries to develop monitoring systems capable of tracking its effects to inform adaptation strategies. Progress can be made in this regard by strengthening surface and groundwater monitoring networks, upgrading meteorological monitoring stations and developing transboundary water basin organizations capable of monitoring a complex array of environmental indicators across borders and sub-sectors.

2 Generic National , Sub-Regional and Regional M&E Framework

National Framework

Overall Approach

The approach to developing national M&E systems recommended in this report sets the demand for and use of information as first priority. The importance of demand is best demonstrated in such countries as Uganda and Senegal that are using SWAps, which create the necessary demand for information and motivation for a thriving sector-wide M&E system. The recommended framework presented herein provides step-by-step details for the development of national M&E systems using a sector information and monitoring system (SIMS) approach. Monitoring systems using the SIMS approach must be:

- Inclusive of the entire chain from inputs to outcomes;
- Integrated and used in planning, budgeting and reporting;
- Incrementally implemented to achieve broad ownership; and,
- Institutionalized to ensure sustainability.

Furthermore, a fifth "I", incentivized, should also be added to the SIMS model to ensure that monitoring is demand driven and owned by sector management institutions and personnel.

Phased Development of the Sector and M&E Systems

The main report illustrates a recommended approach to the development of a country's water sector and its monitoring components, which can be broken down into four phases.

The initial phase of M&E development provides for immediate measures. These include setting up a sector stakeholder working group (SSWG) – a critical body that binds everything with representation from key sector departments and councils, donors, NGOs and the private sector – as well as building consensus around definitions, indicators and undertaking initial pilot monitoring. It also includes broad sector assessments such as a Country Status Review or Sector Framework Review.

The second phase focuses on developing monitoring systems during which the pilots are scaled up to country wide systems and tested. Benchmarking is an important component of this phase, which includes comparisons and harmonization of sector agency data with others such as the statistics and surveys department responsible for annual household surveys and censuses, and poverty surveys monitoring the PRSP. Data collection, collation, storage, reporting and dissemination systems are also established during this phase. This is a major undertaking which calls for careful consensus building between all departments in that the foundation for data sharing and dissemination has to be agreed between all contributing stakeholders. Care needs to remain focused on effective use of information in sector planning and management and not only on the MIS and computer programming systems, which all too often become an end unto themselves. It is at this stage that financial and implementation information also needs to be harmonized: progress reporting needs to be integrated with financial reports to assist managers in relating physical progress directly to financial expenditures. Finally, efficiency and effectiveness studies are needed for performance reviews, planning, and resource allocation, meaning that key indicators such as unit costs and timing need to be generated by the system.

Procedures for joint technical reviews and performance reporting are established during the third phase. The Annual Performance Report combines the sub-sector's information and is the basis of the annual performance review planning, strategy and policy development, resource allocation, undertakings and implementation. It also draws on data from other stakeholders such as the environment, irrigation, forestry and statistics agencies. Monitoring is refined and deepened by enabling the beneficiaries to participate in data collection, systems monitoring and responding to information fed-back after analysis. Special studies such as value for money audits (VFM), tracking studies and expenditure reviews are used to elucidate and resolve key issues facing the sector and the Joint Performance Review (JPR). The SSWG

typically calls on sector agencies to refine and upgrade their programs by identifying and reaching agreements on undertakings for the year ahead while at the same time reviewing progress on those of the past year.

Finally, the consolidation phase is focused on triangulating data, refining sector policy, improving efficiency and following up on undertakings. Activities in this phase are meant to polish up and refine procedures and systems developed during earlier phases and to ensure the sustainability of M&E systems well into the future.

Generic Regional and Sub-Regional M&E Framework

This section seeks to map out the regional and sub-regional organizations that may be capable of playing a role in supporting water sector M&E development in Africa. It is a group that includes NGOs, RECs, RBOs and African branches of international organizations. In brief, the field and desk research undertaken for this study did not uncover a truly regional institution capable of leading and coordinating a Pan-African M&E network. Instead, there exists a mix of international and sub-regional organizations that in some cases could or do have a supporting role to play in regional or sub-regional water sector M&E, and in others they have little to do with the sector and limited capacity or interest to expand into it.

Five RECs (SADC, WRCU-ECOWAS, IGAD, ECCAS, & EAC) and CEDARE have been identified as having potential to provide sector focus and Africa-wide coverage with minimum gaps and overlap across member countries. A principle drawback to the RECs, however, is their focus on water resources to the near exclusion of WSS. However, it is anticipated that with support, their mandates could be expanded to include WSS in the longer term. Furthermore, in accordance with the African Union's July 2008 Sharm El-Sheikh Agreement, AMCOW will report annually on progress made in implementation of the AU's commitments in the sector while being strengthened as a key regional mechanism for promoting sector cooperation. AMCOW will need reliable information, the sources of which could be the RECs if they are strengthened and their mandates expanded to include WSS. The central AMCOW Secretariat in Abuja, Nigeria, could then be responsible for coordinating the preparation and dissemination of an Annual AMCOW African Water Report with support from the RECs.

3 M&E Action Plan

One principal conclusions of this study is that water sector M&E is deficient in almost every African country and that needs go well beyond monitoring progress towards the MDGs. A second conclusion is that M&E is badly needed for planning and managing the sector. Failure of M&E systems in most countries has brought enormous opportunity costs in terms of poor distribution of services, increased poverty and ineffective use of scarce resources. Without relevant and reliable information being generated at the country level, sub-regional, regional and even global databases are rendered ineffective. Within this context, this report's proposed action plan builds on its institutional, country and region-level overview by outlining a starting point for an AWF-led effort to strengthen and harmonize water sector M&E systems across the continent.

National M&E

The Action Plan at the national level comprises three stages, the first of which is supported by guidelines and a template for rapid assessment of national M&E systems Africa-wide. The three stages are structured as follows:

In the first stage, comprised of the Africa-wide Rapid M&E Assessment, consultants will first be trained and then undertake assessments in five countries, followed by up to 25 others using the guidelines and template prepared for the purpose.

The second stage comprises Orientation, Work-planning and Proposal Development, in which selected countries will be assisted through detailed needs identification and proposal development.

The third stage will entail the actual Strengthening of National M&E systems, for which the AWF will appraise and select projects for funding.

Regional and Sub-regional M&E

As indicated above, a combination of national and sub-regional organizations is recommended as the basis of an Africa-wide M&E system. The following are recommended as principles and approaches to its development:

1 First priority should be given to strengthening M&E systems at the country rather than regional or sub-regional levels.

2 M&E systems need to be sector and country-wide and not limited to projects, programs or sub-sectors. They should be based on the SIMS model wherever feasible.

3 While the participation of organizations such as RECs should be welcomed, they should not be relied upon until such time as their capacities can be strengthened.

4 Support to sub-regional organizations can be undertaken in parallel with the above direct AWF-to-country support, but it should first be for their own institutional strengthening.

Schedule and Budget

A schedule and indicative budget are presented in the report that envisage the country assessments taking place during the first nine months followed by country M&E strengthening beginning during the second year and ongoing throughout the third. Sub-regional organization strengthening would take place during the second year following proposal development during the first, while the regional network timing would vary depending on the initiative of interested organizations.

PART 1

OVERVIEW OF WATER SECTOR M&E IN AFRICA

1 Overview of Water Sector M&E in Africa

The objective of this section is to provide an overview of the state of water sector M&E systems in Africa and the rationale for their systematic strengthening and improvement. It takes an analytical approach to the M&E systems of the five focus countries visited during this study, the efforts of three focus regional/international organizations active in supporting African water sector M&E, and the activities and structure of three emerging RBOs. It also draws on desk reviews of several countries that were not visited and an overview of 16 African countries' M&E systems.

The five focus countries – Congo-Brazzaville (Central), Malawi (South), Senegal (West), Tunisia (North) and Uganda (East) – were selected to provide a broad cross-section of M&E systems and wide geographic coverage through the representation of all of AMCOW's sub-regions. These countries were visited in order to conduct assessments of their water sector M&E systems, including IWRM and TWRM, and to test and refine the rapid assessment template (Volume 2).

The WHO/UNICEF's JMP, EMWIS, and WSP-Africa were selected for detailed review due to their commitment and contributions to African M&E, their databases, and the reputed quality of their work. They represent both global & regional foci and a cross-section of IWRM/TWRM and WSS interests and approaches. Each was visited by the Consultant to facilitate the provision of a greater understanding of their methods and approaches and thereby to enhance the design of this report's Generic Framework and Action Plan. These organizations are described and analyzed in Annex C.

Finally, three emerging RBOs were also selected for detailed review: OMVS, the NBI and the initiative to jointly manage the Songwe River basin in Tanzania/Malawi. Their activities, the challenges they face moving forward and how they contribute to transboundary river basin monitoring are described and analyzed in Annex D.

1.1 The Case for M&E

M&E systems were first introduced during the colonial era, when their primary focus was the monitoring of surface water resources. Whereas river gauging networks were generally well maintained under colonial authority and protection, they have since proven expensive to operate and protect from vandalism. The Drinking Water Decade of the 1980's saw an increase in M&E of water supply projects. Project based M&E systems established at that time were intended primarily for project management and evaluation. Most have since been abandoned or downscaled after project completion and withdrawal of donor support.

By the mid-1990s it had become increasingly apparent that in the face of population growth and systems breakdown, the number of people without access to safe water supplies and basic sanitation were increasing rather than decreasing in many countries. Furthermore, doubts were being voiced about the reliability of country data. By the end of the 1990s, donor fatigue and frustration with lack of progress and accountability were tangible. These soon spawned renewed efforts that led to the development of the MDGs, which though aimed at poverty alleviation included key targets related to WSS. WHO and UNICEF teamed up to jointly track progress towards these goals through the JMP, but it was not until 2000 that JMP statistics became based on direct household surveys and confidence was restored not only in progress reporting but in the sector as a whole.

Since 2000, there have been increasing demands for transparency and accountability by the Auditors General (AGs) of donor countries. With aid gradually shifting away from exclusively project-based support to sector wide, pooled funding or direct budgetary support mechanisms, the AGs have been calling for increased and improved M&E of expenditures and use of this less trackable form of support. Donor AGs have only recently begun to assess the budget support mechanism.

Such movements strongly emphasize the need to create and/or strengthen M&E systems in the water sector, as monitoring inputs, outputs and outcomes is one way by which donors can assure their taxpayers of accountability. M&E will therefore become increasingly important in the years to come as the transparency and accountability of the budgetary support mechanism become more widely scrutinized in donor countries.

A further indication of this trend towards increased transparency and comprehensive monitoring is the adoption of sector-wide approaches (SWAps) by at least 11 African countries over the last five years (see table 1.1). This involves regular sector-wide performance assessments, which have given impetus to sector-wide monitoring. Responding to this increased demand for monitoring information, M&E systems are being upgraded and revitalized. In a few countries they are also now being used to assess functionality, unit costs, delivery efficiency and the equitable distribution of services.

The past decade has also witnessed an apparent increase in extreme weather events and the publication of research that has shed considerable new light on climate change and its effects on the world's most vulnerable populations. The Intergovernmental Panel on Climate Change's Fourth Assessment Report noted in 2007, for example, that the 1995-2006 period ranked among the 12 warmest years in the instrumental record of global surface temperature. In addition, Africa is predicted to be one of the regions in the world to be the most vulnerable to the impact of climate change over the next century. It is therefore becoming increasingly important for African countries to develop monitoring systems capable of tracking its effects in order to inform strategies to attenuate them.

In short, M&E has become an essential tool for water sector and socio-economic development as well as environmental sustainability.

1.2 Overview of Contemporary Water Sector M&E Systems

African countries can generally be organized into three broad groups with respect to the calibre of M&E systems across the continent: strong, intermediate and weak. Yet even this simple categorization tends to err on the optimistic side. Countries with intermediate level M&E systems all have substantial weaknesses but are otherwise committed to their upgrading. These systems thereby offer the best potential for early improvement at reasonable cost and thereby inclusion in any AWF initiative. Likewise, those few countries with strong M&E systems also need to improve them but have gone to some length in establishing functional M&E. Most M&E systems across Africa, however, are weak. Typically, they are project-based and fragmented, have little capacity to gather, analyze and report, lack national frameworks, lack resources and sustainability and suffer from the little demand for the information they offer. Many evaluations have been undertaken, but they again are of projects, serve mainly the purposes of donors and do little to support planning, budgeting and management processes.

Table 1.2, below, was prepared to provide a broad characterization of the state of African water sector M&E systems and assist in the identification of countries for the rapid assessments discussed in this report's Action Plan. This characterization is based on a selection of seven primary and publicly available indices related to water sector M&E. It is suggested that those countries already undertaking SWAps should be given priority in the implementation of the rapid assessments, while other parameters included in the table to be given significant weight include the status of national M&E systems, their AfDB CPIA score and geographic representation.

Table 1.1 African Water Sector Assessment Table

Country	REC Group[1]	Total Water Access[2]	M&E Systems[3]	AfDB CPIA[4]	Water Poverty Index[5]	SWAp[6]	Failed States Index[7]	IWRM Plan Progress[8]
Scale		%	A to C	1 to 6	0 to 100		1 to 120	1 to 3
Algeria	North	85		3.91	49.7		77.8	3
Angola	South	51		3.24	41,3		83.8	3
Benin	West	65	C	3.97	39.3	W, H	72.8	2
Botswana	South	96		4.57	56.6	H	65.9	2
Burkina Faso	West	72	B	4.08	41.5	W, H, E	89.9	1
Burundi	East	71		3.29	40.2	H, E*	94.1	3
C.A.R.	Central	66		2.89	44.2		103.7	3
Cameroon	Central	71		3.03	57.3		93.4	3
Cape Verde	West	80		4.36	40.8		80.7	3
Chad	Central	48		3.17	38.5		110.9	3
Comoros	East	85		2.51	44.4		79.6	
Congo-Brazzaville	Central	71		3.03	57.3		93.4	3
Cote d'Ivoire	West	81		2.76	45.7		104.6	
D.R. Congo	Central	46	C	2.79	46.0		106.7	3
Djibouti	East	92		3.17	38.4		80	3
Egypt	North	98		3.90	58.0	H	88.7	2
Equitorial Guinea	Central	43		3.09	67.7		88	
Eritrea	East	60		2.43	37.4		87.4	2
Ethiopia	East	42	B	3.50	35.4	W, H	96.1	2
Gabon	Central	87		3.37	61.5		75	
Gambia	West	86		3.31	48.3		76.9	
Ghana	West	80	B	4.09	45.3	W, H	64.6	2
Guinea	West	70		3.19	51.7		101.8	
Guinea-Bissau	West	57		3.01	48.1		91.3	
Kenya	East	57	C	4.10	47.3	W	93.4	2
Lesotho	South	78	C	3.84	43.2	H	81.7	3
Liberia	West	64		3.54			91.0	
Libya	North						70	3
Madagascar	South	47	A	3.96	47.5		76.7	
Malawi	South	76	B	3.62	38.0	W**, H	92.9	2
Mali	West	60		4.21	40.6	H, E	75.6	2
Mauritania	North	60	B	3.88	49.8	H	86.1	2

Mauritius	South	100		4.31	59.8		42.4	2
Morocco	North	83		4.17	46.2	W**, H	75.8	2
Mozambique	South	42	B	3.73	44.9		76.8	2
Namibia	South	93		4.26	60.0		72.9	1
Niger	West	42	B	3.64	35.2	H, E	94.5	
Nigeria	West	47		3.77	43.9		95.7	2
Rwanda	East	65		3.98	39.4	E	88	3
Sao Tome & Pr.	West	86		3.39			78.3	
Senegal	West	77	B	4.08	45.3	W, H	70.9	2
Seychelles	East	88		3.06			69.5	
Sierra Leone	West	53		3.34	41.9	H	92.3	
Somalia	East	29		1.00			114.2	
South Africa	South	93		4.82	52.2	W, H	62.7	1
Sudan	East	70		2.82	49.4		113.0	2
Swaziland	South	60		3.26	53.3		80	2
Tanzania	East	55	B	4.07	48.3	W, H	79.1	2
Togo	West	59		2.81	46.0		86.8	
Tunisia	North	94	A	4.71	50.9		65.6	2
Uganda	East	64	B	4.27	44.0	W, H	96.1	1
Zambia	South	58	C	3.77	50.4	H, E	81.6	2
Zimbabwe	South	81		1.76	53.4		112.5	2
Good		>79%	A	>4.0	>56	W	<60	1
Mid-range		61-78%	B	3.3-3.9	49-55	H and/or E	60-90	2
Poor		<60%	C	<3.2	<48	-	>90	3

PART 2

WATER RESOURCES MANAGEMENT

2 Water Resources Management

Many of the intermediate level countries are reforming their sectors and are introducing river basin management and local government implementation of WSS. With these reforms have come renewed efforts in M&E. These are in their early stages and vary widely in calibre. The priority given to M&E is still low and suffers in competition with other demands for scarce resources. The other overriding constraint to the growth of M&E systems is the lack of demand for information by management typically inexperienced in the use of management information systems (MIS). This is true of both water resources and WSS sub-sectors.

As a result, water resources information in these countries is typically fragmented, unreliable and out-of-date. The lack of demand for information again plays an important explanatory role. Demand created by functioning IWRM is lacking in countries where IWRM is not practiced. On the other hand, indicators, tools and methods for basic water resources monitoring are relatively well known and established.

Water Supply and Sanitation

The same is not true for water supply and sanitation. In a single country it is common to see a variety of indicators and methods of data collection used to measure the same parameter, which renders comparative analysis next to impossible. Most countries now have or are currently preparing sector policies, setting standards and defining

indicators that are promoting harmonization, but the process is far from complete. Most data are collected, analysed and stored by the service providing agencies and apex ministries, such as ministries of water and/or agriculture and local government. These agencies normally estimate 'coverage' using the 'capacity' of systems built rather than determining access to services through direct household observation surveys. This introduces inaccuracies that severely limit use of the information in sector planning and management.

There are notable exceptions, however, such as those that have been developed in Uganda and Malawi. Uganda uses a set of ten 'golden indicators' that have been researched over time and standardized across the country. Although there are still questions surrounding their accuracy and the regular availability of data, they are well integrated into sector management systems. In Malawi, Water Point Mapping (WPM) is a basic but highly informative tool that provides a geo-referenced map of water points with essential information on water point location, functionality and distribution. When combined with population data it is able to identify areas of inequity of distribution of water services. It also provides key planning information by highlighting water point distribution; quantifying equity distribution of water access and identifying populations falling below national standards. Although WPM is a powerful planning tool, it is only at its early stages of being integrated into district and ministry-level planning and management.

Urban water supply monitoring uses similar approaches but typically has far better information on service points and functionality than in the rural sector. Problems relate to urban boundaries that frequently exclude low income squatter settlements and thereby result in over-estimations of access. This was observed in Zambia, where a detailed baseline study of services to the urban poor revealed that sustainable access to safe water, which in 2002 was estimated at 90 percent, had to be reduced to 47 percent. On the other hand, this is slightly balanced out by the fact that the use of system capacity (e.g. beneficiaries per tap) information often underestimates access since the number of individuals using water points in low income areas are typically far higher than the number of users for which the water systems were designed. For similar reasons, the NWSC

in Uganda is less than confident about its estimations of coverage and is looking to benchmark access using direct household observation survey techniques.

Sanitation (including sewerage) is sometimes attached to water projects by the provider agency, while its monitoring is most often the responsibility of the health ministry and related departments within municipal governments. However, estimates of access are unreliable as a result of sanitation monitoring being relegated to very low priority and the use of indicators that are fraught with inaccuracies. These inaccuracies relate to definitions and indicators for basic and/or improved sanitation and the questions used during surveys that do not include actual use, sharing between families or cleanliness of the latrine. This is of particular concern to current international campaigns promoting the sanitation MDGs.

Global vs. National Monitoring

The JMP provides estimates of access that are based on proxy indicators, which introduces inaccuracies that are accepted as a cost of acquiring comparable estimates globally. Comparing access between countries is a key objective. JMP is also faced with having to use existing data provided by countries (excluding data from service providers). As a result, there are legitimate concerns, for example, about the quality of water provided by the 'improved' water sources and the degree to which improved sanitation protects against spread of faecal pathogens in and around the home. Furthermore, being based on sample surveys, (primarily DHS and MICS), JMP estimates are national and cannot be used at local levels for planning or to discern inequities of services delivery. Nevertheless, it should be noted that the JMP does provide useful estimations and inter-country comparisons of progress towards the MDGs, even if this data can only be used in the broadest of contexts.

Different estimates of access made by statistical agencies and service providers are based on very different survey methodologies and analyses. Indeed, they are intended for different purposes. At the national scale, however, they should still tend to converge, but seldom do. There is a strong case for both sets of monitors to understand reasons for their differences. This would inevitably encourage harmonization of indicators and means of verification and comparison between agencies.

The Demand and SWAp Factors

The demand for information is an essential ingredient in a successful MIS. Unfortunately, data collection is often driven by periodic demands from politicians, preparation of annual reports and ad hoc donor requests. Demand is seldom sufficient to ensure a consistent and reliable information flow. As a result, such data that is collected is inconsistent in quality, regularity and geographic coverage.

Data collection is far more organized and reliable where the demand from senior management is strong, rational and consistent, as observed in Uganda and Senegal. In these cases, M&E is both sector and country-wide, data collection has been regularized, and collation and storage has been integrated into the government's regular work. Water resources is also being integrated with WSS information at the reporting stage, although in both Uganda and Senegal water resources monitoring databases are weak and IWRM is still in its early stages of development.

Holistic and integrated approaches on a nation-wide scale such as the use of the ten 'golden indicators' was found to be highly beneficial in harmonizing indicators and monitoring methodology. Interestingly, no country has been identified as having a functional central sector-wide database and/or MIS, although Senegal is building one and Uganda is rehabilitating its own. Nonetheless, these countries have succeeded without a central MIS by their sub-sectors working together in teams in preparing their annual sector performance assessments.

Where it exists, M&E is strongly influenced by sector-wide approaches (SWAps) to management. SWAps not only integrate the WR and WSS sub-sectors, but such approaches also set in motion a process of performance reviews on which

resource allocation is based and in which all sector stakeholders are involved. This creates a regular demand for monitoring information from the highest levels of management and all stakeholders across the sector. Driven by demand for its information, the M&E system is bound to respond. In doing so it is given the priority it needs to ensure its sustainability by being regularized and integrated into sector programming.

A review was undertaken within this study of countries using SWAps in order to help identify countries that are potential candidates for M&E strengthening. With the information available it was determined that 11 already have or are introducing water sector SWAps this year, and nearly all of these already have a SWAp in their health or education sectors. The 11 countries with SWAp in the water sector represent a wide cross section of countries from all parts of Africa and a full range of water supply access rates. These would likely be selected for early support for M&E improvements. Results of this evaluation can be found under the SWAp column in Table 1.1 above.

2.1 Diagnosis of Focus Country M&E Systems

The following section provides a diagnosis of the water M&E systems in the study's five focus countries. A detailed overview of water sector and key M&E institutions in each country is attached to this report as Annex A.

2.1.1 Malawi

M&E systems in Malawi have deteriorated over the past two decades. As described above, the hydrological networks are functioning at approximately 20 percent, and there is no formal groundwater monitoring mechanism in place. Sanitation monitoring relies on the Ministry of Health, which is only beginning to rehabilitate its collection of village health statistics through the districts. Further, while covering nearly all districts, the country's WPM system needs to be updated and integrated into district and national water sector planning mechanisms.

Demand for data and information across the sector is weak and ad hoc in nature. Available data is of questionable accuracy due to the use of variable indicators and irregular collection. However, a water policy has been established that has defined criteria for water access and quality, and a national sanitation policy that will set standards for access is in its final stages of approval. These policies will go a long way to harmonize standards and provide guidance for decisions on indicators.

Overall, the sector is in its early stages of reform. A SWAp is being introduced and the first Joint Sector Review (JSR) was to take place in October 2008. A Secretariat is also being created within the Planning Division of MIWD that will assist in forming Thematic Working Groups responding to a Multi-Stakeholder Working Group. It will also facilitate the better understanding of activities and investments being made in the thematic areas and assist in the development of action plans. One of the tasks for the Secretariat to address will be to facilitate the identification of harmonized indicators and M&E systems for each thematic area, culminating potentially in consensus around a set of golden indicators similar to Uganda's. Using such data, attempts will be made to establish an approximation of the status of the sector's thematic areas such as access to water supply and sanitation services prior to the first JSR. This will both provide a better understanding of the status quo as well as identify issues and their early resolution within the water sector M&E systems themselves.

Malawi represents a unique example of a country progressing from a weak M&E system to one that is potentially robust and that responds to sector planning and management requirements. It is possible that introducing and operationalizing such a system will require only three years or so. As such, it will benefit from Uganda's provision of a model system that took 10 years of innovation and experimentation to reach its current state of development.

2.1.2 Congo-Brazzaville

An effective water sector M&E system normally entails the existence of several key prerequisites: basic infrastructure that provides most citizens, if not in rural areas than at least in urban centres, with access to potable water; a stable and secure environment through most of the country; reasonable access to rural areas; reliable financing; effective regulation of water sector institutions; and, available technical expertise to manage the sector.

Having only brought to an end in 2003 a decade-long series of devastating civil wars that destroyed much of the country's basic infrastructure and pre-existing water monitoring networks, Congo-Brazzaville (Congo) does not meet many of the prerequisites noted above. Undermining the rehabilitation, reach and growth of water sector M&E systems is the following non-exhaustive list of factors:

- A relatively unstable security environment outside of the Brazzaville and Pointe-Noire that limits the potential for reconstruction efforts in the southern half of the country. Security is of particular concern in the south of the country, causing officials to acknowledge that reconstruction/sector development activities will have to focus largely on the more accessible and secure northern region over the short to medium term.

- Limited technical and regulatory expertise due in part to the absence of appropriate training facilities in the country and a long-standing freeze on public sector hiring.

- A publicly-owned urban water utility (SNDE) that lacks the capacity to accurately track water production and consumption, set appropriate tariff rates and provide a reliable supply of potable drinking water to urban and peri-urban residents.

- The absence of stable sector financing. This is attributable in part to institutional weaknesses and insufficient regulatory control at the project and program management levels as well as the absence of many development partners present in Congo prior to the outbreak of civil conflict in the early 1990s.

This being the case, while some sub-sector institutions have developed action plans for rebuilding pre-war infrastructure or frameworks for the development of water resources databases, urban and rural WSS and water resources M&E systems are currently weak and in need of significant reinforcement.

Nevertheless, many senior sector officials are cognizant of the importance of such systems and are looking for partners who can support their development in parallel with, or following the rehabilitation of, WSS infrastructure. Furthermore, Congo developed a Poverty Reduction Strategy Paper (PRSP) in 2003 with assistance from development partners that serves as a framework for addressing sector-related MDGs. Building on the PRSP were subsequent studies, including the 2005 ECOM and a DHS, which provide the most relevant data with which sector strengthening efforts can grow.

Taking each of these positive factors and noted weaknesses into account, donor support to Congo would likely be most effective if it focused on the development of M&E systems in parallel with the reconstruction of essential water and sanitation infrastructure. As a country that lost much of its sector infrastructure to civil conflict, the coming years are an opportunity for Congo and its development partners to re-establish basic and sustainable M&E systems from the ground up. This would be done alongside the reconstruction of basic WSS infrastructure, the government's priority for this sector for the foreseeable future.

2.1.3 Senegal

Senegal's Program d'Eau Potable et d'Assainissement du Millénaire (PEPAM) Program Coordination Unit (PCU) is striving to create a WSS sector M&E system that would be the envy of nearly every other sub-Saharan African nation. At present, however, there remains limited sharing of information between agencies. Other than PEPAM, exceptions include apart from reporting

on operation and maintenance (O&M) upwards from the field and the periodic provision of information for annual report and project preparation.

More specifically, the state of Senegal's M&E systems can be characterized as follows:

- Having only recently been established, the urban water sector regulator DHU is not yet in a position to formulate, collect or share information.

- The DGPRE's groundwater database is in reasonable order and is able to respond to requests for information on an ad hoc basis. Surface water information has not been entered into a database. Its provision to such organizations as SONES/DRE, agriculture and environment is more difficult and has to rely on DGPRE staff responding to each request individually and manually.

- The ANSD conducts and coordinates health surveys, MICS, poverty surveys and censuses based on direct observation. These are used by the JMP to assess coverage. Whereas reported water supply coverage is reasonably consistent with coverage determined through inventory studies by the national agencies, there are disparities in sanitation coverage estimates resulting from differences in definitions, questions asked and survey methods.

Usefully, ANSD uses direct observation surveys at household level. This provides a comparison and means of verification of the output-based surveys of the implementing agencies. Unfortunately there are differences in definitions of coverage and questions being used with the result that the executing agencies lack confidence in ASDN conclusions. PEPAM is currently investigating these differences. This research has ramifications going well beyond Senegal as it will include comparisons with data collected under JMP indicators. It is noted that PEPAM has taken this initiative (backed by WSP) and is thereby demonstrating its competence and added value to sector development. Without PEPAM, these questions would be left unanswered and continue to exacerbate misunderstandings between implementing agencies, statistical departments and the JMP.

- Both the UDBS and Senegal's water sector M&E coordination model – revolving around PEPAM – are unique to Africa. Although there are detractors, the quality of work and caliber of PEPAM's personnel has given it respect and consequently a central place in the sector. As such, it has successfully influenced sector direction and is able to promote sector reform backed by WSP-Africa and other donors, including the AfDB. Some of the challenges facing PEPAM as it seeks to expand and carry out the implementation of its M&E system include:

- The continuing need for awareness-raising within participating agencies to help ensure their active participation.

- Most of the agencies see the need for their own database but lack qualified and devoted staff. An example is the DGPRE, which has qualified staff but who lack the time to enter the very large amounts of data into its databases. Another is the DHU, which was created after the 2007 budget was passed and lacks sufficient resources to carry out its mandate. SONES itself is only at the database development stage and otherwise relies on hard copy files.

- With the notable exception of DRE, which is contracted to collect, analyze and report to SONES, incentives and budget support are lacking throughout the participating agencies. Substantial promotion and effort will therefore be needed to first convince and then build dedicated staff and databases in each of the participating agencies.

- PEPAM will have to develop the capacity to verify the data being entered into its system. This is particularly true of information being input by the more distant contributors such as the ASUFORs.

2.1.4 Tunisia

The water sector in Tunisia, managed almost entirely by the Ministry of Agriculture, is relatively well advanced, as are its M&E systems. Although Tunisia's population (10.2 million) and its growth rate (1.1%) are relatively low, the increasing production of export crops to Europe is creating a high demand for water. Water availability is limited, particularly in the south where salinities above 2 g/l are not uncommon. Consequently, fresh water is piped over long distances from West to East and south of the country for both agriculture and domestic purposes. 217m3 of wastewater was treated and recycled in 2006, compared to 170m3 in 2001, and desalination is increasingly used in tourist areas along the coast. Tunisia has already reached its MDGs with 99% urban and 84% rural coverage by improved water supply and 96% sanitation coverage in the urban and 64% rural areas, according to 2006 figures from the JMP.

The DGRE takes responsibility for almost all water sector M&E. It has established and maintains a relatively up-to-date network of stations for surface water, groundwater and rainwater. Piped domestic water supplies being metered across the country allows SONEDE to keep up-to-date and reliable data on its use and distribution. ONAS' monitoring system includes all relevant parameters, and both SONEDE and ONAS are monitored independently by the Ministry of Health. In addition, ONAS' effluent quality is monitored by the Agency for Coastline Protection. Most of these agencies have established automatic stations and data transmission by radio and telephone, all are working towards using the Internet, and most already share analyzed information by intra-net.

Whereas the basic data collection systems are in place, measuring most of the required parameters and reporting regularly the scarcity of water and the growing demand for more – both in volume and quality – suggests that M&E systems need substantial upgrading. Tunisia is already exploiting 95% of available water resources. Improved monitoring is therefore needed to identify substantial water losses and water use inefficiencies in irrigation. It is also needed to determine the water balance across the country to increase efficiencies in water use and to support IWRM, which is in its initial stages of development.

