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African Water Facility
Facilité africaine de l'eau

Mobilising Resources for Water in Africa

PAN AFRICAN WATER SECTOR MONITORING AND EVALUATION ASSESSMENT

Final Report

July 2009

African Water Facility | Facilité africaine de l'eau

African Development Bank | Banque africaine de développement

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MINISTERE DE LA COOPERATI[ON]
ET DU DEVELOPPEMENT

Institut d'Elevage et de Médecine Vétérinaire
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COLLECTION
MANUELS ET PRÉCIS D'ÉLEVAGE

PAN AFRICAN WATER SECTOR
MONITORING AND EVALUATION ASSESSMENT

MANUEL D'ALIMENTATION DES RUMINANTS DOMESTIQUES EN MILIEU TROPICAL

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ACS	African Centre for Statistics
AfDB	African Development Bank
AFRISTAT	Observatoire Économique et Statistique d'Afrique Subsaharienne
AMCOW	African Ministers' Council on Water
ANAC	Agence nationale de l'aviation civile
ANBO	African Network of Basin Organizations
ANER	Agence Nationale d'Electrification Rurale
ANERE	Agence Nationale de Régulation d'Électricité
ANHR	Agence nationale de l'Hydraulique Rurale
ANSD	Agence national de la statistique et de la démographie
AQUASTAT-FAO	FAO's Global Information System on Water and Agriculture
ARSE	Agence de Régulation de Secteur de l'Eau
ASECNA	Agence pour la sécurité de la navigation aérienne
ASUFOR	Associations d'usagers de forages
AWF	African Water Facility
BFP	Brigades de forages et puits
Cap-Net	International Network for Capacity Building in IWRM
CBO/CSO	Community-based organization/Community Service Organisation
CC	Consultative Committee
CCEG	Conference of Heads of State and Government
CEDARE	Centre for Environment and Development for the Arab Region and Europe
CFA	African Financial Community
CICOS	International Commission of the Congo-Oubangui-Sangha Basin
CNC	Comité national de coordination
CNSEE	Centre national de la statistique et des études économiques
CONGAD	Conseils des ONG d'appui au développement
CPE	Permanent Commission on Water
CRDA	Commissariats régionaux du développement agricole
CREPA	Centre régional pour l'eau potable et l'assainissement à faible coût
CRP	Regional Planning Committee
DAS	Direction de l'Assainissement
DBMS	Database Management System
DEM	Direction de l'exploitation et de maintenance
DfID	Department for International Development
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
DGE	Direction Générale de l'Environnement
DGPRE	Direction de Gestion et de la Planification des Ressources en Eau
DGRE	Direction Générale des Ressources en Eau
DHD	District Health Departments
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 Urbaine
DM	Direction de la Météorologie
DMC	Drought Monitoring Centre
DMS	Department of Meteorological Services
OWAS	Water and Sanitation Department
DWD	Directorate of Water Development
DWO	District Water Office
DWR	Department of Water Resources
DWRM	Directorate of Water Resources Management
EAC	East African Community
ECA	Economic Commission for Africa
ECOSOC	Economic and Social Council
ECOM	Congolese Household survey
ECOWAS-WRCU	Economic Community of West African States - Water Resources Coordination Unit
EIA	Environmental Impact Assessment
EIS	Environmental Information System
MEDWIP	Euro-Mediterranean Partnership
EMWIS	Euro-Mediterranean Water Information System on Know-how in the Water Sector
ESI	Environmental Sustainability Index
ESPS	Enquête de suivi de la pauvreté au Sénégal
EXCO	AMCOW Executive Committee
FAO	Food and Agricultural Organization
FSSD	Food Security and Sustainable Development
FWMS	Federated Water Monitoring System
GDA	Groupements de développement agricole
GDP	Gross Domestic Product
GEMS	Global Environment Monitoring System
GEO	Global Environmental Outlook Report
GIS	Geographic Information System
GPA	Governance and Public Administration
GPS	Global Positioning System
GRDC	Global Runoff Data Centre
DGRS	Direction générale de recherche scientifique
GSD	Gender and Social Development
GWA	Gender and Water Alliance
GWP	Global Water Partnership
HDI	Human Development Index
HSA	Health Surveillance Assistant
IBNET	The International Benchmarking Network for Water and Sanitation Utilities
ICT	Information and Communication Technology
IGAD	Inter-Governmental Authority for Development
INBO	International Network of Basin Organizations

INM	National Institute of Meteorology
OIEau	International Office for Water
IRC	International Water and Sanitation Centre
IRD	Institut de recherche pour le développement
ISW	International Secretariat for Water
IT	Information Technology
IWRM	Integrated Water Resources Management
JMP	Joint Monitoring Programme
KMP	Knowledge Management Program
LVEMP	Lake Victoria Environmental Management Project
LVWATSAN	Lake Victoria Region Water and Sanitation Initiative
M&E	Monitoring and Evaluation
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MARH	Ministry of Agriculture and Hydrological Resources
MBS	Malawi Bureau of Standards
MDG	Millennium Development Goals
MEDD	Ministry of the Environment and Sustainable Development
MEH	Ministère de l'énergie et d'hydraulique
MFPED	Ministry of Finance, Planning & Economic Development
MGLSD	Ministry of Gender, Labour & Social Development
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
MLGRD	Ministry of Local Government and Rural Development
MoES	Ministry of Education and Sports
MoH	Ministry of Health
MoLG	Ministry of Local Government
MoU	Memorandum of Understanding
MRS	Ministère de la recherche scientifique
MSE	Mean Squared Error
MSP	Ministère de la santé et de la population
MWE	Ministry of Water and Energy
MWI	Ministry of Water and Irrigation
NBI	Nile Basin Initiative
NEPAD	New Partnership for Africa's Development
NFP	National Focal Point
NGO	Non-governmental organization
NWASCO	National Water and Sanitation Company
NWDP	National Water Development Program
NWIS	National Water Information Systems
NWSC	National Water and Sewerage Corporation
O&M	Operation and maintenance
ODA	Official Development Assistance
OMVS	Organisation pour la mise en valeur du fleuve Sénégal
OMVS-SOE	OMVS Environmental Observatory in Senegal
ONAS	Office National de l'Assainissement de Sénégal
ONAS	Office National 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
PLHA	Plans locaux de l'hydraulique et de l'assainissement
PRSP	Poverty Reduction Strategy Paper
RBO	River basin organization
REC	Regional Economic Community
RM&EA	Rapid Monitoring and Evaluation Assessment
RMC	Regional Member Country
RWO	Regional Water Observatory
RWSS	Rural Water Supply and Sanitation
SADC	Southern African Development Community
SAP	Subsidiary Action Programme
SCEVN	Service commun d'entretien des voies navigables
SDE	Sénégalaise des eaux
SIBCO	Information System for the Congo River Basin
SIDA	Swedish International Development Agency
SIMS	Sector Information and Monitoring Systems
SINEAU	Système d'information nationale de l'eau de la Tunisie
SIP	Sector Investment Plan
SNDE	Société nationale de distribution de l'eau
SONEDE	Société nationale de l'exploitation et de distribution des eaux
SONES	Société nationale des eaux du Sénégal
SRB	Senegal River basin
SSWG	Sector Stakeholder Working Group
SVP	Shared Vision Programme
SYGREAU	Système de gestion des ressources en eau
SWAP	Sector Wide Approach Programme
TA	Technical Assistance
TAC	Technical Advisory Committee
TOR	Terms of reference
TRBM	Transboundary river basin management
TWRM	Transboundary water resources management
UDBS	Unified Database System
UN	United Nations
UNCDB	UN Common Database
UNDP	United Nations Development Program
UNECA	United Nations Economic Commission for Africa
UNEP	United Nations Environment Program
UNICEF	United Nations' Children's Fund
VFM	Value for Money
VWC	Village Water Committee
WBO	Water basin organization
WHO	World Health Organization
WMA	Water Monitoring Alliance
WMO	World Meteorological Organization
WPI	Water Poverty Index
WPM	Water Point Mapping
WRD	Water Resources Department

WRM	Water Resources Management
WRMP	Water Resources Management Programme
WSP	Water and Sanitation Programme
WSS	Water Supply and Sanitation
WSSCC	Water Supply and Sanitation Collaborative Council
WUA	Water Users' Association
WWC	World Water Council
ZAPRO	Zambezi Action Plan Project

PREFACE

The Paris Declaration on Aid Effectiveness of March 2, 2005, laid down a practical, action-orientated roadmap to improve the quality of aid and its impact on development. Dominant features of the Declaration included a mechanism for country ownership of development policies and programs; the harmonization of international resource flows with national priorities; and, a system of mutual accountability. Monitoring and evaluation (M&E) 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 also advocated by the Paris Declaration.

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, the 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, the African Water Facility (AWF), 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 of the AWF (July 2005) agreed that M&E and Information and Knowledge Management should be the priority areas of intervention by the AWF. Capacity building among regional member countries (RMCs) to cope with the challenges of data collection, analysis, monitoring, evaluation 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 to 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 connection with the 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. The AMCOW recommended that the AWF consider the first part of the main report and the first annex as background and rationale for a regional water sector M&E framework to be developed, 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 Mechanism, and to organize a regional conference on Monitoring and Evaluation around the middle of the year, to highlight the M&E situation in Africa, and to chart the way forward for stakeholders to work together in the harmonization of M&E standards, methods, and indicators.

The Tunis consultative meeting on Building Partnership in Africa Water Sector Monitoring and Evaluation, September 21-22, 2006, drafted a regional M&E action plan and underscored the primacy of national M&E processes. The main recommendations of the Tunis Report were that AWF, under the auspices of AMCOW:

a) Undertake a comprehensive assessment of existing M&E systems at regional, sub-regional and national levels;
b) Support a programme for strengthening national and regional M&E capacity based on the results of the assessments;
c) Build on the existing M&E systems instead of creating new ones; and
d) Harmonize and coordinate M&E activities undertaken by the various sector players in the region (UNICEF, GWP, etc.).

Pan African Assessment of Existing Water M&E Systems

As recommended by the February 2006 AMCOW TAC Meeting, the AWF formalized the stakeholders M&E Working Group to support the African Water Facility to implement short-term actions agreed at the Tunis regional consultative meeting. The AWF convened the first meeting of this working group on Friday 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.

As the M&E Working Group did not meet due to crosscutting commitments, the review of the Pan African Assessment was done electronically and the bidding process to recruit the consultancy firm was launched in May 2007 with a deadline for submissions on July 6, 2007. The subsequent service contract with Cowater International Inc., a Canadian consultancy firm specializing in international development, was signed in November 2007 to provide the following outputs:

On Monitoring and Evaluation (Part A):
a) Report of the Pan African M&E assessment, including a database of M&E stakeholders and an overview of the water sector M&E situation in Africa;
b) A Rapid M&E Assessment Template for undertaking detailed M&E Country Assessments in selected African countries; and,
c) A national, sub-regional and regional M&E Framework and Action Plan.

On Water Information and Knowledge Management (Part B):
a) Synthesis report of water information and knowledge profiles of 10 countries as well as the knowledge bridging conference in Kenya;
b) Lessons learnt, strategy and guidelines for AWF intervention in water information and knowledge management activities; and
c) Prepare a system for storage and retrieval of this and future such information.

The following report encompasses Part A of the Pan African M&E Assessment, which was prepared by the Consultant through desk research and field studies in five focus countries (Malawi, Senegal, Republic of Congo, Tunisia and Uganda) between November 2007 and May 2008. The annexes of the original report, prepared under the direction of the French Ministry of Foreign Affairs, served as valuable sources of information during the preparation of Part A. Part B of the assessment is available as a separate report.

EXECUTIVE SUMMARY

This Pan African Monitoring and Evaluation (M&E) Assessment report was prepared through desk research, field studies in five focus countries (Malawi, Senegal, Republic of Congo, Tunisia and Uganda) and visits to selected regional, international and water basin organizations (EMWIS, JMP, WSP-Africa, NBI, OMVS).

Chapter 1 provides an overview of the state of water sector monitoring and evaluation 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 regional, international and water basin organizations (WBOs).

Chapter 2 presents a generic framework developed during this study and refined through discussions with African Development Bank (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 the Regional Economic Communities (RECs) and respond to AMCOW's recently defined reporting requirements to the African Union (AU)[1]. 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.

Chapter 3, 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 that begins with (1) rapid assessment of country M&E systems across Africa, continuing with (2) orientation to Sector Information and Monitoring Systems (SIMS) and M&E systems development at country level, (3) needs identification, workshops and project proposal development, (4) project funding and hands-on M&E strengthening accompanied by technical assistance (TA) and training and, (5) overall monitoring, coordination and financing by the African Water Facility (AWF). This Action Plan is supported by a suggested approach and terms of reference (TOR) for the application of the Rapid M&E Assessment Template developed by the Consultant and attached as annexes C and D for use 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.

1. OVERVIEW OF WATER SECTOR M&E IN AFRICA

Water Resources Management & Water Supply and Sanitation M&E

In terms of the calibre of M&E systems across the continent, African countries can generally be grouped into three broad categories: strong, intermediate and weak.[2] 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, analyse 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

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

[2] Please see Table 1.2 in the main report for a list of country rankings according to these categories.

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, 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 calibre. Moreover, priority given to water resources M&E is still low and suffers in competition with other demands for scarce resources. The other over-riding 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, analysed 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 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, areas of inequitable distribution of water services can be identified, as can populations falling below national standards. Although WPM is a powerful planning tool, it is only now beginning to be integrated into district and ministry-level planning and management.

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, 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 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 (SWAp). 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 dependant 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 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. 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.

Diagnostic Assessments: Focus Countries and Organizations

The following diagnostic assessments, informed by field visits to the study's countries and organizations of focus, provided the practical basis behind the M&E overview summarized above and serve as a representative window into the state of water sector M&E in Africa.

Countries

Malawi: M&E systems in Malawi have deteriorated over the past two decades. The hydrological networks are functioning at roughly 20 percent and there is no formal groundwater monitoring mechanism in place. Sanitation monitoring relies on the Health Ministry, which is only beginning to rehabilitate its collection of village health statistics through the districts. On the other hand, Malawi has innovated and established a Water Point Mapping system that is being expanded to cover nearly all districts and being updated and integrated into district and national water sector planning. Demand for data and information across the sector is weak and ad hoc in nature, while 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 guide decisions on indicators.

Republic of Congo: 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 WRM M&E systems are currently either weak or non-existent. Nevertheless, many senior sector officials are cognizant of the importance of such systems and are looking for partners who can assist in the development of appropriate M&E mechanisms in parallel with, or following the rehabilitation of, WSS infrastructure. Furthermore, the Congo developed a 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 *Enquête congolaise auprès des ménages* (ECOM) and a Demographic and Health Survey (DHS), which provide the most relevant data from which M&E strengthening efforts can be built.

Senegal: Senegal's water sector M&E coordination model – revolving around PEPAM, its coordination organization – is unique to Africa. Although there are detractors, the quality of work and caliber of PEPAM's personnel has given it respect and 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 the participating agencies to create ownership and ensure their active participation; most sector agencies see the need for their own database but lack qualified and devoted staff; incentives and budget support are generally lacking throughout the participating agencies; and, PEPAM will have to develop the capacity to verify the data being entered into its system.

Tunisia: Although basic water resource data collection systems are in place, improved monitoring is needed to identify substantial water losses and water use inefficiencies in irrigation. Tunisia is already exploiting 95 percent of available water resources and its last dams are being planned for construction between 2011 and 2013. Such upgrading 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. Though efforts are underway to integrate water information through such projects as the *Système d'information nationale de l'eau de la Tunisie* (SINEAU), which is now upgrading *Direction générale des ressources en eau* (DGRE) monitoring systems in four of the 24 governorates, datasets are fragmented. While sharing information within agencies is common, sharing between them is less so and there is no formal way by which the datasets can be accessed by the public.

Uganda: Uganda's M&E 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. As such, it could become a training ground for other countries interested in strengthening their sector's monitoring systems. Nevertheless, the following are areas that are recognized locally as needing correction or improvement: not all contributing sub-sector operational databases are providing complete data needed for the golden indicators; inaccuracies in access rates are a result of less than realistic assumptions, sometimes flawed analytical methods and outdated census data are used despite continued Ugandan attempts to improve the accuracy of water supply coverage estimates; and, data from NGOs continues to be sporadic and less than reliable.

Organizations

EMWIS: Despite their small size compared to the breadth of their mandate and diversity of their membership, the Euro-Mediterranean Information System on Know-how in the Water Sector's Technical Unit (EMWIS) – the focal point of the organization's initiatives in developing Mediterranean partner countries – 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 Mediterranean Water Information Partnership (MedWIP) and providing valuable technical assistance to NFPs.[3] They have also developed a comprehensive website that allows water sector stakeholders to access a wealth of information on the sector from a centralized source. This includes national, regional and international legislation on water resources management; institutional 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.

Joint Monitoring Programme: Overall, it was observed that within JMP's mandate and resources (particularly considering the availability and quality of data), the methods of analysis and reporting are appropriate for the purposes of assessing progress towards MDGs. It is recognized, however, that there are several concerns over the accuracy, reliability and consistency of estimates. The advantages of coming as close to reality as possible while acknowledging 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 that JMP is using is to focus on (1) improving survey methods used by contributing statistical agencies and (2) improving surveys and estimates of provider agencies, which will undoubtedly yield added benefits to sector planning and management.

Water and Sanitation Program-Africa: M&E is of substantial concern and interest to WSP. WSP took the lead in organizing a key sector workshop, developing the SIMS concept through work in Benin, Uganda and Senegal and collaborated closely with the AWF. WSP anticipates continuing formal and informal support to the development of SIMS and M&E across Africa through its twelve country offices and collaboration with AWF. The approaches and action plan recommended in this report are consistent with the SIMS and WSP's approach.