Water resources data focuses on water availability and distribution, and monitoring for this purpose is reasonably effective. Analyzed information is available but in annual report form, which are typically published one year after the data have been released. Notable exceptions are data used for water distribution from the major dams and data used for system O&M, which are made available from agency databases to management. Similarly, most other monitoring data is typically used within each agency that generates it and shared, at most, only within government. Beyond what could be termed as publicity material, annual reports containing quantified information are not generally available to the public or media.

In an effort to harmonize and increase the accessibility and comparability of all water-resources data, including that related to urban and rural WSS, the DGRE is developing SINEAU, a national water sector monitoring system. Although efforts are underway to integrate water information through such projects as SINEAU, datasets are fragmented. The rural and urban water supply databases (under DG-GREE and SONEDE) are separate. Urban sanitation/sewerage data is collected and managed by ONAS, entirely separately from rural sanitation information held by the DHMPE.

Although still in its early stages, SINEAU is planned to expand on the existing Système de gestion des ressources en eau (SYGREAU) to encompass all components of water data management. It will be responsible for combining, analyzing, reporting on and disseminating Tunisia's water sector information while still relying on existing sources for data collection. SINEAU will be housed within the DGRE of the Ministry of Agriculture and is intended to analyze data that is continuously submitted by outside agencies and provide up-to-date reporting via the internet to a wide variety of local, national and international users. Despite these commendable objectives, SINEAU is currently not well-known or understood

outside of DGRE and its affiliated organizations' circles. In that regards, a major effort in raising awareness and acceptance of SINEAU and its dissemination objectives will be needed.

2.1.5 Uganda

Uganda's M&E architecture provides a good example of a functional system operating within SWAp and providing up-to-date and relatively reliable information on which sector planning and management is based. Overall, and in terms of its effectiveness and use, it is far more advanced than nearly every other water sector M&E system that has been reviewed by this study. As such, it may provide a training ground for other countries interested in strengthening their sector's monitoring systems. Nevertheless, the Ugandan authorities acknowledge that there is still significant room for improvement, most notably in the following areas:

1 Not all contributing sub-sector operational databases are providing complete data needed for the golden indicators. A major effort is needed to ensure complete data is collected on time across all districts and towns.

2 Inaccuracies in access rates are a result of assumptions and analytical method in both rural (through assumption of uniform population densities across sub-districts) and urban (by not accounting for daily urban migration and intensive use of water points in peri-urban areas) and in both urban and rural areas through inaccuracies of estimating population denominators based on out-dated census data.

3 Despite efforts at collaboration and the efforts of an NGO network organization, data from NGOs continues to be supplied sporadically and less than reliable.

4 Continued Ugandan attempts at estimating water supply coverage (and access) serve to demonstrate the real and practical difficulties of doing so. The Ugandan Bureau of Statistics (UBS) provides a rich source of data on access to water supply based on direct household observation surveys. Although these estimates are the most reliable available, they cannot be used for planning and management purposes as they are national averages based on small but representative samples.

By contrast, the DWD uses three different methods to estimate rural coverage. The District Situation Approach is the only one making allowance for functionality of water points. In it, Annual District Situational Reports are used to estimate the numbers of functional water points such as tubewells in sub-counties (avg. population 30,000/sub-county). These are multiplied by their design populations estimated coverage. Populations used in the denominator are projected from the 2002 census. This method has three significant drawbacks, however. The first is that it ignores overlap in the area served by water sources that are close together, resulting in double counting. Coverage rates are thus capped at 95%. The second is that it assumes an evenly distributed population across the sub-county, which is rarely the case. The third is that if population projections are inaccurate then coverage will also be skewed by the same percentage.

5 Similar difficulties also bedevil estimates of urban access. NWSC officials have expressed concern with the accuracy of population forecasts, with the effect of a mobile urban population and with estimates of populations living in low-income, peri-urban areas. Uganda needs to develop better methods of benchmarking and estimating access.

6 Lastly, efforts continue to be made in support of the development a central MIS Unit with a complete overview of the entire sector and M&E system. A position paper by the DWD's MIS Unit points to difficulties.

2.2 Review and Diagnosis of Focus International M&E Organizations and Emerging River Basin Organizations

Annex C provides a review and diagnosis of the three regional or global organizations active in African water sector M&E that were the focus of this study: EMWIS, JMP and WSP-Africa. Annex D provides a similar review and diagnosis of the study's focus RBOs.

2.3 Conclusions

Overall, several points emerge from this in-depth review of country and basin-level water M&E systems and related regional and international organizations that deserve re-emphasizing.

1 Water sector M&E across Africa is very weak. At present and with few exceptions, country-level M&E systems are unable to provide reliable data and information either for sector planning and management, or for use in regional or global databases.

2 Too often, MIS is interpreted as a computerized database without recognizing the importance of collection, demand for and use of information. Much time and money have been spent on building dedicated central MIS, resulting only in seemingly endless debugging and re-programming, much to the frustration of senior management. By contrast, M&E has succeeded in Uganda without a functional central MIS.

3 Through its annual reviews of sector performance SWAp stimulates the much needed demand for M&E assuring it of priority and sustainability. SWAp also provides the needed environment for holistic approaches, integration of sub-sectors (WR and WSS) and harmonization of M&E indicators and methods.

4 Effective monitoring is essential to good sector management. It not only provides for reporting on progress towards the MDGs and the Africa Water Vision 2025 goals; it is also the basis for effective sector planning and budgeting and the starting point for transparency and accountability of services providers. As such, M&E is key to good governance in the sector and assurance of equitable distribution of services.

5 Two M&E initiatives with potential for use as models across Africa are: i) the approach to indicator standardization in Uganda; and ii) WPM in Malawi and Tanzania. In Uganda a set of indicators was developed and harmonized in 2003 for use across the country. Known originally as the 'ten golden indicators.' These have proven useful to the sector's annual technical performance assessment. The geo-referenced WPM that was first developed by WaterAid in Malawi has proven useful in monitoring functionality and better understanding of access to water and sanitation.

6 Using JMP estimates comparisons can be made between countries in their progress towards MDGs and Vision 2025 targets. They are, however, less than useful in local sector planning and management. For this provider agency information is needed, but the methods of estimation currently being used by providers are beset by inaccuracies. There is a case for bringing these two together for greater understanding and improvement in survey and analytical methods.

7 Global water sector databases such as AQUASTAT, GEMStat, GGIS, WHYCOS and JMP are valuable sources for country level information, albeit in the broader context.

More detailed basin, sub-basin, district and town information should be available through sub-regional databases that may be developed by such RECs as SADC and ECOWAS. These will take time and resources to develop. In the meantime, emphasis should be placed on building national capacities for M&E so that data and information that is provided will be adequate in reliability, quality and coverage.

PART 3

GENERIC FRAMEWORK

3 Generic Framework

3.1 Introduction

The following chapter describes a generic framework for water sector M&E at the national and regional levels based on the research findings discussed and overview provided above. Such a framework should neither be seen as a regional superstructure nor as a rigid institutional architecture, but instead as a flexible foundation upon which more robust and detailed M&E frameworks can be constructed.

3.2 National Framework

3.2.1 Traditional Sector Monitoring

M&E mechanisms are commonly included in project funding arrangements. The problem, however, has been that being project based, they are typically disparate and lack coordination and sustainability. There is also an underlying resistance to monitoring by those providing information from the field to the centre that is underscored by a failure of the centre to analyze, feedback or otherwise use the information effectively. Seldom is the information entered into a database, and rarely is it analyzed and disseminated in useful format. Moreover, M&E is often viewed as a donor requirement imposed from outside and of questionable use to the implementing agency. Without ownership and of questionable value, agencies have come to undertake monitoring for monitoring's sake. In addition, MIS have been promoted in recent years for both water resources and WSS sub-sectors as a means of coordinating and making better use of the information being gathered by projects. Unfortunately, these MIS have tended to become projects themselves, lacking sustainability and integration in the sector and large exercises in computer programming rather than management, for which they are intended.

3.2.2 Transitional Sector Monitoring

Many of the shortfalls of traditional forms of aid such as project funding were addressed in the 2005 Paris Declaration on Aid Effectiveness, through which donors agreed to make greater use of country systems and to harmonize the delivery of aid. SWAps and PRSPs have become common-place and are providing frameworks and policies for budget support and debt relief. Transitional mechanisms such as pooled and basket funding are also in fashion and are said to provide opportunity for countries to strengthen policies and systems to ensure that aid is spent effectively. Nevertheless, transitional aid mechanisms also exhibit many of the characteristics of project funding they were meant to replace. This is particularly true where they fund programs that setup separate administrative and management systems. Fortunately, there are other alternatives such as earmarked sector budget support that can be provided in a way that does not result in parallel management systems.

The emergence of these new mechanisms has led to some outstanding examples of where M&E has been used as a powerful tool for accountability and management, built confidence and resulted in increased funding for the sector. In nearly all cases, the essential ingredient has been the demand for reliable information that has motivated the M&E system's development. Clear causal linkages between monitoring, sector performance review and funding can provide the necessary motivation to prioritize monitoring as an essential means of proving efficiency and progress.

Uganda is a case in point. The Ugandan rural water supply sector uses a combination of general budget support, debt relief and earmarked sector budget support. The sector is decentralized and local government is responsible for the delivery of rural water supply and sanitation services. The Ministry of Water and Environment's primary role is policy development, monitoring and technical support to local governments. Strengthened monitoring and performance reviews coupled with an active sector stakeholder working group (including donors and NGOs as well as government) have significantly enhanced sector performance over the past ten years. Technical reviews are conducted annually followed by preparation of annual performance reports. Moreover, performance is reviewed annually by the sector working group, which has a direct impact on government and donor allocations to the sector. At the same time,

government reviews past 'undertakings' and agrees to new ones designed to upgrade and strengthen sector performance in the year ahead. Monitoring and reporting systems are the foundation of the sector review process and resources allocation system. Monitoring is highly motivated and has thereby become central to the Annual Performance Report, a key sector document.

3.2.3 National Framework: Sector Information and Monitoring Systems

Based on the developments and innovative practices discussed above, the sector information and monitoring systems (SIMS) approach has emerged as a suitable framework for the development of national water sector M&E systems.

History

In 2006, the AWF, in collaboration with other national and regional stakeholders, convened a Regional Consultative Meeting on Water Sector M&E in September 2006. It highlighted the current situation of M&E in Africa and drew conclusions as to potential ways forward. Its principal outcomes and conclusions included, among other initiatives, a call for the harmonization of diverse M&E initiatives with an emphasis on the strengthening and development of country-owned M&E systems. The AWF meeting was followed by the SIMS workshop hosted by WSP and AWF in Kenya in March 2007. It took several concomitant factors into account, these being the emergence of PRSPs as providing the framework for country development planning and programs, SWAps and budgetary support rather than bilateral project funding, the increasing call for accountability in public expenditures, the complexity of monitoring multi-sector demand in IWRM monitoring, sector reforms which separate facilitation and implementation roles and, last but not least, the need for greater coherence in country monitoring with regional and global tracking of progress towards the MDGs.

The SIMS Approach

The SIMS workshop concluded that M&E systems must be:

1) Inclusive of the entire chain from inputs to outcomes;
2) Integrated and used in planning, budgeting and reporting;
3) Incrementally implemented to achieve broad ownership; and,
4) Institutionalized to ensure sustainability.

To which, as described above, a fifth "i" must be added: "incentivized" to ensure that it is demand driven, given priority and is owned by sector management institutions and personnel.

These five core elements of country-level M&E systems provide the foundation for the national M&E framework recommended in this report. The following sections describe each element in further detail.

1) Inclusive: There are three levels of inclusive sector monitoring:

i Outcome monitoring has been emphasized by the MDGs and is the focus of the JMP's work. JMP stresses inter-country comparability and therefore uses proxy indicators. Within country however, use of water resources, water supply and sanitation facilities, affordability, and reliability of service affect important outcome results.

ii There are also several indicators important to management at the output level. These include services provided, water point distribution, functionality, water resources allocation, tariff collection, unit costs, etc. Studies that go beyond routine output monitoring are also needed and include VFM audits, tracking studies, and evaluations.

iii Input monitoring includes TA, sector investments and other resource inputs as monitored by public expenditure reviews, audits, financial reporting at central and district levels, and project financial reporting.

2) Integrated

Being a complex mix of institutions, resources, programs and services, the water sector is difficult to manage at the best of times. Nevertheless, it is important that, for planning and budgeting purposes, the right things are monitored both accurately and in a timely fashion. All this serves to underline the need for consistent, reliable and respected monitoring on which management decisions can be based. In this context, it is important to reach early consensus among stakeholders around definitions, indicators and indices, to set up reliable collection, storage, reporting and dissemination mechanisms, and to hold regular sector stakeholder working groups

meetings that will ensure regular performance assessment and transparent and equitable resource allocation. The latter goes beyond monitoring per se but is an essential component that provides the incentive for prioritizing and sustaining quality M&E.

When monitoring is used in assessing sector performance, and where sector performance determines budget allocations, monitoring becomes a crucial input to sector management and development. Likewise, responding to donor requests for accountability by monitoring outputs puts is at the heart of the funding process. Monitoring then has to be integrated into the sector's planning, budgeting and reporting systems. All sub-sectors need to be included to properly integrate water resources and WSS. A strong sector stakeholder working group (SSWG) should be established to provide quality assurance and drive the annual sector performance assessment and joint sector review.

3) Incremental

The assessment of sector M&E conducted for this study concluded that countries can be grouped into weak, intermediate and strong categories, to which a fourth category (fragile) could also be added. Most countries are grouped as weak, while only a handful of them are relatively strong. While goals for sector monitoring and evaluation can be set, each has to respect the country's starting point, capacities and resources. Such an incremental approach separates phases of development into:

i The Initial Phase: establishing the basis for sector M&E, several initiatives of which can be termed as immediate measures;
ii The Monitoring Systems Phase: putting procedures, processes, pilots and plans in place for sector M&E development;
iii The Performance Review Phase: initiating the JSR and performance based resource allocation, special monitoring studies and sector expenditure reviews; and,
iv The Consolidation Phase: strengthening M&E systems by verification, refinement and ensuring follow-up of undertakings.

These phases are further subdivided into types of monitoring (outcome, output and input) and sector management.

Figure 3.1 Sector and Monitoring Phased Development

	INITIAL PHASE	MONITORING SYSTEMS PHASE	PERFORMANCE REVIEW PHASE	CONSOLIDATION PHASE
OUTCOME/RESULTS MONITORING	Ongoing direct household surveys	→	→	→
	Consensus on access & use definitions	Harmonization of surveys	Other stakeholders data integration	
		(HH, Poverty and IAs)		
	Definition of "Golden Indicators"		Sub-Sector implementation indicators	
		Benchmarking		
	Outcome monitoring pilots	Outcome monitoring	→	Triangulation and verification of data
			Community based monitoring	→
OUTPUT MONITORING	Review of existing data			**Improving M&E efficiency**
	Output monitoring pilots	Output monitoring	→	→
		Water Point Mapping (WPM)	WPM & equity studies	→
		Upgrading data management & use	→	→
		Installation of MIS & databases with IT Support	→	→
			Technical audits	→
			Tracking studies	→
			Value for Money (VFM) Audits	→
		Reviews of implementation in the districts	→	→
INPUT MONITORING		**Integration of sector and financial information**	→	→
	Input monitoring pilots	Input monitoring	Reviews of sector expenditures	→
	Ongoing Public Expenditure Reviews (PER)	→	→	→
	Ongoing central financial audits	→	→	→
	Ongoing financial inspections	→	→	→
SECTOR MANAGEMENT	Rapid M&E assessment			
	Sector Stakeholder Working Group (SSWG)	→	→	→
		SSWG Sub-committees	→	→
	Sector Framework and Country Status Review	**Joint Technical Reviews (JTRs)**	→	→
	Sector policy dialogue and formulation	→		Sector Policy Upgrading
	Sector Investment Plan (SIP)	SIP Implementation	→	→
		Sector Performance Reports (SPR)	**Joint Sector Review (JSR)**	→
			Performance based budget allocation	→
			Consensus on undertakings	**Ensuring follow-up on undertakings**
	MTEF & Sector Budgetary Framework	→	→	→
	Sector reform and decentralization	→		

4) Institutionalized

Monitoring systems are not sustainable until and unless they are housed within institutions; likewise, they cannot be sector-wide unless coordinated by some kind of multi-stakeholder coordination body. Typically, the sector's apex organization takes a lead role in data collection, storage and dissemination by drawing on subsidiary databases maintained by sub-sector agencies; likewise, they cannot be sector-wide unless coordinated by some kind of multi-stakeholder coordination body such as a SSWG.

5) Incentivized

The importance of motivation has been mentioned repeatedly in the paragraphs above. Monitoring can be inclusive, integrated and even institutionalized, but if stakeholders are not motivated it will fail just as it has so many times in the past. Experience has demonstrated that the most practical way in which monitoring can be motivated is by making it central to the sector review and resource allocation process, an approach that is in increasing in demand by donors providing sector budget support.

Phased Development of the Sector and M&E Systems

Figure 2.1, above, illustrates the development of a national water sector and its monitoring components. The latter is subdivided into outcome, output and input monitoring. Parallel sector management development is described in four phases and the most crucial elements have been highlighted in bold. The first, which binds everything together, is the SSWG with representation of key sector departments and councils, donors, NGOs and the private sector. The SSWG is the coordinator, forum for policy dialogue, overseer and quality assurance body for the sector. It also provides oversight to monitoring (possibly through an M&E thematic sub-working group) and strongly influences resource allocation, both national and donor. The Sector Investment Plan (SIP) is an overall SWAp investment plan that forms the basis of long term projections and shorter term rolling planning for the sector. Most countries have already begun sector reforms as part of their governance and fiscal decentralization programmes whereby local governments and towns/municipalities become responsible for implementing water supply and sanitation.

The initial phase of M&E development provides for immediate measures. These include setting up the SSWG, building consensus around definitions, indicators and undertaking initial pilot monitoring. It also includes broad sector assessments such as a Country Status Review or Sector Framework Review.

The second phase focuses on developing monitoring systems during which the pilots are scaled up to country wide systems and tested. Benchmarking is an important component of this phase, which includes comparisons and harmonization of sector agency data with others such as the statistics and surveys department responsible for annual household surveys and censuses, and poverty surveys monitoring the PRSP.

Procedures for joint technical reviews and performance reporting are established during the third phase. This is a major undertaking that calls for careful consensus building between all departments in that the foundation for data sharing and dissemination has to be agreed between all contributing stakeholders. As such, emphasis is placed on the word joint, in that these reviews and reports form the basis of sector assessment and resource allocation and need to be understood and respected by all stakeholders. Focus should remain on the effective use of information in sector planning and management rather than simply MIS and computer systems, which all too often become ends unto themselves. It is at this stage that financial and implementation information needs to be harmonized in order to assist managers in relating physical progress directly to financial expenditures. Efficiency and effectiveness studies are also needed for performance reviews, planning, and resource allocation, meaning that key indicators such as unit costs and timing need to be generated by the system.

Information derived through monitoring mechanisms adds greatest value during the performance review

phase. The Annual Performance Report combines the sub-sector's information and is the basis of the annual performance review planning, strategy and policy development, resource allocation, undertakings and implementation. It also draws on data from other stakeholders such as the environment, irrigation, forestry and statistics agencies. Monitoring is refined and deepened by enabling the beneficiaries to participate in data collection, systems monitoring and responding to information fed-back after analysis. Output monitoring can be greatly enhanced by WPM that includes equity distribution studies and functionality reviews. These are powerful tools for planning and systems repair and maintenance. They are also used in determining overall sector performance as they further benchmark access and sustainability and provide in-depth understanding of systems use and maintenance years after installation. Special studies such as VFM audits, tracking studies and expenditure reviews are used to elucidate and resolve key issues facing the sector and the joint performance review. The SSWG typically calls on sector agencies to refine and upgrade their programmes by identifying and reaching agreements on undertakings for the year ahead while at the same time reviewing progress on those of the past year.

Finally, the consolidation phase is focused on triangulating data, refining sector policy, improving efficiency and following up on undertakings. Activities in this phase are meant to polish up and refine procedures and systems developed during earlier phases and to ensure the sustainability of M&E systems well into the future.

3.2.4 Monitoring Indicators and Tools

There are numerous indicators available for monitoring the water sector. The key is to identify those that are relevant, robust, objective, verifiable, cost-effective and respond to the needs of the user. Indicators that are appropriate for international databases differ from those suited to national use. For example, the JMP, being a global database, has consciously cut corners in designing indicators that are appropriate for collection by nearly all countries and that enable inter-country comparisons. As a result, the indicators lack refinement and fail to indicate all that is needed for sector management. Water quality is a case in point. By using technology as a proxy indicator for improved water, one accepts the significant variations in water quality within the same technology. If indicators had to be chosen that accurately measure the safety of water according to national or WHO standards, the stringency and complexity of testing would be prohibitive. In effect, the "best" would have become the enemy of the "better."

Indicators for International Database Use

In 2006, the FAO mapped global water monitoring systems for the UN-Water Task Force on Monitoring. Besides assessing the principal water monitoring systems and initiatives world-wide, it provided a compilation of indicators proposed by the monitoring agencies. It is recognized that there are numerous indicators for WRM responding to a variety of monitoring needs. The UN-Water list is just one of many and is presented here as one that is both succinct and relevant to national and regional water monitoring needs. It has been adapted and reproduced below as Table 2.1.

Table 3.1 FAO WSS and Water Resources Indicators

Water Resources Monitoring	
Annual withdrawal of ground and surface water as a percent of total renewable water	%
Biochemical oxygen demand (BOD) in water bodies	mg/l
IWRM planning process stage	stage
IWRM financial process stage (self-finance and donor support)	stage
Annual precipitation	mm/yr and km^3/yr
Annual rain days	number/yr
Annual internally produced groundwater	km^3/year
Treated wastewater reused annually	km^3/yr
Total annual renewable water resources (surface and groundwater)	km^3/yr
Surface water levels (river, lakes water level)	% of normal value
Water stress index (renewable water resources per capita)	m^3/cap/yr
Wetlands	km^2
Water storage: actual as % of potential capacity	%
Water shortage: per capita water storage capacity	km^3
Dams	#, volume
National water scarcity indicator	km
Country dependency on external sources (as % of total renewable water resources)	%
Rain seasonality index (ratio between the amount of rain in each month and annual pluviosity)	%
Climate moisture index	
Total annual water withdrawals	km^3
Total annual water consumption (net: withdrawals – return flows)	km^3
Water use by sector: % distribution by sector	%
Water use intensity: total agricultural and by crop	lt/$1 USD output
Water use intensity: total industry and by economic activity	lt/$1 USD output
Annual environmental flow requirements	
Irrigated land	km^2
Irrigated land as percentage of cultivated land	%
Extent of land salinated by irrigation	km^2

Importance of groundwater for irrigation	%
Irrigated production as percentage of agricultural production	%
Hydro power generation – technically exploitable capability	
Hydro power development: capacity; actual; und. construction; planned	
Impact of droughts as % of annual GDP	%
Impact of floods as % of annual GDP	%
Concentration of nitrogen (NO3 + NO2) in water bodies	mg/l
Concentration of chemical oxygen demand (COD) in water bodies	mg/l
Water Supply & Sanitation Monitoring	
Concentration of faecal coliform in freshwater	#/100ml
Water, percentage of population with access to improved drinking water sources (total, urban and rural)	%
Proportion of population with access to improved sanitation (total, urban and rural)	%
Water production: water supplied to the distribution system	lt/person day
Water use intensity: total domestic (per person/per household) withdrawals and by clusters (urban, rural…)	lt/day
Prevalence of diarrhoeal disease in children under 5 years of age	%
Droughts – total number of people killed/affected	#
Floods – total number of people killed/affected	#
Gender aspect: women hours per day spent fetching water	Hrs/day
Gender aspect: girls school-days per year lost for fetching water	Hrs/day
Development aid and support for drinking water and sanitation	USD/yr
Price paid per litre of water (average, urban, rural)	USD/lt
Price/per litre of water as proportion of per capita daily income (average, urban, rural)	%
OTHER	
Annual investment in water sector (incl. environment)	USD
Annual water-related investment through loans from international banks	USD
Water sector share in total government spending	%
Water sector share in total external assistance	%

Water Sector Indicators

There are a myriad of indicators and tools available for monitoring water supply and sanitation. One of the first steps to be taken at the country level is to determine what constitutes sustainable access to an improved "safe" water source and what constitutes access to acceptable sanitation. These are decisions to be taken at the national policy level. They will vary between and even within countries.

In responding to requirements of the MDGs, the JMP has drafted a set of "core questions" to monitor outcomes that can be used by national agencies and in particular those undertaking household and census surveys. While each question has its limitations, each has been carefully designed for monitoring progress towards the MDGs. They pertain to:

- 1. Main drinking water source and source for other uses;
- 2. Time to collect water;
- 3. Individual(s) collecting water;
- 4 & 5. Water treatment;

- 6. Sanitation facilities;
- 7 & 8. Shared sanitation facilities and;
- 9. Disposal of children's faeces.

A well-known example on which to draw regarding the development of water sector indicators is the Ugandan Ministry of Water and Environment's set of 'golden indicators" against which performance is measured. The most useful and relevant are the following:

• Access: % of people within 0.2km (urban) and 1.5 km (rural) of an improved water source;	• Functionality: % of improved waters sources that are functional at time of spot check;	• Investment: Average cost per beneficiary of new water and sanitation schemes (USD/capita);
• Sanitation: % of people with access to improved sanitation (households and schools);	• Water quality: % of water samples taken at point of collection & waste discharge point that comply with national standards;	• Quantity of Water: % increase in cumulative storage capacity availability of water for production;
• Equity: Mean Sub-County deviation from district average in persons per improved water point.		

The access, functionality, investment and sanitation indicators are used most often, while data pertaining to the remainder, including three not listed above, varies in reliability and measurability. There is always room for upgrading indicators as the sector and its M&E systems mature, but early agreement on indicators to be used across agencies is very useful in terms of comparability and conformity. The Ugandan example provides a useful list of tested indicators that can be as a basis for designing 'golden' lists elsewhere.

Other recommended indicators include those drawn from Uganda's 2006 Budget Framework Paper below.

Table 3.2 Uganda's WSS and Water Resources Indicators

SUB-SECTOR	SUB-SECTOR
Rural water supply and sanitation	% of new water facilities built according to plan
	Avg. total time taken to collect daily water for household (from all sources)
	Funds allocated and spent on hygiene promotion per capita
	Quality of data for sanitation and hygiene at all levels
Urban water and sanitation	% of unaccounted for water
	Staff productivity (staff per 1000 connections)
	Collection/billing ratio
	# of water and sewerage connections
	% of urban population with on-site sanitation facilities
	% effective response to customer complaints within 24 hours
Water for production	Number of new water facilities (dams, lakes, tanks built)
	% of livestock with access to water at all times
	% increase in irrigated area
	# of water user committees formed and trained
Water resources management	% of water permits issued within the stipulated time limit
	# of per permit holders monitored to ensure compliance every quarter
	% of water samples analyzed within 10 days of receipt
	% of data entered within 14 days of receipt
	% of water assessment studies completed on schedule

Others, across the sub-sectors	Avg. % of household expenditure paid for water and sanitation services
	% of men and women who are satisfied with WSS services
	Avg. daily per capita total consumption of water
	% change in ground and surface water levels
	% of sector annual approved budgets that is actual spent on WSS investment programs
	% of filled staff positions in sector's central and local government

Each country will undoubtedly design its own set of indicators in accordance with its needs and stage of M&E development. Each can use the above as a guideline as to the most cost effective and revealing indicators and indices. There are other tools and indices available that can be used to elucidate specific sector issues and concerns. These include VFM audits and tracking studies, which are normally undertaken by third parties, as well as WaterAid's valuable WPM tool for sector management in Malawi and Tanzania.

3.2.5 National Institutional Framework and Database Management

There are as many sector institutional frameworks as there are countries. Most commonly, they are led by a single ministry, typically the ministry of water or agriculture. These are the apex organizations responsible for collation, analysis, reporting, storage and dissemination. Water resources are commonly monitored by the water resources department within the apex ministry and maintain separate databases. Moreover, water supply M&E is commonly divided between rural and urban, with the apex ministry drawing data from local governments or its district offices for rural water supplies, and from town or municipal authorities and utilities for urban water supply. Rural sanitation data is often collected through the health ministry or the directorate for local government and/or rural infrastructure, while urban sanitation and sewerage data comes from town or municipal authorities. Typically, databases are maintained separately and are difficult to access by other departments or the public.

The most functional approach is to have them coordinated, controlled and drawn on by a central database that is proactive in establishing formats and standards while assuring quality but not taking over the external subsidiary databases. The central database has an important role to play in combining sub-sector reports into coherent sector wide documents, including sector technical and performance reviews. This is the M&E institutional model used by Uganda, whereas Senegal offers a different model that uses a program unit (PEPAM) for sector M&E coordination, reporting and dissemination. Senegal's model has the disadvantage of being more difficult to sustain, but it has the advantage of providing balanced non-partisan leadership and being more accessible to non-government sector stakeholders.

3.3 Generic Regional/ Sub-regional Framework

The role of RMCs was outlined in significant detail in the preceding section on national M&E frameworks, while the following section looks at water sector M&E in Africa from an international perspective. It also seeks to map out the regional and sub-regional organizations that may be capable of playing a role in supporting M&E development in Africa, a group that includes NGOs, RECs, RBOs and African branches of international organizations.

In brief, the field and desk research undertaken for this study did not uncover a truly regional

institution capable of leading the improved collection, harmonization, evaluation and dissemination of WSS and water resources data across the continent. Instead, there exists a mix of international and sub-regional organizations that in some cases do or could have a supporting role to play in regional or sub-regional water sector M&E, and in others they have little to do with the sector as well as limited capacity or interest to expand into it.

3.3.1 Regional Framework

The overall conclusion drawn from this analysis is that while M&E is key to successful sector management, including its funding, it is in its early stage of development. The vast majority of countries will therefore need substantial effort, guidance and resources to create even the basis of effective monitoring Africa-wide. Much the same can be said about regional organizations, which are generally both weak and under-resourced or have interests separate from the water sector. There are also some international organizations working in Africa with interests in developing M&E systems in the sector. These may provide support but could not form the core of an African regional or sub-regional monitoring framework.

For example, UNECA serves as the Secretariat of UN Water-Africa, which exists to coordinate and harmonize water activities in Africa by various UN and other sub-regional inter-governmental organizations. UNECA also publishes the African Water Development Report (AWDR) on behalf of UN-Water/Africa, all UN agencies active in the water sector in Africa and affiliated institutions and experts at national levels. Furthermore, the organization is home to the African Centre for Statistics (ACS), which produces a series of publications each year that disseminate data on a range of social, environmental and economic indicators. However, UNECA is a part of the UN system, and ACS publications, unlike the AWDR, do not contain indicators specifically related to the water and sanitation sector.

The African Network of Basin Organizations (ANBO) also has potential as a regional focus having interests in water sector data collection and dissemination. ANBO is particularly relevant as an African organization having a membership of basin organizations across Africa. At present, however, its resources and technical capacity are limited and it remains largely dependent on the International Network of Basin Organizations (INBO). Its mandate extends only to water resources and excludes WSS. Nevertheless, it is noted that ANBO has an associated partnership with AMCOW, attends AMCOW-TAC meetings and serves in a technical advisory role to AMCOW. While recognizing ANBO's limitations, its linkages with national and transboundary basin organizations could be exploited and supported by the AWF in the upgrading of WRM monitoring across Africa.

3.3.2 Sub-Regional Framework

In the absence of a truly regional institution with a sector wide mandate, one must step down to the sub-regional level to look for promising organizations whose activities encompass their home sub-region. Since, RECs have been said to be prime stakeholders in water sector M&E in Africa, they should be discussed first.