Organisation Pour la Mise en Valeur du Fleuve Sénégal (OMVS): 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 Senegal River basin, the Observatory has been designed as a means to aggregate, store and evaluate basin-wide data in each of the sub-sectors 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), which then provides a selection of this data to the 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, it has not solved the problem of weak data collection overall. Addressing these deficiencies remains a work in progress.

[3] The title for this initiative (MedWIP) may change in the future, as it will serve the forthcoming Mediterranean water strategy defined in the framework of the Union for the Mediterranean.

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, 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 calibre. Moreover, priority given to water resources M&E is still low and suffers in competition with other demands for scarce resources. The other over-riding 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, analysed 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 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, areas of inequitable distribution of water services can be identified, as can populations falling below national standards. Although WPM is a powerful planning tool, it is only now beginning to be integrated into district and ministry-level planning and management.

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, 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 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 (SWAp). 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 dependant 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 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. 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.

Diagnostic Assessments: Focus Countries and Organizations

The following diagnostic assessments, informed by field visits to the study's countries and organizations of focus, provided the practical basis behind the M&E overview summarized above and serve as a representative window into the state of water sector M&E in Africa.

Countries

Malawi: M&E systems in Malawi have deteriorated over the past two decades. The hydrological networks are functioning at roughly 20 percent and there is no formal groundwater monitoring mechanism in place. Sanitation monitoring relies on the Health Ministry, which is only beginning to rehabilitate its collection of village health statistics through the districts. On the other hand, Malawi has innovated and established a Water Point Mapping system that is being expanded to cover nearly all districts and being updated and integrated into district and national water sector planning. Demand for data and information across the sector is weak and ad hoc in nature, while 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

Nile Basin Initiative: 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 participating countries. The NBI points to many achievements, not the least of which are its capacity building and training programmes, 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 from and 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.

Songwe River Basin: Although the basin's two riparian countries, Malawi and Tanzania, have created a trans-border 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, which are amplified by parallel changes in the national boundary. Even the name of Lake Malawi/Nyasa itself is in dispute. Until consensus is reached, it is very unlikely that international donors will support joint initiatives to solve the problem.

2. GENERIC M&E FRAMEWORK

2.1 National Framework

The recommended approach to national M&E 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.

The SIMS approach revolves around the following four pillars. Sector monitoring 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.

A fifth "I", ***incentivized,*** must also be added: to ensure that monitoring is demand driven, given priority and is owned and used by sector management institutions and personnel.

Inclusive

There are three levels of inclusive sector monitoring:

(1) **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 countries, however, use of water resources, water supply and sanitation facilities, affordability and reliability of service affect important outcome results.

(2) 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 efficiencies, unit costs, and etc. Special studies which go beyond routine

output monitoring are also needed and include value for money (VFM) audits, tracking studies, and evaluations.

(3) **Input** monitoring includes technical assistance, sector investments and other resource inputs as monitored by public expenditure reviews, audits, financial reporting at central and district levels, and project financial reporting.

Integrated

All sub-sectors need to be included to properly integrate water resources and water supply and sanitation. A strong multi-stakeholder working group should be established to provide quality assurance and drive the annual sector performance assessment and joint sector review.

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 group 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.

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) is added.[4] Most countries are grouped as *weak* (such as Congo-Brazzaville, Libya and Mozambique) or intermediate (Malawi and Tanzania), while only a handful are relatively strong (Uganda and Senegal). 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:

- *The Initial Phase*: establishing the basis for Sector M&E, several initiatives of which can be termed as immediate measures;
- *The Monitoring Systems Phase*: putting procedures, processes, pilots and plans in place for sector M&E development;
- *The Performance Review Phase*: initiating the joint sector review and performance based resource allocation, special monitoring studies and sector expenditure reviews; and,
- *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 and are explained in further detail in the main report.

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 such as a multi-sector working group (Sector Stakeholder Working Group-SSW

[4] Details of M&E development in fragile states are not included in this report. See section 1.2 in the main report for further detail.

Incentivized

As emphasized above, 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 increasing in demand by donors providing sector budget support.

Phased Development of the Sector and M&E Systems

The main report illustrates the development of a national water sector and its monitoring components. Parallel sector management development is described in four phases. A critical component that binds everything together is the Sector Stakeholder Working Group (SSWG) with representation of key sector departments and councils, donors, NGOs and the private sector.[5] 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 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. 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 WSSG 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.

[5] 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.

2.2 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, a group that includes NGOs, RECs, RBOs and African branches of international organizations. Most of these organizations are also discussed at length in this report's annexes. 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.[6] Instead, there exists a mix of international and sub-regional organizations that in some cases could have 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 and interest to expand into it.

The following competencies are considered desirable, if not essential to an M&E framework at the sub-regional or regional level:

- 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 technical assistance and training Africa-wide and resolving M&E and sector policy and development issues generally.

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.

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 technical assistance and training through the private sector.

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 water resources. 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;
- Technical assistance to member states;
- M&E coordination, oversight, quality assurance, harmonization of indicators and methods; and

[6] "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.

- Monitoring progress towards the Africa Water Vision & MDGs.

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 is their focus on IWRM and particularly TWRM 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.

In accordance with the African Union's July 2008 Sharm El-Sheik 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 African Water Report.

3. M&E ACTION PLAN

A principal conclusion of this study has been 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 remaining countries will be assessed through desk reviews relying on the Internet, secondary data, international agency knowledge and phone contact. 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 five country M&E assessments;
- Refine the Rapid Assessment template;
- Generate a greater understanding of national M&E across Africa;
- Ensure adequacy and comparability of country level rapid assessments; and,

- Identify initial gaps, needs, work plans and conceptual proposals for strengthening national M&E systems.

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 numbers of countries involved will at this stage be kept to a manageable 20, but those not selected will receive support in subsequent batches. Proposals will be developed for AWF funding. The objective of this 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 in target countries;
- Prepare work plans, budgets and detailed proposals to undertake strengthening of national M&E systems; and,
- Identify immediate needs of those countries with weaker M&E systems.

The third stage will entail the actual **Strengthening of National M&E systems**, for which the AWF will appraise and select projects for funding. Using its standard proposal assessment and approval cycle, it is anticipated that some 15 to 20 projects will receive funding. They will be grouped into three categories:

a) Support will be provided to countries with more advanced M&E systems for specific activities identified as gaps. These could include, for example, training for M&E personnel, research into improved and harmonized indicators, tools and methods of data collection, piloting benchmarking, introducing data collection by beneficiary communities, and upgrading the weaker contributing databases.

b) The main effort will be devoted to the many countries having M&E categorized as intermediate. These include, for example, Tanzania, Benin and Malawi. This category includes those with greatest need for support while offering the greatest opportunity for improvement and benefits. They have reasonably strong water sectors, most of which are undergoing sector reform including PRSPs, decentralization, SWAps, annual performance reviews and Joint Sector Reviews. 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; benchmarking; water point mapping; participatory data collection; database development; and integration of monitoring into the annual performance assessment process. Again, emphasis will be on information demand creation and its use in planning and management and on sustainability.

c) The immediate measures identified in the weaker M&E countries, such as Congo-Brazzaville, will be those that respond to early stages of sector and M&E development and that make the best use of such resources and sector strengths as currently exist. First steps might be to improve collaboration between sub-sector agencies, to establish institutional and communication structures for sector M&E such as a stakeholder working group, 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.

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. As described above, first priority should be given to strengthening M&E systems at the country rather than regional or sub-regional levels. Country M&E strengthening should start 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 quality and consistency of assessments and proposals. Rapid assessments and initial strengthening of country M&E should begin in a limited number of countries (five) and later expand to 15 and 30 over time.

2. M&E systems need to be sector and country-wide and not limited to projects, programmes 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.

3. While the participation of organizations such as RECs should be welcomed, they 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 not overlooked. Funding and support should only be demand responsive and not supply driven.

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 capacity building and institutional strengthening. Suggestions have been made that AMCOW Secretariats could become sub-regional centres themselves. Unfortunately, the Secretariats are institutionally even weaker that the RECs that sometimes act as their hosts. REC mandates are more relevant to the task and provide opportunities for more arms-length relationships with AMCOW and AWF. AMCOW Secretariats should be developed with linkages to the strengthened sub-regional organizations so that AMCOW can benefit directly and provide a measure of quality assurance over data and information that is generated by the sub-regional organizations for purposes of AMCOW reporting and dissemination.

Summary

In summary, strengthening M&E is envisaged as proceeding first at the country level while initiatives are being developed and supported at the sub-regional level. Assuming a pro-active role, the AWF will undertake an Africa-wide assessment of M&E within countries that will form the basis of needs identification and proposal development by the countries themselves. This will be followed by a program of well defined and coordinated AWF support to countries. Inevitably, sub-regional organizations (particularly the RECs) will request AWF support for their role in coordinating country M&E development in their sub-regions; however, they themselves will first need to be strengthened before they can effectively support M&E development at sub-regional levels. This strengthening should proceed in parallel with AWF's country level support programme. The development of regional M&E networking capacity is seen as important but not as high a priority as country or even sub-regional M&E strengthening and would depend on the initiative of such regional bodies as ANBO.

A schedule and indicative budget are presented in the report that envisages 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 proposing organizations.

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 monitoring and evaluation systems in Africa and the reasoning behind the need for their systematic 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 river basin organizations. It also draws on desk reviews of several countries that were not visited and an overview of sixteen African countries' M&E systems.[7]

The five focus countries were selected to provide a broad cross-section of M&E systems – a range of strong to weak M&E systems including both WRM and WSS – 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 included as Annex C in this report.

Table 1.1 Focus Countries

COUNTRY	AMCOW SUB-REGION
Congo-Brazzaville	Central
Malawi	South
Senegal	West
Tunisia	North
Uganda	East

The WHO/UNICEF's Joint Monitoring Programme (JMP), the Euro-Mediterranean Information System on Know-how in the Water Sector (EMWIS) and the World Bank's Water and Sanitation Programme (WSP) 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. Additional information on these organizations and a sample of five other active regional/international organizations in this sector can be found in Annex A.

Finally, three emerging river basin organizations (WBOs) were also selected for detailed review from within the study's five focus countries: the *Organisation pour la mise en valeur du fleuve Sénégal* (OMVS), the Nile River Basin Initiative (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 in section 1.3.

1.1. The Case for Monitoring and Evaluation

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 during

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

this period were intended primarily for project management and post-project 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 water supply and sanitation. WHO and UNICEF teamed up to jointly track progress towards these goals through the Joint Monitoring Programme, 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. To illustrate this point, recent assessments of DFID and SIDA budget support programmes, their respective AGs have stated:

> *"DfID should build on its current monitoring arrangements to make sure that for each budget support programme it can systematically assess progress against objectives. Such monitoring should reflect a balance of process, output and outcome indicators and be coordinated with development partners;"*[8] and,

> *"The lack of long term assessments by the Government has made it more difficult for SIDA to ensure that its budget support decisions have a solid foundation....The analyses and assessments included in SIDA's budget support decisions are incomplete and [non]-transparent."*[9]

Such statements strongly emphasise the need to create and/or strengthen monitoring and evaluation systems in the water sector, which is highly dependant 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 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 to planning by at least 11 African countries over the last five years. 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 manage the sector and, in particular, to assess functionality, unit costs, delivery efficiency and the equitable distribution of services.

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[8] National Audit Office, UK (2008), "Providing Budget Support to Developing Countries", February, London, The Stationery Office.

[9] Auditor General of Sweden, (2007) "Aid through Budget Support", December, Stockholm.

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 (IPCC) Fourth Assessment Report noted in 2007, for example, that the 1995-2006 period ranked among the twelve warmest years in the instrumental record of global surface temperature, and that globally the area affected by drought has likely increased since the 1970s. Yet most ordinary Africans who have witnessed increasingly frequent warm spells, heavy precipitation events and severe droughts over the last five decades likely needed little additional confirmation. 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. 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.

In essence, monitoring has become an essential tool for both sector development and environmental sustainability. While monitoring progress regarding access is imperative for global reporting purposes, far more in-depth and better quality monitoring is needed for sector management, transparency and accountability, especially within the budget support framework.

1.2. Overview of Contemporary Water Sector M&E Systems

In terms of the calibre of M&E systems across the continent, African countries can generally be organized into three broad groups: strong, intermediate and weak. Yet this 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.[10] Typically, they are project based and fragmented, have little capacity to gather, analyse 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 and serve mainly the purposes of donors and do little to support planning, budgeting and management processes.

[10] 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.

Table 1.2 African Water Sector Assessment Table[11]

Country	Region	Total Water Access[1]	M&E Systems[2]	AfDB CPIA[3]	Water Poverty Index[4]	SWAp[5]	Failed States Index[6]	IWRM Plan Progress[7]
Scale		%	A to C	1 to 6	0 to 100		1 to 120	1 to 3
Algeria	North			3.91	49.7		77.8	3
Angola	South	51		3.24	41.3		89.8	3
Benin	West	65	C	3.97	39.3		72.6	2
Botswana	South					H*	65.9	2
Burkina Faso	West	72	B		41.5		89.9	
Burundi	East	71		3.29	40.2	H, E*	94.1	3
C. African Republic	Central	66		2.89	44.2		103.7	3
Cameroon	Central	70		3.57	53.6	H**	91.2	2
Cape Verde	West				40.8		80.7	3
Chad	Central	48		3.17	38.5		110.9	3
Comoros	East			2.51	44.4		79.6	
Congo-Brazzaville	Central	71		3.63			93.4	3
Cote d'Ivoire	West			2.76	45.7		104.6	
D.R. Congo	Central	46	C	2.79	46.0		106.7	3
Djibouti	East			3.17	38.4		80	3
Egypt	North			3.90		H	88.7	2
Equitorial Guinea	Central	43		3.09			88	
Eritrea	East	60		2.43	37.4		87.4	2
Ethiopia	East	42	B	3.50	35.4		96.1	2
Gabon	Central			3.37			75	
Gambia	West			3.31	48.3		76.9	
Ghana	West		B		45.3		64.5	2
Guinea	West	70		3.19	51.7		101.8	
Guinea-Bissau	West	57		3.01	48.1		91.3	
Kenya	East	57	C		47.3		93.4	2
Lesotho	South	78	C	3.84	43.2	H	81.7	3
Liberia	West	64		3.54			91	
Libya	North						70	3
Madagascar	South	47		3.96	47.5		76.7	
Malawi	South	76	B	3.62	38.0		92.9	2
Mali	West	60			40.6	H, E	75.6	2
Mauritania	North	60	B*	3.88	49.9	H*	90.1	2
Mauritius	South							2
Morocco	North				46.2		75.8	2
Mozambique	South	42	B	3.73	44.9		76.9	2
Namibia	South						72.9	
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 & Principe	West			3.39			78.3	
Senegal	West	77	B		45.3		70.9	2
Seychelles	East			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				62.2		62.7	
Sudan	East	70		2.82	49.4		113	2
Swaziland	South	60		3.26	53.3		80	2
Tanzania	East	55	B		48.3		79.1	2
Togo	West	59		2.81	46.0		86.8	
Tunisia	North		B		50.9		65.6	2
Uganda	East	64	B		44.0		96.1	
Zambia	South	58	C	3.77	50.4	H, E	81.6	2
Zimbabwe	South			1.76	53.4		112.5	
Ranking Criteria:								
Mid-range		61-75%	B	3.2-3.9	49-55	H and/or E	60-90	2
Poor		<60%	C	<3.2	<48	-	>90	3

[11] (1) Water Access - Total Water Coverage (%) (JMP, 2008) - Validated data from 2006; (2) Estimated scores based on information in "Getting Africa on Track to Meet the WSS MDGs" (WSP, 2006); Part B, "Draft Pan African M&E Assessment Report" (AWF/Cowater International, 2008) and information gathered during field missions to this project's 5 focus countries; (3) AfDB 2007 CPIA Country Policy and Institutional Assessments Scores (AfDB, 2008); (4) The Water Poverty Index is a composite index of five variables – resources, access, capacity, use and environment – intended to measure progress being made towards water sector MDGs at the country and community level (www.ceh.ac.uk); (5) Existence of SWAp in social services sectors (Various sources, 2008). W – Water, H – Health, E - Education, * SWAp planned in sector in 2007, ** SWAp planned in sector in 2008; (6) Failed States Index overall "instability" ranking (Fund for Peace, 2008); (7) GWP Survey (2006) Results for progress of country's IWRM Plan (UN-Water, 2008). Scale: 1 - IWRM plan in place; 2 - IWRM plan in preparation; 3 - IWRM in initial planning steps only.

Table 1.2 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.

1.2.1. 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 over-riding 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.

1.2.2. 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 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, 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.[12] 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.

1.2.3. 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.

1.2.4. 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

[12] GTZ (2007) "MDG Monitoring for Urban Water Supply and Sanitation", GTZ, Eschborn

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 MIS. 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 1.2 above.

1.3. Review and Diagnosis of Five Focus Countries' M&E Systems

The following section provides a review and diagnosis of the water M&E systems in the study's five focus countries – Malawi, the Republic of Congo, Senegal, Tunisia and Uganda. These are complemented by Annex B, which describes the water sector M&E institutional architectures of these and eight other African countries.

1.3.1. 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 the riverbed, the cause of tension in the 1970s due to movement of the river during floods. 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 the Southern African Development Community (SADC), which has funded the installation of tele-metered gauges maintained by Malawi.

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 the City Assemblies and Water Boards. The Assemblies 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 water users' associations assist in water supply and sanitation monitoring and management.

Rural WSS: While the WSSD of the MIWD 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, along 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 marginal. 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 groundwater 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 parliament requests, annual report 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 Water Point Mapping (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 NWDP 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. Currently, the database is 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, and 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 through which data is collected and managed. 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, although the HSAs are working with interim definitions/indicators. Although monitoring is again the responsibility of the health authorities of the municipal boards and city assembly structures, the HSAs are called upon to undertake numerous other tasks apart from monitoring, which is 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.

Diagnostic Assessment

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

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) will take place in October. 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." Using such data and information that exists and notwithstanding its quality, 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 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 ten years of innovation and experimentation to reach its current state of development.

1.3.2. Republic of Congo

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 technical assistance from France's *Institut de Recherche pour le Développement* (IRD) 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.

Trans-boundary water resources monitoring is the responsibility of CICOS, which was created under the auspices of the Economic and Monetary Community of Central Africa to, among other things, 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. Member states include Cameroon, the Central African Republic, the Republic of Congo 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 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 Général 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 (located in Pointe Noire and Cuesso and 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) conducted with technical and financial support from the World Bank, AFRISTAT and the UNDP.

Diagnostic Assessment

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, the 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, 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 the Congo prior to the outbreak of civil conflict in the early 1990s.[13]

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 assist in the development of appropriate M&E mechanisms in parallel with, or following the rehabilitation of, WSS infrastructure. Furthermore, the Congo developed a 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 from which sector strengthening efforts can be built.

Taking each of these positive factors and noted weaknesses into account, donor support to the 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 the Congo and its development partners to re-establish basic and sustainable M&E systems from the ground up alongside the reconstruction basic WSS infrastructure, the government's priority for this sector for the foreseeable future.

1.3.3. Senegal

Institutional Arrangements

Water resources: The government institution with primary responsibility over the protection, development and monitoring of Senegal's surface and ground water resources is the MHRHN's *Dirèction de Gestion et de la Planification des Ressources en Eau* (DGPRE). The

[13] Exceptions include the Agence Francaise de Developpement (AFD), whose efforts in the sector are focused on the strengthening of urban rainwater management infrastructure; GTZ; and UNICEF, WHO and Doctors Without Borders, who are building basic water and sanitation infrastructure and promoting good hygiene practices in the Pool Region.

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 Superieur 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.[14]

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 (Dakar, Saint Louis, Dagana, etc.) 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. For instance, the DEM is managing a reform project entitled *"l'Initiative de partenariat public-privé pour le gestion des forages ruraux motorisés"* focused on transferring the operation and maintenance of rural water points to private sector entities. 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.

[14] 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.

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 9 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 ground water monitoring stations, roughly 60 to 70 percent of which are currently functioning properly. These stations measure the volume, flow and quality of surface and ground water 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. The DGPRE notes that is has insufficient material and financial resources for the regular collection of data and implementation of modern information management tools. Data collection and management systems may be strengthened through the "*Mise en oeuvre du PAGIRE*" project financed by the African Water Facility.

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 African Water Facility. With regards to the storage and accessibility of such data, DGPRE officials note that their data management systems are not well organized, composed of several unsynchronized databases such as ARCVIEW (GIS) and SIGRES, and are accessible at this stage only through written requests to the government from users. 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 (Lac de Guiers), Bakel and Dakar. It is shared on a monthly basis with SONES, Senegal's urban water supply asset holder, 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 (*télégestion*) 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. The regulator has indicated they plan to develop such a database by the end of 2008.

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 Direction de l'Assainissement (DAS), currently has two individuals responsible for M&E, however the directorate does not yet have systems in place that would allow for the collection of its own data.

Rural Water Supply and Sanitation: 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 NGOs active in the WSS sector.

Use of Water Supply and Sanitation Services and Infrastructure: In addition to the work of the institutions discussed above whose efforts are focused purely on either water supply or sanitation services, the *Agence National de la Statistique et de la Démographie* (ANSD) collects important information on the use of water supply and sanitation services at the household level. It has done so through periodic national censuses – 1988 and 2002 being the two most recent – the *Enquete 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 (formerly known as the *Direction de la Prévision et de la Statistique*) lost much of their archived data several years ago through a fire and had to piece it back together with input from partners.

Nevertheless, 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 water supply and sanitation. Debate continues over the comparability of questions and data across surveys and over time and 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): PEPAM is a national program launched in 2005 to help Senegal reach the water and sanitation MDGs. With support from WSP-Africa, PEPAM's Program Coordinating Unit (PCU) has developed a framework for a national water information system (SIMS) 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 SIMS 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 the SIMS 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, including DGPRE, ONAS, SDE, SONES, DEM, DA, DHR and DHU. Input and retrieval will be password controlled under Memoranda of Understanding between PEPAM and participating agencies.

PEPAM's SIMS will also be fed by a network of ten in-country regional M&E platforms whose data will be verified by local government services and central executing agencies and that will be financed by the PEPAM program. 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 from the regional platform 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.

Diagnostic Assessment

Presently there is little sharing of information between agencies 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. Specifically:

- 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.

PEPAM: 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 the participating agencies, for creating ownership and 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, analyse 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.

1.3.4. Tunisia

Institutional Arrangements

Water resources: The Ministry of Agriculture and Hydrological Resources (MARH) is the institution with overarching responsibility over Tunisia's water sector, with responsibilities ranging from the management of surface and groundwater resources to the distribution of potable water and provision of sanitation and wastewater infrastructure. As illustrated in Annex B, the 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 the 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 integrally 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. Lastly, the MEDD's *Observatoire Tunisien de l'Environnement et du Développement Durable*

(OTEDD) studies the state of Tunisia's environment and issues reports and guidelines 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, through its Hygiene and Environmental Protection directorate (DHMPE), plays an oversight role to ensure the alignment of potable water quality indicators with national standards. In rural communities – those characterized both my small populations and population densities – the management of potable water networks and supplies becomes the responsibility of the *Direction Generale de Genie 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 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 *Systeme 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, including that related to urban and rural WSS, the DGRE is developing SINEAU, a national water sector monitoring system.

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 *Project d'Investissement dans le Secteur de l'Eau* (PISEAU) program, it is being developed in order 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.

Diagnostic Assessment

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. 217m^3 of wastewater was treated and recycled in 2006, compared to 170m^3 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 analysed 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 and its last dams are being planned for construction between 2011 and 2013. Improved monitoring is 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.

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.

EMWIS is providing support to the development of SINEAU within the DGRE. Although still in its inception stage, SINEAU is planned to expand on the existing *Système de gestion des ressources en eau* (SYGREAU) to encompass all components of water sector data management. It will be responsible for combining, analysing, reporting on and disseminating Tunisia's water sector information while still relying on existing sources for data collection. This is a worthwhile objective and is ultimately realizable; however, there are important hurdles to overcome. These go beyond the usual financing and infrastructure requirements.

As noted above, IWRM is in its very early stages. Water resources management focuses on water availability and distribution, and monitoring for this purpose is reasonably effective. Water distribution is decided upon daily and at the most central level using up-to-date data, but greater effort is needed to understand and reduce water losses and inefficiencies.

Analysed 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. This is commendable but not adequate. SINEAU is intended to analyse 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.

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. Furthermore, SINEAU is not well-known or understood outside of DGRE and its affiliated organization's circles. In that regards, a major effort in raising awareness and acceptance of SINEAU and its dissemination objectives will be needed.

SINEAU will be housed within the DGRE of the Ministry of Agriculture. It will be collating, analysing and reporting on data from, and disseminating to, several sectors, such as environment, tourism, planning, and socio-economic development as well as water supply and sanitation. Its staff will have to be multi-disciplinary in education and competence, and to function effectively they will need to be respected professionally by colleagues well outside the agriculture and water resources sectors.

1.3.5. Uganda

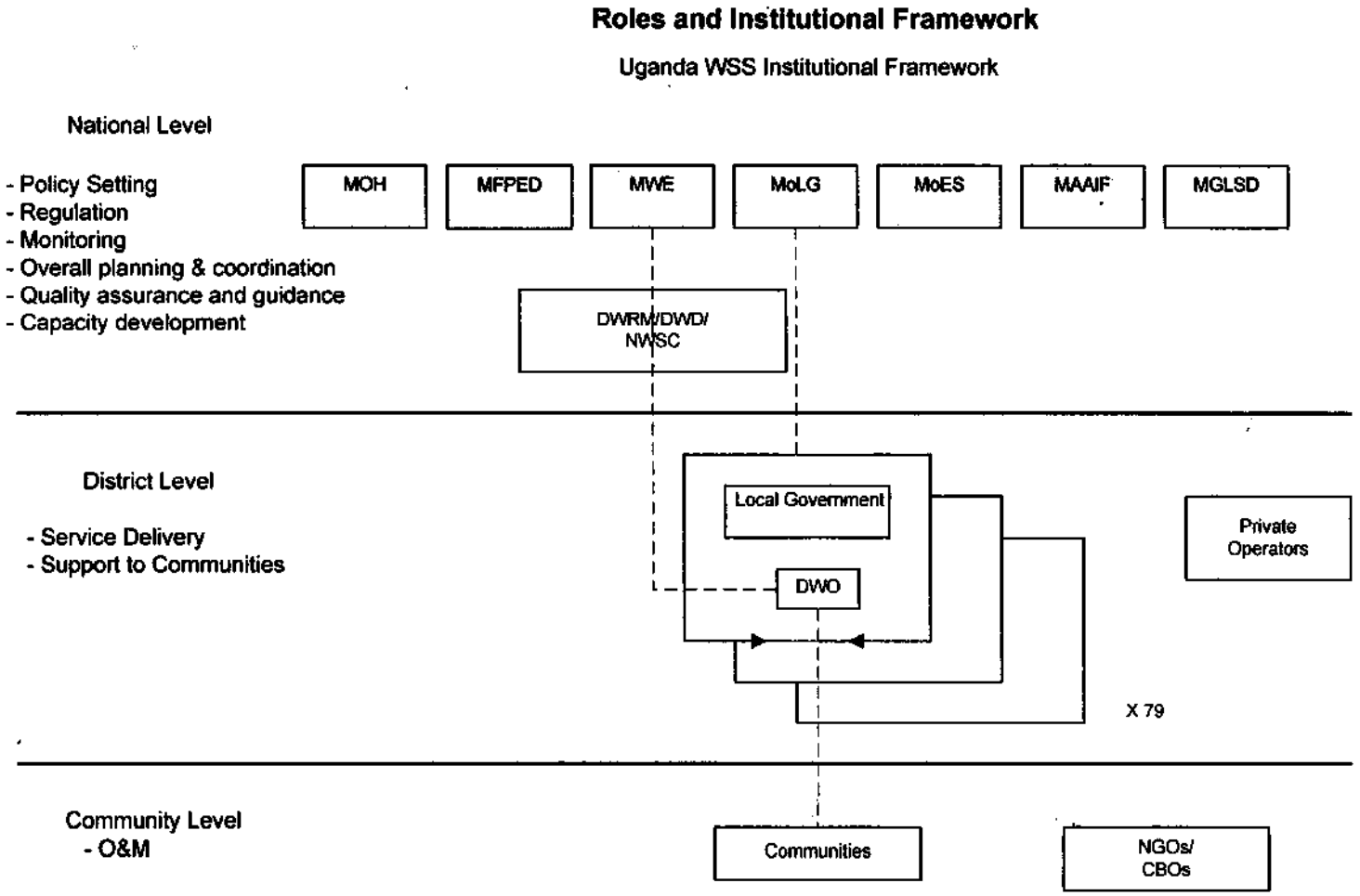
Institutional Arrangements

The Ministry of Water and Environment is the apex organization responsible for the water sector in Uganda. 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 Joint Sector Reviews. 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. Tin brief, the Ministry of Water and Environment (MWE) has responsibility for setting sector policy, standards and priorities for the sector. The Ministry of Finance mobilises funds, coordinates donor input and makes resource allocations, and the Ministry of Health is responsible for sanitation and hygiene.

The sector comprises four sub-sectors. (1) Rural water supply and sanitation (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; (2) Urban water supply and sanitation (UWSS) comprising 19 large towns coming under the National Water and Sewerage Corporation and smaller towns under the DWD; (3) Water for production, of which multipurpose reservoirs and bulk water transfers come under the MWE and (4) Water resources management (WRM) under the newly created Directorate of Water Resources Management (DWRM). The sector operates under SWAp, which de-emphasises 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 recognises 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.

Figure 1.1 Organizational Framework, Uganda WSS



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

Data Collection and Management Systems

Water sector M&E in Uganda has been developed over the past decade to follows the SIMS model characterised as being inclusive, integrated, incrementally implemented and institutionalised (ref. Section 2.3.3 of this report).[15] M&E responds to GoU and donor annual Joint Sector Reviews 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.[16] 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.

Uganda has developed a set of "golden indicators" which it has standardised 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 subjected 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, as discussed in section 2.3.4. However, their real value comes more in process than product. Annually the sector is analysed 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.

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.

Diagnostic Assessment

Uganda's M&E 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.

The Ugandan authorities acknowledge that there is still significant room for improvement and have been open in sharing them with the AWF M&E assessment team. The following are areas that are recognized locally as needing correction or improvement.

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

[16] Ministry of Water and Environment (2007) "Water and Sanitation Sector Performance Report 2007", MWE, Kampala.

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 outdated census data.

3. Despite efforts at collaboration and the efforts of an NGO network organization, data from NGOs continues to be sporadic 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 (UBOS) 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. 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 express 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.

Lastly, attempts continue to develop 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.[17]

1.4. Review and Diagnosis of Focus Regional & International M&E Organizations

The following section 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. These are complemented by the profiles contained in Annex A, which describes the mandates and activities of an additional four such organizations – CEDARE, ECOWAS WRCU, UNECA and the Water Monitoring Alliance. The field and desk research that underlies these profiles informed the observations made in the overview above, the

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

conclusions that follow and the recommendations put forward in the Regional/Sub-regional Framework and Action Plan described below.

1.4.1. EMWIS

Background

The Euro-Mediterranean Information System on Know-how in the Water Sector (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. It is managed by a legal structure grouping the International Office of Water (France), the CEDEX (Spain) and SOGESID (Italy). The Technical Unit and International Focal Point Headquarters is located in Sophia Antipolis-Valbonne, France; with a reduced staff, it relies mainly on the experts from its 3 member organisations. 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 (NFP), 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' International Focal Point; however, each partner country manages its own information server and is responsible for identifying and guaranteeing quality and access to information sources.

Relevant Programs

Once EMWIS' basic structure was put in place in 2002, EMWIS began in Phase II of its program to focus on developing national water information systems 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 were volunteers for the study: Cyprus, Spain, France, Malta, Morocco, Jordan and Tunisia.

Phase III of EMWIS (2008-2011) will concentrate on five main themes: national water information systems 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 participative 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 negotation of specific work plans for each country.

Diagnostic Assessment

The Consultant visited the offices of the EMWIS Technical Unit (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 Technical Unit, 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. This includes Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Palestine, Syria, Tunisia and Turkey. As described in the EMWIS profiles found elsewhere in this report, EMWIS' activities in these countries are focused on harmonizing national water resource indicators and assisting in the development of well-functioning national water information systems 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 technical assistance to NFPs.

They have also developed a website that allows water sector stakeholders – from researchers to sector 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 water resources management; institutional 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. Over the past year, the site has received an average of almost 20,000 hits per day, with more coming from China, France and Morocco than any other country – 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, despite the TU's member organisations (IOW, CEDEX, SOGESID) being capable of providing required expertise. The technical expertise requested by member states is not available in-house, and the number of personnel within the TU is not large enough to support the expansion of this assistance outside the Euro-Mediterranean region (nor is this in its mandate or future plans) or its deepening beyond the provision of assistance for the development of NWIS frameworks and common indicators.

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 valuable role in supporting the collection and sharing of water sector information and best practices in the Euro-Mediterranean region. These same networks facilitate the provision of technical assistance from across the region[18] 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 OpenArchive 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.

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 systems and the sharing of relevant information across Africa included a list of organizations that could potentially contribute to these initiatives. Each was classified according to the characteristics listed in the following table, which also serves to summarize the activities, methodology and capabilities of the EMWIS TU described in the preceding assessment.

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

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, River basin organizations (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-Mediterranean 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 organisations 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.

[18] EMWIS cannot contract water sector information and knowledge management expertise from outside of the EU or partner developing countries due to EU procurement regulations.

Second, though it does maintain a database of water sector projects in the Euro-Mediterranean region on its website and provides access to a metadatabase of hydro-geological datasets, it has neither the interest in or 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 national water information systems 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 technical assistance 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 European Union. 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.

1.4.2. Joint Monitoring Program (JMP)

Background

The Joint Monitoring Programme (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[19]

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.

[19] Please 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.

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 water supply and sanitation, 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 Republic of the Congo 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. For example, JMP might obtain estimates of coverage at sub-national levels or get access to microdata to try and understand any anomalous 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.

1.4.3. 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 water supply and sanitation services. The WSP works directly with client governments at the local and national level in 27 countries through four Regional offices and in the World 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 by commissioning a conceptual framework paper on SIMS for water and sanitation as well as three case studies on the water sector monitoring and evaluation systems in Benin, Senegal and Uganda. This research fed into a March 2007 Practitioner's Workshop in Nairobi, Kenya in partnership with the African Water Facility (AWF) and Kenya's Ministry of Water and Irrigation (MWI), Kenya. 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) Rural Water Supply and Sanitation, (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 a key workshop, developed the SIMS concept through work in Benin, Uganda and Senegal and collaborated closely with AWF which has been mandated water sector M&E systems development by AMCOW.

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 programme 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 (SIMS) to learn from those which are more advanced, which was also recommended.

WSP is preparing to publish SIMS Guidelines that will make a substantial contribution to country M&E systems. The Consultants contributed to its preparation by commenting on its draft and encouraging its early publication. Other recommendations by the Kenya workshop include (1) developing a better understanding of country rationale and processes, (2) developing a conceptual basis for different parameters of outcome indicators for regional codification, and (3) strengthening regional coordination.

WSP continues to strengthen SIMS and by it, M&E in Senegal and Uganda with support from Kenya by active participation in its development (ref. Dominick de Waal). In Senegal for example, the WSP office (ref. Tom Fuglesnes) 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 twelve country offices and

collaboration with AWF. The approaches and action plan recommended in this report are consistent with the SIMS and WSP's approach.