Research undertaken for this study indicates that most RECs (with the notable exceptions of ECOWAS and SADC), while meeting the criteria of being African and representing multi-state interests, prioritize regional economic integration and political cooperation over water resources and WSS. Ongoing uncertainty over sustainability, resources and staffing and future direction of many RECs further limits their concerted engagement in specialized activities such as water sector M&E. All have common interests in transboundary water resource management, but few have active programs in water sector M&E. Exceptions to this general rule apply to the Water Resources Coordination Unit of the Economic Community of West African States (WRCU-ECOWAS), the Southern African Development Community (SADC), the East African Community (EAC), the Inter-Governmental Authority for Development (IGAD) and the Community of Sahel and Saharan States (CEN-SAD).

Through its WRCU, ECOWAS has taken several crucial steps towards becoming a sub-regional

leader in water resources monitoring, including the ongoing development of a Regional Water Observatory for 15 countries of West Africa. Though financial and human resource shortfalls inhibit the attainment of many of its short to medium term goals, the WRCU's vision and efforts to date put it significantly ahead of its fellow REC counterparts with regards to sub-regional water resources M&E.

A similar exception applies to SADC. Created in 1980 and renamed in 1992, the Southern African Development Community comprises fourteen southern African states. Sharing the Africa Vision 2025 and the MDGs with its member states, one of its mandates is TWRM. SADC members ratified its Protocol on Shared Watercourses in 1998. In addition to the Protocol's role as a guiding policy framework, it is also meant to facilitate "research, technology development, information exchange, capacity building and the application of appropriate technologies in shared watercourses management." One of SADC's important achievements has been the Zambezi Action Plan Project (ZAPRO) and parenting of the Zambezi Watercourse Commission. The objective of the Commission is the equitable utilization of the Zambezi waters and its efficient management and sustainable development. SADC also carries out climate monitoring on behalf of the region through its Drought Monitoring Centre (DMC) and Groundwater and Drought Management Project. The DMC's main objective is to carry out climate monitoring and prediction for early warning and to mitigate the adverse impacts of extreme climatic events on agricultural production, food security, water resources, energy and health, among other socio-economic sectors.

Other RECs are resource short, but they too have interests in the sector. Some have made proposals to the AWF for funding. For instance: the EAC has proposed support for urban water supply development around Lake Victoria in collabo-ration with UN-HABITAT; IGAD, in collaboration with the Sahara and Sahel Observatory (OSS) is developing an AWF supported project for mapping, assessment and management of trans-boundary water resources; and, CEN-SAD has requested support for the management of natural resources in its region.

This suggests that the potential exists to establish a network of sub-regional monitoring centres that will draw on country databases and analyze, prepare and disseminate reports to their members. Each REC would have its own program influenced by the needs and interests of its regional members. Eventually, with proper support, each could become a regional centre providing valuable TA and information services to its members, including in M&E and data quality assurance. The development of such a network would take several years, and it would require substantial technical and financial inputs and present both substantial opportunities and challenges. The network development process may be facilitated by regional NGOs such as the African Civil Society Network on Water and Sanitation (ANEW) or professional bodies such as the African Water Association (AfWA).

As stated above, nearly all RECs are currently institutionally weak, resource short and have limited mandates. AWF support would first call for careful and detailed assessment prior to providing support for capacity building and TA. The initiative would have to be demand driven and utilize the usual cycle of project funding. In the initial round, the program would only partially conform to AWF's network design. As to be expected, the program would initially respond mostly to the REC's individual needs and perceptions. Only in a second and third round of proposals and project funding would the planned network of water sector monitoring centres be realized. Key information regarding ECOWAS, SADC and other active RECs on the continent is summarized in Annex B.

Additional resources for the Sub-Regional Framework may become available through the planned network of AMCOW's Secretariats. These are to be established and strengthened under AMCOW's Brazzaville Declaration and will have direct links to AMCOW's TAC, EXCO and member countries. AMCOW's Secretariats will be of particular value in that they are to provide information services to AMCOW and come under

its direct control. By liaising with a Sub-Regional framework or network of organizations described above would also support the implementation of the African Union's (AU) July 2008 Sharm El-Sheikh Agreement. This agreement "requests AMCOW to annually report on progress made in the implementation of [the AU's] commitment on water and sanitation with support from regional partners." The Agreement also commits the AU to "strengthen AMCOW as a key regional mechanism…for promoting cooperation on water and sanitation."

Other resources having potential for the Framework are the several national and sub-regional organizations and initiatives based in Africa, including both RBOs and NGOs, with interests in IWRM. Some are well developed, such as the OMVS in Senegal. The OMVS and others like it could form the basis of a capacity building network themselves being strengthened to provide training, TA and demonstration services to other basin organizations at earlier stages of development. All would participate in providing data and information to REC regional water resource databases as discussed above. These organizations, as discussed below, typically enjoy assured technical and financial support from outside.

In North Africa, CEDARE is supporting the strengthening of environmental information systems at the national level including monitoring progress towards the MDGs. Its activities are supplemented by those of EMWIS, which, through its national focal points across North Africa, is promoting the strengthening of National Water Information Systems, the development of a Mediterranean Water Monitoring mechanism, and is supporting sub-regional water sector M&E. These activities are being complemented by those of the United Nations Environment Program's Blue Plan Mediterranean Environment and Development Observatory, which endeavours to promote the creation of national observatories in member countries, the use of indicators on the environment and sustainable development and the strengthening of capacities in the field of environmental statistics through the MEDSTAT project. Furthermore, the OSS is supporting the sharing of experiences, mastering information technologies and providing greater access to common databases in order to combat desertification. The OSS' Network for Long Term Ecological Monitoring Observatories (ROSELT), supported by UNESCO, aims to improve the effective use of data and to thereby enhance knowledge of the mechanisms, causes, and consequences of desertification in arid and semi-arid zones around the Sahara desert.

Furthermore, CEDARE has submitted a proposal to AWF on behalf of N-AMCOW to which it acts as host to the N-AMCOW Secretariat. The proposal is for development of "A Water MDGs Monitoring and Evaluation Program in North Africa." Countries included in the study are Egypt, Libya, Tunisia, Algeria, Morocco, and Mauritania. The overall objective is to assess progress in achieving the African Vision and water-related targets of the MDGs and IWRM in the Northern African countries and enable country-led M&E in North Africa to produce monitoring data and evaluations that are credible, valid, comparable and useable as tested by internationally recognized M&E standards. The proposal is in its early stages of development. Explanations as to how its objectives are to be accomplished need to be included with work programs, schedules, details of past experience and the proposed expertise available to undertake the work. The recipient of the grant of €3.1 million would be N-AMCOW itself with CEDARE as executing agency. CEDARE held a workshop June 2008 in Cairo on the proposal, which the Consultant attended along with representatives of participating countries.

In West Africa, WRCU-ECOWAS demonstrates the most potential to become a regional leader in water sector M&E through its efforts to develop a Regional Water Observatory, but its current focus on water resources limits its ability to branch out into WSS monitoring. The OMVS Environmental Observatory in Senegal (OMVS-SOE), which has created a network to collect and share IWRM data from and between OMVS member states, and a database that provides a multilayered picture of the state of the Senegal River basin (SRB). It can be considered a model on which other RBOs may seek to build. Nevertheless, its

limited geographic focus currently precludes its expansion into a larger sub-regional M&E.

One should also mention the Regional Centre for Low-cost Water Supply and Sanitation (CREPA), based in Burkina Faso. Though focused on building capacity in the water and sanitation sector across French speaking West and Central African countries, CREPA can be said to contribute to water M&E by promoting the dissemination of information and the exchange of experiences in the WSS sector. Moreover, its efforts to transfer suitable technologies to the community level may also serve as a useful input into the expansion of water monitoring networks in the region.

In East Africa, the Nile Basin Initiative (NBI) based in Entebbe, Uganda – a partnership between the river's 10 riparian states intended to facilitate the sustainable development and management and utilization of Nile Basin water resources – has been managing their Information Products for Nile Basin Water Resources Management project since 2004. This is an initiative intended to strengthen the ability of riparian government to make informed decisions regarding water resources policy and management through increased access to information and knowledge concerning basin resources. In addition to the NBI, the Lake Victoria Environmental Management Project, involving Kenya, Tanzania and Uganda, is another river basin-level organization in East Africa with a strong monitoring component. This component, focused on qualitative and quantitative water quality information, provides riparian states with data covering a large number of bacteriological, chemical and physical indicators related to drinking water, agriculture, municipal and industrial waste and ecosystem stability.

In Central Africa, it is unclear whether any organization exists with the capacity or mandate for supporting the development of a sub-regional water M&E system. While focused on economic, political and social cooperation to support the maintenance of peace and security in the region, the Economic Community of Central African States (ECCAS) is involved to some degree in the environmental sector and in the management of natural resources. ECCAS sees itself playing the role of "institution fédératrice", a coordinating body that can help guide initiatives focused on the environment and natural resources in Central Africa. In 2007, for instance, it began to prepare a project to install a satellite imagery system to support the management of the environment and natural resources in order to strengthen its role in the management, monitoring and evaluation of natural resources in the region. Nevertheless, these efforts are still in their infancy.

Finally, there are numerous organizations with mandates that are limited to WRM and exclude WSS but offer significant potential in terms of expertise and institutional resources to support sub-regional coordination of M&E. These include ANBO and the many RBOs across Africa. The recommendation is therefore made for ANBO to be approached to determine the most effective way in which it can be strengthened to provide support to national and transboundary organizations, even without including water supply and sanitation. It is also noted that there are considerable strengths within transboundary RBOs, such as the OMVS, that should be included and drawn on to support the strengthening of other national and transboundary RBOs.

In conclusion, there is currently no single and truly regional institution capable of leading the establishment of an effective and sustained Africa-wide M&E system. However, combinations of organizations offer good potential. There are several that are recommended below as contributing to a viable regional framework.

3.3.3 Proposed Regional/Sub-Regional Framework

In light of the above findings, the following competencies are considered desirable, if not essential to a regional/sub-regional M&E framework:

- Vision, coordination and quality assurance in developing the M&E Framework;
- A source of finance or capacity to acquire funding from donors.

- Functional competence in both IWRM and WSS;
- Information collation and dissemination centres with databases, websites and the capability to prepare and disseminate reports;
- Sub-regional mandates responding to the contexts, needs and aspirations of participating countries; and,
- A resource centre able to provide TA and training Africa-wide and resolving M&E and sector policy and development issues generally; and,

In addition, the framework should cover both IWRM and WSS. It must be based in African organizations and preferably not in those that are parented by organizations outside Africa. The following table illustrates the most relevant characteristics of key regional and sub-regional organizations that could make up this framework.

A principle drawback to the RECs is their focus on IWRM and particularly TWRM to the near exclusion of WSS. It is anticipated, however that, with support, their mandates could be expanded to include WSS in the longer term. These concerns aside, there is considerable potential for establishing sub-regional databases within the RECs. For example, SADC and WRCU-ECOWAS are already working with their member countries in monitoring transboundary waters. Competencies and interest already being established for transboundary waters could be expanded to include national water resources and WSS services with financial and technical support. Ideally, in the long-term, RECs could be responsible within their sub-regions for:

- Information collation , database management and dissemination;

Table 3.3 Potential Organizations for Regional Framework

	AWF-AfDB	RECs	AMCOW secretariats	RBOs	NGOs	Private Sector
Vision, coord. & quality assurance for M&E Framework	√			variable		
Financing capacity	√					
Functional in IWRM	√	√		√	√	√
Functional in WSS	√				√	√
Database and dissemination capacity		√		√		
Sub-regional mandates		√	√			
Technical asst & training capability	√	variable		√	variable	√

The AWF-AfDB has thus far (in collaboration with WSP, JMP and others) been instrumental in carrying forward a vision and coordinating efforts to develop Africa-wide water sector M&E. The Action Plan, presented in the following section, recommends AWF's expanded role in the first stages of M&E assessments and strengthening at country level Africa-wide. It also has an important role to play in strengthening sub-regional organizations through its financing mechanism. In addition, AWF offers considerable potential in coordination, management and financing of TA and training through the private sector.

- TA to member states;
- M&E coordination, oversight, quality assurance, harmonization of indicators and methods; and,
- Monitoring progress towards the Africa Water Vision & MDGs.

As listed in Table 2.4, below, five RECs plus CEDARE have been identified as having the greatest potential for providing sector focus and Africa-wide coverage with minimum gaps and overlap across member countries. Their interests and African country membership are listed.

In accordance with the AU's July 2008 Sharm El-Sheikh Agreement, AMCOW will report annually on progress made in implementation of the AU's commitments in the sector while being strengthened as a key regional mechanism for promoting sector cooperation. AMCOW will need reliable information, the sources of which could be the RECs if they are strengthened and their mandates expanded to include WSS. AMCOW's Secretariats (if established as planned) would usefully link with the RECs to obtain, collate and report on the required data and information. The central AMCOW Secretariat in Abuja, Nigeria, could be responsible for coordinating the data and information from sub-regions obtained through its network of secretariats to prepare and disseminate an annual AMCOW Africa Water Report.

Table 3.4 African RECs and CEDARE

	CEDARE	EAC	ECCAS	ECOWAS-WRCU	IGAD	SADC
Sectoral Interests	• Water resources • Land resources • Knowledge management and ICT • Trade & investment	• Free trade • Economic integration • Political coopera -tion • Water supply	• Economic & monetary integration • Free trade • Peace and security • Natural resources	• Economic ntegration • Security cooperation • Human rights • Culture • Water resources (WRCU)	• Economic cooperation and integration • Peace and security • Water resources	• Political and security coope-ration • Economic coopera-tion & integration • Water resources
African Members (HQ)	Focal Points: • Algeria • Djibouti • Egypt • Libya • Morocco • Sudan • Tunisia	• Burundi • Kenya • Rwanda • Tanzania • Uganda	• Angola • Burundi • Cameroon • C.A.R. • Chad • D.R. Congo • Rep. of the Congo • Eq. Guinea • Gabon • São Tomé and Príncipe	• Benin • Burkina Faso (WRCU) • Cape Verde • Cote d'Ivoire • Gambia • Ghana • Guinea • Guinea-Bissau • Liberia • Mali • Niger • Nigeria (HQ) • Senegal • Sierra Leone • Togo	• Djibouti • Ethiopia • Kenya • Somalia • Sudan • Uganda	• Angola • Botswana • D.R. Congo • Lesotho • Madag-ascar • Malawi • Mauritius • Mozam-bique • Namibia • South Africa • Swaziland • Tanzania • Zambia • Zimbabwe

***Bold = headquarters country.**

PART 4

ACTION PLAN

4 Action Plan

The importance to water sector development of strengthening national M&E systems across Africa cannot be understated. A principal conclusion of this study has been that water sector M&E is deficient in almost every African country. Failure of M&E systems in the vast majority of countries has brought enormous opportunity costs in terms of poor distribution of services, poverty and cost in the effective use of scarce resources. Furthermore, without relevant and reliable information being generated by individual countries, sub-regional, regional and even global databases are rendered ineffective and progress towards high level targets such as the MDGs is nearly impossible to track.

This Action Plan builds on the preceding institutional, country and region-level overview and analyses of African water sector M&E systems in order to outline a starting point for an AWF-led effort to strengthen and harmonize such systems across the continent. The Action Plan recommended herein is divided into three primary stages and is supported by a suggested approach and terms of reference for the application of the Rapid M&E Assessment Template (Volume 2). The three stages of the Action Plan are structured as follows:

- The first takes the form of an Africa-wide Rapid M&E Assessment. Using the template prepared for the purpose, consultants will be trained and subsequently undertake assessments in some 30 selected countries. The remaining countries will be assessed through desk reviews relying on Internet, secondary data and phone contact.

- The second stage comprises Orientation, Work-planning and Proposal Development (OWPD), in which selected countries will be assisted through needs identification and proposal development. The numbers of countries involved will, at this stage, be reduced to a manageable 20. Those not selected will receive support later in second and third batches. Proposals will be developed for AWF funding.

- The third stage will entail the actual Strengthening of National M&E systems.

For the purposes of discussion it is assumed that the AWF will provide most of the financing, coordination and quality assurance needed to carry out the initiative while also coordinating the provision of TA and training to RECs at the sub-regional level through the private sector. As the AMCOW Secretariats come on stream, it is anticipated that they will liaise with their sub-regional organizations (principally the RECs) for the sector data and information they require.

The following six foundational recommendations are put forward to help guide the implementation of this continent-wide initiative.

i First priority should be given to strengthening M&E systems at the country rather than the regional level.

ii Country M&E strengthening should begin with direct and pro-active AWF-to-country support. It should begin with Rapid Assessments coupled with proposal development once a cadre of assessors has been trained to ensure uniformity, quality and consistency of assessments and proposals.

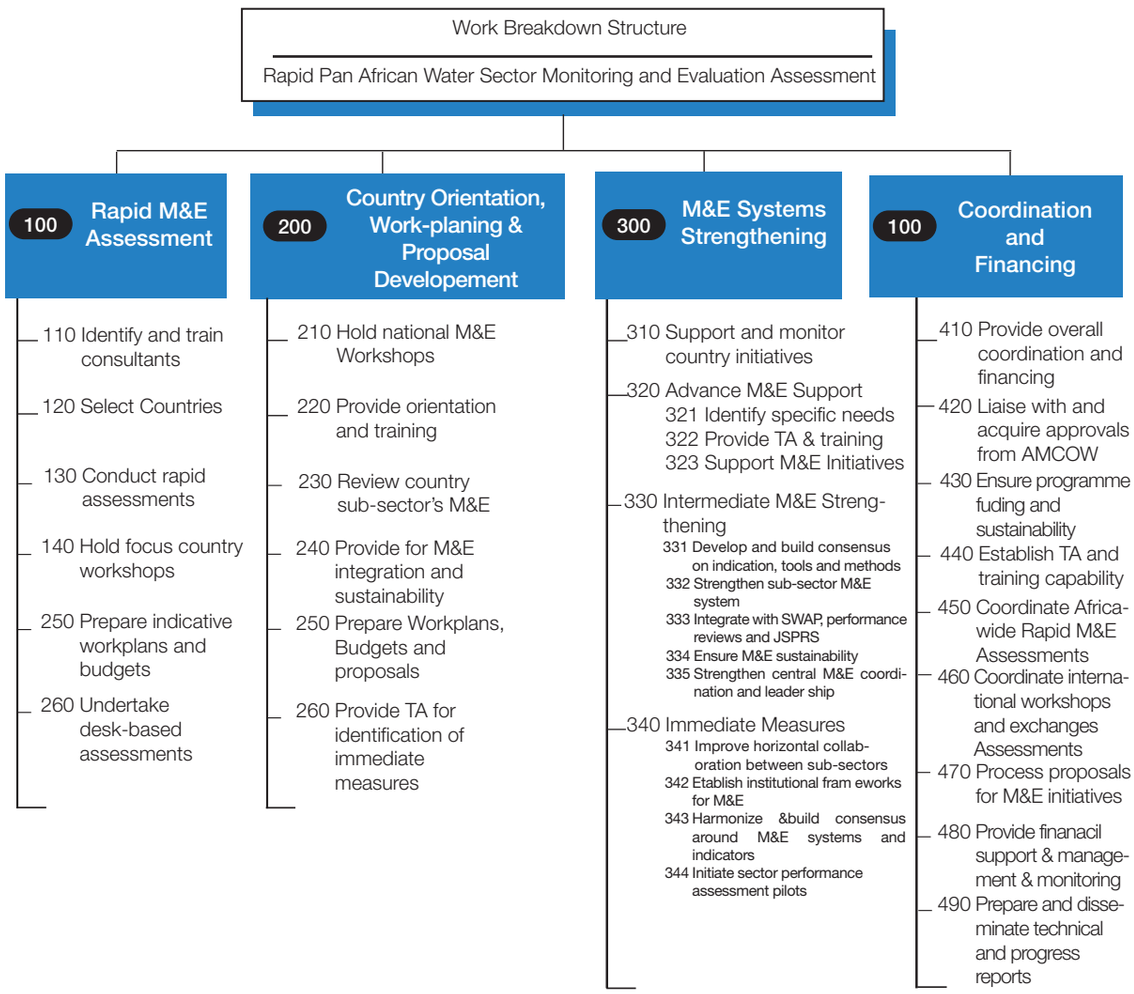
iii Rapid assessments and initial strengthening of country M&E systems should begin in a limited number of countries (five being the proposed number herein). They will later expand to 20 and 30 over time. The first countries selected should not include the more difficult ones but respond to country demand and potential for success.

iv M&E systems need to be sector and country-wide and not be limited to projects, programs or sub-sectors. Where feasible they should be based on the SIMS model and strongly incentivized to ensure their sustainability. Where possible they should also form the basis of regular sector performance assessments within the SWAp framework.

v While the participation of organizations such as RECs should be welcomed, RECs should not be relied upon as prime movers until such time as their capacities can be strengthened and experience in the sector broadened. Proposals from RECs and associated institutions should be encouraged by AWF, but their weaknesses should not be overlooked. Funding and support should only be demand responsive.

vi Support to sub-regional organizations such as RECs can be undertaken in parallel with the above direct AWF-to-country support, but it should first be for capacity building and institutional strengthening.

Figure 4.1 Rapid M&E Assessment Work Breakdown Structure



4.1 The Rapid M&E Assessment & Template

The Rapid M&E Assessment will be the first stage of the AWF's Africa-wide M&E strengthening initiative. The objectives of this first stage will be to:

- Identify high quality consultants and orient and train them in water sector M&E assessment;
- Establish standard procedures through a first set of country M&E assessments;
- Generate an overall understanding of national M&E systems across Africa;
- Ensure relevance, adequacy and comparability of country level rapid assessments; and,
- Identify initial gaps, needs, work plans and proposals for strengthening national M&E systems.

The template that will be used to guide the rapid assessments of water sector M&E systems in some 30 countries was developed and pilot-tested between January and May 2008 in this study's five focus countries – Malawi, Senegal, Tunisia, the Congo-Brazzaville and Uganda. It has been published in parallel with this report as Volume 2 and is composed of two main parts. Part 1, Rapid Assessment Guidelines, provides background material on a typical country's water sector's institutional framework and roles and responsibilities of the sector's stakeholders. The guidelines describe the types of organizations to review and interview, information to be acquired and assessments to be made. It is a guide meant to promote inclusiveness and enhance the quality of information obtained as well as to facilitate cross country comparisons. Part 2, Rapid Assessment Outline & Checklist, provides the assessor with descriptions of the assessment report's contents. It includes specific questions listed in checklist fashion to assist the assessor in obtaining and including all of the required information. It is presented in the form of a recommended table of contents.

4.1.1 Application of the Template

Five well qualified consultants will be identified to first undergo training and then conduct rapid assessments in the first five countries. Their work would then be expanded in phases to a total of 30 countries representative of a variety of M&E systems (advanced, intermediate and weak), having the full range of WRM and WSS development and representing all RECs. The consultants will have proven ability in the African water sector and M&E techniques, and they will have strong writing skills. Their training will serve to ensure the desired quality, consistency and comparability of assessments and eventual work plans and proposals. Training will entail a week of intensive study in a country with strong M&E systems followed a sample rapid assessment that will be conducted jointly. This intensive training is considered necessary in light of past AWF experience in cross-country studies undertaken by teams of consultants working under common TORs but producing incomparable results. This experience strongly suggests that the consultants will need to be well prepared, carefully monitored and work under detailed guidelines if the results are to be consistent, accurate and comparable. It was for this reason that the template was prepared in such detail.

Once the training has been completed a first set of five country assessments will be undertaken. The consultants will be supported in each country by local country 'coordinators' who will assist in coordinating appointments and data gathering. The five country assessments will be closely monitored and followed-up with a workshop to review quality and comparability. Ultimately, all 30 country assessments must be able to be compared and compiled in a single document.

The ensuing 25 country assessments will be undertaken in two sets during the second year and will be closely coordinated by the AWF. There will be occasions when RECs will work jointly with the AWF in assisting the assessment work. The two sets of assessments will take six to eight months to complete. Both sets will culminate in a focal country AWF workshop attended by country coordinators, the consultants, AWF and representatives of other concerned donors and stakeholders. They will review the assessments, draw comparisons, identify common issues and needs and recommend steps to be taken in their resolution.

In addition, a desk-based assessment of the remaining (approximately 22) African countries' M&E will be undertaken by drawing on documentation (including reports and appraisals of international banks, bilateral donors and UN agencies), Internet and in-country contacts. A comprehensive report on the state of water sector M&E Africa-wide will then be prepared to include both desk and in-country assessments. It will report on the focal country workshop and outline the needs and next steps for strengthening M&E in-country and sub-regionally.

4.2 Orientation, Work-planning and Proposal Development

The objective of the next stage is to:

- Orient key country stakeholders to national M&E frameworks, systems and requirements;
- Provide greater detail as to the status and needs of sub-sector M&E systems;
- Prepare work plans, budgets and proposals to undertake strengthening of national M&E systems; and,
- Identify immediate needs of those countries with weaker M&E systems.

The first activity following the rapid M&E assessments will be to select focus countries for strengthening. The number of countries selected will depend on availability of financing, but it is hoped that at least 30 M&E systems will eventually be strengthened. National workshops will be held to provide stakeholders with an understanding of all the sub-sectors encompassed by M&E systems. Where desirable, key professionals will be provided with additional training and participate in study tours of functional systems. The rapid assessments will have provided information on weaknesses, gaps and needs and will be accompanied by proposals, at least to the conceptual stage. At this stage any sub-regional countries that had been strengthened previously could play a stronger supportive and coordinating role. It is stressed, however, that they will need to have been well integrated into the proposed approach to country-level M&E development to ensure maximum uniformity and harmonization of approaches.

The central collection of data and information, creation of a central database and preparation of reports and dissemination will be included as an integral part of each M&E system. Special attention will be given to the integration of M&E into sector development as a whole (including in SWAps, performance reviews and JSRs) and to its use in planning and management. This has particular relevance to the creation of demand for information by management. The issues of isolation and sustainability will also be given particular attention since all M&E systems require continuing support, resources and demand for their information; otherwise, they will fall into disuse as has so often happened in the past.

TA will be provided directly or through consultants by the AWF to support the preparation of M&E strengthening project proposals. These will include work plans, budgets and schedules for submission to AWF and other funding sources. For those countries at early stages of sector and M&E development, such as those described as having weak M&E systems and potentially some fragile states, consultants will be provided to work with participating agencies, hold meetings and prepare work plans and proposals for less ambitious but nonetheless important and urgently needed strengthening activities.

4.3 M&E Systems Strengthening

The AWF will appraise and select projects for funding. Using its standard proposal assessment and approval cycle, it is anticipated that some 34 projects will receive funding. They will be grouped into three categories:

a) Support will be provided to some countries with more advanced M&E systems that will seek support for specific activities identified as gaps. These, for example, could be training for M&E personnel, research into improved and harmonized indicators, tools and methods of data collection, piloting benchmarking, extending data collection to

beneficiary communities and upgrading the weaker contributing databases.

b) Most resources will be devoted to the many countries with M&E systems categorized as intermediate. These include, for example, Tanzania, Benin and Malawi. This category includes those countries with greatest need for support while offering the greatest opportunity for improvement and benefits. They have reasonably strong water sectors, most are undergoing sector reform including decentralization, SWAps, annual performance reviews and JSRs. Most have also now moved from project funding to earmarked sector budgetary support. They will be looking for a full range of strengthening initiatives including IWRM M&E; standards, indicators and tools development; bench-marking; water point mapping; participatory data collection; database development; and integration of monitoring into the annual performance assessment process. Again, emphasis will be on creation of demand for information and its use in planning and management.

c) The immediate measures identified in the weaker M&E countries will be those that respond to early stages of sector and M&E development and that make the best use of existing resources and sector strengths. First steps might be to improve collaboration between sub-sector agencies, to establish institutional and communication structures for sector M&E, to select and build consensus for harmonized indicators and M&E methods/systems and to initiate performance assessment pilots. All of these can be undertaken as immediate quick-win measures.

4.4 Coordination and Financing

Coordination and financing are recommended to fall under the purview of AWF, as listed under component 400 of the WBS above.

4.4.1 Appraisal, Financing and Overall Coordination

The AWF coordinates the overall initiative and be its primary liaison with AMCOW, its Technical Advisory Committee (TAC) and its M&E Working group. This includes progress reporting, preparing work-plans, seeking approvals at each stage and undertaking responsibilities as set out by the TAC. The AWF will also be responsible for financial management and ensuring that funding is available and disbursed for projects and field activities in a timely fashion.

AWF's first major activity will be to setup and coordinate the initial Rapid M&E Assessment. This will entail selection, training, contracting and managing consultants and coordinating the entire activity, including the first five assessments and the international workshop. Following its conclusion, AWF will be responsible for preparing a comprehensive report on M&E systems and their needs Africa-wide.

The next stage will see the expansion of assessments to up to 30 countries as well as the organization of two international workshops and several national ones in the ensuing stage (task 460). These will be AWF's responsibility to organize, but they could also be outsourced. There will also be substantial specialized training to be provided along with numerous TA assignments. Each training and TA will be designed to meet specific needs and situations. It is readily apparent that AWF will need to be strengthened to manage the numerous contracts, provide the coordination, ensure standardization of methods and exercise quality control required for this initiative. This being the case, a good portion of these activities could be outsourced to the private sector, but even then the size and complexity of the M&E Rapid Assessment will necessitate additional AWF staff inputs. The use of RECs to provide management and coordination at this early stage is not an option. As indicated above, RECs need substantial strengthening themselves before they will be able to act as sub-regional coordinators. Their use would also

mean that standards and quality control (so very necessary to M&E strengthening across Africa) would be next to impossible to maintain. Recommendations on how to strengthen sub-regional organizations such as RECs to enable their involvement as sub-regional M&E coordination centres at a later stage are provided in section 3.4.2 below.

During this stage the AWF will perform its traditional role of providing overall program direction, encouraging and assessing project proposals and, if needed, having them upgraded, turning them down, or funding and monitoring their implementation. Coordinating this activity across some 20 countries will entail a substantial increase in the facility's overall workload. Furthermore, the AWF will be responsible for ensuring quality control and for preparing progress reports to be submitted to AMCOW and participating donors. In doing so AWF will liaise closely with other donors and stakeholders in water sector M&E such as WSP, UNECA and JMP.

This is particularly relevant to the question of sustainability. The desired M&E systems are sector-wide and will be used in its planning and management. These systems also need to be integrated and harmonized into all sub-sectors and will therefore require both national budgetary and donor support in nearly all countries. By definition, such support cannot be on a project basis; as such, it would neither be sustainable nor integrated and harmonized. Sustainability will have to be assured through basket funding or earmarked sector budget support. Successful and sustained M&E needs to be owned and used by all major stakeholders. As such it is ideally suited to SWAp and sector budget support mechanisms. In coordinating the M&E initiative, AWF will continue its strong linkages with the major donors including the World Bank, its own OWAS at AfDB and support agencies such as WSP to ensure M&E is regularly included in planning and funding sector programs and earmarked budget support.

4.4.2 M&E Coordination at Sub-Regional Level

Possible combinations of organizations that could be involved in M&E coordination at the sub-regional level are listed in Section 2.3. The first step should be to decide which combination would be the most effective and have greatest potential for success. The second would be to investigate those organizations showing strong interest, potential, relevance and commitment and deciding on those that will participate based on merit. The third step would be to hold joint meetings and/or a workshop to assist in the preparation of proposals. AWF should maintain a strong coordinating role throughout this process to ensure relevance and quality of proposal and ensuing projects. Of necessity is the design of appropriate and harmonized frameworks at this stage.

As stressed above, the RECs and other organizations with sub-regional mandates in the sector have some potential as sub-regional M&E coordination centres. Inevitably, they will submit proposals for funding, as in the case of CEDARE and SADC; however, care needs to be taken to ensure that they are first strengthened institutionally, work across the sector (including both WSS and WRM), have the necessary experience and expertise in-house, and that the proposal is fully supported and owned by the countries they represent. The preparation of sub-regional organizations will take at least a year to complete, during which country level assessment and strengthening should be well underway (as illustrated in the Action Plan's schedule). Country-level M&E strengthening should take priority and not depend on or be held back by regional or sub-regional database development and organizational strengthening.