1.5. Review and Diagnosis of Emerging River Basin Organizations

1.5.1. 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 *Organisation 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 portent creation de l'Organisation 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. In addition to the 1972 conventions noted above, this legislation includes the 1978 Convention on the Legal Status of Shared Infrastructure, the 1982 Convention on the Financing of Shared Infrastructure, and the 2002 Senegal River Water Charter, which outlines the principles, rules and regulations defining the exploitation, management and development of the basin's water resources.

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 OMVS 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.

1.5.2. 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.

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 Programme (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.

A series of Subsidiary Action Programmes (SAPs) are promoting cooperation and trust between basin countries by planning and facilitating joint investment projects between basin countries. These include power, river basin development and lake management projects. Some examples include

- Ethiopian-Sudan and Kenya-Uganda Transmission Lines Interconnection projects
- Watershed Management projects in Ethiopia, Sudan and Egypt
- Flood Preparedness and Early Warning Systems
- Regional Rusumo Falls Hydro-electric and Multipurpose Project (Tanzania, Rwanda and Burundi)
- Lake Edward and Albert Fisheries Project
- Kagera River Basin Management and Development (Burundi, Tanzania, Rwanda & Uganda)

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 bilaterals. Funds expended approximate USD 25 million per year.

The NBI points to many achievements, not the least of which are its capacity building and training programmes, 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 from and 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.

1.5.3. 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. Movement 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 seventies, the Songwe, along with other disagreements between Tanzania and Malawi, became the cause of tension and open debate between them. 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.

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 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 for the development of hydropower, irrigation, land reclamation and river training as above.

Several stakeholders have been involved in this process, including: the Ministry of Irrigation and Water Development, Republic of Malawi, and the Ministry of Lands and Human Settlements Development, United Republic of Tanzania.

While such changes in the international boundary are of national concern, for farmers cultivating land close to the river changes in the channel can lead to sudden loss of some or all of their land during one flood season. Once their land falls under the jurisdiction of the opposite country, they lose the right to cultivate that land. This situation may last for several years until the river makes another drastic change of course, which may or many not be to their advantage. The major part of the population in the area is very vulnerable to alterations in the access to land and water resources. Resettlement may for some households imply a move from poverty to misery and regulated floods may contribute to further deterioration of agricultural production and food security. At the same time upstream activities and practices are contributing factors to downstream flood problems.

The most cost effective solution would be to both develop reservoirs on the Songwe and to channalize it where and if necessary. This will provide multipurpose benefits to both Tanzania and Malawi. This includes development of the national hydropower, irrigation/agricultural development, improved water supply and reduction of flood damages in the project area, all on both sides of the border.

Unfortunately, although the two countries have created a trans-border 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 the name of Lake Malawi/Nyasa itself. Until agreement is reached it's very unlikely that international donors will be forthcoming and, as such, the project remains unfunded and the problem unresolved.

1.6. 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-emphasising.

1. **Water sector M&E across Africa is very weak.** At present, with few exceptions country M&E is unable to provide reliable data and information either for sector planning and management, or to networks of regional or global databases.

2. **Too often, MIS is interpreted as a computerized database** without recognizing the importance of collection, demand, dissemination 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 by IT specialists, much to the

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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 of sector planning and budgeting. It is the starting point for transparency and accountability of services providers, and the foundation for sector performance assessment and upgrading. 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 (1) the approach to indicator standardization in Uganda, and (2) water point mapping 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 water point mapping 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 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.

2. GENERIC FRAMEWORK

2.1. Introduction

In defining a generic framework for water sector monitoring and evaluation in Africa, field visits and diagnostic assessments were conducted in the study's five countries (section 1.3), while the status of country-level M&E systems was reviewed in eight others, for a total of thirteen countries (Annex B). Reviews and diagnoses (Annex A and section 1.4) were also made of seven regional and global organizations that could act as regional or sub-regional centres for a regional water monitoring network. Three river basin organizations were also visited and analyzed (section 1.5) to understand their contributions to sub-regional and transboundary water monitoring systems.

The following chapter describes a generic framework for water sector M&E at the national, regional and global 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.

2.2. National Framework

2.2.1. 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 analyse, feed back or otherwise use the information effectively. Seldom is the information entered into a database, and rarely is it analysed and disseminated in useful format. Moreover, M&E has become looked upon 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, Management Information Systems (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 largely exercises in computer programming rather than management, for which they are intended.

2.2.2. 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.[20] Sector-wide approaches

[20] 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 and reporting 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, and helps donors coordinate better among themselves and government, especially in the areas of technical assistance and monitoring. It 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. Nevertheless, the flow of aid through budget support remains relatively small and traditional project funding and transitional mechanisms remain dominant.

(SWAps) and Poverty Reduction Strategy Papers (PRSPs) have become common-place and are providing frameworks and policies for budget support and debt relief. Transitional mechanisms such as common, 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 programmes that setup separate administrative and management systems. Fortunately, there are other alternatives such as earmarked sector (as opposed to general) 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.

2.2.3. 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 monitoring and evaluation systems.

History

In 2006, the African Water Facility, 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:

- A call for the harmonization of diverse M&E initiatives with an emphasis on strengthening and development of country-owned M&E systems;
- The need to address the inadequacy of funding for sustained M&E;
- The use of local expertise in building capacities through exchange of skills and experiences between regional and sub-regional African institutions;

- The need for leadership in water sector M&E, the basis for which may be provided by regional and sub-regional institutions;
- The need for collaboration with global monitoring institutions and development of stronger linkages between countries, and global systems through regional organizations.

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 programmes, SWAps and budgetary support rather than bilateral project funding, the increasing call for accountability in public expenditure, 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:

- **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.

To which, as described above, a fifth "i" must be added: **"incentivized"** to ensure that it is demand driven, given priority and is owned and used 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 of them in further detail.

Inclusive

There are three levels of inclusive sector monitoring:

(1) **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.

(2) 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 efficiencies, unit costs, etc. Special studies that go beyond routine output monitoring are also needed and include value for money (VFM) audits, tracking studies, and evaluations.

(3) **Input** monitoring includes technical assistance, sector investments and other resource inputs as monitored by public expenditure reviews, audits, financial reporting at central and district levels, and project financial reporting.

Integrated

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 it 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 water supply and sanitation. A strong multi-stakeholder working group should be established to provide quality assurance and drive the annual sector performance assessment and joint sector review.

Being a complex mix of institutions, resources, programmes 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.

Incremental

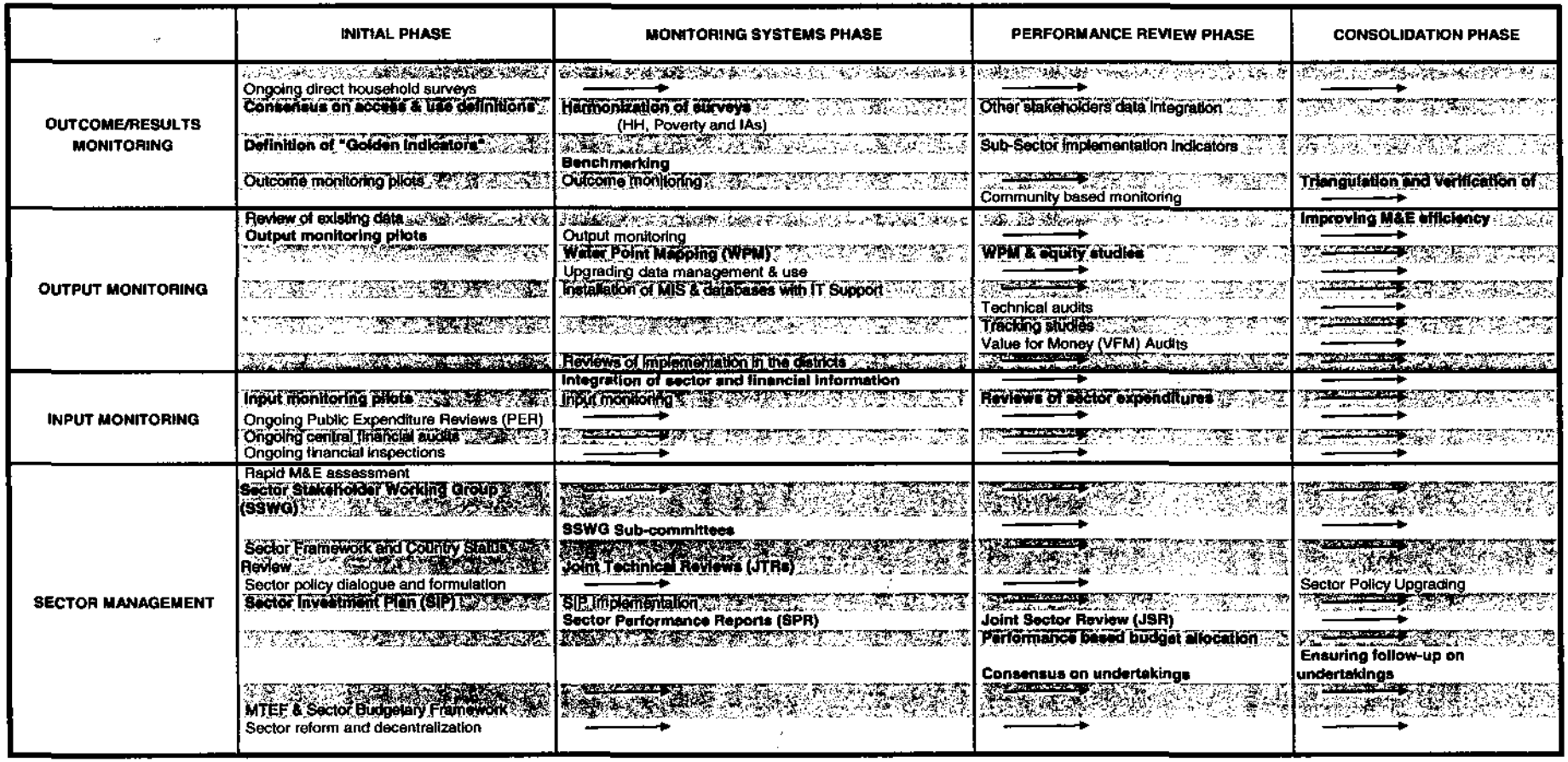
The assessment of sector M&E conducted for this study concluded that countries can be grouped into weak, intermediate and strong categories, to which a fourth category (fragile) is added.[21] Most countries are grouped as weak, while only a handful of them are relatively strong. While goals for sector 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:

- *The Initial Phase*: establishing the basis for Sector M&E, several initiatives of which can be termed as immediate measures;
- *The Monitoring Systems Phase*: putting procedures, processes, pilots and plans in place for sector M&E development;
- *The Performance Review Phase*: initiating the Joint Sector Review and performance based resource allocation, special monitoring studies and sector expenditure reviews; and,
- *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.

[21] Details of M&E development in fragile states are not included in this report. See section 1.2 for further detail.

Figure 2.1 Sector and Monitoring Phased Development



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 (Ministry of Water or Agriculture) 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 multi-sector working group. Further detail on this is given in section 3.3.

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 Sector Stakeholder Working Group (SSWG) with representation of key sector departments and councils, donors, NGOs and the private sector.[22] 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

[22] 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.

to be understood and respected by all 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 needs to be harmonized. Project progress reporting needs to be integrated with financial reports 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 Water Point Mapping 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.[23] 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 WSSG 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.

2.2.4. Monitoring Indicators and Tools

There are numerous indicators available for monitoring in 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. As an example and as discussed previously, 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 used 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 (implying safe) 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.[24] 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

[23] 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

[24] UN-Water Task Force on Monitoring (2006) "Water Monitoring", FAO, Rome.

and relevant to global water monitoring. Somewhat adapted to the needs of this study, it has been reproduced below in Table 2.1.

Table 2.1 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	%
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/$1 USD output
Annual environmental flow requirements	
Irrigated land	km^2
Irrigated land as percentage of cultivated land	%
Extent of land salinated by irrigation	km^2
Importance of groundwater for irrigation	%
Irrigated production as percentage of agricultural production	%
Hydro power generation – technically exploitable capability	
Hydro power development – capacity; actual generation; under construction; planned	
Impact of droughts as % of annual GDP	%
Impact of floods as % of annual GDP	%
Concentration of nitrogen ($NO_3 + NO_2$) 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 for fetching water (total, urban and rural)	Hrs/day
Gender aspect: girls school-days per year lost for fetching water (total, urban and rural) related	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 paid 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.[25] 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.

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 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.

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

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.[26] The most useful and relevant are:

- *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 first four indicators are used most often, while data pertaining to the remainder, including three not listed here, varies in reliability and measurability. There is always room for upgrading indicators as the sector and its M&E systems mature. For example, access indicators could be adapted to more accurately measure access to "safe" water and "adequate" hygiene and sanitation but with the limitations described above. 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.[27]

Table 2.2 Uganda's WSS and Water Resources Indicators

SUB-SECTOR	INDICATORS
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
	Number 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
	Water use committees formed and trained
Water resources management	% of water permits issued within the stipulated time limit

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

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

	Number of per permit holders monitored to ensure compliance every quarter
	% of water samples analysed 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 water and sanitation 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 W&S investment programmes
	% of staff positions in sector's central and local government that are filled

AQUASTAT's key water resources management indicators, listed below in Table 2.3, supplement those in Table 2.2.[28]

Table 2.3 AQUASTAT Water Resources Management Indicators

INDICATOR	UNITS
Average precipitation	mm/yr
Surface water produced internally	m^3/yr
Groundwater produced internally	m^3/yr
Water resources total internal renewable	m^3/yr
Surface water: accounted inflow	m^3/yr
Surface water total renewable (actual)	m^3/yr
Groundwater total renewable (actual)	m^3/yr
Water resources total exploitable	m^3/yr
Total dam capacity	m^3/yr
Agricultural water withdrawal	m^3/yr
Domestic water withdrawal	m^3/yr
Industrial water withdrawal	m^3/yr
Surface water withdrawal	m^3/yr
Groundwater withdrawal	m^3/yr
Treated wastewater reused	m^3/yr
Wastewater produced	m^3/yr
Wastewater treated	m^3/yr
Agr. Water as % of total renewable water resources	%
Freshwater withdrawal as % of total renewable water resources	%
Area salinated by irrigation	%

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 normal undertaken by third parties, and WaterAid's valuable WPM tool for sector management in Malawi and Tanzania.[29]

[28] http://www.fao.org/nr/water/aquastat.html

[29] 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.

2.2.5. 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.[30] Water resources are commonly monitored by the water resources department within the apex ministry and maintain separate databases. 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 the 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 separately maintained and difficult to access by other departments or the public.

The most functional approach is to have them coordinated, quality 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 has the advantage of providing balanced non-partisan leadership and being more accessible to non-government sector stakeholders.

2.3. Generic Regional/Sub-regional Framework

At the AWF's regional consultative meeting in September 2006 on "Building Partnership to Support African Countries in Water Sector M&E," regional economic communities, along with regional member countries and river basin organizations, were said to be prime stakeholders in water sector M&E in Africa. However, it was also noted that there was insufficient understanding of the dynamics of M&E among emerging and long-established RBOs and RECs on the continent, and that an M&E mapping exercise – the outcome of which is this report – would be needed to assist the AWF in making decisions about harmonizing and strengthening water sector M&E in Africa. The role of RMCs was outlined in significant detail in the preceding section on national M&E frameworks, while the following looks at water sector M&E in Africa from an international perspective. 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, a group that includes NGOs, RECs, RBOs and African branches of international organizations. Most of these organizations are also discussed at length in this report's annexes.

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.[31] 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 and limited capacity and interest to expand into it.

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[30] 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.

[31] "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.

2.3.1. Regional Framework

The overall conclusion drawn from this analysis is that while M&E is key to successful sector operation, 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, that 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 multinational 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 continues its dependence on the International Network of Basin Organizations (INBO). Its mandate extends only to water resources and excludes water supply and sanitation. 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.

2.3.2. 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 – northern, western, central, eastern and southern Africa – to look for promising organizations whose activities encompass their home sub-region. Since, as noted above, 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 has indicated 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. Ongoing uncertainty over sustainability, resources and staffing and future direction of many RECs 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.

Created in 1980 and renamed in 1992, the Southern African Development Community (SADC) comprises fourteen Southern African States. Sharing the Africa Vision 2025 and the MDGs with its member states, one of its mandates is transboundary water resources management. 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, and some have made proposals to the African Water Facility for funding. For instance:

- The East African Community (EAC) has proposed support for urban water supply development around Lake Victoria in collaboration with UN-HABITAT;
- The Inter-Governmental Authority for Development (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,
- The Community of Sahel and Saharan States (CEN-SAD) has requested support for the management of natural resources, including water, in its region.

This suggests that there may be potential in establishing 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 technical assistance 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).[32]

[32] 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. AfWA promotes knowledge sharing and and cooperation in relation to technical, legal, administrative and economic aspects of water supply and sanitation.

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 technical assistance. 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 Table 2.4.

Table 2.4 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	➢ Organizational, financial and human resource constraints.

REC	PROFILE	MAIN OBJECTIVES	CHALLENGES
		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.	
Inter-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)[33]	**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.

Additional resources for the Sub-Regional Framework may become available though 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

[33] 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.

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 river basin organizations 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, technical assistance 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 can be said to be complemented by those of UNEP'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 Sahara and Sahel Observatory (OSS), an international organization, 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, consequences and scope of desertification in arid and semi-arid zones of the circum-Saharan area.

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 monitoring and evaluation 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 during June in Cairo on the proposal, which the Consultant attended along with representatives of participating countries.

In West Africa, WRCU-ECOWAS demonstrates through its efforts to develop a Regional Water Observatory the most potential to become a regional leader in water sector M&E, 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 on the Senegal River basin precludes its expansion into a sub-regional M&E organization for the time being.

One should 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 water supply and sanitation 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 (LVEMP), 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.[34] 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 and considerable sustained support would likely be required in order for them to be realized.

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.

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[34] ECCAS, "Vision de la CEEAC sur la gestion et la Coordination des Ressources Naturelles en Afrique centrale », http://www.ceeac-eccas.org/index.php?rubrique=domaine-intervention&id=13 (accessed November 2008)

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.

2.3.3. Proposed Regional/Sub-Regional Framework

In light of the above findings, the following competencies are considered desirable, if not essential to an 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
- A Resource Centre able to provide technical assistance and training Africa-wide and resolving M&E and sector policy and development issues generally; and,

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.

Table 2.5 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 technical assistance and training through the private sector.

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.

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;
- Technical assistance 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 2.6, five RECs and CEDARE have been identified as having 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.

Table 2.6 African Regional Economic Communities and CEDARE

	[illegible]	[illegible]	Center for Development and Environment for the Arab Region and Europe (CEDARE)	East African Community (EAC)	Economic Community of Central African States (ECCAS)	[illegible]	Economic Community of West African States - Water Resources Coordination Unit (ECOWAS-WRCU)	[illegible]	Intergovernmental Authority on Development (IGAD)	Southern African Development Community (SADC)
Sectoral Interests	• Trade • Economic growth • Political cooperation	• Free trade • Foreign investment • Political cooperation • Natural resources	• Water resources • Land resources • Knowledge management and ICT • Trade & investment	• Free trade • Economic integration • Political cooperation • Water supply	• Economic & monetary integration • Free trade • Peace and security • Natural resources	• Trade • Economic integration within CFA franc zone	• Economic integration • Security cooperation • Human rights • Culture • Water resources (WRCU)	• Economic cooperation & integration • Trade	• Economic cooperation and integration • Peace and security • Water resources	• Political and security cooperation • Economic cooperation & integration • Water resources

African Members (HQ)	• Algeria • Libya • Mauritania • **Morocco** • Tunisia	• Benin • Burkina Faso • C.A.R • Chad • Comoros • Cote d"ivoire • Djibouti • Egypt • Eritrea • Gambia • Ghana • Guinea-Bissau • Kenya • Liberia • **Libya** • Mali • Mauritania • Morocco • Niger • Nigeria • Senegal • Sierra Leone • Somalia • Sudan • Togo • Tunisia • São Tomé and Príncipe	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	• Cameroon • **C.A.R.** • Chad • Rep. of the Congo • Eq. Guinea • Gabon	• Benin • **Burkina Faso (WRCU)** • Cape Verde • Cote d'Ivoire • Gambia • Ghana • Guinea • Guinea-Bissau • Liberia • Mali • Niger • **Nigeria (HQ)** • Senegal • Sierra Leone • Togo	• Benin • **Burkina Faso** • Cote d'Ivoire • Guinea-Bissau • Mali • Niger • Senegal • Togo	• **Djibouti** • Ethiopia • Kenya • Somalia • Sudan • Uganda	• Angola • **Botswana** • D.R. Congo • Lesotho • Madagascar • Malawi • Mauritius • Mozambique • Namibia • South Africa • Swaziland • Tanzania • Zambia • Zimbabwe

In accordance with the African Union's July 2008 Sharm El-Sheik 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.

2.4. Global Monitoring Systems

At the UN-Water meeting in Paris 2005, member agencies confirmed their commitment to monitor the state of the world's water resources and water related development issues. The FAO, UNESCO, UNDESA, UNEP, WMO, UNECA, UNESCWA, WHO, GWP and WWAP all indicated interest in forming a thematic group on water statistics. Their aim would be to establish standards, harmonize existing databases and synchronize the collection of water data. In addition, UN-Water conducted a survey of global monitoring initiatives in service, quantity, quality and governance within the water sector, summarized in this report as Annex G.[35]

As a result, UN-Water proposed a Federated Water Monitoring System (FWMS) based on Federative Data Warehouse Architecture that would provide users with a single entry point for country level data held within the UN system. It would retain its global coverage and streamline data collection processes to avoid duplication of effort and would include features for data query, extraction and visualization and export in commonly used formats. It would also provide a gateway to local databases. Since publication of the proposal, however, no further information on its establishment or viability has become available, and awareness of the proposed system amongst African water sector stakeholders is low.

[35] UN-Water, 2006, "Water Monitoring – a Mapping Exercise of Existing Global Systems and Initiatives", FAO.

3. 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 monitoring and evaluation is deficient in almost every African country. Needs go well beyond monitoring progress towards the MDGs, yet M&E is badly needed in planning and managing the sector in every 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. Without relevant and reliable information being generated by countries, sub-regional, regional and even global databases are rendered ineffective.

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 water sector M&E systems across the continent. The Action Plan recommended herein is composed of three primary stages, discussed below, and is supported by a suggested approach and terms of reference for the application of the Rapid M&E Assessment Template attached as annexes C and D for use in the first phase of the AfDB-led M&E strengthening initiative. 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 undertake assessments in some 30 selected countries. The remaining countries will be assessed through desk reviews relying on internet, secondary data, international agency knowledge 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 twenty. 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.**

These stages will be coordinated by the AWF. Reference is made to section 2.3.3 in which a generic regional framework is given. For the purposes of discussion, it is assumed that the relevant framework comprises AWF as providing most of the financing, coordination and quality assurance, a combination of RECs at the sub-regional level with technical assistance and training being provided 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 for AMCOW.

Before proceeding to the work breakdown structure (WBS) in Figure 3.1 and accompanying schedule (Table 3.1) describing the Action Plan in a step-by-step format, the following eight recommendations are put forward to guide and help ensure its effective implementation.

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

2. 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.

3. Rapid assessments and initial strengthening of country M&E should begin in a limited number of countries (5 being the proposed number herein) and later expand to 20 and 30 over time. The first countries selected should not include the more difficult ones but respond to country interest and potential for success.

4. M&E systems need to be sector and country-wide and not limited to projects, programmes 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.

5. 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 not overlooked. Funding and support should only be demand responsive and not supply driven.

6. 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 3.1 Rapid M&E Assessment Work Breakdown Structure

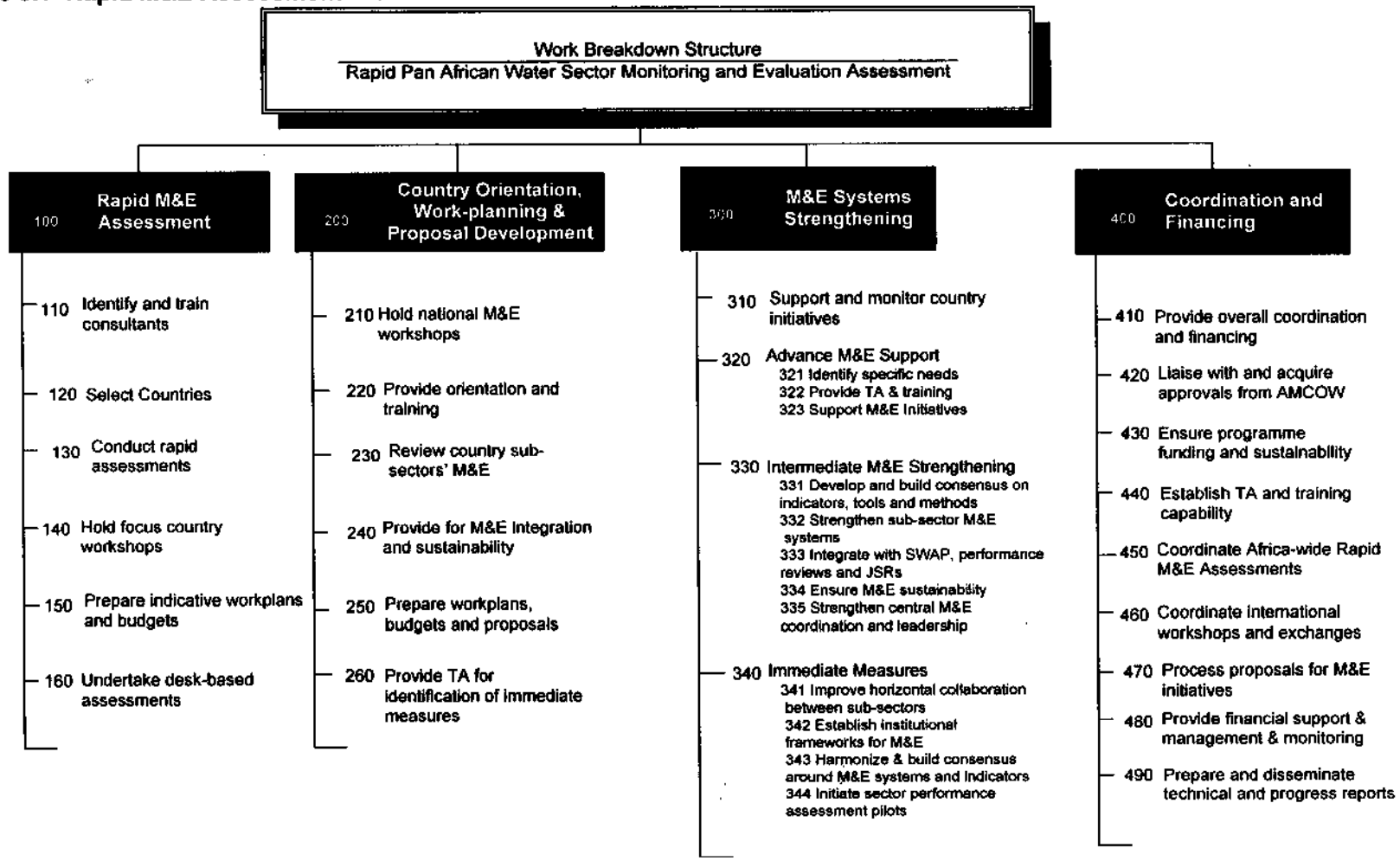
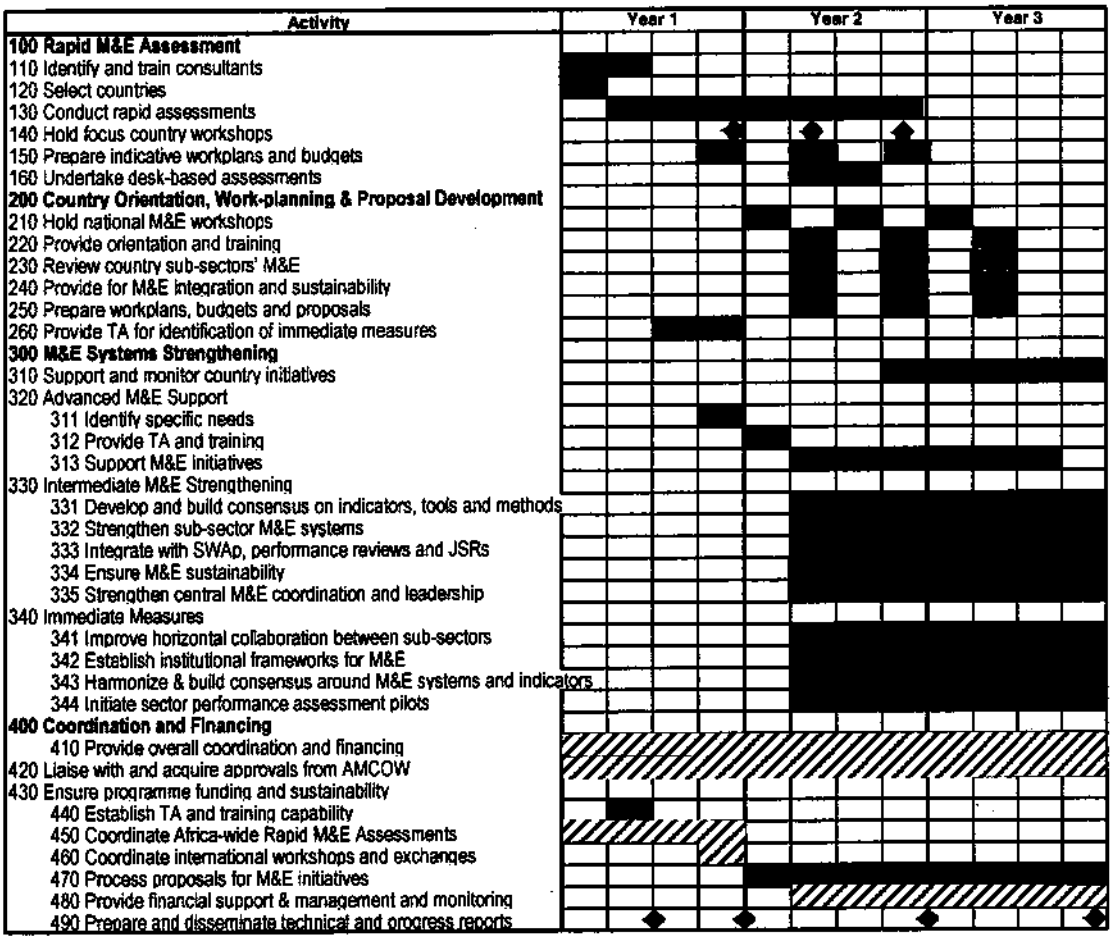


Table 3.1 Africa-wide Water Sector M&E Action Plan Schedule

Africa-wide Water Sector M&E Action Plan Schedule



3.1. 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 Activity. 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 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 Republic of Congo and Uganda. It is attached to this report as Annex C 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 to promote inclusiveness and enhance the quality of information obtained, as well as consistency of analysis 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 almost 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.

3.1.1. 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, M&E and have strong writing skills. Their training and the first five country assessments will be to ensure the desired quality, consistency and comparability of assessments and eventual workplans and proposals for strengthening. Training will entail a week of intensive study in a country with strong M&E systems followed by jointly conducting a sample rapid assessment. 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 is complete a first set of five country assessments will be undertaken. The consultants will be supported in each country by country 'coordinators' who would 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 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.

Application of the Template and the undertaking of the assessment itself are described using the proposed terms of reference for each consultant attached to this report as Annex D.

3.2. Country 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 assessment 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 orientation across the sub-sectors in 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 again stressed, however, that they will need to have been well integrated into the overall system to ensure 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 SWAp, performance reviews and Joint Sector Reviews) and 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 as all M&E systems require continuing support, resources and demand for their information, otherwise they fall into disuse as has so often happened in the past.

Technical assistance 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 none-the-less important and urgently needed strengthening activities.

3.3. 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 countries with more advanced M&E 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) The main effort will be devoted to the many countries having M&E categorized as Intermediate. These include, for example, Tanzania, Benin and Malawi. This category includes those 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 PRSP, decentralization, SWAp, annual performance reviews and Joint Sector Reviews. 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; benchmarking; water point mapping; participatory data collection; database development; and integration of monitoring into the annual performance assessment process. Again, emphasis will be on information demand creation and its use in planning and management and on sustainability.

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.

3.4. Coordination and Financing

Coordination and financing are recommended as AWF functions listed under Work Breakdown Structure component 400.

3.4.1. Appraisal, Financing and Overall Coordination

The AWF will provide overall coordination and liaison with the AMCOW, its Technical Advisory Committee (TAC) and 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 for activities in timely fashion in support of projects and field activities.

Its first major activity will be to set-up and coordinate the 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. On 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 and two international workshops followed by 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. A good portion could be outsourced to the private sector but even then the size and complexity of the Pan-African M&E Rapid Assessment will necessitate additional AWF staff. 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.

The AWF will perform its traditional role of providing overall programme direction, encouraging project proposals, assessing them and if needed having them upgraded, approving or rejecting them, and funding and monitoring their implementation. Coordinating this activity across some twenty countries will be a substantial increase in workload.

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 be liaising 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.

3.4.2. 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 on a merit basis and deciding on specific organizations within the selected option. 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 to ensure relevance and quality of proposal and ensuing projects. Of necessity is the design of appropriate and harmonized networks at this stage.

As stressed above, the RECs and other organizations with sub-regional mandates in the sector have 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 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, technical assistance and training input.

3.4.3. M&E Development Programme (MEDP) Budget

The following Table 3.2 presents an indicative budget for the action plan, each activity in accordance with the WBS.

Table 3.2 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			27,550	0	0	27,550
	142 2nd Set Rapid Assessment Coordination Workshops incl fees and exps	workshop	27,550		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	5	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	60,000	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	19,500	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	1,000	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	2,960	5	25		14,800	74,000	0	88,800
460	Coordinate international workshops and exchanges	workshop	10,000	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	8,850	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							373,850	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 3.1 provides for the timing of activities detailed in table 3.2. The previous sections describe the activities in four phases. 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 2009. Completion of rapid assessments will be achieved in 2010 with 25 in-country and 22 desk-based assessments. 2009 will be the programme's first year; allowance needs to be made for establishing and standardizing procedures to enable scaling-up during 2010 and 2011. Assuming that the AWF's capacity to administer the programme will be limited, provision has been made for extensive use of African consultants, specifically those that will have received training and have undertaken the rapid assessments.

The budget includes costs that are directly related to the M&E Development Programme (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, eleven 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 0.25m for advanced countries and immediate measures projects and USD 1m for the intermediate countries. It is anticipated that the numbers of countries receiving eventual funding will be four advanced, eight immediate and 22 intermediate. The number and size of projects to be funded in 2009, 2010 and 2011 will be 6, 14 and 14, respectively, at an estimated cost of USD 2.5m in the first year, 11m in the second and 11m in the third.