The final steps will be the funding and implementation of projects, which will take another two years to complete and inevitably require continuous monitoring, TA and training input.

4.4.3 M&E Development Program (MEDP) Budget

The following table presents an indicative budget for undertaking the proposed action plan. Each activity is in accordance with the WBS included above.

Table 4.1 Action Plan Indicative Budget

Activity	Unit	Unit Cost USD	Number Year 1	Number Year 2	Number Year 3	Cost Year 1	Cost Year 1	Cost Year 1	Total Cost
100 Rapid M&E Assessment									
110 Identify and train consultants (trainers, trainees, facilities and course)	training	64 300	1			64 300	0	0	64 300
120 Select countries (by AWF)						0	0	0	0
130 Conduct rapid assessments						0	0	0	0
131 First Set of Rapid Assessments (5)	assessment	13 500	5			67 500	0	0	67 500
132 Second Set of Rapid Assessments (10)	assessment	13 500		10		0	135 000	0	135 000
133 Third Set of Rapid Assessments (15)	assessment	13 500		15		0	202 500	0	202 500
140 Hold focus country workshops						0	0	0	0
141First Set Rapid Assessment Coordination Workshops incl fees and exps	workshop	27 550	1			27 500	0	0	27 550
142 2nd Set Rapid Assessment Coordination Workshops incl fees and exps	workshop	27 550	5	1		0	27 550	0	27 550
143 3rd Set Rapid Assessment Coordination Workshops incl fees and exps	workshop	27 550		1		0	27 550	0	27 550
150 Prepare indicative workplans and budgets	workplan	1 000		25		5 000	25 000	0	30 000
160 Undertake desk-based assessments	assessment	5 450		22		0	119 900	0	119 900
200 Country Orientation, Work-planning & Proposal Development						0	0	0	0
210 Hold national M&E workshops	workshop	3 300	5	10	15	16 500	33 000	49 500	99 000
220 Provide orientation and training	orient & tr	6 000	5	10	15	30 000	66 000	90 000	180 000
230 Review country sub-sectors' M&E	review	2 000	5	10	15	10 000	20 000	30 000	60 000
240 Provide for M&E integration and sustainability	int & sust	1 300	5	10	15	6 500	13 000	19 000	39 000
250 Prepare workplans, budgets and proposals	proposal	2 000	5	10	15	10 000	20 000	30 000	60 000
260 Provide TA for identification of immediate measures	TA	4 300	3	5	7	12 900	21 500	30 100	64 500
300 M&E Systems Strengthening						0	0	0	0
310 Support and monitor country initiatives (misc. support)	support	750	6	14	14	4 500	10 500	10 500	25 500
320 Advanced M&E Support	support	4 500	2	2		9 000	9 000	0	18 000
330 Intermediate M&E Strengthening	strengthen	8 500	2	10	10	17 000	85 000	85 000	187 000
340 Immediate Measures	identification	4 500	2	2	4	9 000	9 000	18 000	36 000
400 Coordination and Financing						0	0	0	0
410 Provide overall coordination and financing (misc. costs)	country	1000	6	14	14	6 000	14 000	14 000	34 000
420 Liaise with and acquire approvals from AMCOW (under regular AWF funding)						0	0	0	0
430 Ensure programme funding and sustainability						0	0	0	0
440 Establish TA and training capability (assumed available in private sector)						0	0	0	0
450 Coordinate Africa-wide Rapid M&E Assessments (consultant assistance)	country	2960	5	25		14 800	74 000	0	88 800

460 Coordinate international workshops and exchanges	workshop	10000	1	2		10 000	20 000	0	30 000
470 Process proposals for M&E initiatives (assumed AWF normal function, separately funded)						0	0	0	0
480 Provide financial support & management and monitoring	project	8850	6	14	14	53 100	123 900	123 900	300 900
490 Prepare and disseminate technical and progress reports (AWF nor4mal function separately funded)						0			0
Total						373 650	1 050 400	500 500	1 924 550

Notes

(300) Sub-regional organization (CEDARE, SADC, WRCU) project support not included

(300) M&E development projects assumed USD 250,000 for advanced and immediate measures countries & USD 1million for intermediate

(300) M&E development project costs ewstimated as USD 2.5m, USD 11m and USD 11m in year 1,2&3 respectively

(440) TA and training will come through 5 trained consultants but will require coordination and quality control included in 450

(480) Monitoring fees and exp cost, 3 trips per country-project

The schedule in table 3.2, below, illustrates the timing of activities detailed in table 3.2 and described above. It is anticipated that start-up will be somewhat slow in view of the approvals required; the first phase is therefore conservatively estimated to be comprised of five rapid assessments in Year 1. Completion of rapid assessments will be achieved in Year 2 with 25 in-country and 22 desk-based assessments. Allowances will need to be made for establishing and standardizing procedures to enable scaling-up during Year 2 and Year 3. Assuming that the AWF's capacity to administer the program will be limited, provisions have been made for the extensive use of African consultants, specifically those that will have received training and undertaken the rapid assessments.

The budget includes costs that are directly related to the M&E Development Program (MEDP) and exclude costs that would be otherwise considered as normal AWF operational costs. These include additional AWF staff and associated costs that may be brought on to cope with the additional workload that the MEDP will bring. Each rapid assessment is assumed to take 14 days of consultant time, 11 of these days being in-country. It is assumed that consultant support will be required for facilitating workshops and developing proposals for AWF funding. In this way the AWF can ensure the required content and quality but maintain an arm's length relationship with the proposing countries/institutions through the trained local consultant. As noted in the table's footnotes, the costs of country M&E project funding have been estimated as USD 0.25 million for advanced countries and immediate measures projects and USD 1 million for the intermediate countries. It is anticipated that the numbers of countries receiving eventual funding will be four advanced, eight intermediate and 22 weak (as noted in section 3.3). The number and size of projects to be funded in Year 1, Year 2 and Year 3 will be 6, 14 and 14, respectively at an estimated cost of USD 2.5 million in the first year, 11 million in the second and 11 million in the third.

Table 4.2 Africa-wide Water Sector M&E Action Plan Schedule

Africa-wide Water Sector M&E Action Plan Schedule													
Activity		Year 1				Year 2				Year 3			
100 Rapid M&E Assessment													
110 Identify and train consultants		■	■										
120 Select countries		■											
130 Conduct rapid assessments			■	■	■	■	■	■					
140 Hold focus country workshops					✦		✦		✦				
150 Prepare indicative workplans and budgets					■		■		■				
160 Undertake desk-based assessments							■	■					
200 Country Orientation, Work-planning & Proposal Development													
210 Hold national M&E workshops						■		■		■			
220 Provide orientation and training							■		■		■		
230 Review country sub-sectors' M&E							■		■		■		
240 Provide for M&E integration and sustainability							■		■		■		
250 Prepare workplans, budgets and proposals							■		■		■		
260 Provide TA for identification of immediate measures				■	■								
300 M&E Systems Strengthening													
310 Support and monitor country initiatives									■	■	■	■	■
320 Advanced M&E Support													
	311 Identify specific needs				■								
	312 Provide TA and training					■							
	313 Support M&E initiatives						■	■	■	■	■	■	
330 Intermediate M&E Strengthening													
	331 Develop and build consensus on indicators, tools and methods						■	■	■	■	■	■	■
	332 Strengthen sub-sector M&E systems						■	■	■	■	■	■	■
	333 Integrate with SWAp, performance reviews and JSRs						■	■	■	■	■	■	■
	334 Ensure M&E sustainability						■	■	■	■	■	■	■
	335 Strengthen central M&E coordination and leadership						■	■	■	■	■	■	■

Africa-wide Water Sector M&E Action Plan Schedule

Activity	Year 1				Year 2				Year 3			
340 Immediate Measures												
341 Improve horizontal collaboration between sub-sectors												
342 Establish institutional frameworks for M&E												
343 Harmonize & build consensus around M&E systems and indicators												
344 Initiate sector performance assessment pilots												
400 Coordination and Financing												
410 Provide overall coordination and financing												
420 Liaise with and acquire approvals from AMCOW												
430 Ensure programme funding and sustainability												
440 Establish TA and training capability												
450 Coordinate Africa-wide Rapid M&E Assessments												
460 Coordinate international workshops and exchanges												
470 Process proposals for M&E initiatives												
480 Provide financial support & management and monitoring												
490 Prepare and disseminate technical and progress reports												

ANNEXES

6 Annexes

Annex A Review of Focus Country Water Sector M&E Systems

A.1 MALAWI

Institutional Arrangements

Water Resources: The management and M&E of water resources in Malawi falls primarily under the purview of the Ministry of Irrigation and Water Development (MIWD), which is responsible for overall water sector development programming, policy planning and M&E. The day-to-day management of these issues has been delegated to the Water Resources Department, which carries out water resources management and development activities, including surface, groundwater and water quality monitoring. Several other ministries and smaller agencies play a supporting role in water resources management and M&E. These include the Department of Meteorological Services (DMS), which collects and disseminates rainfall and other climactic data for the Ministry of Transport and Public Works; and the National Water Resources Board, which enforces regulations in place for the proper management and utilization of Malawi's water resources. While the Global Water Partnership (GWP) has recently completed a plan to coordinate a shift towards IWRM, no significant progress has yet been made in this regard. Similarly, IWRM and groundwater monitoring systems have yet to be established.

Two principal mechanisms have been established for the monitoring and management of transboundary waters. These apply to the Songwe and Zambezi rivers. Given that the Songwe is shared by Tanzania and Malawi, the Songwe mechanism responds to problems associated with a border defined by a shifting riverbed. Feasibility studies have been carried out and identified the most cost effective means of river stabilization, but an agreement has not yet been reached and financing for the infrastructure has yet to be identified. The Zambezi River is monitored by each riparian county and coordinated by SADC.

Urban WSS: Overall rural and urban water supply and sanitation planning, coordination, regulation and monitoring falls under the mandate of the MIWD's Water Supply and Sanitation Department (WSSD). Urban water supply provision is the mandate of the water boards of Blantyre, Lilongwe, Northern Region, Central Region and Southern Region, each of which is responsible for water supply services in the towns and cities within their water supply areas. Urban water supply monitoring is the responsibility of city assemblies (CAs) and water boards. CAs are responsible for monitoring non-piped water (wells and kiosks primarily in peri-urban areas) while the boards are responsible for piped water. Information is gathered on an ad hoc basis and is sometimes used for system extension design and location of kiosks and wells. Monitoring information is not comprehensive or consistent enough to be used in planning and management. Local level WUAs assist in WSS monitoring and management.

Rural WSS: While the WSSD develops rules and strategies for the provision of sustainable WSS services to rural communities, the Ministry of Local Government and Rural Development (MLGRD) is the entity with primary responsibility for the planning and management of WSS at the local assembly level. The MLGRD also supports private sector and NGO participation in the delivery of WSS services and regulates the activities of village water committees (VWCs), elected local bodies that operate and manage communal water points and piped water supply schemes in rural areas. NGOs and other civil society bodies assist these institutions in the collection, processing and dissemination of water related data and information, particularly regarding water services provision.

The Malawi Bureau of Standards (MBS) supports the work of the institutions discussed above by setting national standards for treated and untreated water supply services and effluent that can be discharged into the natural environment.

Data Collection and Management Systems

Water Resources: Surface waters are monitored by gauging stations first established during the

colonial period and maintained through the Banda era with support from traditional chiefs on a voluntary basis. MIWD's National Hydrometric Network, comprised of roughly 230 monitoring stations covering all 17 of Malawi's water resource areas, has ostensibly been maintained through to today; however, it has largely fallen out of use in step with the reduction of the ability of traditional authorities to generate volunteer support. Although the network deteriorated considerably over the last two decades due to inadequate funding and maintenance, it did undergo significant improvements through donor-funded projects between 2003 and 2006.

The network's stations were designed to measure discharge, water levels and rainfall, while the MIWD's Water Resources Department (WRD) also periodically measures water quality, sediment load, and lake geometry. 171 stations are meant to undertake both gauging and discharge measurements, 141 stations were designed to measure water quality, and 48 are said to be used for pollution control monitoring. Parameters tested include conductivity, pH value, dissolved and suspended solids, mineral content, alkalinity, hardness, silica, phosphates and microbiological content. Six hydrometric stations have data collection platforms connected to the SADC HYCOS network. Overall, approximately 20 to 30 percent of stations are reporting, but their accuracy is questionable. The WRD's Data Processing Unit has three dedicated computers procured in 2001 and three staff members with limited formal training in data management, but there is currently almost no manual processing of collected data due to staff shortages.

With respect to underground water resources, the MIWD's Groundwater Division in the DWR is tasked with managing and maintaining Malawi's hydrogeological monitoring network. The last comprehensive groundwater resources report was published in 1983, and since then there has been limited hydrogeological data collection and reporting. Borehole drilling logs are filed with the DWR and a borehole inventory was undertaken in 2003, though its use is minimal. A detailed proposal to establish a groundwater monitoring network is being developed, and the Government has budgeted 174 million Kwacha for this purpose and to upgrade the surface water monitoring network. Parameters to be monitored through the groundwater network include water levels and quality, spring flows and quality, rainfall and evaporation and recharge.

The current network of meteorological stations includes 25 full meteorological stations, 19 subsidiary agro-meteorological stations in the eight agricultural development divisions, 55 subsidiary meteorological stations and 663 rainfall stations. These were built between 1938 and 1987. The MD also has one air pollution monitoring station in Lilongwe, two weather radars and three hydrogen plants for use in upper air monitoring, but none of these are currently operational. In general, exchange of data and information between the water ministry and sub-sector agencies such as environment, agriculture and meteorology is done on an ad hoc basis according to parliamentary requests, annual reporting requirements and specific functions such as EIAs and water rights permits.

Water Supply and Sanitation: An attempt at benchmarking rural water supply was completed in 2003 by the MIWD that focused on handpumps and their functionality without concurrently recording their associated user populations. This was followed by WaterAid's WPM program, which began in 2002. Taps and pumps were geo-located and collated with population at the village level based on census data projections. While there are recognized deficiencies in the 1998 census data and growth factors, the WPM did provide useful information for planning purposes. The WPM was taken up by the National Water Development Program and later UNICEF, which has integrated it into its twelve district support program covering more than just the water sector. GPS/GIS data is now available for nearly all districts at the Water Resources Board but requires updating. The database is currently held at UNICEF, which is working to strengthen district governments to the point where they can maintain their own databases for use in new district water sector plans. Efforts are also being made to institutionalize the database and strengthen ownership within the MIWD.

Although WPM coverage has been achieved in almost all districts, its level of institutionalization and assurance of quality and sustainability have a long way to go.

At the project and program level, Malawi is reported to have two relatively distinctive M&E systems. The first, at the community level, is spearheaded by VWCs guided by monitoring indicators outlined in the 2003 Guidelines and Standards for the Devolution of Functions by the MIWD. However, data entry is not computerized and there is no systematic flow of data from the district level to the centre. The second relates to large infrastructure programs and projects implemented from the centre, which tend to have centralized M&E systems confined to the executive levels of government and their financing partners.

Rural sanitation monitoring is the responsibility of the Ministry of Health and carried out through its district health departments (DHD). Whereas sanitation (and water supply) was formerly included in the Health MIS, it has since been removed but remains the responsibility of the DHDs and their health surveillance assistants (HSAs). HSAs have recently increased greatly in numbers and are undergoing training. While they keep regular records in the form of village health registries, they are also expected to work in health care as well as the mandated preventative health areas.

Access to urban sanitation is not measured, and nationally accepted definitions of access to acceptable sanitation have yet to be officially confirmed. HSAs are currently working with interim definitions/indicators. Even though monitoring is again the responsibility of the health authorities of the municipal boards and CAs, the HSAs are called upon to undertake numerous other tasks apart from monitoring, which is a lower priority. Data is gathered by the MoH at HQ in response to ad hoc requests and the need for information for annual performance reporting. As a result of these factors, data is not reliable and estimates of coverage are estimates only.

A.2 Congo-Brazzaville

Institutional Arrangements

Water Resources: The Ministère de l'Energie et de l'Hydraulique (MEH) is responsible for energy and water policy and program development and oversight. It is led by a cabinet in charge of three directorates – Contrôle et Orientation, Etudes et Planifications, and Coopération et Communication – two Directorates-General – l'Energie (DGE) and l'Hydraulique (DGH) – and seven agencies and crown corporations: la Société Nationale d'Electricité (SNE), l'Agence Nationale de Régulation d'Electricité (ANERE), l'Agence Nationale d'Electrification Rurale (ANER), le Fond de Développement des Secteur de l'Eau et d'Electricité (FDSEE), la Société Nationale de Distribution de l'Eau (SNDE), l'Agence de Régulation de Secteur de l'Eau (ARSE) and l'Agence Nationale de l'Hydraulique Rurale (ANHR). The Direction Générale de l'Hydraulique is composed of three agencies: l'Hydraulique et l'Assainissement; Gestion des Ressources en Eau; and Réglementation et Contrôle. The MEH's efforts are complemented by the work of the Direction Général de l'Environnement (DGE) under the Ministère du Tourisme et de l'Environnement, which is responsible for the management and sustainable development of the country's forest, fauna and fishery resources. The DGE implements the Law on the Protection of the Environment, which is currently undergoing revision, and validates environmental impact studies conducted for planned industrial projects.

Le Ministère de la Recherche Scientifique was created in 1994 to collect and analyze surface, groundwater and meteorological data emanating from the Congo's hydrological, hydrogeoloical and climatogical monitoring networks. The MRS, through its Direction Générale de Recherche Scientifique and its Unité de Service Hydrologique et Météorologique, is in the process of developing a water resources monitoring database with TA from a French organization and conducts research on water resources in the Congo. The MRS is an active member of the Congo-Oubangui-Sangha River basin organization (CICOS), described below.

Transboundary water resources monitoring is the responsibility of CICOS, which was created under the auspices of the Economic and Monetary Community of Central Africa. Its purpose, among other things, is to facilitate cooperation between member states for the sustainable management of the Congo River Basin and to provide information on the state of water resources and transportation on shared waterways. Other member states include Cameroon, the CAR and the D.R. Congo.

The Agence Nationale de l'Aviation Civile's (ANAC) Direction de la Météorologie (DM) collects and disseminates meteorological data with support from the Agence pour la Sécurité de la Navigation Aérienne en Afrique et à Madagascar (ASECNA). Data is sent every three hours to the Regional Telecommunications Centre at Maya Maya International Airport outside Brazzaville, while monthly summary reports are sent in hard copy to the ANAC for treatment, storage and dissemination through periodic (ad hoc) reports.

Urban and rural water supply: The Congo's urban water supply depends predominantly on the services provided by the publicly owned Société Nationale de Distribution de l'Eau (SNDE), which is responsible for the generation and distribution of potable water in the Congo's four major cities, 15 secondary towns of more than 5000 people and some peri-urban areas. The SNDE also collects and stores data related to the quality and quantity of potable water distributed through its network, which can only be considered as estimates. Due to human resource shortages and the loss of equipment during civil wars, SNDE's water quality control capacity is very limited. The MEH's Agence Nationale de l'Hydraulique Rurale (ANHR) – only recently created – is developing a framework to improve access to water in rural areas and develop a basic water rural water supply monitoring system.

Urban and rural sanitation: The primary institutions responsible for urban sanitation in large cities are the municipal governments themselves, such as La Mairie de Brazzaville. Its Direction de l'Environnement et de la Propreté de la Ville is responsible for sanitation sector studies and regulation but currently does not have a functioning sanitation monitoring system in place. The Direction de l'Hygiène Générale (DHG) within the Ministère de la Santé et de la Population (MSP) is responsible for water quality monitoring and reporting. However, it lacks the financial, technical and human resources to carry out its mandate effectively. When tests are conducted – approximately every six months for the SNDE network and on a project basis for semi-urban areas within 100km of Brazzaville – the DHG applies the WHO's Water Quality Directives in the absence of a set of national water quality norms.

Data Collection and Management Systems

Water Resources: Water resources data is collected and analyzed primarily by the Direction Générale de Recherche Scientifique (GRSEN). Hydrological data is collected through a network of five surface water monitoring stations (down from 40 prior to the civil war) that measure water height, flow and water quality (physico-chemical) but lack limnographs. Five additional stations located in northern Congo are scheduled for rehabilitation by the end of 2008. Data is collected every quarter, down from monthly prior to the war. Groundwater monitoring is limited to a handful of stations in Brazzaville. The GRSEN is in the process of planning a surface water, groundwater and climactic database that will store available water resources data. Data is currently stored in hard copy and on a computer using Excel but will eventually shift to HYDRASYS software once fully operational. Data sharing partnerships are already in place with the Service commun d'entretien des voies navigables (SCEVN) – which monitors river levels and the presence of liquid and solid discharge through a network of seven monitoring stations – and ANAC for climactic and additional hydrometric data. The intention is to provide all relevant institutions with access to this database (ministries responsible for public works, energy/mines, health, transport, forests, agriculture and education as well as other research centres).

While there exist no mechanisms to measure or control pollution in the Congo, the Direction Générale de l'Environnement collects information on the state of the environment (water, soil, forests, industry, transportation, energy, etc) and publishes reports on an irregular basis. The most

recent "state of the environment" report was conducted in 2004, validated by experts in 2006 and awaits government approval.

As noted above, the Direction de la Météorologie collects agro-meteorological data. It operates a network of 18 functioning synoptic stations, some of which are being fitted with solar panels, 10 climatological stations, 212 rainwater monitoring stations, 2 radio transmission stations (operated by ASECNA), 1 air pollution measurement station, 1 radar station and 1 'MSG.' Data is typically transmitted by phone and is disseminated domestically through bi-weekly bulletins and national television and worldwide through the Regional Telecommunications Centre at the Maya Maya International Airport. CLIMSOFT, Excel and other in-house software programs are used by ANAC to manage their data.

With regards to transboundary river basin monitoring, there are plans to create an Information System for the Congo Basin (SIBCO) within CICOS that will collect and publish information on the state of water resources and the situation concerning transportation on shared waterways. Feeding this information system will be the planned Congo-HYCOS network of hydrological monitoring stations throughout the basin as well as an environmental decision-making support system making use of satellite imagery.

Urban and Rural Water Supply: The country's primary water provider, SNDE, relies largely on the under-resourced Laboratoire de Bromatologie of the DHG for water quality testing. The DHG's laboratory is capable of measuring most physico-chemical water quality indicators (colour, odor, taste, appearance, pH, conductivity, nitrate/nitrite, ammonia, mineralization and chlorine content) but field-testing is done on an ad hoc basis due to a lack of financing. The SNDE's water consumption and quality monitoring network is plagued by the lack of automatic counters at the household (consumption) and industrial (production) level. Its information management system is "embryonic" according to officials. Rural water supply monitoring is now the responsibility of the MEH's ANHR, which is still in its infancy. Nevertheless, the ANHR has developed a plan under the auspices of the re-invigorated Projet Hydraulique Humaine to conduct an inventory of rural water points and monitoring stations and begin their strengthening and expansion. No such inventory has been conducted since the early 1990s.

Sanitation: Given the severe weakness and/or absence of waste disposal and treatment networks in the Congo's major cities, there is no monitoring system in place to track access or quality indicators regarding basic sanitation. With respect to hygiene, the DHG plans to create a national electronic database on water quality, but this remains only an idea in the minds of DHG officials and external partners. The current system used to collect and store water quality data is based on regular monitoring of the SNDE-managed water supply and ad-hoc field studies in villages and towns within 100km of Brazzaville.

Socio-economic: Congolese socio-economic data is collected through periodic national censuses and studies managed by the Centre National de la Statistique et des Etudes Economique (CNSEE) within the Ministère des Plans. Prior to the last census conducted in 2006, which is still being processed, censuses were conducted in 1984 and 1996. The most current and reliable socio-economic data stems from the 2005 Congolese Household Survey (ECOM), a nationally representative poverty assessment baseline survey (published February 2006).

A.3 Senegal

Institutional Arrangements

Water resources: The institution with primary responsibility over the protection, development and monitoring of Senegal's water resources is the MHRHN's Direction de Gestion et de la Planification des Ressources en Eau (DGPRE). The DGPRE's four main spheres of activity are the following: general studies on national hydrological resources and water resources planning; the development and management of a water resources monitoring network; the provision of relevant data to water resource

planners; and the elaboration of legislation and regulations with regards to the management, protection and use of water resources.

In addition to its day-to-day work, the DGPRE is also tasked with providing significant technical support to the development and implementation of Senegal's IWRM Action Plan (PAGIRE), a program intended to reform the country's institutional, legal and organizational framework in order to improve the protection and technical and financial management of national water resources. Alongside the Conseil Supérieur de l'Eau and the Partenariat de l'Eau, the DGPRE will serve as one of three 'strategic partners' to PAGIRE's Permanent Secretariat, which will coordinate the implementation, evaluation and follow-up of each of PAGIRE's components.

Urban water supply: Since its creation in 1995, La Société Nationale des Eaux du Sénégal (SONES) has served as the para-public institution with primary responsibility over the planning, development and regulation of urban water supply infrastructure and services. The institution responsible for the actual operation and maintenance of these networks in Senegal's major towns and cities is the private sector company Sénégalaise des Eaux (SDE). Following the construction of urban water facilities and distribution networks, SDE leases this infrastructure from SONES and operates and maintains it according to the regulations and guidelines set forth in formal concessions and performance contracts. As the water supply utility, SDE collects and manages water user fees in addition to sanitation surtaxes at the household level. Also involved in the regulation of the urban water sector is the Direction de l'Hydraulique Urbain (DHU), established in 2007 under the MHRHN to monitor and enforce adherence to national water supply policies and regulations.

Rural water supply: As in the urban sector, several institutional stakeholders are responsible for the development, operation, management and monitoring of rural water supply. The Direction de l'Hydraulique Rurale (DHR) is the national institution responsible for the construction and monitoring of most rural water points (e.g. boreholes), while its partner institution, the Direction de l'Exploitation et Maintenance (DEM), plans, constructs and monitors rural tubewells. In addition to its infrastructure development activities, the DHR also works closely with rural communities to understand their needs and priorities through village-driven Plans Locales d'Hydraulique et de l'Assainissement (PLHA) and the DHR's own needs assessment surveys in communities without PLHAs. Finally, at the user level, Associations d'Usagers de Forages (ASUFOR) are responsible for the collective management and operation of local water supply points.

Urban and rural sanitation: Similar to the governance structure of the urban water supply sector, urban sanitation and wastewater networks are governed by the work of a public regulator, the Direction de l'Assainissement (DAS) and a para-public service provider, l'Office National de l'Assainissement du Sénégal (ONAS). The former institution resides within the current Ministère de l'Urbanisme, de l'Habitat, de l'Hydraulique Urbain, de l'Hygiène Publique et de l'Assainissement (MUHHUHPA), and is responsible for the regulation of services provided by ONAS. Unlike in the water sector, however, the para-public utility in this sector is also responsible for planning and construction of network infrastructure, which in this case includes sanitation and wastewater facilities and networks. The planning and development of rural sanitation infrastructure – currently limited to the estimated nine percent of rural Senegalese with access to such services according to the JMP's 2008 figures – is the responsibility of the DAS, which undertakes these activities in addition to its urban sanitation monitoring and regulation responsibilities.

Data Collection and Management Systems

Though not discussed above due to its status as a program-based institution, Senegal's Program d'Eau Potable et d'Assainissement du Millénaire (PEPAM) Program Coordination Unit (PCU) is striving to create a WSS sector M&E system that would be the envy of nearly every other sub-Saharan African nation. Yet before this can be described in detail, the multiple and largely unsynchronized monitoring systems and databases

belonging to Senegal's WSS sector implementing agencies should first be explained.

Water Resources: As noted above, the DGPRE's essential raison d'être is the monitoring and study of Senegal's surface and ground water resources. The network in place to supply the DGPRE with the data it needs to carry out its mandate is composed primarily of approximately 100 surface water monitoring stations and 400 groundwater monitoring stations, roughly 60 to 70 percent of which are currently functioning properly. These stations measure the volume, flow and quality of surface and groundwater resources. The quality of the latter is tested twice yearly, once each during the wet and dry seasons. Primary indicators used in this regard include fluoride, nitrate and salinity levels as well as calcium, potassium, iron and faecal coliform content. Arsenic and heavy metal levels are not currently tested. Surface water resources are monitored each month for physical and chemical indicators such as turbidity, conductivity and pH levels as well as phosphorous and chloride. Though the DGPRE's groundwater database is in reasonable order and is able to respond to requests for information on an ad hoc basis, surface water information has only recently begun to be integrated into a database. Nevertheless, databases for surface and groundwater resources are said to be kept up to date on a regular basis and are current as of 2008. The provision of data to such organizations as SONES/DRE, agriculture and environment is more difficult and has to rely on DGPRE staff responding to each request individually and manually. Data collection and management systems may be strengthened through the "Mise en oeuvre du PAGIRE" project financed by the AWF.

This monitoring of the quality and quantity of surface and ground water resources is complemented by periodic inventories of hydrogeological resources. The last such inventory was conducted in 2000, while another is scheduled for the near future under a project funded by the AWF. With regards to the storage and accessibility of such data, DGPRE officials note that their data management systems are not well organized. They are composed of several unsynchronized databases such as ARCVIEW (GIS) and SIGRES and are accessible only through written requests to the government. Such requests are most often granted following certain treatments of the raw data. Nevertheless, according to the DGPRE, the DHR, DEM and SONES regularly use this data for investment planning, something likely facilitated by prompt annual reports that typically take no more than a year to publish.

Urban Water Supply: As the primary provider of potable water for urban Senegalese in 56 cities and towns across the country, the SDE is required to conduct regular monitoring of water quantity and quality at both the output point (pumping stations) and distribution points (households). This data, which measures water volume and standard physico-chemical and bacteriological indicators, is collected daily and tested at SDE labs in Saint Louis, Gnit, Bakel and Dakar. It is shared on a monthly basis with SONES but is not publicly available. SDE also maintains a database on revenues and distribution costs with indicators such as the average cost per cubic meter and distribution costs per person.

SDE's water treatment plants and pumping stations are managed both electronically (and by local inspectors through a call centre in its headquarters in Dakar. Breakdowns tracked through this system are addressed promptly and are published in annual reports to SONES. In addition, SDE is bound contractually by the DHU to conduct user satisfaction surveys to assess the quality of household connections, usage figures and any complaints that may arise, however the DHU does not have the means to verify the accuracy of published survey results through their own M&E system, having only been created without an adequate operational budget in July 2007.

SONES, mandated to oversee the work of SDE, conducts periodic testing of the urban water supply at both pumping stations and distribution points. Verification teams are sent out each month to conduct random samples, while chemical and bacteriological testing is carried out by the private Institute Louis Pasteur in Dakar to cross-check data provided by the SDE's own labs. Like the DGPRE, SONES does not yet possess a centralized database that would facilitate

access to and evaluation of collected data; instead, data is collected and managed by individual project leaders. A plan to develop such a database was being developed at the time this report was drafted.

Urban Sanitation: Wastewater treatment falls under the jurisdiction of ONAS, whose lab in Dakar analyzes data collected through periodic sampling missions to its treatment facilities. ONAS' regulator, the DAS currently has two individuals responsible for M&E but does not yet have systems in place that would allow for the collection of its own data.

RWSS: The DEM has primary responsibility over the monitoring of rural water points, including 1200 boreholes with motorized pumps and 1500 fitted with handpumps. Its monitoring activities are led by 16 regional Brigades de forages et puits (BFP), which collect information directly (e.g. water quality is measured at the time of drilling) and from ASUFORs on the type of water point, its status and the characteristics of its users. BFPs are required to produce quarterly synthesis reports of technical, financial and management data received from ASUFORs, but this typically does not occur on a systematic basis. This may be influenced by the observation of one DEM official that "user groups do not have the capacity to provide feedback." Moreover, DEM does not currently have the capacity to collect and manage centrally all the information it receives from BFPs, all of which is in hard copy.