4. ANNEXES

Annex A: Regional M&E Organizations

A.1 CEDARE

The Centre for Environment and Development for the Arab Region and Europe (CEDARE) was established in 1992 as an inter-governmental organization with diplomatic status. It was created through a convention adopted by the Council of Arab Ministers Responsible for the Environment and with the support of Egypt, the UNDP and the Arab Fund for Economic and Social Development. Governed by a high-level Board of Trustees from the Arab world and the international community, CEDARE works in close partnership with governments, UN agencies and other international organizations, NGOs, the private sector, the media and civil society at large to build a qualified human resource base capable of addressing complex environmental challenges through collective action, reform and renewal. It also seeks to integrate the environmental dimension into the fabric of development policies and practices to make the market work for the benefit of the environment.[36]

Programs

CEDARE's Plan of Implementation (2005-2010) focuses on five priority areas:

- Integrated water resources management (IWRM);
- Land resources management, which stresses land degradation and desertification issues through dialogue, stakeholder involvement and the exchange of best practices;
- Dissemination of knowledge and information technology (IT), which builds on CEDARE's experience in providing access to reliable environmental data, knowledge and IT to institutions throughout the Arab world to support environmental decision making processes;
- Trade, investment and the environment, through which CEDARE works with the private sector to promote corporate social responsibility; and,
- Areas of special concern, through which CEDARE can address current and emerging environmental issues such as climate change, coastal zone management, water management and genetically modified organisms.

The two programs most relevant to African water sector M&E are its water resources management (WRMP) and knowledge management (KMP) programs.

Knowledge Management Program: The basic mandate of the KMP is to provide CEDARE with a tool for reliable environmental assessment, monitoring, identification of environmental concerns, trends, root causes, emerging issues and policy responses in the region. CEDARE operationalizes this mandate by assisting in the creation and strengthening of national Environmental Information System (EIS) programs; fostering cooperative and coordinated efforts for the production of environmental information in the region; acting as a clearing house for the dissemination and exchange of environmental information; coordinating and promoting data harmonization and standardization, and influencing data collection methodologies. CEDARE also uses environmental information to mobilize and augment public opinion; develops sound environmental IT projects at the national and regional levels; works to develop a regional environmental information network that offers shared access to

[36] Source: CEDARE at a Glance, "CEDARE, 2007", http://water.cedare.int/

distributed databases located at various institutions and links between the actors in the environmental field in the region.[37]

One of the KMP's most significant projects to date was its work for the UN Environment Program (UNEP) to coordinate the Arab countries' component of the Global Environmental Outlook report (GEO 1 and GEO 2). It has also provided considerable technical assistance related to environmental information technologies for governments and institutions across the Arab world. [38]

Also falling under its KMP, CEDARE is developing a Water MDGs Monitoring and Evaluation Programme in North Africa, an initiative stemming from its additional role as the Secretariat for the North African Ministers' Council on Water (NAMCOW). NAMCOW's member states include Mauritania, Morocco, Algeria, Tunisia, Libya and Egypt.

Water Resources Management Programme (WRMP): Through technical assistance projects and studies,[39] CEDARE's WRMP seeks to build the capacity of national institutions working in the field of water resources management; provide consultation on water conservation, monitoring, and assessment techniques; advise on proper management of surface water, groundwater, and other non-conventional water resources; transfer low-cost and environment-friendly technologies for water resources protection; promote best practices for international WRM; explore non-conventional water resources and water reuse; assist countries in the formulation of water master plans, policies and legislation for water conservation; and, initiate water-resources public-awareness activities through yearly events and contests.

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[37] According to CEDARE, "the information needed to address the environmental issues in the region are either lacking or inaccessible, even those that are readily available are not accessible as they are not in a format that can be easily shared or exchanged. They are locked in reports, books, maps, etc. The great challenge for informed decision making lies thus in the issues of data availability, accessibility, harmonization and standards, networking mechanisms to facility information exchange, and the expertise to utilize this information. There is a strong need for region-wide, coordinated and integrated environmental information systems to build the capacity of the region to incorporate environmental information into their work programme and the...decision making process to be able to address their environmental issues and sustainable development." http://theme.cedare.int/Main.aspx?code=291

[38] Please see the KMP's website, http://theme.cedare.int/Main.aspx?code=293, for more information.

[39] More information on the WRMP's current and former technical assistance and other projects can be found through its website: http://water.cedare.int/Main.aspx?code=680

A.2 ECOWAS Water Resources Coordination Unit

BACKGROUND

The Economic Community of West African States (ECOWAS), founded in 1975 with its headquarters in Abuja, Nigeria, is a regional group of fifteen West African countries. Its mission is to promote economic integration in "all fields of economic activity, particularly industry, transport, telecommunications, energy, agriculture, natural resources, commerce, monetary and financial questions, and social and cultural matters." ECOWAS is composed of institutions, such as the ECOWAS Commission – the centre of decision making authority within the organization – financial institutions, such as the ECOWAS Bank for Investment and Development, and Specialized Agencies. Among the organization's nine Specialized Agencies is the Water Resources Coordination Unit (WRCU).

The WRCU, created in 2004, is a regional unit in charge of the follow-up and supervision of ECOWAS activities in the domain of water management, most notably the coordination and implementation of the Regional Action Plan on IWRM in West Africa (PAR-GIRE/AO). The WRCU is placed under the supervision of ECOWAS Deputy Executive Secretary in charge of Integration Programs and is based in Ouagadougou, Burkina Faso.

The overall objective of the WRCU is to facilitate the equitable and efficient management and the sustainable use of water in West Africa. More specifically, however, the Unit is tasked with the promotion of IRWM practices and the coordination and monitoring of the implementation of the Regional Action Plan at the country level. In this regards, the WRCU is working towards the development of its Regional Water Observatory. Once operational, the Observatory will facilitate the consistent monitoring and evaluation of regional water resources at the country, basin and regional level. The facility will also provide capacity building support to reinforce country-level water information management systems and will develop and share reports on the state of regional water resources.

REGIONS/COUNTRIES OF INTERVENTION

Member States: Burkina Faso, Benin, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo.

Country Focal Points: Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, and Togo.

WBO Focal Points: ABN, CTBV, Mano River Union, OMVG, OMVS and the CBLT.

PARTNERS, AFFILIATED ORGANIZATIONS AND ACTORS

ECOWAS' partners include transboundary water basin organizations and regional and international organizations such as the AWF, UNEP, GWP, OSS, FAO, JMP, and the OECD.

THEMATIC AREAS

- Integrated water resources management (IWRM)
- Transboundary river basin management (TRBM)

BUDGET/COSTS

- Overall budget (2007): 487 432 888 CFA
    - Disbursed (as of January 2008): 417 815 862 CFA

RELEVANT PROGRAMS (PAST AND PLANNED)

Having only been created in 2004-2005, the WRCU's activities have been devoted predominantly towards building up the human and technical resources of the Unit and establishing the foundation for its future work. The latter efforts included the development and enunciation of the Unit's immediate objectives: the implementation, at each country level, of a

Country Water Action plan; the creation of a regional co-operation framework for IWRM and the harmonization of water related policies and legislation; the creation or reinvigoration of the advisory frameworks between bordering countries for a concerted water management in common basins; and, the development of country and regional strategies to mobilize the financial resources needed for integrated water resources management. The WRCU's 2006 work plan, however, focused on the following three categories of activity: direct support to the water resources sector; integration and sector development; and coordination and tracking of sector activities.

The Unit's IWRM monitoring and evaluation activities fall under the 'integration and sector development' category. Financed in part by the African Water Facility and DANIDA, these include the creation of a Regional Water Observatory (RWO), updating the status of IWRM in West Africa at all levels (regional, country, transboundary basins, local, etc), and the creation of a database of the water management systems in West Africa (regional, country, basins, local, etc).

As of February 2006, the Information Management and Sharing component of the WRCU's work plan had made only gradual progress towards its full implementation.[40] Terms of reference for the development of the West African RWO had been drafted, as had those for a series of IWRM studies. In 2007, WRCU's activities focused on the development of a regional framework and integration tools to facilitate countries and basin organizations to accelerate and coordinate their efforts towards the implementation of integrated water resources management. WRCU also devoted considerable effort to the development of its RWO and, similarly, to the completion of 14 country studies and a regional overview on the status of water sector information systems in ECOWAS member states. It also made progress towards defining a set of IWRM indicators based on the principles of efficiency, sustainability and social equity.[41]

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[40] Ibid, p. 19-20
[41] WRCU, "Management Report: Year 2007," January 2008, WRCU.

A.3 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. It is managed by a legal structure grouping the International Office of Water (France), the CEDEX (Spain) and SOGESID (Italy). The Technical Unit and International Focal Point Headquarters are located in Sophia Antipolis-Valbonne, France; with a reduced staff, it relies mainly on the experts from its 3 member organisations. EMWIS is supported by core financing from the governments of France, Spain, Italy and the European Union.

The activities of the NFPs are coordinated by a central Technical Unit (TU), a permanent body managed and financed by Spain, France and Italy. The primary roles of the TU are to:

- Coordinate and provide technical assistance and recommendations to the NFPs;
- Support the activities of the Steering and Coordination Committees;
- Act as the International Focal Point: collecting and disseminating through the website data of relevance to the Euro-Mediterranean region. The TU also works towards reaching agreements with international initiatives and projects.

At the decision-making level, EMWIS is composed of a Steering Committee and a Coordination Committee. The former, comprised of 13 rotating member countries, formulates operational strategy and validates yearly budgets and progress reports. The Coordination Committee, composed of representatives from the Technical Unit and the NFPs, is tasked with drawing up annual activity programs and proposing the annual budget. EMWIS is led by a Secretary-General who is in charge of relations with the European Commission and the Partnership Countries.

OBJECTIVES

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.

The first objective – to provide easy access to water sector information – is focused on the following five elements:

- *Institutions:* The types of institutions and the people involved;
- *Documentation*: Existing centres and their organization; the means and technologies used for processing, accessing, consultation and dissemination, standardization and quality certification;
- *Training:* Existing organizations, programs, localization, trainers, methods, training materials and quality certification;
- *Research and development:* Existing organizations, programs, people involved, means and technologies, publications, partnerships, funding sources;
- *Data administration:* Existing organizations and databases, methods used for data gathering and verification, and publications. For example, the Mediterranean Water Information Partnership (MedWIP) program is assessing the reach and effectiveness of national water information systems in selected member countries in order to eventually strengthen their data collection and dissemination capabilities.

The second objective – to deepen the reach and accessibility of this information – is being realized primarily through the establishment and strengthening of NFPs.

Finally, the third objective – to work together on common products and cooperation programs – is best exemplified by the ongoing development of MedWIP, to be discussed in further detail

below. It also entails the strengthening and harmonization of water information management systems across the Euro-Mediterranean region and the reduction of the duplication of initiatives with similar goals.

Access to EMWIS is open to everyone interested in water management issues. The EMWIS website is multilingual, with most information available in English, French and Arabic. Each partner country manages its own information server, providing access to national information and know-how. All of these servers are connected via the Internet; however, users can search for information using a single access point, i.e. the International Focal Point. Each NFP is responsible for identifying and guaranteeing quality and access to information sources. For quality assurance purposes, the only information sources accessible via this system are those approved by EMWIS.

REGIONS/COUNTRIES OF INTERVENTION

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). NFPs are currently in place in the following member countries:

European Union: Austria, Belgium, Cyprus, France, Greece, Italy, Luxembourg, Malta, Portugal and Spain.

MPCs: Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Palestine, Syria, Tunisia and Turkey.

PARTNERS, AFFILIATED ORGANIZATIONS AND ACTORS

EMWIS has signed several partnership agreements or memoranda of understanding with international organizations. These partnerships facilitate the diffusion and exchange of information on the water sector in the Euro-Mediterranean zone. To date, agreements have been signed with the following organizations:

BALWOIS: Water Observation and Information System for Balkan Countries. EMWIS will contribute to the development of this organization, an extension of EMWIS into the Balkan countries. BALWOIS' activities focus on the creation of scientists and other practitioners working the water-related fields; the implementation of a water observation and information system; and the organization of working groups, workshops and training activities.

EEA: The European Environment Agency and EMWIS are working together to interface EMWIS with the Water Information System of Europe-WISE.

GWP-Med: EMWIS belongs to the Global Water Partnership, a working partnership among all those involved in water management: government agencies, public institutions, private companies, professional organizations, multilateral development agencies and others committed to the Dublin-Rio principles.

INBO – MENBO: The International Network of Basin Organizations and the Mediterranean Network of Basin Organizations. The partnership notably works towards the exchange of knowledge on water management at the river basin level.

IME: Mediterranean Water Institute. The partnership focuses in particular on trans-national cooperation in sharing information on Mediterranean water management.

MED-EUWI: The Mediterranean Component of the European Union Water Initiative (MED EUWI) is a regional component of the EUWI and shares its overall objectives. The EMWIS website will serve as a main dissemination channel for Med EUWI in the Euro-Mediterranean Region and as a tool to foster Med-EUWI activities.

SMAP – RMSU: Regional Euro-Mediterranean Programme for the Environment - Regional Management and Support Project. SMAP-RMSU and EMWIS will cooperate to improve the collection and dissemination of information on integrated water resources management.

UNEP/MAP/Plan Bleu: This partnership will help link together the Mediterranean water information system with the Mediterranean System on Environment and Sustainable Development.

World Water Council: This partnership with the WWC is intended to promote and disseminate Mediterranean experience abroad and facilitate Mediterranean contributions to the Water Monitoring Alliance's (WMA) website and database.

Furthermore, though EMWIS currently does not have any direct partnerships with any river basin organizations (RBOs), it looks favourably upon providing them with technical assistance for the development of their own water information management systems of a similar nature to that provided to NFPs.

THEMATIC AREAS

- Water sector management;
- Water information management systems.

BUDGET/COSTS

Regional activities (meetings, working groups, defining standards, training, etc.), the IFP and technical assistance to non-EU countries are financed by contracts between the European Economic Interest Group – EMWIS-TU-EEIG – and the European Commission. Each NFP received an annual budget of approximately €40,000 to support operations (such as NWIS development 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.

RELEVANT PROGRAMMES (PAST AND PLANNED)

First Phase of EMWIS' Implementation (1997-2002):
This period was devoted to creating the supporting structure behind EMWIS and its future activities. This included: the consolidation of political support at the highest level and of institutional support in member countries; the development of a partnership spirit in the countries; the installation of EMWIS' operational and organizational framework; and, the training of NFP teams on the advanced techniques of knowledge management. Four of the 20 NFPs launched during this period were established in North African countries: Algeria, Egypt, Morocco and Tunisia. Three of the four, with the exception of Egypt, also launched their own websites.

Second Phase (2003–2007)
A significant initiative falling within Phase II, the focus of which was to develop EMWIS as an integrated network of interoperable National Water Information Systems (NWIS), was the initiation of a feasibility study concerning the development of a Mediterranean water

monitoring mechanism. Four pilot countries were selected for the study: Spain, France, Jordan and Tunisia. This initiative served to highlight the need and demand from concerned international and regional organizations for such a mechanism within the region.

The study on Tunisia, for example, revealed that the first phase of development of the country's proposed SINEAU will take place between 2007 and 2011 under the auspices of the *Project d'invetissement du Secteur de l'eau.* The SINEAU will enable the efficient collection, storage and dissemination of detailed data on Tunisia's surface and groundwater resources and improve the capabilities of Tunisia's *Direction Générale des Ressources en Eau* to better fulfill its mandate. The study also revealed the four water resources management indicators deemed by Tunisia to best suit the country's priorities and socio-economic context: the water resource exploitation rate; water resource use by economic activity; used water purification rate; volume of exploited non-conventional water resources.

Phase II also included technical and financial feasibility studies of the NWIS in 12 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 were volunteers for the study: Cyprus, Spain, France, Malta, Morocco, Jordan and Tunisia.

It was concluded through these studies that Algeria and Tunisia possessed "advanced level" National Water Information Systems, while Morocco's was rated one step down as "high level." However, all three countries were included in the "Most NWIS-Ready Group" in the study's final report that encompassed all 12 assessments. Apart from Algeria and Tunisia, moreover, none of the other countries visited were developing a NWIS at the technical level at the time the reports were completed (January 2006); however, they were all convinced of the need of such system. Some countries had started initiatives or developed systems that could serve as core components for developing a NWIS, such as the Water Information Systems of Morocco and Cyprus. Algeria saw its NWIS as one that could be emulated by other Mediterranean countries seeking to develop one of their own.

Phase III (2008-2011): Following consultations with Mediterranean Partner Countries (MPCs) and taking into consideration regional and global initiatives such as the Mediterranean Strategy for Sustainable Development and Pollution Control and the MDGs, EMWIS' Steering Committee decided in 2006 that its initiatives to facilitate the transfer of know-how in the water sector between MPCs during Phase III would concentrate on five main themes. These include: national water information systems and the development of the Mediterranean Water Monitoring Observatory; extreme phenonema such as droughts and floods; the use of non-conventional water resources through wastewater recycling and desalinization; sanitation and domestic pollution; and participative approaches to IWRM.

At the 4th Conference of the Water Directors of the Euro-Mediterranean and Southeastern European Countries in December 2007, the Water Directors acknowledged the results achieved so far by EMWIS and its NFPs to facilitate the exchange of know-how between Euro-Med countries. They also welcomed the results of the feasibility study on the MedWIP and discussed the proposal of the EMWIS Steering Committee further facilitate information sharing between relevant national and regional organisms. Finally, they recommended further

development and reinforcement of water information systems in the Mediterranean and Southeastern European countries to be included as an appropriate component within a potential future water strategy for the Mediterranean to be decided by the special ad hoc Ministerial Conference on Water in 2008.

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A.4 JMP

BACKGROUND

The Joint Monitoring Programme (JMP) is a collaborative mechanism operated by the World Health Organization (WHO) and UNICEF to track progress on global water and sanitation goals. Its three major goals are to:

- Monitor trends and progress within the water-supply and sanitation sector;
- Inform policy-makers and civil society on the status of the sector;
- Build national capacity for monitoring.