Other institutions active in the rural water sector that may play a role in M&E are the DHR and ONAS. Like the DEM, the DHR does not have the capacity to monitor the quality of water emanating from rural boreholes on an ongoing basis, nor do they possess outcome-based data to measure the impact of rural water projects. Although ONAS is focused on urban and peri-urban wastewater treatment, it is also said to study rural wastewater, sewage and sanitation issues and works with CONGAD, an association of water sector NGOs.

Use of Water Supply and Sanitation Services and Infrastructure: The Agence Nationale de la Statistique et de la Démographie (ANSD) collects important information on the use of WSS services at the household level. It has done so through periodic national censuses – 1988 and 2002 being the two most recent – the Enquête de Suivi de la Pauvreté au Sénégal (ESPS, 2005-2006), the Enquête Sénégalaise Auprès des Ménages (ESAM II, 2001-2002), the Enquête de Perception de la Pauvreté au Sénégal (EPPS, 2001) and the Enquête sur les Priorités (1992-1993). Unfortunately, the ANSD lost much of their archived data several years ago through a fire and had to piece it back together with input from partners.

ANSD household surveys currently generate information on population growth – a key determinant of access rates – and households' primary source of drinking water and access to basic sanitation. Senegal's 2002 census contained one question on the primary source of household drinking water, though none on sanitation, while the most recent ESPS contained three questions on WSS. Debate continues over the comparability of questions and data across surveys and over time as well as over the significant differences between national data published by the ANSD on access rates to urban and rural WSS and figures published by PEPAM's PCU, detailed below.

Programme d'Eau Potable et d'Assainissement du Millénaire: PEPAM is a national program launched in 2005 to help Senegal reach the water and sanitation MDGs. With support from WSP-Africa, PEPAM's PCU has developed a framework for a national water information system that will aggregate and harmonize the existing databases and data management systems discussed above. Once operational, this SIMS will monitor the evolution of access to safe water and sanitation in Senegal, facilitate performance assessments of sector stakeholders and allow for the use of an iterative approach to PEPAM's implementation. Focusing on water supply and sanitation but also including water resources management, PEPAM's system employs the WSP's conceptual model, which allows for both implementation monitoring (e.g. financial inputs, physical and non-physical inputs) and outcome monitoring (e.g. access to services, intermediate results).

The harmonization of sector data through this system will be facilitated by a series of 16 common indicators, nine for safe water and seven for sanitation. Indicators for safe water include funding (total investments), outputs (number of water points or connections), access (population served, global access rate, access rate by connection, number of persons per water point, availability rate of service) and intermediate results (investment per capita, number of persons served per year). Indicators for sanitation include funding (total investments), outputs (number of individual systems, number of community systems), access (population served, global access rate) and intermediate results (investment per capita, number of persons served per year).

Data will be managed in a centralized unified database system (UDBS). The UDBS is an integrated system of linked tables fed by existing databases that will provide a platform for all agencies to store, manage, systematize and disseminate their data with the primary intent that the information will be available for planning and sector management. These tables will encompass household surveys, infrastructure inventories, GIS maps, financial reports and monthly and annual operational reports. Each table will remain the property of the contributing implementing agency, as will responsibility over keeping it up to date. The system as currently designed uses Microsoft Access and MySQL. Input into pre-designed tables will be made via internet and intranet portals by the participating implementing agencies. Input and retrieval will be password-controlled under MoUs between PEPAM and participating agencies.

PEPAM's system will also be fed by a network of 10 in-country regional M&E platforms financed by the PEPAM program whose data will be verified by local government services and central executing agencies. It is envisioned that each focal point will include an office with 2-3 computers, 5-10 PDA/GPS units, a mobile, Internet access and relevant support documentation that will allow for the transmission of data to the centralized UDBS. Two such regional platforms are being piloted in Thies and Saint Louis, lessons learned from which will be integrated into the generalization of the platform network over the coming years.

A.4 Tunisia

Institutional Arrangements

Water resources: The Ministry of Agriculture and Hydrological Resources (MARH) is the institution with overarching responsibility over Tunisia's water sector. Its responsibilities range from the management of surface and groundwater resources to the distribution of potable water and provision of sanitation and wastewater infrastructure. MARH is composed of a minimum of seven directions générales or bureaux responsible for the management, coordination, monitoring and evaluation of relevant sub-sector projects, programs and resources. The Ministry also oversees the work of Tunisia's para-public water utility, La Société Nationale d'Exploitation et de Distribution des Eaux (SONEDE) and Tunisia's urban sanitation and sewerage utility, l'Office National de l'Assainissement (ONAS) with support from the Ministry of the Environment and Sustainable Development (MEDD). Responsible for the efficient distribution and management of potable water and sanitation/wastewater networks in Tunisia's cities, towns and municipalities over 4000 people in size, respectively, the work of each of these two para-public utilities is tied deeply into the effective management of Tunisia's water resources.

Outside the MARH, the National Institute of Meteorology (INM) also plays an important role in this regard by monitoring and managing meteorological conditions through the country, while Tunisia's Commissariats Régionaux du Développement Agricole (CRDA) manage the distribution of water resources for drinking and irrigation at the sub-regional level. The MEDD's Observatoire Tunisien de l'Environnement et du Développement Durable (OTEDD) studies the state of Tunisia's environment and issues reports on sustainable development.

Urban and rural water supply: As noted above, SONEDE is responsible for the management of urban potable water supply networks across

Tunisia, which includes water treatment; the management and development of water supply networks; the distribution of potable water to residential and industrial users; and the collection of user fees. The Ministry of Health plays an oversight role to ensure the alignment of potable water quality indicators with national standards. In rural communities the management of potable water networks and supplies becomes the responsibility of the Direction Générale de Génie Rurale et de l'Exploitation des Eaux (DG-GREE) of the MARH, which oversees the water distribution, management and cost-recovery activities of sub-regional CRDAs and rural Groupements de Développement Agricole (GDA). Like in the urban sector, the DHMPE also plays an oversight role to ensure the quality of drinking water in rural areas.

Urban and rural sanitation: ONAS plays the equivalent role to SONAS but in the sphere of urban sanitation and wastewater treatment. As it does in the case of rural water supply, the DG-GREE has primary responsibility over rural sanitation services, while their management is provided by GDAs with support from CRDAs.

Data Collection and Management Systems

La Direction Générale des Ressources en Eau (DGRE) of the MARH is the institutional focal point for water sector monitoring and evaluation activities in Tunisia. Through its Bureau de l'Inventaire et des Recherches Hydrauliques (BIRH) and the input of data from CRDAs and the DGRE's network of hydrological, hydrogeological and rainwater monitoring stations across Tunisia, the DGRE monitors the state of the country's surface and groundwater resources in both real time and on a periodic basis. Tunisia's water resources monitoring network includes 800 rainwater monitoring stations and an underground water monitoring network consisting of more than 1200 measurement points.

The DGRE's primary tool for managing data related to surface and ground water resources is its Système de Gestion des Ressources en Eau (SYGREAU) database. Though there is no formal certification mechanism for assessing the validity of incoming data, officials in charge of collecting regional data review new data for unexpected occurrences. Primary surface and groundwater quality indicators used by the DGRE measure salinity and nitrates, water levels and volumes in Tunisia's aquifers, rivers, lakes and network of dams as well as monthly rainfall patterns. In an effort to harmonize and increase the accessibility and comparability of all water-resources data, the DGRE is developing SINEAU.

Still in its development phase – it has so far been piloted in only three governorates – SINEAU is envisioned to be a centralized and harmonized data management system capable of collecting up-to-date information on Tunisia's surface and groundwater resources and its sanitation and potable water networks. Financed under the Projet d'Investissement dans le Secteur de l'Eau (PISEAU) program, it is being developed to better organize and rationalize the collection of existing raw and manipulated data; prevent redundancies and multiple coding of identical information; promote the exchange and sharing of numerical and graphical data; and, strengthen the circulation of data to the regional level. Its structure will be composed of three primary elements. Firstly, an Internet/intranet portal will provide information on SINEAU, its contributors and news related to the sector and serve as an interface for accessing and downloading relevant sector data. Secondly, a documentation centre will provide access to meta-data published in annual reports and periodic studies and, thirdly, an interactive GIS access point. At this stage in its development, however, awareness of SINEAU and its potential uses and benefits across water sector institutions in Tunisia is low, posing a challenge to its future expansion to all 24 governorates.

A.5 Uganda

Institutional Arrangements

The Ministry of Water and Environment (MWE) is the apex organization responsible for Uganda's water sector. Over the past decade, the sector has undergone reform bringing sweeping changes including SWAp, pilot IWRM and decentralization. The Ministry operates an integrated sector-wide M&E system, meaning that up-to-date monitoring

information is integrated at all levels of sector planning and management, annual technical reviews and JSRs. As such, it is likely one of the most advanced M&E systems in Africa. Under the local Government Act of 1997, local governments of municipalities, districts, towns and sub-counties became responsible for water supply and sanitation delivery. NGOs and community-based organisations (CBOs) assist in delivery, while communities are responsible for planning and O&M. Figure 1.1 illustrates the organizational framework. In brief, the MWE has responsibility for setting sector policy, standards and priorities for the sector. The Ministry of Finance makes resource allocations, and the Ministry of Health is responsible for sanitation and hygiene.

The sector comprises four sub-sectors: i) RWSS, provided primarily through community managed point sources to populations under 5,000 for which the Directorate of Water Development (DWD) is responsible within MWE; ii) UWSS comprising 19 large towns coming under the NWSC and smaller towns under the DWD; iii) water for production, of which multipurpose reservoirs and bulk water transfers come under the MWE; and, iv) WRM under the newly created Directorate of Water Resources Management (DWRM). The sector operates under SWAp, which de-emphasizes donor specific projects and promotes general, sector earmarked budget support or basket funding. Two multi-stakeholder committees formulate sector policy and provide technical guidance. These are the Water Policy Committee (WPC) and the Water and Sanitation Working Group (WSWG). The latter includes government, donor and NGO representation. The sector operates within the Poverty Eradication Action Plan (PEAP), which recognizes the multidimensional nature of poverty and includes water supply and sanitation in two of its pillars. It also follows a Sector Investment Plan and national water and sanitation policies.

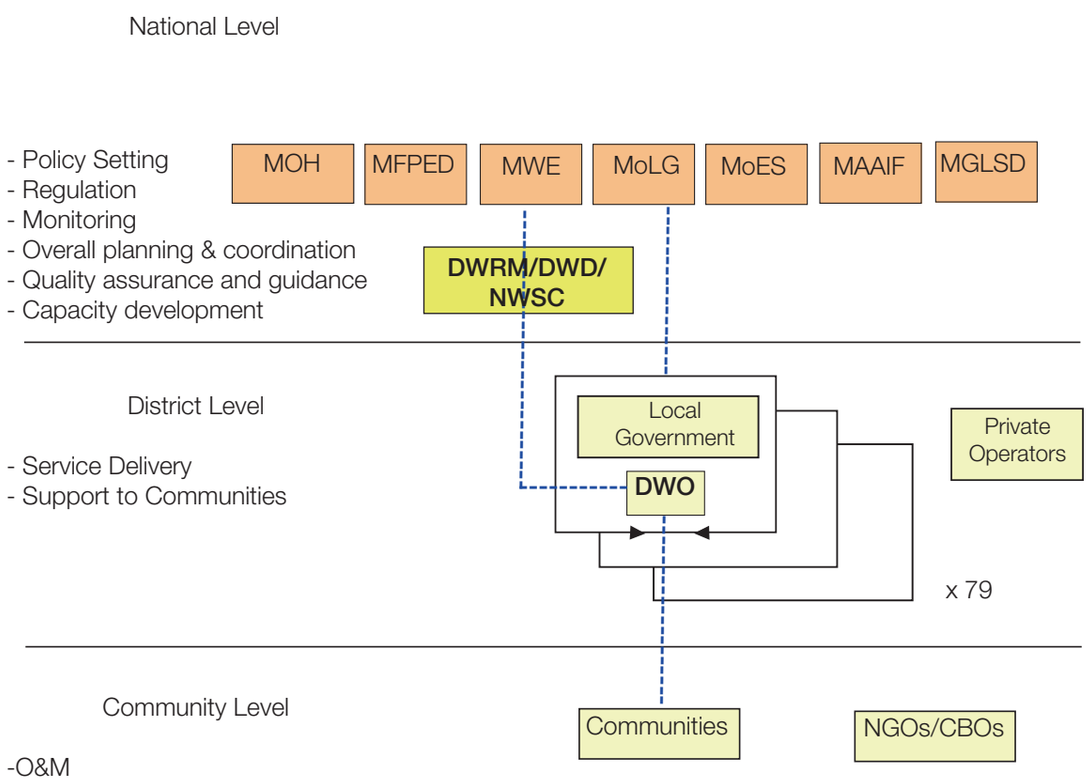
Data Collection and Management Systems

Water sector M&E in Uganda has been developed over the past decade to follow the SIMS model (inclusive, integrated, incrementally implemented and institutionalised). M&E responds to GoU and donor annual JSRs conducted by the WSSWG. Data is collected through those responsible for implementation (primarily the DWRM, districts, NWSC, sub-counties, water and sanitation committees, NGOs and the DWD itself). DWD takes responsibility for coordinating Annual Sector Technical Reviews and preparing the Annual Sector Performance Report. Moreover, in preparing its technical and performance reviews, which double as annual sector reports, the DWD coordinates reporting by sub-sectors, such as NWSC for urban, MoH for sanitation and DWRM for WRM. In the process of reaching its advanced stage of M&E development, the MWE has not needed a functional central database or MIS.

As noted in the main report, Uganda has developed a set of 'golden indicators' that it has standardized and uses in drawing comparisons of progress over the years and districts. These relate to access, functionality, investment, water quality, quantity, equity distribution, handwashing, management and gender. While the data set is not complete across districts and services, the first five indicators, at least, provide a reasonable measure of sector progress. To these are added sub-sector specific indicators such as unaccounted for water, reservoirs built, water permits issued, sector annual approved budgets, etc.

The golden indicators have been subject to their fair share of criticism. Just the same, they have served well as central reference points and make comparative analysis possible. One of the criticisms relates to their accuracy. However, their real value comes more in process than product. Annually the sector is analyzed for its performance and cost effectiveness. Each year the entire sector works together to produce its annual performance report upon which resources allocations are based and undertakings made for the coming year. This provides strong incentive to ensure sector monitoring and reporting is up to date and as accurate and relevant as possible. This demand for information is the basis of the M&E system's sustainability. Finally, several other M&E tools are used in the annual assessment of sector performance. These include value-for-money reviews, public expenditure reviews, equity studies, tracking studies and technical audits.

Figure A.1 Organizational Framework, Uganda WSS Sector[1]



[1]Source: Government of Uganda, Ministry of Water and Environment (2007), "Water and Sanitation Sector Performance Report," Kampala.

Annex B Africa's Regional Economic Communities

REC	PROFILE	MAIN OBJECTIVES	CHALLENGES
Arab Maghreb Union (AMU)	HQ: Rabat, Morocco Founded: 1989 Members: 5	Strengthening all forms of ties among Member States, as well as to introduce gradually the free circulation of goods, services, and factors of production among them.	Sectoral focus and capacity building.
Community of Sahel-Saharan States (CEN-SAD)	HQ: Tripoli, Libya Founded: 1998 Members: 25	Political cooperation and the creation of a free trade area amongst member states. This also includes: ➢ The promotion of external trade through an investment policy in member States. ➢ The increase of means of land, air and maritime transport and communications among member States and the execution of common projects. ➢ The same right, advantages and obligations granted to their own citizens to nationals of the signatory countries in conformity with the provisions of their respective constitutions. ➢ The harmonization of educational, pedagogical, scientific and cultural systems of the various cycles of education.	Sectoral focus and capacity building.
East African Community (EAC)	HQ: Arusha, Tanzania Founded: 2000 Members: 5	Monetary union, common market and political union leading to the formation of a single country, known as the East African Federation (EAF), with a common President.	Popular opposition to the EAF in Tanzania. Clashes over land scarcity. Sectoral focus.
Economic Community of Central African States (ECCAS)	HQ: Libreville, Gabon Founded: 1981 Members: 11	Regional economic cooperation leading to a Central African Common Market and improved living standards. Other objectives include: ➢ To develop capacities to maintain peace, security and stability; ➢ To develop a culture of human integration.	➢ Significant financial and human resource constraints; ➢ Sectoral focus
Economic Community of West African States (ECOWAS)	HQ: Abuja, Nigeria Founded: 1975 Members: 15	To promote economic integration in "all fields of economic activity, particularly industry, transport, telecommunications, energy, agriculture, natural resources, commerce, monetary and financial, and social and cultural matters." The overall objective of the WRCU, which hosts a regional water observatory, is to facilitate the equitable and efficient management and sustainable use of water resources in West Africa.	➢ Organizational, financial and human resource constraints.

REC	PROFILE	MAIN OBJECTIVES	CHALLENGES
Governmental Authority for Development (IGAD)	HQ: Djibouti Founded: 1996 Members: 6	Assist and complement the efforts of the Member States to achieve, through increased cooperation: ➢ Food Security and environmental protection; ➢ Promotion and maintenance of peace and security and humanitarian affairs; and, ➢ Economic cooperation and integration.	➢ Financial and human resource constraints
Southern African Development Community (SADC)	HQ: Gaborone, Botswana Founded: 1980 & 1992 Members: 15	Socio-economic cooperation/ integration and political and security cooperation amongst members. Drought protection programme, general agreement on water resources through its protocol on Shared Water Courses and particularly Zambezi transboundary water resources management.	➢ Limited institutional capacity; ➢ Lingering disputes over new powers granted to SADC in 2001; ➢ "Competition" from other regional econ. cooperation mechanisms.
Centre for Environment and Development for the Arab Region and Europe (CEDARE)	HQ: Cairo, Egypt Founded: 1992 Members: 7 African countries & 19 from Europe and the Middle East	Build a human resource base in member countries capable of addressing complex environmental challenges and integrate the environmental dimension into the fabric of development policies and practices. Areas of focus include: ➢ Integrated water resource management; ➢ Land resources management ➢ Dissemination of knowledge and information technology; ➢ Corporate social responsibility.	➢ Limited experience in M&E, especially in WSS; ➢ Nascent relationships with water sector officials in North Africa in their early stages.

Annex C Review and Diagnosis of Focus International M&E Organizations

C.1 Emwis

Background

EMWIS was created in 1997 by the Euro-Mediterranean Partnership (EMP) as a means through which information and knowledge on water management could be shared between and among EMP countries. The Technical Unit (TU) and International Focal Point (IFP) headquarters is located in Sophia Antipolis-Valbonne, France; with a reduced staff, it relies mainly on the experts from its three member organizations. EMWIS is supported by core financing from the governments of France, Spain, Italy and the European Union. EMWIS' objectives are threefold: to provide easy access to information related to the water sector and water management; to deepen the reach and accessibility of this information; and, to work with member countries on common products and cooperation programs.

EMWIS is composed of the 27 EU member states plus the 10 Mediterranean partner countries (Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Palestine, Syria, Tunisia and Turkey). With the recent launch of the Union for the Mediterranean, Balkan countries, Libya and Mauritania may also join EMWIS. The organization currently supports 20 National focal Points (NFPs), which work to strengthen the collection of water sector data at the national level. It also possesses a Technical Unit that provides technical and material assistance to NFPs to strengthen national water information systems (NWIS) and promotes information sharing amongst member states. Information provided by NFPs to EMWIS is accessible online through EMWIS' IFP; however, each partner country manages its own server and is responsible for guaranteeing quality and access to information sources.

Relevant Programs

Once EMWIS' basic structure was put in place in 2002, EMWIS began Phase II of its program to focus on developing NWIS within member countries, working towards the use of harmonized water sector monitoring indicators, and strengthening relations between member state water sector institutions. This began with the technical and financial feasibility studies of the NWIS in 10 Mediterranean countries, including Algeria, Morocco and Tunisia. This initiative was intended to identify the current status of NWIS in order to better target subsequent capacity building initiatives led by EMWIS. On request of Euromed water directors, a feasibility study was initiated on a Mediterranean water observation mechanism. It resulted in the proposed Mediterranean Water Information Partnership (MedWIP) that served to highlight the need to reinforce the national capacities and related systems as well as the need and demand from concerned international and regional organizations for such a mechanism within the region. Seven pilot countries participated in the study: Cyprus, Spain, France, Malta, Morocco, Jordan and Tunisia.

Phase III of EMWIS (2008-2011) will concentrate on five main themes: NWIS and the further development of the MedWIP; extreme phenomena such as droughts and floods; the use of non-conventional water resources through wastewater recycling and desalinization; sanitation and domestic pollution; and, participatory approaches to IWRM. EMWIS continues to focus on supporting the development of NFPs across the Euro-Mediterranean region. Each NFP received an annual budget of approximately €40,000 to support operations (such as NWIS preparatory actions and the maintenance of the NFP's website) and the acquisition of equipment following the development and negotiation of specific work plans for each country.

Diagnostic Assessment

The Consultant visited the offices of the EMWIS TU and met with its staff in May 2008. The visit included a tour of the office and meetings with key staff members and a representative from the International Office for Water (IOW), during which the organization's activities, methods and partnerships were discussed in detail.
The TU, composed of only three full time specialists – a manager, a data manager and an administrative officer – is housed within the Centre International de Communications Avancée in the 'technopole' of Sophia Antipolis. As such, the TU has access to shared but modern meeting, communications and office facilities that greatly increase the range of its possible activities relative to its size.

While European EMWIS NFPs are focused on reinforcing their country's water sectors and associated information management and sharing capabilities, the EMWIS TU is focused on Mediterranean partner Countries lying outside the European Union. EMWIS' activities in these countries are focused on harmonizing national water resource indicators and assisting in the development of well-functioning NWIS compatible with those of other Euro-Mediterranean countries and capable of disseminating data used by international organizations to track progress regarding the MDGs and other sectoral objectives.

Despite their small size compared to the breadth of their mandate and diversity of their membership, the TU appears capable of managing their current initiatives and services. With assistance from partner organizations such as the IOW, EMWIS has succeeded over the last decade in strengthening relations between member country water institutions, creating an enabling environment for more comprehensive information sharing between and within national water institutions through the MedWIP and providing TA to NFPs.

They have also developed a website that allows water sector stakeholders – from researchers to bureaucrats around the region and the globe – to access a wealth of information on the sector from a centralized source. This includes national, regional and international legislation on WRM; contact information; a database of water sector projects being undertaken in the Euro-Mediterranean region; a geo-sources catalogue providing access to datasets on water resources information by country; and access to sector related news and events information. Hits to the site come from all over the globe but emanate primarily from China, France and Morocco – an indication of worldwide interest in the documents available through the web portal. While work remains to be done regarding the site's user-friendliness, its overall value to global water stakeholders appears to be high.

That being said, the ability of the TU to facilitate the provision of technical support to national water information systems and the harmonization of water indicators across the region is limited by its current size. The technical expertise requested by member states is not available in-house. Furthermore, the number of personnel within the TU is large enough to neither support the expansion of this assistance outside the Euro-Med nor its deepening beyond the provision of current forms of assistance focused on NWIS.

Nevertheless, given the relationships and network that EMWIS has built over the last decade and taking into account the strength of its web portal, the EMWIS TU plays a useful role in supporting the collection and sharing of water sector information and best practices in the Euro-Med region. These same networks facilitate the provision of TA from across the region that can provide technical support to NFPs on demand under the auspices of NFP-EMWIS national work plans and with core financial support from EMWIS' core donors.

While EMWIS alone cannot provide long-term funding for the development and maintenance of NFP NWIS, the assistance it provides in developing NWIS frameworks facilitates the development of proposals for such assistance by partner developing countries to international donors active in the sector. For example, EMWIS provided technical support to Tunisia's NFP, housed within Tunisia's DGRE, to build a virtual water resources library and assist in the digitization of its hard copy library in support of its SINEAU NWIS. This included providing

start-up support and training in the use of Open Archive software, translation of documents and the organization of a communications seminar to promote Tunisia's NFP and its intended outputs across government and to the public. Tunisia has since developed a framework proposal for long-term support within the PISEAU II (World Bank, AFD, BAD, FAE) to strengthen and maintain this system.

	African	Database capability	TA Capability	Financing	IWRM	WSS
EMWIS TU	No	Partial	Yes	Partial	Yes	Yes

Role within Regional and Sub-regional Framework
The options put forward in this report regarding the development of a regional framework for supporting the harmonization and the strengthening of water sector M&E included a list of organizations that could potentially contribute to these initiatives. Each has been classified according to the characteristics listed in the following table, which also serves to summarize the activities, methodology and capabilities of the EMWIS TU.

The same framework revolves around an Information Centre, Resource Centre and Source of Finance with which institutions such as EMWIS and others listed in the regional framework table (AWF, AMCOW Secretariats, RECs, RBOs, universities, NGOs and the private sector) can either collaborate or represent. Given the characteristics described above, EMWIS would best serve as a collaborating institution that would combine and feed into the efforts of the envisioned information and resource centres, rather than represent such a centre itself. The justification for this type of involvement is explained below.

First, EMWIS is a European-driven institution with only a handful of African member countries. As such, it does not meet the 'African' criterion such Centres should ideally meet. Moreover, it intends to remain focused on the Euro-Med region for the foreseeable future with no plans in place to expand its activities to other regions in Africa. That being said, EMWIS TU's member organizations can provide valuable knowledge and expertise that are beyond EMWIS' geographical scope. IOW, CEDEX or SOGESID could be considered as potential contributors for TA at country or regional levels.

Second, though it does maintain a database of water sector projects in the Euro-Med region on its website and provides access to a meta-database of hydro-geological datasets, it has neither the interest in nor capacity to become a regional Information Centre such as the one envisioned in the framework. Instead, it and the EMWIS-led MedWIP are focused on harmonizing indicators at the national level to meet the needs of regional and international monitoring bodies and on strengthening associated NWIS to support informed program and policy development and implementation. MedWIP, in other words, is not intended to become a centralized data storage mechanism for the Euro-Mediterranean sub-region.

Third, the EMWIS Administrator has the capacity to facilitate the supply of TA from across the EU and the region to support the strengthening of NFPs and member states' water information systems. In this sense, it could serve as a valuable resource for access to know-how in the development of NWIS that can support the activities of the regional Resource Centre envisioned in the framework.

Fourth, EMWIS has access to reasonably stable and independent sources of financing through the governments of France, Italy and Spain as well as the EU. This would reduce the cost of any TA provided by EMWIS as well as financial burden of the Source of Finance discussed in the framework and thereby support the sustainability of the regional Information and Resource Centres.

Finally, the argument behind EMWIS' role as a supporting institution is underlined by multidisciplinary approach to the water sector. That is, EMWIS generates, collects, manages and shares through its website valuable documentation and know-how concerning not only regional water resources, but also water supply and sanitation issues and best practices. It can thereby serve as an important source of documentation and expertise for the principal regional Resource Centre envisioned in the framework.

C.2 Joint Monitoring Program (JMP)

Background

The Joint Monitoring Program (JMP) is a collaborative mechanism operated by the WHO and UNICEF to track country-level progress on global water and sanitation goals, namely the MDGs. It is the official UN vehicle to monitor progress towards the MDG for water and sanitation (Goal 7, Target 3). The three major objectives of JMP are to monitor trends and progress within the water supply and sanitation sector; to build national capacity for monitoring; and, to inform policy-makers and civil society on the status of the sector.

Relevant Programs

Data compilation: The JMP receives data from national agencies, UNICEF (MICS, CRING), USAID (DHS) and the International Household Network focused on two primary indicators: the percentage of people with access to improved water supply sources in urban and rural areas, and the percentage of people with access to improved sanitation facilities in urban and rural areas. Implementation of household surveys is usually coordinated by national statistical agencies. It is carried out by nationals that have received extensive training in the implementation of surveys and who collect information on a wide range of health and living conditions through household interviews.

Data processing: Care is taken to use third party data wherever possible, and service provider-based (reported) data are used only when there is no third party survey data available. WHO and UNICEF have drawn up a set of rules to make the interpretation of data from surveys and their graphical conversion into data points a systematic and objective exercise. These rules describe the categories of access that are considered "improved" or "not improved" and provide guidance on how to assess the validity of surveys, derive estimates, graph trend lines and deal with exceptional cases.

JMP decides which of the data sources will be used for monitoring the attainment of the MDGs. When new survey or census data and accompanying documentation are received, the validity of the data is assessed using a set of objective criteria. New survey data are entered into the JMP database only when the accompanying survey documentation is available to JMP. Data that passes JMP assessments is used to prepare regression lines that summarize the progress toward the MDGs. The regression equation is estimated using the simple 'Ordinary Least Squares' method, with all data points given equal weight in the regression.

JMP publishes coverage estimates on an annual basis (although the dataset is revised every two years). Since 2000, the JMP has provided biannual reports on the latest JMP dataset to illustrate progress being made towards meeting the WSS MDGs, while in alternate years the reports have focused on specific topics of interest. JMP also provides yearly inputs for the report of the UN Secretary-General on the MDGs. As of the 2008 JMP report, results are presented using a four-step ladder to illustrate trends in the use of various forms of WSS, from least to most improved. Steps on the sanitation ladder begin at open defecation, followed by unimproved, shared and improved sanitation facilities. Steps on the water supply ladder begin with unimproved sources, followed by other improved water sources and piped connections into a dwelling, plot or yard.

Building National Capacity for Water Sector Monitoring: JMP promotes improved monitoring at the national level by making the experience it has gained from survey design and analysis

available to government statistics offices and other national programs or projects. In 2008 the JMP began a series of methods workshops intended to encourage mutual understanding of national and JMP monitoring processes; bring together water, sanitation and health stakeholders to promote dialogue and harmonization at the national level; and promote coherency between national and JMP data. However, the roles and responsibilities of WHO and UNICEF are still evolving in the area of national capacity building, and partnership opportunities with the AfDB, WSP and others are being explored.

Diagnostic Assessment

The Consultant met with JMP in Geneva to learn about and assess the organization's initiatives and methods and to discuss potential joint activities between AWF and JMP that are now under consideration. Following the Consultant's mission to Uganda, the statistician attached to the Consultant's team was able to informally review the latest information coming from Uganda, Malawi, Senegal, Tunisia and the Congo-Brazzaville and give a closer assessment of JMP's methods of analysis.

With continued effort, JMP's reports are improving in accuracy and are of increasing value to the sector globally and especially within the UN. Understandably, as it is not in JMP's mandate, such reports provide little information on process (inputs and outputs) that can be used by sector agencies in sector planning management. While statistically correct, the household surveys are sample-based, which means they do not provide detail on the distribution or sustainability of services; furthermore, implementing agencies are rarely involved in the surveys. As a result, though the information may be accurate, it is neither owned nor trusted by them. This situation is compounded by the lack of understanding of JMP methods and poor relationships between sector institutions. Nevertheless, the JMP reports serve as a resource against which service provider data can be compared and to stimulate questions on why differences exist when they are found.

Following from this review are two specific suggestions that might be considered by the JMP. First, the regression estimation technique could give additional weight to surveys that have a larger sample size. One might also consider including all surveys with acceptable results in the regression but giving them a weight that reflects their perceived reliability. Second, JMP might conduct a study where the results across countries are compared to try and identify national results that are abnormal. The suggestion is that one could publish a chart with the 'Mean Squared Errors' (MSEs) of the data points from their national regression lines. Based on statistical theory one would expect that these MSEs would be smaller when the sample size is high and when the proportion estimated, the access rate, is near zero or one. One could chart the MSEs across surveys and countries to see if any country has unusually high or low MSEs (given their sample size and coverage rate). Queries could be conducted to try and understand the cause of those results.

Overall, it was observed that within JMP's mandate and resources (particularly considering the availability and quality of available data), the methods of analysis and reporting are appropriate for the purposes of assessing progress towards MDGs. It is recognized, as stated elsewhere in this report, that there are several concerns over the accuracy, reliability and consistency of estimates. The advantages of coming as close to reality as possible while knowing and accepting inaccuracies far outweigh the disadvantages of mounting an exhaustive effort into upgrading methodology globally at this stage. The most cost-effective approach to improving accuracy of estimates is to focus on (1) improving survey methods used by contributing statistical agencies while not expecting major changes in national estimates and, more importantly, (2) focusing on improving surveys and estimates of provider agencies which will undoubtedly yield added benefits to sector planning and management, (3) ensuring better coordination and collaboration between providers and statistical agencies.

C.3 Water and Sanitation Programme (WSP-Africa)

Background

The Water and Sanitation Program (WSP) is a field-based, multi-donor partnership led by the World Bank whose goal is to help the poor gain sustained access to improved WSS services. The WSP works directly with client governments at the local and national level in 27 countries through four regional offices and in the Bank headquarters in Washington D.C. Its aim is to help achieve the MDG of halving the proportion of people without access to safe drinking water and adequate sanitation by 2015. WSP-Africa, based in Nairobi, Kenya, strives to be a valued, high-level source of impartial advice and experience, based on comparative knowledge of what works. Its strategy is to make an impact in three critical entry points: promoting sector reform, improved governance, and the development of country-owned roadmaps; assisting countries in developing sustainable financing strategies to implement large-scale programs; and, providing capacity-building support to both regional and national policymakers and service providers.

The bulk of WSP-Africa's national support is focused on the 12 countries in which it currently has an office. Country-level support generally follows the sequence of assisting clients in planning reforms, developing strategies, and implementing investment programs related to the water and sanitation sector. Increasingly, country plans also include helping clients develop effective sector communication strategies.

Relevant Programs

WSP-Africa is leading the development of Sector Information Monitoring Systems (SIMS) for Water and Sanitation in Africa. It began this initiative by commissioning a conceptual framework paper on SIMS for water and sanitation as well as three case studies on the water sector M&E systems in Benin, Senegal and Uganda. This research fed into a March 2007 Practitioner's Workshop in Nairobi, Kenya in partnership with the AWF and Kenya's Ministry of Water and Irrigation. This workshop served to articulate the key principles that underlie SIMS: inclusiveness, integration with country systems, and the need to adopt an incremental approach towards their development and implementation. Emerging from this workshop was an agenda for moving forward with the development and implementation of SIMS across the African continent. This agenda is composed of three primary elements: Support to Countries in Establishing and Strengthening SIMS; Development of SIMS Guidelines; and Regional Harmonization and Review.

Based on workshop deliberations, three areas emerge as important and will be taken up in further work: i) developing a better understanding of country processes and rationales or developing outcome definitions; ii) developing a conceptual basis for different parameters of outcome indicators to arrive at a regional codification; and iii) further strengthening regional coordination among various stakeholders to avoid duplication and to identify gaps in support to be provided to countries and other stakeholders.

Diagnostic Assessment

WSP-Africa's four themes of work are (1) Financing the Sector, (2) RWSS, (3) Sanitation and Hygiene and (4) Strategic Communications. M&E is of concern and interest to WSP, but it is not a thematic focus. Nevertheless, WSP took the lead in organizing the key workshop noted above, developed the SIMS concept and has been collaborating closely with AWF on water sector M&E systems development activities.

The Kenya workshop of March 2007 made several recommendations for moving forward. The first was support to countries in establishing and strengthening SIMS. The generic national framework described in this report utilizes SIMS and is thereby responding to the recommendation. The Rapid Assessment of M&E across Africa is the first step in a consultative process which was also recommended by the workshop, it will initiate a program of strengthening M&E. Incorporated in the action plan is a South-to-South learning by enabling those that have just initiated the process of establishing an M&E system to learn from those

which are more advanced, which was also recommended. WSP has published a SIMS Guidelines document, which make a substantial contribution to country M&E systems. The Consultants contributed to its preparation by commenting on early drafts and encouraging its early publication. WSP continues to strengthen SIMS and, in doing so, M&E in Senegal and Uganda. In Senegal for example, the WSP office is providing TA in establishing a unified database system to PEPAM. WSP anticipates continuing formal and informal support to the development of SIMS and M&E across Africa through its 12 country offices and collaboration with AWF. The approaches and action plan recommended in this report are consistent with the SIMS and WSP's approach.

Annex D Review and Diagnosis of Emerging River Basin Organizations

D.1 Organisation pour la mise en valeur du fleuve Sénégal (OMVS)

Acknowledging the inherently shared nature of the Senegal River Basin (SRB) and its importance to the economies and the basic needs of the basin's riparian states and inhabitants, Senegal, Mali and Mauritania created the Organization Pour la Mise en Valeur du Fleuve Sénégal (OMVS) in 1972. As enshrined in the Convention relative au statut du fleuve Sénégal du 11 mars 1972 and the Convention portant creation de l'Organization Pour la Mise en Valeur du Fleuve Sénégal du 11 mars 1972, the purpose of the OMVS is to coordinate the sustainable management and exploitation of the SRB and its associated natural resources while also accelerating the economic development of its member states and the incomes of the basin's inhabitants.

Institutional Architecture: Based in Dakar, Senegal, the OMVS is supported by a multi-tiered institutional framework. Meeting once every two years, the Conference of Heads of State and Government (CCEG) defines the organizations' overall cooperation policies and economic development plans. One level below the CCEG and meeting twice each year, the Council of Ministers (CM) elaborates general river basin management and inter-state cooperation policies. In turn, the OMVS High Commission, composed of approximately 30 full-time staff, carries out the decisions made by the preceding two bodies and is responsible for most of the organization's day-to-day operational work. Supporting the efforts of the High Commission is the Permanent Commission on Water (CPE), the Regional Planning Committee (CRP) and the Consultative Committee (CC). The CPE defines the framework for allocation water from the Senegal River between different sectors (i.e. agriculture, transportation, potable water, etc), while the CRP and the CC coordinate and engage in river basin investment planning and the mobilisation of financial resources, respectively.

At the country level, each riparian member state hosts a national Cellule Nationale de Coordination or Comité National de Coordination (CNC), which monitors the implementation of programs developed by the High Commission and approves or limits the execution of basin-based development projects according to the OMVS' legal framework and basin-level legislation.

Programming and Activities: The OMVS leads and coordinates the realization of multinational projects focused on developing the SRB for the economic, social and environmental benefit of riparian states. The most visible amongst them are the basic infrastructure projects that have been developed and managed jointly by member states over the last several decades. These include the Manantali and Diama dams, the Manantali Hydro-electric facility, and their associated auxiliary infrastructure. OMVS programming, much of which is linked to the basic infrastructure projects noted above, revolves around the following sectors: irrigation, navigation, energy, potable water, preservation of the environment and poverty reduction.

While the costs of undertaking the organization's day-to-day operations is financed equally by member states, the cost of major investment projects is financed by loans managed by the OMVS. Member states remain responsible for the repayment of such loans and their associated interest costs but only according to the benefits they derive from the projects themselves. For instance, if Senegal were to use 80 percent of the energy produced through a hydro-electric project, it would be responsible for the same percentage of project costs.

An institution within the OMVS that is of increasing importance but was not discussed above is the OMVS Observatory. Created as the foundation behind the organization's environmental preservation program, the Observatory gathers multi-sector data from member states to monitor the status of the SRB and the environmental impact of projects being carried out within

its boundaries. The need for such a regional observatory was identified through a 2003 needs assessment that generated baseline data on the status of the sub-sectors to be monitored by the OMVS – surface water, waterborne illnesses, wetlands, fishery resources, climatology, marine and land fauna, socio-economic conditions, invasive plants, vegetation cover, soil health, the use of fertilizers and pesticides, underground water resources and mining – and their respective M&E systems.

The results of this study pointed to the need to strengthen the OMVS Observatory, now functional and based in Dakar, Senegal. With a formal mandate to monitor the state of the environment within the SRB, the Observatory has been designed as a means to aggregate, store and evaluate basin-wide data on each of the sub-sectors noted above from the relevant ministries in each of its member states. In theory, focal points in each relevant ministry feed their data into the national OMVS focal point (CNC), such as the DGPRE in Senegal, which then provides a selection of this data to the regional OMVS Observatory in Dakar. In practice, significant disparities exist between countries and between ministries within member states that impede the collection and subsequent dissemination of relevant data. While each CNC receives some capacity building support from the OMVS to improve their data collection and storage systems, this does not solve the problem of weak data collection mechanisms in certain sectors, such as waterborne diseases, due to the nature of the data itself. Addressing these deficiencies remains a work in progress.

D.2 Nile River Basin Initiative (NBI) (Uganda)

The NBI aims to realize the vision agreed between the nine riparian states (Rwanda, Kenya, Uganda, Tanzania, DRC, Sudan, Ethiopia, Egypt and Burundi) of "achieving sustainable socio-economic development through equitable utilization of, and benefit from, the common Nile resources". The NBI is a transitional arrangement for development of the Nile Basin pending conclusion of the Cooperative Framework Agreement, which has yet to be ratified by all countries. NBI works under the guidance of the Nile Council of Ministers (NILE-COM) from member states and its technical arm NILE-TAC and has its secretariat in Entebbe, Uganda. It is funded by member states and the donor community through the Nile Basin Trust Fund administered by the World Bank, AfDB, UNDP and other bilateral donors. Funds expended approximate USD 25 million per year.

In effort to promote efficient TWRM and optimal use of water related Nile resources, NBI is actively engaged in areas of harmonizing Nile Basin water policies, undertaking studies on impact of macro/sectoral policies on the Nile environment, enhancement of water governance and information sharing. In particular, it works on transboundary issues in power development and trade, agricultural and natural resource management, developing guidelines for water policy formulation, establishing basin-wide networks, capacity building and development of harmonized transboundary policies and institutional frameworks.

The NBI's Shared Vision Program (SVP) seeks to lay a solid foundation for regional cooperation through activities that enhance capacities in IWRM, broaden multi-stakeholder dialogues, expand the networking of professionals, and encourage information exchange and databases. In addition, a series of Subsidiary Action Programmes (SAPs) are promoting cooperation and trust between basin countries by planning and facilitating joint investment projects. These include power, river basin development and lake management projects. Two examples include the Regional Rusumo Falls Hydro-electric and Multipurpose Project (Tanzania, Rwanda and Burundi) and the Ethiopian-Sudan and Kenya-Uganda Transmission Lines Interconnection projects.

The NBI points to many achievements, not the least of which are its capacity building and training programs, integrated water resources development projects, natural resources management initiatives, transboundary environmental action projects, stakeholder involvement and confidence building, and regional power trade initiatives. On the other hand, it faces many acknowledged challenges, not the least of which are delays in communications between member countries, delays in financial disbursements due

to lack of legal recognition of NBI in all countries, lengthy procurement procedures caused by no-objection requirements from member states, and difficulties in accessing project sites due to security concerns. The over-riding concern, however, is the fact that disagreements on Nile River security have split the basin member countries. The Nile Cooperative Framework Agreement would establish a permanent Nile River Basin Commission through which member countries will act together to manage and develop the resources of the Nile, but agreement remains elusive with Egypt and Sudan reluctant to sign.

D.3 The Songwe River Basin (Tanzania/Malawi)

The Songwe River forms part of the international boundary between Tanzania and Malawi. It is one of 80 and more international transboundary rivers within African that cover about 60 percent of the continent's area. The Songwe is relatively small. It was purposely selected to represent the many transboundary waters which are less well known than the larger basins such as the Nile and Zambeze but nevertheless are a source of both conflict and potential benefit among riparian states. The high rainfall from the mountainous areas of the Songwe River catchment, the dense drainage pattern with large rivers entering the lower basin, combined with variability of the Lake Malawi/Nyasa water level itself, have created a flood plain along the international border between the two countries.

The boundary line between Tanzania and Malawi is demarked as the deepest channel of the Songwe. With the river, it is constantly moving. The length of the meandering portion of the channel is 29 km. Upstream the changes in river channel may extend to 150 m but in the downstream part of the meandering section changes can be quite drastic with shifts of up to 2.5 km.M ovement of the river occurs principally across its delta before discharging into Lake Malawi/Nyasa at peak flow periods during the rainy seasons. Movement is so pronounced that during the 1970s the Songwe became the cause of tension and open debate between Tanzania and Malawi.

Efforts at conflict resolution began with preliminary studies on the Songwe in 2001 in an attempt to stabilize the river bed so as to eliminate the cause of this friction. This was followed by feasibility studies including cost benefit analysis of technical options. The overall objective was to determine both technically and economically the best optional method for stabilising the course of the Songwe River, thereby ensuring a stable and definitive international boundary between the two countries, and to prepare a Songwe River Basin Development Plan. Several stakeholders have been involved in this process, including Malawi's MIWD and Tanzania's Ministry of Lands and Human Settlements Development.

Unfortunately, although the two countries have created a transboundary committee, no formal agreement has been signed and the prospects for one in the near future are dim. Negotiations are complicated by continuing tension over flows and fluctuations and even by the name of Lake Malawi/Nyasa itself. Until agreement is reached, it is therefore very unlikely that international donors will be forthcoming with contributions and, as such, the transboundary committee project remains unfunded and the problem unresolved.

Annex E National M&E Institutions

	CATEGORY	ORGANIZATIONS/ PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
BENIN[xxix]	IWRM	• Ministère des Mines, de l'Énergie et de l'Hydraulique (MMEH) o Direction Générale de l'Hydraulique (DGH)	• MMEH: Ministry responsible for the overall development and implementation of urban and rural water supply policies and the development of hydroelectricity. o DGH: Responsible for the coordination of the state's water sector activities, including IWRM; overseeing the operation of water sector MIS and the centralization of sector data; providing advisory services to local water sector stakeholders; developing and implementing Benin's water supply policy; planning and management of rural WSS sector.	• DGH: Documentation service, through which it manages all technical publications and reports related to Benin's underground resources. The DGH also disseminates the results of studies on Benin's water resources through its publications and organizes initiatives through which future needs and challenges are discussed. • DGH also operates the National Water Partnership (PNE) to coordinate and share information on IWRM. • DGH's hydrometric monitoring network was built up primarily through two main projects in late 1980s, which also put in place a hydrological database. Since then, DGH's hydrological monitoring network, comprised of 36 stations, has lost considerable capacity, with wide variations in the quality of monitoring stations and a lack of resources to maintain the system. • SMN: Rainwater monitoring network composed of 43 measurement stations monitored by local observers. • ABE: Maintains an inventory tracking the extent of pollution in surface water resources
		• Ministère de l'Environnement, de l'Habitat et de l'Urbanisme (MEHU) o Agence Béninoise pour l'Environnement (ABE)	• MEHU: Ministry responsible for the environment, habitat and urban development. o ABE: Agency responsible for coordinating the monitoring and management of pollution in Benin's water resources	
		• Ministère de Transport (MT) o Le Service Météorologique National (SMN)	• MT: Ministry responsible for public transportation. o SMN: Responsible for the collection, distribution and management of meteorological/climactic data.	
	RURAL WSS M&E	• Ministère des Mines, de l'Energie et de l'Hyrdaulique (MMEH) o Direction Générale de l'Hydraulique • Le Service de l'Hydrologie (SH)	• MMEH: See above. o DGH: Responsible for the planning, management and coordination of WSS policies and initiatives for rural and small towns. This includes PADEAR, the «Programme d'Assistance au Developpement du Secteur de l'Alimentation en Eau Potable et de l'Assainissement du Milieu Rural». • SH: Branch responsible for M&E of all surface water resources.	• DGH manages data on the country's sanitation systems and water quality through the PROSPER database to permit cost-benefit analyses and inform rural water programming decisions. o DGH-SH: Maintains inventory of water development plans; develops and collects data from hydrometric monitoring network; collects, stores, analyses and disseminates water resources data. • Rural WSS strategy, PADEAR, recently renewed and focused on achieving MDGs. Coherent with 2003 PRSP, PADEAR includes indicators and linkages between objectives, activities, expected results & expenditures. Attention paid to quantifiable & cost-efficient indicators. • SONEB: Collects and manages the vast majority of data related to the urban water sector. Data relate primarily to the exploitation of water points used to supply urban centres.
		• Ministère de la Santé (MS): o Direction de l'Hygiène et de l'Assainissement de Base (DHAB) o Centre Régional pour l'Eau Potable et l'Assainissement (CrEPA)	• MS: Ministry responsible for the implementation of government policies related to hygiene and basic sanitation and the control of waterborne diseases. o DHAB: Responsible for implementing Benin's Code of Hygiene and coordinating research into hygiene and sanitation. o CrEPA	

	CATEGORY	ORGANIZATIONS/ PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
BURKINA FASO [xxxi]	URBAN WSS M&E	• Centres Régionaux pour la Promotion Agricole (CeRPA).	• CeRPA: Implement rural wells and ponds programs and gather data (inputted into PROSPER) on rainfall patterns and the quality and quantity of such rural water points.	o With support from WSP-Africa and KfW, SONEB began developing its first urban water supply and sanitation strategy in 2004. Overall objectives include completing an inventory of water resources to ensure their sustainable use, improving planning and effective use of resources, expanding services to new urban settlements, introducing an appropriate pricing policy for water use, conducting public awareness campaigns for water saving, and developing a finance action plan. • Integrated Database (IB) being developed with the assistance of foreign donors to track the attainment of performance objectives for RWSS. However, the quality and usefulness of current indicators are, as a matter of necessity, limited by the available data and existing means of collection of statistics and performance arrangements. Approximately 30 indicators can be grouped into the following categories: Service rate; number of departments which have achieved the national annual target of the service rate; failure rate; investment cost per the newly served inhabitant; (%) of monthly published data on water resources and their usage. • M&E framework needs to be linked up to broader poverty reduction framework (e.g. PRSP).
		• Comités de gestion d'eau potables (CGEP), les Associations d'Usagers d'Eau (AUE) et les Comités de gestion des points pastoraux (CGPP)	• CGEP, AUE, CGPP: Local level water resources management and users committees.	
		• Ministère des Mines, de l'Energie et de l'Hydraulique (MMEH) o Société Nationale des Eaux de Bénin (SONEB);	• MMEH: See above. o SONEB: Public utility with responsibility for urban water supply and sanitation service provision.	
		• Ministère de la Santé (MS): o Direction de l'Hygiène et de l'Assainissement de Base.	• MS-DHAB: See above.	
		• Direction de l'Assainissement et des Voies Urbaines (DAVU)	• DAVU: Collects information on urban rainwater management.	
	IWRM	• Ministère de l'Agriculture, de l'Hydraulique et des Ressources Halieutiques (MAHRH) o Direction Générale des Ressources en Eau (DGRE); o Direction Générale du Génie Rural (DGGR); o Direction Générale des Ressources Halieutiques (DGRH).	• MAHRH: Ministry with overall responsibility for national water resources sector policies and programs. o DGRE: Responsible for ensuring the proper management of BF's water resources and for the development and management of an information management system for the sector (SNIEau).	• Action Plan for IWRM (PAGIRE) adopted in 2003. o Led by the DGRE, PAGIRE will facilitate the development of a national water sector information system (SNIEau) that will manage the collection of qualitative and quantitative data on the quality and supply of water resources and their management. o A hydrological resources inventory system being developed under PAGIRE will allow for the elaboration of a coherent water and sanitation program focused on meeting the MDGs. • DGRE: M&E activities associated with the SNIEau: o Development and maintenance of an inventory of and studies on surface and groundwater resources o Monitoring the use of national water resources; o Aggregation and dissemination of water resources data;
		• Ministère de l'Environnement et du Cadre de Vie (MECV) o Direction Générale de la Conservation de la Nature o Direction Générale de l'Environnement; o Le Laboratoire National d'Analyse des Eaux o Le Système d'Information sur l'Environnement (SNIE)		

	CATEGORY	ORGANIZATIONS/ PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
		• Institut National de la Statistique et de la Démographie (INSD) • Le Ministère de l'Energie et des Carrières (MEMC) o Direction Générale de l'Energie (DGE) • Cellule du projet de Barrage Hydro-éléctrique Noumbiel.	• INSD: Manage – through censuses and other social, economic and demographic studies – the collection, storage, analysis and dissemination of national statistical information.	o The development of structures charged with monitoring adherence to water resources regulations; o Development and publication of annual hydrological and hydro-geological reports; o Aggregating and managing data related to national and regional water basins; o Maintaining network of hydro-metric stations; o Maintaining inventory of supply of water points and water basin levels • INSD: Collect and disseminate climate data and information on household access, purchase and use of water provided by the ONEA
		• L'Autorité de Mise en Valeur de Vallée de Sourou (AMVS)		
	RURAL WSS M&E	• Ministère de l'Agriculture, de l'Hydraulique et des Ressources Halieutiques (MAHRH) o Direction Générale de Ressources en Eau (DGRE); o La Direction Générale de l'Approvisionnement en Eau Potable (DGAEP	• MAHRH: Ministry with overall responsibility for the development and management of national WSS policies and programs. o DGRE: Responsible for WSS in rural & semi-urban areas. Also manages, maintains and coordinates implementation of MDG Roadmap. DGRE operates out of 45 provincial offices. o DGAEP: Responsible for the development, coordination and implementation of national water policies in the urban, peri-urban, rural and industrial sectors and the monitoring of the quality and protection of water resources intended for human consumption.	• DGAEP M&E activities include : o Monitoring and quality control of potable water in villages and peri-urban and urban centres; o Ensuring the monitoring and evaluation of demand and supply of water. • There does not exist within the DGAEP a functional monitoring system for the MDGs in the water and sanitation sector. • Information on rural water points are supposed to be collected and stored using the BEWACO database, initially developed with financial support from the Netherlands. On paper, BEWACO is a powerful database tool enabling the monitoring of water resources and water points. However, BEWACO has not been updated since Dutch assistance ended in 1997. • Complete inventory of water and sanitation infrastructure in semi-urban and rural areas, financed by AfDB, validated in 2006, however BF does not possess accurate figures on access to water in rural areas. • The International Secretariat for Water (ISW) proposed in 2004 the creation of an evaluation branch within the DGAEP that would put in place national water indicators related to the PRSP process and BF's Sector Information Monitoring System (SIMS) and track progress towards meeting the water and sanitation component of the MDGs. The budget of such an office was estimated at 100m CFA/year. • INSD: See above.
		• Institut National de la Statistique et de la Démographie (INSD)	• INSD: See above.	
		• Water Committees (WC) & User Associations (UA)	• WCs and UAs: Play a dominant role in the management & monitoring of water services (mainly manual pumps, and to a lesser extent small water supply networks).	

	CATEGORY	ORGANIZATIONS/ PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
	URBAN WSS M&E	• Ministère de l'Agriculture, de l'Hydraulique et des Ressources Halieutiques (MAHRH) o l'Office National de l'Eau et de l'Assainissement (ONEA)	• ONEA: Public institution in charge of the provision and management of urban (cities and towns larger than 10,000) water supply and sanitation services.	• ONEA manages an information management system covering most of Ouagadougou, however water supply data on cities and towns outside of Ouagadougou and under ONEA's jurisdiction is unavailable. • ONEA is committed to the development of a national water sector information system.
REPUBLIC of CONGO [xxxii]	**IWRM**	• Ministère de l'Energie et de l'Hydraulique (MEH) o Direction Générale de l'Hydraulique (DGH	• MEH: Ministry responsible for energy and water policy development, implementation and oversight. o DGH: Responsible for water sector policy and program development and oversight	• DGH: Overall sector monitoring.
		• Ministère de Tourisme et de l'Environnement (MEFE) o Direction Générale de l'Environnement (DGE)	• MEFE-DGE: Responsible for the management and sustainable development of the Congo's forest, fauna and fishery resources.	• MEFE-DGE: Collects and stores data on water resource quality and contributes data to the UN Environmental Programme's GemSTAT system. Carries out and publishes irregular "state of the environment" reports.
		• Commission Internationale du Bassin Congo-Oubangui-Sangha (CICOS)	• CICOS: International commission based in Kinshasa and setup under the auspices of the CEMAC regional economic community to facilitate the joint management of the Congo-Obangui-Sangha river basin. Member states include Cameroon, Central African Republic, Republic of Congo and the D.R. Congo.	• CICOS, though itself in its early stages of development, plans to create an Information System for the Congo Basin (SIRCO) that will collect and publish information on the state of water resources and the situation concerning transportation on shared waterways. Feeding this information system will be the planned Congo-HYCOS network of hydrological monitoring stations throughout the basin as well as an environmental decision-making support system making use of satellite imagery.
		• l'Agence Nationale de l'Aviation Civile (ANAC) o Direction de la Météorologie (DM)	• ANAC: Public agency under the Ministry of Transport responsible for civil aviation and climate monitoring. o DM: Collects, analyzes and disseminates national meteorological data through bulletins and television with the assistance of the World Meteorological Organization.	• DM's meteorological monitoring network composed of 18 functioning synoptic stations, 10 climatological stations, 212 rainwater monitoring stations, 2 radio transmission stations (in Pointe Noire and Cuesso and operated by ASECNA), 1 air pollution measurement station, 1 radar station and 1 'MSG.'. Data is typically transmitted three times daily by phone and is disseminated domestically through bi-weekly bulletins and national television and worldwide through the Regional Telecommunications Centre at the Maya Maya International Airport.
		• Ministère des Plans (MP) o Centre National de la Statistique et des Études Économiques (CNSEE)	• MP-CNSEE: The official statistical service of the Congo.	• CNSEE: Manages periodic national censuses (1984, 2006) and socio-economic studies (e.g. ECOM 2005, DHS 2005) and disseminates associated data electronically and in hard copy.
		• Service Commun d'Entretien des Voies Navigables (SCEVN)	• SCEVN: State agency under the Ministry of Transport responsible for maintaining national waterways.	• SCEVN: Collects and disseminates information on water levels on the Congo's major rivers (Congo, Oubangui and Sangha) through a network of seven monitoring stations

	CATEGORY	ORGANIZATIONS/ PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
		• Ministere des Recherches Scientifiques (MRS) o Direction Générale de la Recherche Scientifique (GRSEN)	• GRSEN: Collects and stores hydrological, hydrogeological and climactic data in hard copy archives.	• GRSEN's hydrometric monitoring network consists of 55 stations operating at roughly half their capacity due to resource shortfalls. Moreover, water monitoring is limited to the 20 water points still operational amongst the 480 water points that once existed. GRSEN has developed the framework for a water resources database to centralize data and facilitate research on surface water and groundwater resources and climatology. Annual hydrological reports currently only as recent as 1983.
	RURAL WSS M&E	• Ministère de l'Energie et de l'Hydraulique (MEH) o Agence National de l'Hydraulique Rurale (ANHR)	• MEH: See above. o ANHR: Department responsible for the development and monitoring of rural water supply.	• ANHR: Has developed Terms of Reference to guide the Projet de l"Hydraulique Humaine", through which pre-war rural water points and monitoring infrastructure will be rehabilitated across the country.
		• Ministère de la Santé et de la Population (MSP) o Direction de l'Hygiène Générale (DHG)	• MSP: Ministry responsible for public health. o DHG: Department responsible for public hygiene and sanitation promotion and monitoring as well as water quality monitoring.	• DGH: Conducts water quality monitoring through its Laboratoire de Bromatologie with basic equipment supplied by the WHO. Reports sent to the SNDE and DGH on a regular basis. Severely constrained by insufficient financial resources and a lack of modern information technology.
	URBAN WSS M&E	• Société Nationale de Distribution d'Eau (SNDE);	• SNDE: Public agency responsible for the production and distribution of potable water in cities, urban centres and towns of more than 5000 people.	• SNDE: Operates offices in the Congo's four major cities and in 15 secondary towns and collects data some data related to the quality and quantity of potable water within its jurisdiction. Due to human resource shortages and the loss of equipment during civil wars, SNDE's water quality control and monitoring capacity is very limited.
		• Ministère du Santé Publique (MSP) o Direction de l'Hygiène Générale (DHG) • Municipal Governments, e.g. City of Brazzaville	• MSP o DHG: See above. • MGs: Responsible for sanitation sector studies and regulation; the construction and management of municipal works projects, including rainwater evacuation systems; and, the treatment of industrial wastewater.	• MSP-DGH: See above • City of Brazzaville's Direction de l'Environnement et de la Propreté de la Ville is said to monitor sanitation indicators. No city-wide sewerage system exists, thereby making measurements of access to basic sanitation difficult to track.
D.R.CONGO [xxxiii]	IWRM	• Ministry of the Environment, Nature Conservation and Forestry (MECNE) o Water Resources Directorate (DRE) o National Sanitation Programme (PNA)	• MECNE: Ministry responsible for managing DR Congo's water resources, including: (i) urban sanitation through control of the harmful effects of air, soil and water pollution; and (ii) creating and managing integral natural reserves, catchment plants and water ecosystems. o DRE: Directorate responsible for implementing the water resources policy. o PNA: Responsible for wastewater, solid waste, and vector control.	• M&E activities now coordinated by CNAEA. MDG Roadmap process will assist in M&E framework development under CNAEA. • GTZ/KfW are financing and managing a program to strengthen the capacity of DR Congo's water sector. The programme is resident at CNAEA and is advising CNAEA on the reform of the national water policy.

	CATEGORY	ORGANIZATIONS/ PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
		• Ministry of Energy (MINE) o Department of Water and Hydrology (DEH)	• MINE: Ministry with the non-exclusive mandate to manage DR Congo's water resources. o DEH: Department responsible, in particular, for coordinating the Global Water Resources Assessment Programme at the national level.	• Ongoing & planned projects, including those linked to the PRSP process, are developing key indicators to be used as the basis for water sector M&E.
	RURAL WSS M&E	• Ministry of Rural Development (MDR) o Rural Water Service (SNHR)	• MDR: Ministry responsible for formulating, implementing and monitoring rural and semi-urban drinking water supply projects. o SNHR: Responsible for developing and maintaining an inventory of water resources in rural areas, constructing drinking water structures, and training the population in the servicing and maintenance of said structure.	• CNAEA is working to extend its Action Plan for sanitation outside of Kinshasa to other large and mid-sized towns. • At the operational level, REGIDESO comprises, in addition to Kinshasa and its five sales departments, 10 provincial directorates which serve 94 centres, 44 of which stopped operating between 2000 and 2007. Both SNHR, which has 17 stations countrywide, and REGIDESO lack the capacities and financial resources to carry out water and wastewater management in an effective and cost-efficient manner. • The African Development Bank is preparing the Semi-Urban Drinking Water Supply and Sanitation Project for the D.R. Congo. Through this project, a consulting firm will be recruited to conduct a sectoral study that will include: (i) an inventory of water structures in the country and strengthening of the data base available at CNAEA, the creation of a Geographical Information System "SIG-EAU" as well as the training of officers of management structures of the sector in the use of System.
		• National Committee for Water and Sanitation (CNAEA)	• CNAEA: An Inter-Ministerial Structure responsible for the coordination of all drinking water supply activities at the highest level. CNAEA is under the supervision of, and is chaired by, the Minister of the Plan (MINPLAN).	
	URBAN WSS M&E	• Ministry of Energy (MINE) o Water Distribution Agency (REGIDESO)	• MINE: Ministry with the non-exclusive mandate to manage DR Congo's water resources. o REGIDESO: State-owned corporation responsible for urban water and wastewater management and distribution	
		• Ministry of the Environment, Nature Conservation and Forestry (MECNE) o National Sanitation Programme (PNA) • Municipal Sanitation Brigades (BCA)	• MECNE: See above. o PNA: Responsible for wastewater, solid waste, and vector control. Active only in Kinshasa, where it collects solid waste. It has only limited presence in the provinces, mainly through the Municipal Sanitation Brigades (BCA). These brigades are understaffed and under-equipped.	
		• National Committee for Water and Sanitation (CNAEA)	• CNAEA: See above.	
ETHIOPIA [xxxiv]	**IWRM**	• Ministry of Water Resources (MOWR) o Information System and Meta-database Centre (ISMDC) o Hydrology Department (HD) o Basin Development Studies Department (BDSD)	• MOWR: Ministry with overall responsibility for the development, protection and study of the water sector. o ISMDC: The focal point for the coordination and management of sector information and documentation. Its objectives are to provide modern information services, create linkages and exchange information, administer all programs, projects and master plan documents and archive sector data and information.	• Existing water sector information management characterized by dispersed data storage, low processing and analytical capability, lack of information sharing and communications systems, insufficient utilization of modern computer technologies. No national protocol, standards and guidelines on sharing sector information and knowledge.