Responsibility for the management and implementation of JMP is shared by WHO, through its Water, Sanitation and Hygiene Unit, and by UNICEF through its Water, Environment and Sanitation and Strategic Information sections. A focal point from each agency is responsible for the management of JMP and its interactions with partner organizations and users of JMP information, etc. WHO and UNICEF also provide staff for the day-to-day operations of JMP, and both agencies are accountable for the quality of JMP coverage estimates.

REGIONS/COUNTRIES OF INTERVENTION

Global, with information grouped according to the regional subdivisions used in the MDGs: Northern Africa, Sub-Saharan Africa, Eastern Asia, Southern Asia, South-Eastern Asia, Western Asia, Latin America and the Caribbean, Oceania, CIS, Developed Regions.

THEMATIC AREAS

- Water and sanitation coverage monitoring;
- Building national capacity for water sector monitoring;
- Dissemination of information to policy-makers and civil society.

PARTNERS, AFFILIATED ORGANIZATIONS AND ACTORS

N/A. JMP's partnership structure is in the process of being reformed.

BUDGET/COSTS

Both WHO and UNICEF fund staff positions for JMP. The agencies recognize the need for external funding to complement regular resources and actively pursue external funding to fully realize JMP objectives.

RELEVANT PROGRAMS (PAST AND PLANNED)

Water and Sanitation Coverage Monitoring

Data compilation: The JMP assembles, reviews and validates the results of nationally representative surveys and censuses, including household surveys – MICS, DHS the World Bank's Living Standard Measurement Survey and the WHO's World Health Surveys. These are used to generate data on two primary indicators: percent of people with access to improved water supply in urban and rural areas, and the percent of people with access to improved sanitation in urban and rural areas. [42] Implementation of household surveys is usually

[42] The DHS and MICS are national cluster sample surveys that cover several thousand households in each country. Demographic and Health Surveys (DHS) are a central component of the USAID-funded DHS Measure project. Implemented by ORC Macro in partnership with three US research organizations and John Hopkins University, the DHS approach to data collection emphasizes integration, coordination, cost-effectiveness, and capacity building. The Multiple Indicator Cluster Survey (MICS) is a household survey

coordinated by national institutes for statistics, and carried out by national staff that have received extensive training in the implementation of the household survey. The average sample size of MICS and DHS surveys varies between 4000 and 20,000 households. UNICEF uses its extensive network of country offices to collect annually the most recent data along with copies of the original source documentation. WHO collects new data through consultation with its country or regional offices, or directly with country statistical offices. In 2002, WHO conducted the first round of the World Health Surveys in 52 countries.

Data processing: 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. 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, use regression analysis to graph trend lines, extrapolate regression lines and deal with exceptional cases. These rules also ensure consistency with the definitions of water and sanitation indicators and objectives used in the tracking of Target 7 of the MDGs. In the context of halving the proportion of people without sustainable access to safe drinking water and basic sanitation by 2015, for example, "access" refers to the use of improved drinking water sources and sanitation facilities.[43]

Data analysis: Once data have been entered into the country data files, WHO and UNICEF staff review the work of the other agency and discuss potential differences in interpretation. Review meetings are held to:

- Review the data files and estimates, with a focus on the most populous developing countries for which changes have been made;
- Discuss problem files on which no agreement could be reached between those processing the data;
- Discuss country files in which new data show a sharp increase or decrease when compared to prior measurements. For remaining questions, the opinion of WHO or UNICEF country offices or survey staff is sought. Once WHO and UNICEF have signed off on the complete data set, national, regional and global coverage estimates are calculated using population-weighted averages based on the latest estimates of the UN Population Division.

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 agencies. For example, a logical outcome of current work on the harmonization of

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programme developed by UNICEF to assist countries in filling data gaps for monitoring the situation of children and women. It is capable of producing statistically sound, internationally comparable estimates of these indicators. Samples from both DHS and MICS surveys are stratified to ensure they are representative of urban and rural areas of each country. Currently, DHS conducts 7–9 surveys per year, while MICS is conducted every five years in approximately 70 countries.

[43] Improved drinking water sources include: piped water into dwelling, plot or yard; public pipe/standpipe; tubewell/borehole; protected dug well; protected spring; and rainwater collection. Improved sanitation facilities include: flush or pour-flush to piped sewer system, septic tank or pit latrine; ventilated improved pit latrine; pit latrine with slab; and composting toilet. www.wssinfo.org

instruments is the recent authoritative guide on household survey questions and indicators for water supply and sanitation, JMP's "Core Questions". Improved communications with national stakeholders on how JMP coverage estimates are derived, and on the applicability of JMP methodology to national and sub-national surveys, will yield more consistent and comparable national and global estimates. The roles and responsibilities of WHO and UNICEF are still evolving in the area of national capacity building.

Dissemination of information to policy-makers and civil society

Frequency of reporting: In principle, JMP updates the complete data set every two years, as global estimates of water and sanitation coverage do not change significantly on an annual basis. On average, the results of 25 new surveys or censes emerge every year, and WHO is bound by a World Health Assembly decision of 2002 to share any data on its member countries with each ministry of health before WHO officially releases them. This decision applies to JMP estimates. Countries have one month to respond to the data, before the estimates become official JMP figures. If a government has evidence on access (derived according to JMP criteria) that is not in the JMP data set, then JMP estimates will be updated with the new evidence.

Types of reports: 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, while in alternate years the reports have focused on topics of interest. The reports use information from household surveys, which are analyzed in more depth, and sector information from other credible sources. JMP also provides yearly inputs for the report of the UN Secretary General on Millennium Development Goals.

Data dissemination: The annual reports, tables and country data files and graphs are available at the JMP website, or at the UNICEF website, which has global data on child survival and development. The individual data files are shared with country authorities through WHO and UNICEF country representatives. Country representatives are encouraged to organize stakeholder meetings to present the new country estimates, explain the JMP methodology for estimating coverage, and advocate that JMP estimates be widely used.

As of the 2008 JMP report, results are presented using a four-step ladder to illustrate trends in the use of various forms of water supply and sanitation, from least to most improved. For sanitation, trends in using improved, shared, and unimproved sanitation facilities are shown, in addition to the trend in open defecation. The drinking-water ladder shows the percentage of global population using piped connections into a dwelling, plot or yard; other improved water sources; and unimproved sources. The intention is to continue refining the "ladders" in future reports.

Data use: The JMP database is freely available for scientific or advocacy purposes, provided the source is referenced and the year of the data is clearly stated. The JMP's series of MDG monitoring reports is key tool used to track progress being made towards reaching Target 7 of the MDGs. Using the JMP's data, these biannual reports provide estimates of water and sanitation coverage by country and MDG region, show how many people have gained access since the MDG baseline year (1990) and identify the ongoing challenges related to meeting the MDG drinking water and sanitation target.

CONTACT INFORMATION

World Health Organization	United Nations Children's Fund
Water, Sanitation and Health 20, Avenue Appia 1211 Geneva 27, Switzerland Email: contact-who@wssinfo.org www.who.int/water_sanitation_health	WES Section 3 United Nations Plaza, New York, NY 10017, USA Email: contact-unicef@wssinfo.org or: wesinfo@unicef.org www.unicef.org/wes

A.5 UNECA

BACKGROUND

The UN Economic Commission for Africa (UNECA) was established by the Economic and Social Council (ECOSOC) of the United Nations (UN) in 1958 as one of the UN's five regional commissions. UNECA's mandate is to promote the economic and social development of its member States, foster intra-regional integration, and promote international cooperation for Africa's development. The work of the UNECA is divided amongst six programs: the African Centre for Statistics (ACS); Food Security and Sustainable Development (FSSD); Gender and Social Development (GSD); Governance and Public Administration (GPA); ICT and Science & Technology (ICTST); NEPAD and Regional Integration (NRI); and Trade, Finance and Economic Development (TFED). UNECA's two most relevant linkages to water sector monitoring and evaluation in Africa are through its role as the Secretariat of UN Water-Africa and the work of the ACS.

African Centre for Statistics (ACS): The objective of the ACS is to strengthen capacities for statistical development at national, sub-regional and regional levels, including the promotion of the development of improved and integrated statistical databases in support of decision-making and policy formulation, monitoring and evaluation.

REGIONS/COUNTRIES OF INTERVENTION

UNECA has five sub-regional offices located in Central, East, North, South and West Africa.

THEMATIC AREAS

The Commission focuses on the following thematic areas:

- Regional Integration, Trade and Infrastructure
- *Meeting the MDGs with a special emphasis on Poverty Reduction and Growth, Sustainable Development and Gender*
- Promoting Good Governance and Popular Participation
- ICT, Science and Technology for Development
- *Statistics and Statistical Development*

PARTNERS, AFFILIATED ORGANIZATIONS AND ACTORS

African Centre for Statistics:

- Ecole Nationale d'Economie Appliquée - Département de Statistique et de Démographie - Dakar, Sénégal (ENEA - DSD) www.refer.sn/dsdenea/resuldakar2003.htm
- Ecole Nationale Supérieure de Statistique et d'Economie Appliquée - Abidjan, Côte d'Ivoire (ENSEA) www.ensea-ci.org
- Ecole Supérieure de la Statistique et de l'Analyse de l'Information - Tunis, Tunisie (ESSAI) www.tunisie-statistiques.tn
- Institut Sous-regional de Statistique et d'Economie Appliquée - Yaoundé, Cameroun (ISSEA)
- Institut Supérieur de Statistique et d'Economie Appliquée - Rabat, Maroc (INSEA) www.insea.ac.ma
- East African Statistical Training Centre, Dar-es-Salam, Tanzania (EASTC) www.eastc.ac.tz
- Institute of Statistics and Applied Economics, University of Makarere, Uganda (ISAE)
- www.mak.ac.ug

BUDGET/COSTS

N/A

RELEVANT PROGRAMS (PAST AND PLANNED)

UNECA serves as the **Secretariat of UN Water-Africa (formerly the Interagency Group for Water in Africa),** which exists to coordinate and harmonize water activities in Africa by various UN and other sub-regional inter-governmental organizations. UN-Water also promotes joint collaborative activities in the water sector in Africa by these agencies, such as the African Water Development Report, described below, and serves as valuable online resource for information on African water resources.

UNECA published the **2006 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. Produced for the first time in 2006, the report, which covers more than 25 African countries, was created under the general direction of all the heads of the participating agencies, including UNEP, UNESCO, WMO, UN-HABITAT, FAO, UNDP, and UNECA, which assumed the responsibility of producing and publishing the AWDR under the overall leadership of its Executive Secretaries and with the support of the Director of the FSSD. The objectives of the AWDR are to: provide a lasting and durable mechanism to monitor progress made in implementing the African Water Vision; provide African decision makers with an authoritative basis for managing Africa's water resources; and, serve as an integrative program for the strengthening of UN Water/Africa.

African Centre for Statistics

The objective of the African Centre for Statistics is to strengthen capacities for statistical development at national, sub-regional and regional levels, including the promotion of the development of improved and integrated statistical databases in support of decision-making and policy formulation, monitoring and evaluation. It produces a series of publications each year that serve to disseminate data on a range of social, environmental and economic indicators. It publishes the annual African Statistical Yearbook and the Social and Environmental Indicators Report as well as the decennial Integrated National and Sub-Regional Economic Report. However, these publications, unlike the AWDR, do not contain indicators directly related to the WSS sector. Other publications include the annual Compendium of Intra-African and Related Foreign Trade Statistics and a quarterly Statistical Newsletter. ACS also provides access to the following technical material to member states and other interested parties: the UNECA Statistics Website; household survey files; the Regional Statistical Database; and, a database of statisticians, statistician-economists and demographers.

Beyond the production and dissemination of the above-noted publications and materials, the ACS also conducts group training workshops and field projects and provides advisory services to member state governments and sub-regional and regional institutions. Workshops conducted in 2005 included the following topics: new database development technologies; the use of geographic information systems (GIS) in national statistical offices for data collection, dissemination and poverty mapping; and poverty statistics. In 2005, the ACS conducted a field project on strengthening capacity for statistical services in Africa (with emphasis on Database Development, National Accounts and Household Surveys).

CONTACT INFORMATION

UN Economic Commission for Africa	African Centre for Statistics (ACS)
Menelik II Ave. P.O. Box 3001, Addis Ababa, Ethiopia Tel: 251-11-551 7200 Cable: ECA ADDIS ABABA Fax: 251-11-551 4416 (Addis Ababa) 1- 212-963 4957 (New York) Email: ecainfo@uneca.org	Mr. Sanga DIMITRI, Officer in Charge UNECA P.O. Box 3001, Addis Ababa, Ethiopia Tel : +251 11 544 3050 Email: DSanga@uneca.org

A.6 WMA

BACKGROUND

The Water Monitoring Alliance (WMA), an initiative of the World Water Council (WWC),[44] is a cooperative partnership established in 2005 by international, regional and national organizations involved in the collection, analysis, reporting and dissemination of information on water in all its uses.

The WMA's mandate stems from the fact that many organizations conduct monitoring activities at various levels and for many different purposes. UN organizations, ministries and departments of different countries, non-governmental organizations, universities and research centres, etc, all invest great effort and time in monitoring water in its various aspects and at various levels. However, due to different priorities and monitoring protocols, comparison and aggregation is very difficult. Moreover, basic information concerning the water sector often remains confidential, and experts question the reliability of current statistics. Consequently, the WMA exists "to enhance greater exchange and sharing of information amongst the organizations and programmes involved in the collection and dissemination of water data and to provide better access to the information for decision makers, the media and the public at large."

REGIONS/COUNTRIES OF INTERVENTION

Global, with data grouped according to region: Africa (53 countries), The Mediterranean, Asia, Latin America and the Caribbean, North America, and Europe.

THEMATIC AREAS

- Monitoring & Related Activities
- Tools & Methods
- Capacity Building

PARTNERS, AFFILIATED ORGANIZATIONS AND ACTORS

- African Water Facility (AWF)
- European Water Initiative (EUWI)
- Japan Water Forum (JWF)
- Ministère des Affaires Étrangères
- Ministère de l'Écologie du Développement et de L'Aménagement Durable (France)
- Organization for Economic Co-operation and Development (OECD)
- Sahara and Sahel Observatory
- The Euro-Mediterranean Information System on Know-how in the Water Sector (EMWIS)
- World Water Assessment Programme (WWAP)
- World Water Council (WWC)

BUDGET/COSTS

N/A

[44] The WWC, established in 1996, is an international multi-stakeholder platform whose mission is to promote awareness, build political commitment and trigger action on critical water issues at all levels, including the highest decision-making level, to facilitate the efficient conservation, protection, development, planning, management and use of water in all its dimensions on an environmentally sustainable basis for the benefit of all life on earth."

RELEVANT PROGRAMS (PAST AND PLANNED)

WMA Database

The purpose of the WMA database is to facilitate the search for water-related information on the global, regional, international, national and local levels. Organizations carrying out related activities can submit information on their initiatives to the WMA. If they are deemed relevant and respond to the criteria of the WMA, these activities would then be added to the database. A search for information can be carried out according to the following categories:

Monitoring & Related Activities

Under this category, a variety of monitoring, reporting and observation programmes that collect and publish data in the form of databases or reports can be found. These include but are not limited to:

- African Household Survey Databank (AHSD)
- Aquastat
- Blue Plan Mediterranean Environment and Development Observatory
- FAO Country Profiles & Mapping Information System
- FAO Water Quality and Environment Programme: Wastewater Database
- Global Environment Monitoring System – Water (GEMS – Water)
- IGAD Climate Prediction and Applications Centre for the Greater Horn of Africa (ICPAC)
- International Benchmarking Network for Water and Sanitation Utilities (IBNET)
- International Groundwater Resources Assessment Centre (IGRAC)
- Joint Monitoring Programme for Water Supply and Sanitation (JMP)
- Lake Victoria Environmental Management Project (LVEMP)
- Millennium Project - Task Force 7 on Water and Sanitation
- Southern African Development Community – Drought Monitoring Centre (SADC – DMC)
- Sustainable Management of the Usangu Wetland and its Catchment Project (SMUWC)
- Tiger Initiative
- Water Resource Management Information System (WARMIS)
- UNEP World Conservation Monitoring Centre (WCMC)
- World Bank World Development Indicators (WDI)
- World Water Assessment Programme (WWAP)

Tools & Methods

The Tools & Methods section has been added to the WMA database to present an overview of different monitoring methods, such as household surveys or composite indices, being employed around the world. Detailed information can be found on methodology as well as indicators and data used by the method. Current tools and methods in the database include:

- Core Welfare Indicators Questionnaire (CWIQ)
- Demographic and Health Surveys (DHS)
- Environmental Sustainability Index (ESI)
- Equity Distribution Indicator (EDI) - Water Aid Case Study in Malawi
- Household Budget Surveys (HBS)
- International Organization for Standardization - Technical Committee 224 (ISO/TC224)
- Living Standard Measurement Study (LSMS) Household Survey
- Methodology for Participatory Assessment (MPA)

- Vision 21
- Water Resource Management Information System (WARMIS)
- Water Poverty Index (WPI)

Capacity Building

Under this category, programmes and organizations performing capacity-building activities in the monitoring sector are presented. Capacity building activities led by training, research and resource centres of various sized currently found in the database include:

- Environmental Statistics in the Mediterranean (MEDSTAT - Environment)
- Training, Research & Networking for Development (TREND)
- Water Supply & Sanitation Collaborative Council (WSSCC)
- Water Utility Partnership (WUP)
- World Bank - Trust Fund for Statistical Capacity Building (TSFCB)

Regional and Country Profiles

Once complete, regional profiles developed by the WMA will provide background information on political agendas, useful documents and access to regional programmes for the following regions: Africa, Asia, Europe, Latin America and the Caribbean, Middle East and Northern Africa, the Mediterranean, North America, Oceania and Pacific. Currently, profiles are available for Africa and the Mediterranean. Country profiles, currently under development, will provide water related information for African countries, although the WMA's goal is to provide profiles of every country. Sections refers to the country water profile, access to water and sanitation, ODA for water and monitoring activities at both the national and local level.