	CATEGORY	ORGANIZATIONS/ PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
			o HD: Monitors flow and depth of water in rivers and lakes and depth of sediment loads in some locations through 9 branch offices and over 560 measuring stations. o BDSD: Coordinates all water basin master plans and maintains basin information database.	• ISMDC has employed the Ethiopian Natural Resources and Environmental Meta Database (ENRAEMED) unified database system since 2002. The ENRAEMED was designed to serve as an information referencing and catalogue centre providing access to data collections of major institutions at federal and regional levels concerned with the storage and dissemination of natural resources and environmental information. o ENRAEMED stakeholders: MOWR, Ministry of Agriculture (MOA), Geological Survey of Ethiopia (GSE), National Meteorological Agency (NMA), Environmental Protection Agency (EPA), Ethiopian Mapping Authority (EMA), Ethiopian Space and Technology Agency (ESTA), regional states of Amhara, Gamabella, Oromia, Southern and Tigray. • HD collects data on groundwater collected through + 550 measuring stations on lakes and rivers in addition to other sources such as regional water bureaus, ESAs and NGO projects. Groundwater data managed using ENGDA software. No formal activities to disseminate and publish reports, but Hydrological Yearbook under consideration. • NMA recently converted from manual recording of data to electronic data management using ORACLE-based CLIDATA software. Data available on request. • GSE: Employs ENGDA software to store and analyze groundwater data and linked up with ENRAEMED. • NBI: Plans in place to develop a share water resources management information system/database. • Water quality management: There exist no well-considered programs for routine and random monitoring and surveillance of water quality at the national level.
		• National Meteorological Agency (NMA)	• NMA: Collects and manages data on rainfall and other climactic variables through close to 700 measurement stations.	
		• Geological Survey of Ethiopia (GSE)	• GSE: Agency responsible for the collection, analysis and publication of information on geological, hydro geological and groundwater resources.	
		• Ethiopian Environmental Protection Authority (EPA)	• EPA: The EPA's responsibilities encompass the following thematic areas: development and implementation of environmental policy, regulatory and management frameworks; enforcement and compliance mechanisms; community empowerment and participation in decision making; identification and use of environmentally sound technologies; and, resource mobilization for environmental protection.	
		• Nile Basin Initiative (NBI)	• NBI: Multilateral institution created by riparian states to enable the coordinated management of shared water resources in the Nile River Basin.	
	RURAL WSS M&E	• MOWR	• MOWR: Overall responsibility for the development, protection and study of the water sector.	• MOWR: Plans in place to develop a rural WSS database and M&E system in partnership with the ministries of education and health through the WASH Movement, a UNICEF-supported initiative to promote good hygiene practices amongst children and adults in Ethiopia. • MOWR also plans to monitor district (woreda) WSS access and performance through baseline data surveys, which will incorporate inventory of WSS schemes, supply chains, equipment and machinery performance and water quality management.
		• Regional Water Bureaus (RWBs), e.g.: o Oromia Water Bureau o Southern Nations, Nationalities and Peoples State (SNNPS) Water Bureau.	• RWBs: Responsible for coordinating WSS activities and overseeing WSS performance and standards at the regional level. Mandate covers water projects, meteorology stations, hydrology stations and district water offices.	
		• District Water Desks/Offices (DWD)	• DWD/Os: Oversee status of water supply and sanitation services in rural areas.	

	CATEGORY	ORGANIZATIONS/ PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
	URBAN WSS M&E	• MOWR	• MOWR: See above.	• Regional water bureaus: assess water resources at district level, develop inventory of local water schemes, and maintain subcomponent databases covering archives, fixed assets, vehicles, human resources, rural and urban water schemes. • AAWSA: Currently no well-organized urban MIS in place. • DWD/Os: Generate information on water supply and sanitation at the district level and disseminate to regional water bureaus.
		• Addis Ababa Water and Sewerage Authority (AAWSA)	• AAWSA: Ethiopia's largest water utility in charge of the distribution and management of potable water in Addis Ababa.	
		• Town Water Utilities	• TWUs: In charge of development and maintenance of water distribution systems in urban towns.	
GHANA [xxxv]		• Ministry of Water Resources, Works and Housing (MWWH) o Water Directorate (WD) o Water Resources Commission (WRC) o Hydrological Services Department (HSD)	• MWWH: Responsible for the formulation and promulgation of Government policy in the water sector, including potable water, and the development of infrastructure facilities in the areas of water and flood control systems, drainage, coastal protection works and operational hydrology. o Water Directorate (WD): Established to oversee sector policy formulation, the review, monitoring and evaluation of activities of the agencies, and the coordination of donor activities. o Water Resources Commission (WRC): Established in 1996 and holds the responsibility to regulate and manage the utilization of water resources in Ghana and the coordination of policy in relation to them. o Hydrological Services Department (HSD): Responsible for operating the national hydrometric data collection network on stream flows, sediment transport and water quality. It also has the responsibility of processing and assessment of the hydrometric data.	• The M&E Unit of the EPA conducts comparative studies every year to analyze and advice on deviations from targets. They have their own system and programs to develop quality assurance plans each quarter. • Managed by the HSD, Ghana's surface water monitoring network is composed of 174 stations, 76 of which are fitted with automatic recorders. All the equipment is functioning properly, thus, data generated is assessed as reliable. Data collected measure water quality, water levels, flow rates of rivers/streams, discharges, and aquifer parameters such as yields, conductivity, and the coordination of each measuring station. Water level measurements are taken 3 times daily and the flow measurements are taken periodically. • Groundwater monitoring has been carried out on a limited scale by the WRI, EPA, and the GWCL with CIDA. The WRI's data collection equipment in its network of 30 monitoring stations includes rain gauges, flow meters, sediment samplers and ovens, boreholes, submersible pumps, water level indicators, submersible pumps and automatic recorders for borehole measurements, and maintenance is done on a regular basis. • Groundwater data collected from hand dug wells and drilled boreholes by the WRI includes lithological logs, aquifer and well parameters (depth, optimum pumping rates, static water levels, transmissivity, storage coefficient, specific capacities, etc), while data collected on groundwater quality include physico-chemical and bacteriological parameters – turbidity, colour, odour, taste, pH, temperature, total dissolved solids, conductivity, alkalinity, dissolved oxygen, major ions and copper elements.

	CATEGORY	ORGANIZATIONS/ PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
		• National Development Planning Commission (NDPC)	• NDPC: The NDPC is ultimately responsible for ensuring consistency and continuity in framing and executing Ghana's development policy.	
		• Ministry of Food and Agriculture (MoFA) o Irrigation Development Authority (IDA): o Fisheries Commission (FC)	• MoFA: The Ministry is charged with the overall promotion of policies and programs that ensure sustainable and equitable distribution of food supply for the country's population as well as the sustainable growth of the agricultural sector including fisheries. o IDA: Main functions include: to formulate plans for the development of irrigation in the country; to develop water resources of the country for irrigated farming, livestock improvement and fish culture; and, to execute comprehensive programmes for the effective use of irrigated lands in cooperation with other relevant agencies. o FC: Responsible for the development, management and ensuring the sustainable exploitation of Ghana's fisheries.	• The GMA is the sole agency collecting rainfall and climactic data. Data available and collected daily are rainfall, air temperature, dry bulb and wet bulb temperatures, soil temperatures, wind speed and directions, solar radiation, sunshine duration, and evaporation. Data is available at the basin level and collected from 22 synoptic stations, 61 climatological stations, 156, 54 agrometeorological stations and 1 upper air station.
		• Ministry Of Energy (MOE) • Volta River Authority (VRA)	• MOE: Overall responsibility for the development and use of Ghana's energy sources including fuel wood and hydropower which are related to the water system. • VRA: Has management responsibilities over the production of electricity from two dams across the Volta River, at Akosombo and Kpong.	
		• Environmental Protection Authority (EPA)	• EPA: Holds the responsibility to regulate the environment and ensure the implementation of government policies on the environment.	
		• Ghana Meteorological Agency (GMA)	• GMA: Provides cost effective weather and climate services by collecting, processing, archiving and disseminating meteorological information to support end users contribution to the management of Ghana's economy.	
		• Water Research Institute (WRI)	• WRI: Generates and provides scientific information, strategies and services towards the rational development, utilization and management of Ghana's water resources.	

	CATEGORY	ORGANIZATIONS/ PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
	RURAL WSS M&E	• Ministry of Water Resources, Works and Housing (MWWH) o Community Water and Sanitation Agency (CWSA)	• MWWH: See above • CWSA: Charged with facilitating the provision of safe water and related sanitation services to rural communities and to provide for connected purposes.	• The GWCL and CWSA are active resource stakeholders in monitoring the progress of the country towards the Millenium Development Goals. Fora involving CWSA, NGOs and donors have been held to discuss issues arising out of measurements of indicators such as access to potable water sources/supply, but there has been no real concerted effort to coordinate the monitoring of progress. • The CWSA, on the other hand, has a national M&E system, the WaterSan Facility Planning and Monitoring System, which has been designed and installed in each region. Within the system is a set of water and sanitation indicators on which regions are expected to report to the Head Office on a quarterly basis. The system assists in streamlining critical CWSA activities that at present tend to be conducted independently from one another. • GWCL: Each Project Department reports on performance of all ongoing projects. These reports are fed into the mid-year and end-of-year evaluation process, and adjustments are made to given targets.
	URBAN WSS M&E	• MWWH o Ghana Water Company Limited (GWCL)	• MWWH: See above • GWCL: Public utility whose basic mandate includes the provision, distribution, conservation and supply of water in Ghana and the establishment, operation and control of sewerage systems.	
LESOTHO xxxv	**IWRM**	• Ministry of Natural Resources (MNR) o Department of Water Affairs (DWA) o Commissioner of Water (COW)	• MNR: Overall responsibility over the management of water resources in Lesotho. o DWA: Coordinates and manages water resources activities of the MNR. Areas of responsibility include: water resource data collection and management; transboundary water resources management; water supply and sanitation planning. o COW: Created in 1999 to facilitate integrated water resources development and management. Responsible for water resources development planning.	• Hydrogeological data derived from 106 springs and 69 boreholes monitored by DWA. 8 stream gauging stations feed into HYCOS hydrological data network. HYCOS network facilitates hydrological data sharing within SADC region. • DWA collects information on groundwater resources, conducts hydrogeological mapping and monitors river flows. However, it does not disseminate its information online, nor does it produce periodicals or newsletters. • WASA: Tracks water demand. • Lesotho and the World Bank currently implementing the Water Sector Improvement Project (WSIP). Project focusing on: o Strengthening governance of the delivery of WSS services; o Expanding and improving WSS infrastructure; o Promoting a sector-wide policy and regulatory framework.
		• Orange-Senqu River Basin Commission (ORASECOM)	• ORASECOM: Lesotho is a member alongside Botswana, Namibia and South Africa. The Commission advocates joint development and management of the water resources of the Orange-Senqu River Basin	
		• Lesotho Bureau of Statistics (LBS)	• LBS: Government department under the Ministry of Finance and Development Planning mandated to set up and manage a system for national official statistics on economic, social, demographic and environmental areas in relation to the development needs of Lesotho. Collects and disseminates official statistics for purposes of economic and social planning, research, public information and international cooperation.	

	CATEGORY	ORGANIZATIONS/ PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
MALAWI xxxvii	RURAL WSS M&E	• Ministry of Natural Resources (MNR) o Commissioner of Water (COW) o Department of Rural Water Supply (DRWS)	• MNR: See above. o COW: See above. o DRWS: Manages, develops and monitors rural water supply.	• WSIP provided impetus for the creation of the COW and its Policy, Planning and Strategy Unit (PPSU). Under the WSIP, OW and the PPSU will review and assess the objectives formulation process and clarify distinctions between outputs, outcomes and impacts related to the attainment of national objectives and the MDGs. • In coming years, COW will act as a water service regulator to oversee the attainment of present targets for water supply delivery, data collection and information generation for the achievement of national priorities and goals. • Twinning arrangements have been organized with regional utilities in Malawi, South Africa, Zambia and Swaziland in the domestic water supply sector through which technical information is shared and staff exchanges are undertaken. • Low priority given to water resources data collection: hydrological data compromised by insufficient infrastructure and maintenance of measurement units; water quality not fully monitored throughout the country; no centralized management information system (MIS). (Makhoalibe, 2006).
		• Ministry of Health and Social Welfare (MHSW)	• MHSW: Ministry responsible for managing and monitoring rural sanitation and hygiene	
		• Lesotho Bureau of Statistics (LBS)	• LBS: See above.	
	URBAN WSS M&E	• Ministry of Natural Resources (MNR) o Commissioner of Water (COW) o Lesotho Water and Sewerage Authority (WASA)	• MNR: See above. o COW: See above. • WASA: National utility charged with the responsibility of providing potable water in the urban areas of Lesotho.	
		• Ministry of Local Government (MLG)	• MLG: Assists with peri-urban sanitation provision and monitoring.	
		• Lesotho Bureau of Statistics (LBS)	• LBS: See above.	
	IWRM	• Ministry of Irrigation and Water Development (MoIWD) o Water Resources Department (WRD)	• MoIWD: Responsible for water sector development programming, policy planning, and monitoring and evaluation. o WRD: Department responsible for water resources management and development, including surface, groundwater and water quality monitoring.	• MoIWD currently has weak M&E capacity due to inadequate staffing. No proper M&E of water sector activities and programs until 2005. M&E includes collection, processing, storage and dissemination of hydrological, hydro geological, water quality and domestic water services data. • MMNREA: Monitors and regulates water quality in water bodies to safeguard aquatic life. • NWRA: Slated to manage Malawi's Water Point Mapping system (see NGOs, below). The NWRA collects, stores and disseminates data and information related to: o Water abstraction and effluent discharge licences; o Locations, quantities and characteristics of permitted water abstractions and effluent discharges into public waters; o Levels of compliance with the provisions of the licences; o Characteristics of water control areas; o Lists of approved water-related development projects. • NSOM: Tracks and disseminates information on progress towards MDG goals through the Malawi Demographic and Health Survey. • WES: Initiated the GIS-based Water Point Mapping system.
		• Ministry of Transport and Public Works (MTPW) o Department of Meteorological Services (DMS)	• MTPW o DMS: Role includes the provision of relevant meteorological data for the assessment, development and management of water resources.	
		• Ministry of Mines, Natural Resources and Environmental Affairs (MMNREA)	• MMNREA: Ministry responsible for the development of mining, forestry, fisheries and energy in addition to environmental management.	
		• National Water Resources Authority (NWRA)	• NWRA: Formerly known as the Water Resources Board, its key function is to enforce the policies and legal provisions for the proper management and utilisation of Malawi's water resources.	

	CATEGORY	ORGANIZATIONS/ PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
		• Water and Environmental Sanitation Group (WES)	• WES: Informal and collaborative group founded by various stakeholders in the water sector to monitor the implementation of various sector programs and policies. Meets once a month and also plays an advocacy role to elevate the sector's profile within government.	• Malawi's hydrometric network, managed by the WRD, is comprised of river discharge stations, water level stations, rainfall stations, climate stations and water quality monitoring stations. There are currently 230 hydrometric stations scattered on Malawi's major rivers, streams and water bodies, including major dams, throughout 17 Water Resource Areas (WRAs). Of the 230, 171 undertake both gauging and discharge measurements, while 59 only take water level measurements. o A WRA study conducted through the Canadian International Development Agency-funded COM-WASH project found that most gauging stations in at least two districts were not functional and that there were significant gaps in past data collection. • Plans to re-establish groundwater monitoring: A detailed proposal stemming from the National Water Development project (2002-2003) has been developed to establish a groundwater monitoring network, which is currently awaiting financing. Indicators would include groundwater levels and quality, spring flows and quality, rainfall evaporation and recharge.
	RURAL WSS M&E	• Ministry of Irrigation and Water Development (MoIWD) o Water Supply and Sanitation Department (WSSD)	• MoIWD: See above o WSSD: Responsible for water services planning and development coordination, development of rules and strategies for the provision of sustainable water and sanitation services to rural communities and the promotion of new innovations in service delivery.	• MoH: Monitors and provides guidance on drinking water quality. • MLGRD: Collects, processes and disseminates data related to water activities in the local authorities. • MBS: Responsible for the monitoring and policing of compliance to national standards for safety, health and the environment. • NGOs and Civil Society Bodies: NGOs active in Malawi with a stake in M&E include WaterAid (water services provision, data collection and analysis and policy related advocacy); Oxfam (involved in water services provision and data collection); and Inter-Aide (involved in water services provision and data collection). One of the most significant recent contributions made by NGOs in Malawi has been the creation of the GIS-based Water Point Mapping system. • The Government of Malawi has recently posted M&E Officers to the local assemblies to improve their data gathering capacities. • Many sectoral programs being implemented under the MoIWD at the community level incorporate participatory M&E initiatives where communities, with the assistance of Water Monitoring Assistants (WMA) provided by the government, review the performance of their facilities and feed the
		• Ministry of Health (MoH)	• MoH: Ministry responsible for public health.	
		• Ministry of Local Government and Rural Development (MLGRD)	• MLGRD: Ministry responsible for the planning, implementation and monitoring of WSS services at local assembly levels and supporting private sector and NGO participation in the delivery of WSS services.	
		• National Statistical Office of Malawi (NSOM)	• NSOM: See above.	
		• Malawi Bureau of Standards (MBS)	• MBS: See above.	
		• NGOs and Civil Society Bodies	• NGOs and Civil Society Bodies: Assist in the collection, processing and dissemination of water related data and information, particularly regarding water services provision.	

	CATEGORY	ORGANIZATIONS/ PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
		• Local Assemblies	• Local Assemblies: Responsible for providing social services within their jurisdictions as per the National Decentralisation Policy (1998).	information to their local assemblies for consolidation. However, to the detriment of community-level M&E initiatives, approximately half of all WMA positions are currently unfilled. • There is a plan in place for an annual review of water resource base-line data by each district. This review will form the basis of each district's water and sanitation plan for the coming year. • 'Guidelines and Standards for the Devolution of Functions' by the Ministry of Water Development of January 2003 provide clear guidelines on how communities are to undertake the M&E of their programs and projects. The document states that M&E should be done in partnership with women, men and village leaders, who should participate in information collection and analysis. The Village Water Committee should spearhead monitoring at the community level. Monitoring indicators suggested in the Guidelines cover general information, water supply and sanitation facilities and the managerial performance of Water Committees. • VWCs: Current policy states that VWCs should be composed of 8-10 individuals; however, typically only 2-3 individuals are active on such committees.
		• Village Water Committees (VWC)	• VWCs: Elected local bodies tasked with management of communal water points or piped water supply schemes.	
	URBAN WSS M&E	• Ministry of Irrigation and Water Development (MoIWD) o Water Supply and Sanitation Department (WSSD)	• Water Boards: Responsible for water supply services in the towns and cities within their water supply areas.	• Data and information collected and disseminated by Water Boards includes: data on the quality of both raw and treated water; river discharge and groundwater yields from their abstraction sources; water demand and consumption patterns; consumption patterns among the various classes and types of water consumers; and systems operation and maintenance information. • Water Boards: M&E responsibilities include monitoring water quality within their water supply systems and collecting, processing, analysing and disseminating relevant data related to their functions in their water sector. • MOH: Role of MoH with respect to urban WSS is to provide guidance on and monitoring of drinking water quality. • MBS: Responsible for the monitoring and policing of compliance to national standards for safety, health and the environment.
		• Water Boards of Blantyre, Lilongwe, Northern Region, Central Region and Southern Region.	• MoIWD: See above. o WSSD: See above.	
		• Ministry of Health (MoH)	• MoH: See above.	
		• Malawi Bureau of Standards (MBS)	• MBS: See above.	
		• NGOs and Civil Society Bodies o Water user associations (WUA)	• WUAs: Assist in local water supply and sanitation monitoring and management.WUAs: Assist in local water supply and sanitation monitoring and management.	

	CATEGORY	ORGANIZATIONS/ PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
SENEGAL[xxxviii]	**IWRM**	• Ministère de l'Hydraulique Rurale et du Réseau Hydrographique National o Direction de Gestion et de la Planification des Ressources en Eau (DGPRE)	• MHRRHN: o DGPRE: Responsible for monitoring the status of Senegal's surface and groundwater resources and planning/implementing integrated water resources management programs. Also the country focal point of the OMVS.	• Project 2 of the DGPRE's Action Plan for IWRM (PAGIRE) is the development of an integrated water resources information and knowledge management system, or Systeme d'Information sur l'Eau (SIE). Intended results of the SIE, which will be managed by the DGPRE with support from the OMVS, include: o Water information systems are inventoried and databases are aggregated and harmonized; o Partnerships are established based on formal agreements or conventions; o Equipment and technical know-how are acquired; • Hydro geological Study of the Dakar and North Littoral Aquifers for the Improvement of Potable Water in Dakar. The objective of the Lot 1 of this study is to improve the capacity of the DGPRE to: o Establish a baseline for the effective monitoring of the quality and quantity of water in these aquifers. • L'étude hydrogéologique de la Bordure Sédimentaire du Sénégal oriental (lot 2). The general objective of Lot 2 is to contribute to the improvement of knowledge on underground water resources in eastern Senegal and to improve the capacity of the DGPRE to better evaluate the development potential of the water resources in this region. • Construction and Rehabilitation of Piezometres. This project will reinforce the country's hydro-geological monitoring and modeling capacity through the construction of 17 and the rehabilitation of 15 existing piezometres.
	RURAL WSS M&E	• Ministère de l'Hydraulique et du Réseau Hydrographique National (MHRN) o Direction de l'Hydraulique Rurale (DHR) o Direction de l'Exploitation et de la Maintenance (DEM) • Associations d'Usagers de Forages (ASUFOR)	• MHRHN: o DHR: Responsible for the planning, realization and oversight of rural water points. o DEM: Provides technical support to water users associations and management committees; coordinates the transfer of operation and management responsibilities over rural water points to the private sector; oversees and regulates provision of potable water in rural areas. • ASUFOR: Water users associations that operate and manage most rural water points.	• PEPAM's UCP is leading the development of Senegal's Sectoral Information Monitoring System (SIMS). The system, developed with technical support from the WSP-Africa, will monitor the evolution of access to safe water and basic sanitation in rural and urban areas and compare progress against the MDGs and optimize the use of resources by enabling fact-based performance assessments of water sector service providers. The SIMS, launched in 2006, is composed of an M&E system, a unified database system and an internet portal. o To expand the reach and depth of the SIMS at the national level, 'regional M&E platforms' are being established throughout the country.

	CATEGORY	ORGANIZATIONS/ PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
		• Ministère de l'Urbanisme, de l'Habitat, de l'Hydraulique Urbain, de l'Hygiene Publique et de l'Assainissement (MUHHUHPA) o Direction de l'Assainissement (DAS)	• MUHHUHPA: o DAS: Responsible for the planning, implementation and monitoring of rural sanitation programs and the monitoring of ONAS' urban sanitation planning and implementation activities	o The core of SIMS is its Unified Database System (UDBS): an open source, integrated network of linked tables from 15 existing databases relevant to water and sanitation (public finances, infrastructure inventories, demographics, household surveys, GIS layers, etc). Each table "belongs" to a stakeholder (i.e. a department or ministry) who makes it available to others while keeping exclusive rights on its contents. • PEPAM's GIS has mapped approximately 90% of 958 motorized boreholes, 82% of 10,710 public standposts, 82% of 58,428 private connections and 82% of 6527 wells with handpumps. o The SIMS' key design principles include: participatory monitoring (each actors has specific responsibilities for providing data); giving key roles to decentralized structures (regional services and 380 local governments); sharing data and ensuring interactivity with data providers; and pragmatism (avoid the creation of new procedures, careful cost control). • ANSD: Working with PEPAM, WSP and the JMP to identify reasons behind differences in access rates to water and sanitation reported by ANSD and the JMP.
		• PEPAM o Program Coordination Unit (UCP)	• PEPAM: Programme d'eau potable et d'assainissement du Millénaire. Established to coordinate and develop national WSS M&E systems. o UCP: PEPAM's program coordination unit. Managed jointly by the MHRHN and the MITT.	
	URBAN WSS M&E	• Ministère de l'Hydraulique et du Réseau Hydrographique National (MHRHN) o Societé Nationale des Eaux du Senegal (SONES) o Direction de l'Hydraulique Urbaine (DHU)	• MHRRHN: o SONES: Para-public agency responsible for the planning, construction and monitoring of urban and peri-urban water supply network. Regulates the SDE. o DHU: Newly created agency (July 2007) responsible for the oversight of the urban water sector at the policy level. Coordinates activities with SONES.	
		• Ministère de l'Urbanisme, de l'Habitat, de l'Hydraulique Urbain, de l'Hygiene Publique et de l'Assainissement (MUHHUHPA) o Direction de l'Assainissement (DAS) o L'Office Nationale de l'Assainissement du Sénégal (ONAS) o Sénégalaise des Eaux (SDE)	• MUHHUHPA: o DAS: See above. o ONAS: Para-public agency responsible for the development and maintenance of urban and peri-urban sanitation and wastewater treatment network. o SDE: Private company contracted by SONES through concessions to operate and maintain urban and peri-urban water supply network.	
		• l'Agence Nationale de la Statistique et de la Démographie (ANSD)	• ANSD: Senegal's national statistical agency. Collects and disseminates household level data (population, access/use of water and sanitation services, socio-economic information, etc) through periodic censes and poverty assessments	
		• PEPAM o Program Coordination Unit (UCP)	• PEPAM o UCP: See above.	
TANZANIA[xxxix]	**IWRM**	• Ministry of Water (MoW) o Department of Water Resources (DWR)	• MoW: Ministry with overall responsibility for the management and development of Tanzania's water resources. o DWR: Holds responsibility for analyzing, storing and disseminating information on stream flow and lake data collected by BWOs and CWOs. It is also the lead institution regarding the management of transboundary water resources.	• National Water Sector Development Strategy (NWSDS): Adopted in 2004 in order to reform Tanzania's legal and institutional framework to principles of IWRM. Tanzania currently in 'transitional' stage from existing institutional framework to 'future framework' under the NWSDS.

CATEGORY	ORGANIZATIONS/ PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
	• Basin Water Office (BWO) • Basin Water Board (BWB)	• BWB and BWOs: Data collection, processing and analysis for IWRM monitoring and resource assessment (NWSDS Future Framework)	• District Councils: Possess the authority under the Local Government Acts of 1982 to establish, maintain, operate and control public water supplies, drainage and sewerage networks. o In rural areas, where WUAs have not been established, responsibility for water supply rests with the District Councils. • MoW has both centralized and decentralized data processing and archiving systems. Uses Hydata database system for archiving and processing hydrological data and manages 14 water quality laboratories throughout the country. DWR conducts groundwater monitoring using 160 groundwater gauges throughout Tanzania. • Hydrological gauging networking being improved following the establishment of BWOs. • CWCOs: Collect, process and analyze data on water basins. • National Strategy for Growth and Poverty Reduction (MKUKUTA): MKUKUTA has put in place the Poverty Monitoring System (PMS) to monitor the achievement of the strategy's targets, such as the MDG goal of reducing by half the proportion of people without sustainable access to safe drinking water and basic sanitation by 2015. o Objectives of PMS: ensure timely availability of data; ensure easy access and use by stakeholders; analyze data and disseminate findings to stakeholders; promote evidence-based decision-making through monitoring and an increased attention to evaluation; ensure that targets of global initiatives (e.g. MDGs) to which Tanzania is committed are integrated into the system and localized. • TMA's observation network consists of 600 rainfall stations, 26 synoptic stations, 11 agro-meteorological stations and 14 automatic weather stations.
	• Catchment Water Committees and Offices (CWCO)	• CWCOs: Responsible for basin WRM planning and management; data collection, processing and analysis; water resources assessments; issuing and enforcing water and discharge permits; implementing WRM projects.	
	• National Environment Management Council (NEMC)	• NEMC: Undertakes review, enforcement and monitoring of environment impact assessments. Collects, analyzes and disseminates data on environment and natural resources.	
	• Tanzania Meteorological Agency (TMA)	• TMA: Collects rainfall and climatic data and stores in database using CLICOM software.	
RURAL WSS M&E	• Ministry of Water (MoW)	• MoW: Ministry responsible for WSS policy development, facilitation and regulation.	• A RWSS management information system (MIS) is being developed under the auspices of the National Water Policy, 2002 (NAWAPO). The purposes of the MIS are to provide the necessary tools and system for: networking and information exchange; project tracking and management; project document retrieval, and planning and management for LGA level staff.
	• District Councils • Village Councils	• District Councils: Possess the authority under the Local Government Acts of 1982 to establish, maintain, operate and control public water supplies, drainage and sewerage networks. o In rural areas, where WUAs have not been established, responsibility for water supply rests with the District Councils.	
	• Clustered Water Supply and Sewerage Authority (CWSSA)	• CWSSA: Own, manage and develop water supply and sanitation assets.	

	CATEGORY	ORGANIZATIONS/ PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
		• Community Owned Water Supply Organization (COWSO)	• COWSOs: Operate and maintain water supply assets. Regulated by the MoW.	o A M&E system is proposed for the National Rural Water Supply and Sanitation Program (NRWSSP), which will track program progress. It will be linked to the RWSS MIS and monitor project indicators down to the village level. The NRWSSP monitoring system will generate a quarterly report, consisting of: a statement of program purpose; a table listing indicators of progress towards the purpose; time series data for those indicators; and analytical interpretation explaining what the indicators mean in respect of progress towards the program purpose (i.e. trend analysis). • EWURA: Monitors water quality and performance of CWSSAs and collects and publishes comparative performance data.
		• Energy and Water Utilities Regulatory Authority (EWURA)	• EWURA: Responsible for regulating services offered by commercially viable CWSSAs	
		• Water Users Associations (WUA)	• WUAs: Manage allocation of water resources at local level; manage equitable allocation of resources during drought; mediate in local disputes.	
		• Ministry of Health (MoH)	• MoH: Maintains the Health Information Management System (HIMS), a dedicated system for collection of health data countrywide that provides means for monitoring trends in water related diseases.	
	URBAN WSS M&E	• Ministry of Water (MoW)	• MoW: See above.	• UWSAs and DUWSAs: Collect data on the quality of water supplied to users and on the quality of effluents from waste water treatment plants to ensure each conforms to national standards. Also responsible for conducting and reporting periodically on water demand within their areas of operation. 19 UWSAs and 37 DUWSAs in operation as of 2006.
		• Urban Water Supply and Sewerage Authorities (UWSAs)	• UWSAs: Water and sanitation service providers and regulators in cities and large towns.	
		• District Urban Water Supply and Sewerage Authorities (DUWSAs)	• DUWSAs: Water and sanitation service providers and regulators in small towns.	
		• Ministry of Health (MoH)	• MoH: See above.	
TUNISIA [xi]	IWRM	• Ministère de l'Agriculture et des Ressources Hydraulique (MARH) o Direction Générale des Ressources en Eau (DGRE) • Bureau de l'Inventaire et des Recherches Hydrauliques (BIRH) o Direction Générale des Barrages et de Grands Travaux Hydroliques (DG-BGTH) o Direction Générale du Génie Rurale et de l'Exploitation des Eaux (DG-GREE) o Direction Générale de l'Aménagement et de la Conservation des Terres Agricoles (DG-ACTA) o Observatoire National d'Agriculture (ONAGRI	• MARH: Ministry responsible for the overall management and coordination of Tunisia's water resource sector. o DGRE: Responsible for the management of national water resources; the management of water sector M&E networks; and the implementation of appropriate methods of water management and utilization relative to supply and demand. • BIRH: Maintains inventory of national surface and groundwater resources (SYGREAU) and collaborates with districts on regional water resources. o DG-BGTH: Directorate responsible for the development and management of major dams and infrastructure projects and the distribution of surface water resources to sub-regions. o DG-GREE: Responsible for undertaking strategic development studies, developing policies and elaborating plans relative to rural development and the utilization of water in the agriculture sector.	• The MARH is the main provider of water related data on surface water, groundwater, non-conventional water and reuse. The ministry issues annual and periodic (e.g. every five years) reports on the quality and quantity of water resources in Tunisia. o DGRE includes two documentation units, Library A and Library B, that are the home of more than 20,000 national and international publications on water resources, including annual reports.. Documents can only be consulted on site with the approval of the Director of the DGRE. • There are currently no set standard procedures or policies for water resources data exchange. Researchers and private sector institutions need to send official letters to get data, and standard operating procedures need to be defined for data exchange between stakeholders. • M&E responsibilities of the DGRE include monitoring the use and managing an inventory of all surface and groundwater resources and the coordination, production and dissemination of technical reports and studies on water resources.

CATEGORY	ORGANIZATIONS/ PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
		o DG-ACTA: Elaborates water basin planning strategies and coordinates the activities of all stakeholders regarding the conservation of water and soil. o ONAGRI: Responsible for the development and management of an information system for the agriculture and pisciculture sectors and the analysis and dissemination of this data.	o Tunisia's water resources monitoring network includes: • 800 rainwater monitoring stations • 180 hydrometric monitoring stations • More than 1000 aquifer monitoring metres • DGRE manages Projet SINEAU: Système d'Information National de Suivi de l'Eau. Tunisia recently completed a four-phase study on the development of a national water information management system (NWIS). This included a situation analysis, conceptual development and the creation of a strategy for the creation of a NWIS through pilot studies in 3 governorates. Implementation phase of SINEAU (2007-2011) will be financed under the Project d'Investissement dans le Secteur de l'Eau (PISEAU).
	• Ministère de l'Agriculture et des Ressources Hydraulique (MARH) o DG-GREE • Groupements de Développement Agricole (GDA) • Groupements d'Interet Collectif d'Irrigation (GIC)	• MARH: See above. o DG-GREE: See above. • GDAs: Water users' associations responsible for the management and exploitation of rural water supply points. 1610 in existence as of 2006. • GIC: Irrigation water users' associations responsible for the management of irrigated public lands.	• DG-BGTH: Collects daily data on water volumes and flows throughout nation-wide dam network. Manage GIS hydrological data through GORE management information system (Gestion Optimal de Resources en Eau). DG-GREE: Monitors and evaluates irrigation planning and management projects. • CRDAs: Responsible for M&E of water resources at the sub-regional level. Collect data on surface water levels and from GDAs and GICs on rural potable and irrigation water usage, demand and efficiency. This data sent to DGRE for storage and management. o GDA: Collects information on rural water use, demand, loss and associated revenue generation. Information shared with CRDAs and DG-GREE. In 2006, 22% of GDAs were considered well functioning; 60% were considered medium-functioning; and 18% were considered poorly functioning. • MEDD: Issues an annual report on the state of the environment covering environmental policy and programs and updates on the state of water, soil, energy, forests, coastlines and biological diversity in Tunisia. • INS: Collects and maintain statistics on household use of and access to potable water and sewerage systems. Integrated water resources statistical monitoring system currently under development (SEEA-Eau).
	• Les Commissariats Régionaux du Développement Agricole (CRDA)	• CRDA: Responsible for the management of public hydro-agricultural infrastructure and environmental management at the sub-regional level. Oversee activities and provide technical support to GDAs and GICs.	
	• Ministère de l'Environnement et du Développement Durable (MEDD) o Observatoire Tunisien de l'Environnement et du Développement Durable (OTEDD)	• MEDD: Ministry responsible for environmental management and sustainable development. o OTEDD: Monitors indicators on the state of the environment and the development of water resources; serve as home of Secretariat for Sustainable Development and Point Focale of Plan Bleu; undertakes studies on sustainable development.	
	• Ministère du Transport (MT) o Institut National de la Météorologie (INM)	• Ministère du Transport (MT) : Ministry responsible for public transportation. o INM: Institute responsible for weather monitoring and forecasting, implementing international accords related to meteorology, and meeting the general meteorology-related needs of diverse sectors of the nation's economy.	

	CATEGORY	ORGANIZATIONS/ PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
		• Institut National de la Statistique (INS)	• INS: Responsible for the management and coordination, with other statistical institutions, the collection – through censuses and other social, economic and demographic studies – storage, analysis and dissemination of national statistical information.	
	RURAL WSS M&E	• Ministère de l'Agriculture et des Ressources Hydraulique (MARH) o DG-GREE • GDA	• MARH: See above. o DG-GREE: See above. o GDA: See above.	
		• Ministère de la Santé Publique (MSP) o Direction de l'Hygiène du Milieu et de la Protection de l'Environnement (DHMPE)	• MSP: Ministry responsible for public health. o DHMPE: Responsible for potable and thermal water quality control and the monitoring and maintenance of public water points, wastewater networks and treatment stations.	• DHMPE: See adjacent cell.
	URBAN WSS M&E	• Ministère de l'Agriculture et des Ressources Hydraulique (MARH) o Société Nationale d'Exploitation et de Distribution des Eaux (SONEDE)	• SONEDE: Para-public utility responsible for the distribution and maintenance of potable water in urban areas. Undertakes studies to support the development of the water distribution network and subdivided into central, regional and local branches with a total of 7500 staff.	• SONEDE: See adjacent cell.
		• Ministère de l'Environnement et due Développement Durable (MEDD) o L'Office National de l'Assainissement (ONAS)	• MEDD: Ministry responsible for the environment and the promotion of sustainable development. o ONAS: Para-public utility responsible for the provision and maintenance of urban (cities and municipalities that receive water through SONEDE) sanitation networks and wastewater treatment facilities.	• ONAS: Monitors and evaluates quality and quantities of treated wastewater and the demand for and coverage of national sewage and sanitation networks.
		• Ministère de la Santé Publique (MSP) o Direction de l'Hygiène due Milieu et de la Protection de l'Environnement (DHMPE)	• MSP: Ministry responsible for public health. o DHMPE: Responsible for potable and thermal water quality control and the monitoring and maintenance of public water points, wastewater networks and treatment stations.	
UGANDA [xli]	IWRM	• Ministry of Water and Environment (MWE) • Directorate of Water Resources Management (DWRM)	• MWE: Responsible for overall policy formulation, standard setting, strategic planning, coordination, quality assurance and capacity building for the water sector. o DWRM: Has a mandate to promote and ensure rational and sustainable utilization, effective management and safeguard of water resources." Responsible for managing, monitoring and regulation of water resources and is comprised of three departments: Water Resources Monitoring and Assessments; Water Resources Regulation; and Water Quality Management.	• The water sector has also established an annual joint Government/ Development Partners Sector Review (JSR) attended by sector ministries, civil and political leaders, local government staff and representatives of development partners. During these reviews, a comprehensive review of the performance of the sector is carried out, shortcomings discussed and undertakings for addressing priority issues during the following year agreed upon.

	CATEGORY	ORGANIZATIONS/ PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
		• Ministry of Agriculture, Animal Husbandry and Fisheries (MAAIF)	• MAAIF: Spearheads agricultural development, including the on-farm use and management of water for production (irrigation, animal production and aquaculture).	• As part of the performance monitoring process, mid-term joint technical reviews are also carried out to assess the technical and financial performance of the sector. More detailed field visits are carried out during the technical review. Annual water sector performance reports are prepared and circulated to all stakeholders for review. • The DWD developed a robust MIS with a data warehouse in 1999. As of 2006, however, the system had yet to be fully operationalized. The MOH is in the process of developing a MIS for sanitation. • UBS: The Bureau is the principal data collecting and disseminating agency responsible for coordinating, monitoring and supervising the National Statistical System.
		• Uganda Bureau of Statistics (UBS)	• UBS: Uganda's central statistical office. Conducts censuses and surveys that yield a range of economic, social and demographic statistics.	
	RURAL WSS M&E	• MWE o Directorate of Water Development (DWD) o Rural Water Supply Department	• MWE: See above. o DWD: Responsible for providing overall technical oversight for the planning, implementation and supervision of the delivery of urban and rural WSS services across the country, including water for production. o RWSD: Functions include strategic planning, regulation and quality assurance of rural WSS interventions.	• A National Water Resources Monitoring Network (NWRMN) has been established to monitor the temporal and spatial variation of both surface- and groundwater quantity and quality in Uganda. The monitoring stations (60 hydrological stations, roughly 300 rainfall monitoring stations, 17 climatological stations and 15 groundwater monitoring stations) are fairly evenly distributed around the country except for some of the insecure areas in the northern part of the country. The network is fully operational and data is collected, quality controlled, analyzed and stored in databases on a regular basis. • O&M of the NWRMN is the responsibility of the WRMD with support from locally hired hydrological and hydro geological observers. The monitoring stations are visited periodically. • Centrally-coordinated output monitoring in Uganda includes district progress reporting, Poverty Action Fund monitoring and Ministry of Local Government monitoring. Centrally-coordinated reviews and inspections cover water point inspections, health inspector reports, implementation reviews and technical "audits". • NWSC: Monitors water demand, distribution and revenues in major towns and urban centres. • MOH: In the process of developing sanitation monitoring systems. • Uganda has created a set of 10 'Golden Performance Indicators' to track progress towards achieving national goals in the WSS sector. Indicators are compatible with those used more generally in Uganda's main planning documents, but only the following seven are measurable to varying degrees.
		• Local Governments (LGs)	• LGs: Districts, Town Councils, Sub-Counties empowered by the 2000 Local Governments Act to provide water services. In consultation with the MWE-DWD, they also appoint and manage private operators for urban piped water schemes outside the jurisdiction of the NWSC.	
		• Water Authorities and Water Boards	• WAs & WBs: Manage small town water supplies, many of which are operated by private contractors. DWD has established 48 WAs and 48 Water Boards since 2000.	
		• Ministry of Health (MOH) o Environmental Health Division (EHD)	• MOH: Ministry responsible for public health. o EHD: Responsible for hygiene and sanitation promotion amongst households.	
		• District Water and Sanitation Coordination Committees (WSC)	• DWSCCs: Work to improve the co-ordination and management of RWSS programs at the local government level, including the interaction between the relevant departments and also with the private sector, NGOs and local communities are composed of representatives from local governments, NGOs, CBOs, and the private sector.	
		• Water User Committees/Water and Sanitation Committees (WUC/WSC)	• WUC/WSCs: Responsible for demanding, planning, co-financing, operating and maintaining RWSS facilities. WUCs or WSCs should be established at each water point.	

	CATEGORY	ORGANIZATIONS/ PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
	URBAN WSS M&E	• MWE o Directorate of Water Development (DWD) o Urban Water Supply Department (UWSD)	• MWE: See above. o DWD: See above o UWSD: Functions include the planning, design and quality assurance of small-town WSS services.	The remaining three, covering handwashing, management and gender, do not yet have firm targets in place and are not backed up by representative data. The functional indicators include: 1) Access: % of people within 0.2km (urban) and 1.5 km (rural) of an improved water source; 2) Functionality: % of improved waters sources that are functional at time of spot check; 3) Investment: Average cost per beneficiary of new water and sanitation schemes (USD); 4) Sanitation: % of people with access to improved sanitation (households and schools); 5) Water quality: % of water samples taken at point of collection & waste discharge point that comply with national standards; 6) Quantity of Water: % increase in cumulative storage capacity availability of water for production; 7) Equity: Mean Sub-County deviation from district average in persons per improved water point; • The M&E initiatives noted above have provided the foundation for the formal development of Uganda's unified sector information monitoring system (SIMS) for support from donors. • NWASCO manages urban WSS information systems and compiles annual reports on the sector. Monitors the performance of water utilities.
		• National Water and Sewerage Corporation (NWSC)	• NWSC: A parastatal responsible operating and providing water and sewerage services for 22 large urban centres across the country, including Kampala City. Its activities are focused on expanding coverage, improving service delivery and increasing labour productivity.	
		• MOH-EHD	• MOH-EHD: See above.	
		• Local Governments (LGs) • Ministry of Energy and Water Development (MEWD) o Department of Water Affairs (DWA) o National Water Resources Management Authority (NWRMA) o Water Board (WB) • Environmental Council of Zambia (ECZ) • Ministry of Local Government and Housing (MLGH) o Department of Infrastructure and Support Services (DISS) • Rural Water Supply and Sanitation Unit (RWSSU) o Department of Local Government Administration (DLGA)	• LGs: See above. o DISS: Implements water and sanitation policies, including facilitation of urban and rural infrastructure development and rehabilitation and supporting local service delivery through local governments. • RWSSU: Created in 2003, undertakes planning and development of rural WSS services. o DLGA: Monitors all activities of the local authorities.	
		• Ministry of Health (MOH)	MOH: Responsible for monitoring potable water quality.	
		• Local Authorities (LAs)	• LAs: Provide services and facilities in social and infrastructure sectors. Most urban water supply and sanitation services have been taken over by CUs, but 22/72 LAs are providing these services through their respective departments of works or water.	
		• Village and local community CBOs	• CBOs: Manage, operate and maintain village water supply (CBOs can be communal or private).	

	CATEGORY	ORGANIZATIONS/ PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
		• Ministry of Local Government and Housing (MLGH) o Department of Infrastructure and and Support Services (DISS) • Unit for Peri-Urban WSS (PWSSU) o National Water and Sewerage Council (NWASCO)	• MLGH-DISS: See above. o PWSSU: undertakes planning and development of peri-urban WSS services. o NWASCO: Regulates the activities of ten commercial water utilities providing water and sanitation services in urban areas; advises government on WSS matters, local authorities on institutional arrangements for the provision of WSS services, and utilities on handling customer complaints; develops sector guidelines and establishes/enforces standards; disseminates information to consumers.	
		• Commercial Utility Companies (CUs)	• CUs: Provide access to, develop and maintain water and sanitation services and infrastructure. 10 operating in Zambia as of 2005.	
		• Local Authorities (LAs)	• LAs: See above.	
		• Ministry of Health (MOH)	• MOH: See above.	

Annex F Individuals Consulted during Field Missions

TUNISIA: January 14-20, 2008		
Name	**Position**	**Institution**
Mohamed Néjib Kachouri	Coordinator and Data Manager	BHIR/SEMIDE, DGRE
Abderrazak Daud	IT Manager	BHIR/SEMIDE, DGRE
Henda Ben Hassin	Data collector	BHIR/SEMIDE, DGRE
Sondès Kamoun		BHIR/SEMIDE, DGRE
Friha Laroussi	SINEAU Project Manager	DGRE, MARH
Mekki Hamza	Directeur Général	DGRE
Nouri Soussi	Directeur de l'Observatoire Tunisien de l'Environnement et du Développement Durable	OTEDD, MEDD
Mabrouk Nedhif	Director of Hygiene and Environmental Protection	Ministry of Public Health
Jamel Chalouff		Ministry of Public Health
Noureddine Zidi	Directeur Central des Etudes	SONEDE
Raqya Alatiri	Directeur de l'Economie de l'Eau	DG-GREE, MARH
Eberhard Goll	Chef de Mission GTZ	GTZ
Naceur Zehri	Directeur Général	DG-BGTH, MARH
Khalil Attia	Chief Executive Officer	ONAS

SENEGAL: January 20-25, 2008		
Name	**Position**	**Institution**
Mouhamed Fadel Ndaw	Coordinator	PEPAM
Amadou Dialou		PEPAM
Luc Huong Gia	M&E Expert	PEPAM
Niokhor Ndour	Chef de Division Planification et système d'information	DGPRE
Saliou Ngon	Chef de Division Hydrogéologie	DGPRE
Gora Ndiaye	Chef de Division Hydrologie	DGPRE
Abdou Diouf	Directeur de la Stratégie et de la Planification	SONES
Malick So	Chef du Service Etudes et Cartographie	SONES
Amadou Seydou Dia	Directeur de l'Hydraulique Urbaine	DHU

Marieme Badji		DHU
	Directeur de l'Hydraulique Rurale	DHR
Daouda Gningue	Directeur de Projet REGEFOR	DEM
Mohamed H'Midouche	Resident Regional Representative	AfDB
Ababacar N'dao	Coordinator de la Cellule OMVS/OMVG	OMVS/Ministère des Infrastructures, de Transports Terrestres
Tamsir Ndiaye	Coordinator de l'Observatoire de l'Environnement	OMVS Haut-Commissariat
Macoumba Diouf		ANSD
Arowna Traore	Gestionnaire de Projet	DA
Diarra Naimouna		DA
Aladji Dieng	Directeur Technique	SDE
Thomas Fugelsnes	Finance Specialist	WSP-Senegal
Didier Allely	Technical Officer	WHO/JMP
Rifat Hossain	Statistician	WHO/JMP
Dominick de Waal	Senior Financial Specialist	WSP-Kenya
Silvia Gaya	Specialist	UNICEF/JMP
Anne Briand	Consultant	WSP-Senegal

UGANDA: March 12-21, 2008		
Name	**Position**	**Institution**
Eng. Sottie Bomukama	Director	DWD
Eng. Ian Arebahoona	Head of Monitoring	DWD
Eng. Azuba Chris	Asst. Comm - Water Authorities	DWD
Mr. Wakooli Watson	Statistician	DWD
Eng. Mugisha Shillingi	Acting Director - WRM	DWD
Mr. Otuba Sam	Head of QA and Planning	MWE
Mr. Ronald Kato	District Water Officer - Mukono	
Mr. Isingoma David	Head of Planning	NWSC
Mr. Jackson Opwonya	Acting. Managing Director	NWSC
Nebert Wobusobozi	Acting. Comm.	WRMA
Joel Almadri	Information Specialist	Nile Basin Initiative
James Muwonge		UBS – Household Stats
Ronald Kagwa	Economist/Planner & Head, Environmental Health Division	MoH - Environmental Health Division

James Muwonge	Manager - Socio-Economic Surveys Division	UBS
Charles Kyegonza	Geographic Information Section	UBS
Rifat Hossain	Statistician	WHO/JMP

MALAWI: April 21-26, 2008		
Name	**Position**	**Institution**
Ms. Andrina Mchiela	Permanent Secretary	MoIWD
Boniface Gondwe	Director of Water Supply and Sanitation	MoIWD
Sidney Mainala	Director of Water Resources	MoIWD
Gershom Jere	Director of Planning	MoIWD
Geoffrey Mamba	Regional Water Officer	MoIWD
Themba Chirwa	Principal Economist	MoIWD
Mr. Frank S. Kufakwandi	Resident Representative	AfDB
Jesper Klindt Peterson	Country programme Officer	AfDB
Roger Roome	First Secretary, Development	CIDA
Amos Kudzala	Water and Sanitation Officer	UNICEF
Simon Msukwa	MIS Expert	UNICEF
Dr. Kampelewera	Director of Environmental Affairs	DEA
Robert Kampala	Country Manager	Water Aid
Heather Anderson	Technical Expert	Water Aid
L. Masuku	Deputy Director	MoH
Richie Muheya	GIS Expert	University of Malawi
Dr L. R. Bandawe	Director of Sanitation and Environmental Sanitation	City of Balantyre
Ms. Theresa Mkandawire	Lecturer, Polytechnic	GWP
Mr. Charles Machinjili	Commissioner for Census and Statistics	NSO

CONGO-BRAZZAVILLE: May 4-9, 2008		
Name	**Position**	**Institution**
Nicolas LABARRE	Directeur Général de l"Hydraulique	MEH
M. Rubens KAYA	Chef de Service	ANHR
Alain ROBERT	Ingénieur Coordonnateur & Administrateur	GIE-SCEVN
Dr Alexis MINGA	Directeur Général	DGE, Ministère du Tour. & l'Enviro.
Biendwue ANKARA		Direction de la Conservation des Ecosystèmes Naturels
Gilbert MADOUKA	Chef de Service des Ecosystèmes Aquatiques	Point Focal National Ramsar
Dr. Gabriel ELEKA	Directeur	DHG, MSP
Dr. Bertin NGOLO	Chef de Laboratoire de l'Hygiène	MSP
Dr. Jean-Pierre TATHY	Coordonnateur du GRSEN	MRS
M. Bienvenu NAZIEZOULA	Responsable de l'Unité de Service Hydrologique et Météorologique	MRS
Jean Gustave FOUNDOU	Directeur Technique	SNDE
Armand POUABOU	Études et Méthodes	SNDE
Joseph MAYOLA	Laboratoire	SNDE
Alphonse KANGA	Chef de Service de la Météorologie Synoptique	ANAC
Vincent LOEMBET MAKAYA	Directeur	Direction de l'Environnement et de la Propreté de la Ville, Mairie de Brazzaville
Maixent ELENGA BANINGOBERA	Coordonnateur	ANHR
Eugène IKOUNGA	Coordonnateur	l'Organe de Régulation du Secteur de l'Eau, MEH
M. Guecico OBAMBI	Directeur de l'Informatique et de la Gestion de Base de Données	CNSEE, Ministère des Plans
M. Benjamin NDALA	Secrétaire Général	CICOS
Xavier BLANCHARD	Directeur	AFD, Brazzaville
M. Pierre MABANDZA	Directeur	Service de l'Hydraulique et de l'Assainissement, DGH, MEH
M. Julien MAVOUNGOU	Directeur	Service Gestion des Ressources en Eau, DGH, MEH
M. Hubert YOBO	Directeur	Direction des Statistiques Agriculture et Elevage, Ministère de l'Agriculture

ENDNOTES

i Sharm el-Sheikh Commitments for Accelerating the Achievement of Water and Sanitation Goals in Africa (2008) Assembly/African Union/Draft/Decl.1 Rev.1, July

ii Please see Table 1.1 in the main report for a list of country rankings according to these categories.

iii The report on Water and Sanitation SIMS in Uganda by WSP-Africa (Thomson and Ofumbi, 2006) provides useful background information and analysis of SIMS in Uganda.

iv "Truly regional" in this case refers to an Africa-driven (as opposed to donor or internationally-driven) organization with the reach, credibility and support to engage in water sector M&E that covers the entire continent.

v WSP, AMCOW, AfDB-AWF, EWUI, and UNDP (2006) "Getting Africa on Track to Meet the MDGs in WSS."

vi A fourth category of states that is not explored in detail in this report covers those considered "fragile" or "failing." These are characterized not only by low GDP but also by weak institutions, persistent political instability, open or simmering conflict, extreme vulnerability to natural disasters and chronic humanitarian crises. These issues seriously undermine attempts by the state or other non-state actors to build and/or maintain M&E systems, let alone govern and provide security to citizens. This thereby necessitates an extremely cautious and case-by-case approach to M&E system strengthening, one that is not explored in this report aside from indirectly through a diagnostic assessment of the Republic of Congo, a country that only recently emerged from civil conflict and is at the early stages of reconstructing basic public infrastructure and building effective state institutions.

vii GTZ (2007) "MDG Monitoring for Urban Water Supply and Sanitation", GTZ, Eschborn

viii Exceptions include the AFD, whose efforts in the sector are focused on the strengthening of urban rainwater management infrastructure; GTZ; and UNICEF, WHO and MSF, who are building basic WSS infrastructure and promoting good hygiene practices in the Pool Region.

ix Wakooli, W., W. Tumwebaze & C. Rudholm (2006) "Revitalization of the DWD-MIS", DWD MIS Unit, Kampala

x It is now acknowledged that much sector project funding during the 80s and 90s led to disparate policies, projects delivered in parallel with government systems, diversion of skilled staff and duplication of administrative systems. In the process, many donor projects bypassed rather than strengthened government systems and made them more rather than less dependant. In contrast, budget support provides aid directly to government budgets, helps donors coordinate better among themselves and government, and provides opportunities for dialogue on priorities, systems and policies that are increasingly being linked to conditionalities. Budget support also empowers countries to improve policies and systems of services delivery.

xi Details of M&E development in fragile states are not included in this report. See section 1.2.

xii The report on Water and Sanitation SIMS in Uganda by WSP-Africa (Thomson and Ofumbi, 2006) provides useful background information and analysis of SIMS in Uganda.

xiii Welle, K (2005) "Learning for Advocacy and Good Practice, WaterAid Water Point Mapping", WaterAid and ODI Water Policy Programme, London, UK; and O. Stoupy and S. Sudgen (2003), "Halving the proportion of people without Access to Safe Water by 2015, A Malawian Perspective. Parts 1 and 2" WaterAid, London, UK

xiv UN-Water Task Force on Monitoring (2006) "Water Monitoring", FAO, Rome.

xv JMP: WHO & UNICEF (2006) "Core Questions on Drinking Water and Sanitation for Household Surveys", Geneva & New York

xvi The first question uses a proxy indicator for whether a household's drinking water is safe. The assumption being that certain technologies are "likely" to provide water that is of adequate quality for health needs. These are piped water supply into the dwelling, piped water to a yard tap, a tubewell/borehole, a protected dug well, and a protected spring or rainwater. Being a proxy indicator, it understandably omits key information such as water quality and reliability of supply during the drier seasons. It is, however, a useful indicator and is applicable to nearly all countries' monitoring systems as a starting point. Another proxy indicator is for adequate sanitation, which is defined as flush to piped sewer system, flush to septic tank, flush/pourflush to pit, VIP latrine, and pit latrine with slab. Still unresolved, however, are questions about the numbers using the latrine, the sharing of latrines by families and the maintenance/cleanliness of these facilities.

xvii Ministry of Water and Environment (2007) "Water and Sanitation Sector Performance Report", September, Kampala, Uganda

xvii Thomson, M, & Mathias Ofumbi (2006) "Water and Sanitation Sector Information and Monitoring Systems in Uganda", WSP, Uganda

xix O. Stoupy and S. Sudgen (2003) "Halving the proportion of people without Access to Safe Water by 2015, A Malawian Perspective, Parts 1 and 2,: WaterAid, London, UK.

xx Departments of surveys and statistics are usually responsible for household surveys. As described above however, these are unfortunately seldom coordinated with sector M&E systems.

xxi "Truly regional" in this case refers to an Africa-driven (as opposed to donor or internationally-driven) organization with the reach, credibility and support to engage in water sector M&E that covers the entire continent.

xxii ANEW is a CSO umbrella organization that provides a platform for learning, sharing, networking and coalition building around best practices and key issues in the WSS sector.

xxiii ECCAS, "Vision de la CEEAC sur la gestion et la Coordination des Ressources Naturelles en Afrique centrale," www.ceeac-eccas.org, (accessed November 2008).

xxiv Data concerning key socio-economic indicators was collected using the World Bank`s QUIBB method, a tool developed by the World Bank in collaboration with the UNDP, UNICEF and the ILO to provide countries with a mechanism to rapidly produce key statistical indicators and to reinforce their capacity to use these indictors to develop and monitor projects and programs more effectively. The QUIBB method emphasizes high quality fieldwork; the use of electronic scanners to accelerate the storage of data; the establishment of data verification methods in advance to ensure data is of high quality; and the automated generation of standardized results and their storage on CD-ROMs to allow for subsequent research to be easily undertaken.

xxv M. Thomson and Mathias Ofumbi (2006) "Water and Sanitation Sector Information and Monitoring Systems in Uganda", WSP-Africa

xxvi MWE, Uganda (2007) "Water and Sanitation Sector Performance Report 2007".

xxvii CEDARE is not a REC but has been included here in view of its proposal to AWF and its intention to assist in coordinating water monitoring systems development in its member countries.

xxviii See "Policies and Procedures: Version 4 April 2004," available on the JMP's website, for more information and a copy of the JMP's abridged rules for interpreting and managing their data.

xxix Source: Danvi, Comlan Célestin, "Situation Générale des Informations et Connaissances sur l'Eau au Bénin," AWF, February 2006.

xxx http://www.irc.nl/page/14889

xxxi Sources: Mamadou, Diallo, "Rapport sur la situation générale d'information et de connaissance sur l'eau au Burkina Faso," AWF, March 2006; Valfrey, Bruno and Diallo, Mamadou (Hydroconseil), "Livre bleu - Burkina Faso: Etat des lieux et perspectives pour l'eau et l'assainissement," International Water Secretariat, August 2004; "Cadre Institutionnel," www.gwp-pnebenin.org; Karambiri, Salamanta, "Étude de diagnostic sur la mise en place d'un mécanisme régional africain d'observation sur l'eau et l'assainissement : Consultations nationales au Burkina Faso, Annexe 5," AMCOW/AWF, January 2006.

xxxii Sources: Consultant's meetings with Congolese water sector officials during field mission to Brazzaville, May 2008; "Situation générale d'informations et de connaissances sur l'eau en République du Congo : Rapport provisoire, " Mai 2006, AWF.

xxxiii Sources: African Development Fund, "DR Congo Semi-Urban Drinking Water Supply and Sanitation Project: Appraisal Report," AfDB, February 2007; GTZ, "Water Sector Reform - Democratic Republic of the Congo," Fact Sheet, GTZ, April 2007.

xxxiv AWF, "Country Water Information and Knowledge Systems Profile – Ethiopia," Final Report, February 2005.

xxxv Source: Kubabom, Benedict, "Draft Report on Ghana's Water Information and Knowledge Profile Study," African Water Facility, June 2006, Accra.

xxxvi Source: Makhoalibe, S, "Country (Lesotho) Profile on Information and Knowledge," AWF, 2006.

xxxvii Source: Gondwe, Boniface N.C., "Country Water Information and Knowledge Profile for Malawi (Draft)," AWF, May 2006.

xxxviii Sources: Field interviews with representatives from Senegal's water resources and WSS sector institutions (DGPRE, DEM, DHR, DHU. DAS, SONES, ONAS, SDE, PEPAM, ANSD, OMVS) January 20-25, 2008; DGPRE, "Plans d'Actions de Gestion Integrée des Resources en Eau du Sénégal (PAGIRE): Partie II," Republic of Senegal, Sept. 2007"; PEPAM, "Système de suivi-evaluation du PEPAM: présentation et bilan d'étape," Présenté à l'Atelier sur l'état d'avancement du système de suivi-évaluation du PEPAM, Centre des métiers de l'eau, Dakar, 24 janvier 2008; Website of the Republic of Senegal, www.gouv.sn; Ndaw, Mouhamed Fadel, "Developing and Implementing a Monitoring System for the MDG Roadmap – the PEPAM Experience in Senegal," A Presentation for the World Water Week in Stockholm, Sweden, 14 August 2007. www.pepam.gouv.sn; PEPAM, "Rapport d'Avancement," November 2007, Republic of Senegal.

xxxix Sources: Mashauri, D.A., "Tanzania Water Information and Knowledge Country Profile: Draft Report," African Water Facility, May 2006; Ministry of Water, "Water Sector Support Programme (WSSP): Consolidated Report," Government of the United Republic of Tanzania, March 2006.

xl Sources: Field interviews with representatives from Tunisia's water resources and WSS sector institutions (DGRE, OTEDD, MSP, SONEDE, ONAS, DG-GREE, DGBGTH) January 15-19, 2008; Abdelaziz, Mahmoudi, "Situation Générale des Informations et Connaissances sur l'Eau en Tunisie," AWF, March 2006; EasyInfo, « Technical and Financial Feasibility Studies of the National Water Information Systems in 12 Mediterranean Countries: Country Report – Tunis, » EMWIS/SEMIDE, July 2004.

xli Sources: Ministry of Water and Environment, "Water and Sanitation Sector: Performance Report 2007," Government of Uganda, September 2007; UN-Water, "National Water Development Report: Uganda," Prepared for the UN World Water Development Report, UN-WATER, 2006.

xlii Ssozi, Disan, "Sector Information and Monitoring System: Uganda Case Study," PowerPoint Presentation at the 2007 Stockholm World Water Week, 31/08/2007.

xliii Sources: Government of Zambia/Government of Denmark, "Water Sector Programme Support Zambia: Sector Programme Support Document," Ref No. 104. Zam. 814, November 2005; Sievers, Peter, "Challenges for Integrated Water Resources Management in Zambia," Water Sector Coordination Unit, Royal Danish Embassy, Zambia, January 2006; http://iwarema.gim.eu/users/mewd.html

xliv The Consultant planned and had made attempts to meet with the Hon. Bruno Jean Richard ITOUA, President of AMCOW and Minister of the Congo's Ministry of Energy and Water as well as Mr. Charles NGANGOUE, President of the AMCOW TAC. However, upon arrival it was learned that both officials were out of the country during the Consultant's five-day visit, making meetings impossible.