Resource Library, News and Events

These sections have been created on the WMA website to provide background documents on monitoring and information on recent developments, workshops or meetings of the water monitoring world. In line with the overall purpose of the WMA database, these sections facilitate the search for water-related information at the global, regional, international, national and local levels.

CONTACT INFORMATION

World Water Council
Espace Gaymard, 2-4 place d'Arvieux 13002 Marseille, FRANCE Website: www.worldwatercouncil.org

A.7 WSP

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 water supply and sanitation services. The WSP works directly with client governments at the local and national level in 27 countries through four regional offices and World 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
- 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 countries in which it currently has an office (see 'Regions/Countries of Intervention, below). 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.

REGIONS/COUNTRIES OF INTERVENTION

WSP headquarters are located at the World Bank in Washington, DC, while WSP programs are carried out through its four regional offices in Africa (Nairobi, Kenya), East Asia and the Pacific (Jakarta, Indonesia), Latin America and the Caribbean (Lima, Peru), and South Asia (New Delhi, India).

WSP-Africa also operates country offices in the following 12 African countries:

Burkina Faso	Benin	DR Congo	Ethiopia
Mozambique	Niger	Rwanda	Senegal
Tanzania	Tunisia	Uganda	Zambia

THEMATIC AREAS

- Financing the sector
  - Including monitoring systems;
- Rural water supply & sanitation;
- Sanitation & hygiene;
- Strategic communications;
- Urban water supply and sanitation.

PARTNERS, AFFILIATED ORGANIZATIONS AND ACTORS

- Basic Support for Institutionalizing Child Survival (BASICS)
- Bank-Netherlands Water Partnership (BNWP)

- Building Partners for Development in Water and Sanitation (BPDWS)
- Centre Régional pour l'Eau et l'Assainissement (CREPA)
- Environmental Health Project
- Global Water Partnership (GWP)
- Global Partnership on Output Based Aid (GPOBA)
- Handpump Training Network (HTN)
- International Water and Sanitation Centre (IRC)
- L'Institut Africain de Gestion Urbaine
- London School of Hygiene and Tropical Medicine
- Network for Water and Sanitation
- Programme Solidarite Eau
- Public-Private Infrastructure Advisory Facility (PPIAF)
- The International Year of Sanitation (IYS)
- UNICEF (Water, Environment and Sanitation)
- WaterAid
- Water, Engineering and Development Centre (WEDC)
- World Health Organization
- Water Supply and Sanitation Collaborative Council (WSSCC)
- Water Utility Partnership (WUP)
- World Bank

BUDGET/COSTS

The WSP receives funding and encouragement from various international donors and partners within the water and sanitation sector, including: AusAID, the Austrian Foreign Ministry, Belgian Development Corporation, the Canadian International Development Agency, the Danish Ministry of Foreign Affairs, the French Development Agency, the Bill and Melinda Gates Foundation, Ireland's Department of Foreign Affairs, Luxembourg's Ministry of Foreign Affairs, the Ministry of Foreign Affairs of the Netherlands, the Norwegian Agency for Development Cooperation, the Swedish International Development Cooperation Agency, the Swiss Agency for Development and Cooperation, the UK's Department for International Development, the US Agency for International Development and the World Bank.

RELEVANT PROGRAMS (PAST AND PLANNED)

WSP-Africa is leading the development of a regional approach towards generating and implementing Sector Information Monitoring Systems (SIMS) for Water and Sanitation in Africa. It began this process by commissioning a conceptual framework paper on SIMS for water and sanitation as well as three case studies on the water sector monitoring and evaluation systems in Benin, Senegal and Uganda. This research fed into a March 2007 Practitioner's Workshop, convened in Nairobi, Kenya in partnership with the African Water Facility and the Ministry of Water and Irrigation, Kenya.[45]

This workshop served to articulate the key principles that will underlie SIMS in the region: inclusiveness, integration with country systems, and the need to adopt an incremental approach towards their development and implementation. For example, the integration of

[45] Please see 'Field Note: Country-level Sector Information and Monitoring Systems (SIMS) for Water and Sanitation in Africa - Practitioners' Workshop, Nairobi, Kenya, March 27-29, 2007," WSP, AWF, Government of Kenya, March 2007.

SIMS with country systems entails the use of a Unified Database System (UDBS), an integrated network of linked tables from numerous existing databases of various nature and structure, e.g. public finances, infrastructure inventories and household surveys. Each table shared on the UDBS 'belongs' to a stakeholder who makes it available to others while keeping exclusive update rights on this table. Such a UDBS, using open source database software, will be installed on the government server. The Program Coordination Unit (PCU) of Senegal's PEPAM has developed, with WSP's support, the detailed framework for such a system and is on its way to making it fully operational.[46]

The workshop also helped to identify success factors and best practices related to the implementation of SIMS as well as a strong need for effective SIMS across the African continent. This need, though driven by the current lack of effective water and sanitation SIMS in most African countries, was agreed to be supported by the following factors: the emergence of PRSPs as the overarching framework for country social and economic planning; the move towards SWAps and direct budgetary support in the region; the [international] commitment toward aid effectiveness and aid harmonization; the strong demand for accountability in the allocation of public funds; the complexity of monitoring competing social, economic and environmental demands required by IWRM; and the need for greater coherence of country monitoring with regional global tracking of the MDGs.

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.

Support to countries in establishing and strengthening SIMS:

- Based on the country action plans initiated at the workshop, countries will initiate a consultative process at the national and local levels to identify priorities in establishing and strengthening SIMS.
- Countries in the region are at different levels of SIMS development. There is a need to promote South-South learning by enabling those that have just initiated the process of establishing SIMS to learn from SIMS leaders. The organizing partners (**WSP-Africa** and AWF) will work with other partners and countries to support country processes in setting up and strengthening SIMS.

Development of SIMS Guidelines:

- The workshop validated the basic SIMS framework and approach presented in the SIMS framework paper. The paper was drafted based on the experiences of countries in the region in setting up SIMS. Several additional good practices were shared at the workshop, which will be incorporated in the development of a fuller set of SIMS Guidelines.

- The SIMS Guidelines will be a "living document" drawing from country experiences as these evolve over time.

[46] Outside of the African water sector, other examples of the use of unified database systems include that which is being used by the UNDP in Lesotho to coordinate the collection, management and sharing of information related to Lesotho's National AIDS Strategic Plan ("UNDP and a Reforming UN: A Catalyst for Change," in *UNDP 2007 Annual Report*). The World Bank has also identified the need to create a high-level UDBS in China in order to facilitate better management of the country's water basin systems ("Country Water Resources Strategy: China (2002)," World Bank).

Regional Harmonization and Review:

- Based on workshop deliberations, three areas emerge as important and will be taken up for 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.

- AWF has the AMCOW mandate to develop regional M&E systems in line with the MDGs, including IWRM. It will initiate the work on improved regional harmonization and the creation of synergies among different global and regional partners through a regional coordination working group. The group will assist with analyses and adapting tools, methods, approaches and experiences developed by international and regional organizations.

CONTACT INFORMATION

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Water and Sanitation Program for West and Central Africa	
3 Place de l'Indépendence, Immeuble SDIH c/o The World Bank, B.P. 3296 Dakar, Sénégal Phone: +221-849-5000/842-6584 Fax : +221-849-5027/823-6277 Email : odiop1@worldbank.org	

Annex B: National M&E Institutions

	CATEGORY	ORGANIZATIONS/PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
BENIN[i]	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. 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
		• 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	
		• 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.	

	CATEGORY	ORGANIZATIONS/PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
		• 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.	developing a finance action plan.[ii] • 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).
	URBAN WSS M&E	• 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 (DHAB);	• MS-DHAB: See above.	
		• Direction de l'Assainissement et des Voies Urbaines (DAVU)	• DAVU: Collects information on urban rainwater management.	
BURKINA FASO[iii]	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; 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 hydrometric 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.
		• 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)		
		• 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.	

	CATEGORY	ORGANIZATIONS/PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
		• 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 ands 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 FCFA/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).	
	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.
LIC of CONGO	**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.

	CATEGORY	ORGANIZATIONS/PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
		• 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 • 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.
		• 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.	
	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.

	CATEGORY	ORGANIZATIONS/PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
		• 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)	• MSP o DHG: See above.	• MSP-DGH: See above
		• Municipal Governments, e.g. City of Brazzaville	• 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.	• 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'	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. • 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.
		• 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.	
	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.
		• 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,	

	CATEGORY	ORGANIZATIONS/PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
			and is chaired by, the Minister of the Plan (MINPLAN).	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.
	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[vi]	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. 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.	• 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. • 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.
		• 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	

	CATEGORY	ORGANIZATIONS/PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
			mobilization for environmental protection.	• 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.
		• 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: 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.
		• **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.	
	URBAN WSS M&E	• MOWR	• MOWR: See above.	
		• **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.	

	CATEGORY	ORGANIZATIONS/PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
GHANA[vii]	IWRM	• **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 coordinates 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.
		• 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.	• 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.

	CATEGORY	ORGANIZATIONS/PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
			○ FC: Responsible for the development, management and ensuring the sustainable exploitation of Ghana's fisheries.	

		• 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.	

	RURAL WSS M&E	• Ministry of Water Resources, Works and Housing (MWWH)
		  ○ 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
		  ○ 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.	

	CATEGORY	ORGANIZATIONS/PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
LESOTHO[viii]	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. • 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).
		• 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.	
	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.	
		• 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.	

	CATEGORY	ORGANIZATIONS/PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
		• Lesotho Bureau of Statistics (LBS)	• LBS: See above.	
MALAWI[ix]	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. • 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 COMWASH 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.
		• 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.	
		• Malawi Bureau of Standards (MBS)	• MBS: Sets national standards for treated and untreated water supply services and effluent that can be discharged into the environment.	
		• National Statistical Office of Malawi (NSOM)	• NSOM: Office responsible for providing high quality, timely and independent statistical information and promoting its use for policy formulation, decision making, research, transparency and general public awareness.	
		• 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.	
	RURAL WSS M&E	• **Ministry of Irrigation and Water Development (MoIWD)** o **Water Supply and Sanitation**	• MoIWD: See above o WSSD: Responsible for water services planning and development coordination, development of	• MoH: Monitors and provides guidance on drinking water quality.

	CATEGORY	ORGANIZATIONS/PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
		Department (WSSD)	rules and strategies for the provision of sustainable water and sanitation services to rural communities and the promotion of new innovations in service delivery.	• 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 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.
		• 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.	
		• Local Assemblies	• Local Assemblies: Responsible for providing social services within their jurisdictions as per the National Decentralisation Policy (1998).	
		• 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)** ó **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
		• Water Boards of Blantyre, Lilongwe, Northern Region, Central Region and	• MoIWD: See above.	

	CATEGORY	ORGANIZATIONS/PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
		Southern Region. • Ministry of Health (MoH) • Malawi Bureau of Standards (MBS) • NGOs and Civil Society Bodies o Water user associations (WUA)	o WSSD: See above. • MoH: See above. . • MBS: See above. • WUAs: Assist in local water supply and sanitation monitoring and management.	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.
SENEGAL[3]	**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: Provide technical support to water users associations and management committees; coordinate the transfer of operation and management responsibilities over rural water points to the private sector; oversee and regulate provision of potable water in rural areas. ▪ ASUFOR: Water users associations that	• 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.

	CATEGORY	ORGANIZATIONS/PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
			operate and manage most rural water points.	o To expand the reach and depth of the SIMS at the national level, 'regional M&E platforms' are being established throughout the country. 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.
		• **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.	
		• 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.	

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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 analysing, 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.
			• 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 localised.
			• TMA's observation network consists of 600 rainfall stations, 26 synoptic stations, 11 agro-meteorological stations and 14 automatic weather stations.

	• 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)	
	• 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. 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).
	• 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.	
	• Community Owned Water Supply Organization (COWSO)	• COWSOs: Operate and maintain water supply assets. Regulated by the MoW.	
	• Energy and Water Utilities Regulatory	• EWURA: Responsible for regulating services offered by	

	CATEGORY	ORGANIZATIONS/PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
		Authority (EWURA)	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.	• EWURA: Monitors water quality and performance of CWSSAs and collects and publishes comparative performance data.
		• 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.	

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	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. 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.	• 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. 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). SINEAU, when generalized to all 24 governorates, will enable: o The creation of a detailed inventory and a validation of existing data concerning Tunisia's water resources; o The organization of data according to water basin and aquifer system; o The reduction of duplication and redundancies pertaining to water resources information; o The stimulation of information sharing and circulation; ▪ The streamlining of data manipulated and produced by the DGRE; ▪ The use of common tools and assessment criteria.

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	• 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: Collect 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: Collect 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.	
	• 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.	• DHMPE: See adjacent cell.
	• 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.	
URBAN WSS M&E	• **Ministère de l'Agriculture et des Ressources Hydraulique (MARH)**	• SONEDE: Para-public utility responsible for the distribution and maintenance of potable water in urban	

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UGANDA		○ **Société Nationale d'Exploitation et de Distribution des Eaux (SONEDE)**	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) ○ **L'Office National de l'Assainissement (ONAS)**	• MEDD: Ministry responsible for the environment and the promotion of sustainable development. ○ 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) ○ Direction de l'Hygiène due Milieu et de la Protection de l'Environnement (DHMPE)	• MSP: Ministry responsible for public health. ○ DHMPE: Responsible for potable and thermal water quality control and the monitoring and maintenance of public water points, wastewater networks and treatment stations.	
	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. ○ 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. • 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. • 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,
		• 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).	
		• 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** ○ **Directorate of Water Development (DWD)** ○ Rural Water Supply Department	• **MWE**: See above. ○ **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. ○ RWSD: Functions include strategic planning, regulation and quality assurance of rural WSS interventions.	

	CATEGORY	ORGANIZATIONS/PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
		• 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.	analyzed and stored in databases on a regular basis. • The Operation and maintenance 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 (monthly or quarterly, depending on the nature and use of the station). • Centrally-coordinated output monitoring in Uganda includes district progress reporting, Poverty Action Fund (PAF) 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. 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 seven 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 the water and sanitation sector. Next steps include: strengthening the institutional framework for SIMS at the central and LG levels; linking SIMS and the intra-sector budgeting process; emphasizing in-depth analysis of sector issues in annual
		• 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.	
	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.	
		• 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)	• LGs: See above.	

	CATEGORY	ORGANIZATIONS/PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
				performance reports; and investing in capacity development for the central and LG staff involved in SIMS.[xiv]
ZAMBIA[xv]	IWRM	• **Ministry of Energy and Water Development (MEWD)** o Department of Water Affairs (DWA) o National Water Resources Management Authority (NWRMA) o Water Board (WB)	• MEWD: Overall responsibility for water resources management and development through the WDB. o DWA: The DWA is the technical department of the Ministry. It is responsible for water resources management and development. Specifically, the DWA undertakes water rights investigations, hydrological and hydrology investigations, water resources information management, groundwater and surface water development. The DWA is present in all the nine provinces of Zambia. o NWRMA: Provides logistical support to WDB. o WB: Responsible for water resources management with logistical support from the DWA.	• Despite ample water resources, Zambia's water sector characterized by: o Poor and inadequate infrastructure and systems for management of water resources; o Inadequate capacity for water resources management at all levels; o Poor water resource management, regulation and enforcement mechanisms; o Lack of appropriate, reliable and accessible water resources information and dissemination systems. (Sievers, 2006) • Water Resources Action Program: Led by the MEWD, WRAP is a process created to spearhead the institutional, legal and regulatory reform of the water resources management sub-sector. WRAP drafted the 2004 Water Resources Management Bill, which proposes, among other initiatives, an institutional framework for WRM. This includes the creation of a Department of Water Resources, which would replace the DWA and be responsible for policy formulation and guidance in addition to the management of international rivers. • IWRM component of DANIDA's support to Zambia's water sector includes strengthening management instruments and capacities for the development of water resources, including the enhancement of water monitoring networks.
		• Environmental Council of Zambia (ECZ)	• ECZ: Responsible for the administration, monitoring and enforcement of measures for environmental protection.	
	RURAL WSS M&E	• **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)	• MLGH: Responsible for WSS service delivery. After implementation of national decentralisation policy (2002), all WATSAN functions are to be devolved to local authorities. 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.	• Rural WSS sub-sector lacks a structured M&E framework. However, an M&E system for rural WSS has been implemented in three provinces by the MLGH. Plans and funding are in place to roll it out nationwide with support from donors. • NWASCO manages urban WSS information systems and compiles annual reports on the sector. Monitors the performance of water utilities.
		• 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	

	CATEGORY	ORGANIZATIONS/PARTNERS	MANDATES/OBJECTIVES & THEMATIC AREAS	M&E PROGRAMS
			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).	
	URBAN WSS M&E	• **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 Sewage 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. NWASCO also facilitates the establishment of Consumer Watch Groups (CWG) that attend to consumer concerns	
		• 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.	

***Note: References can be found in the endnotes at the end of this document**

Annex C: Template for Rapid Assessment of Water Sector M&E

Annex D: Terms of Reference for Assessors

BACKGROUND

Monitoring and evaluation of the Water sector is considered the weakest link in efforts to achieve the MDGs. At the Paris Conference in 2005, the African Ministers of Water and Finance committed to establishing a regional mechanism for tracking progress towards achievement of the MDGs. The first Governing Council of the AWF, 2005 agreed that M&E and Information and Knowledge Management should be priority areas of intervention by the AWF.

AMCOW requested the AWF to hold a regional forum of all stakeholders involved in sector M&E work in the region to define key requirements for harmonized results oriented M&E in the African water sector. It was held in Tunis, September 2006. It reaffirmed the centrality of RMCs, River basin Organizations (RBOs), and Regional Economic Communities (RECs) as prime stakeholders. It also confirmed AWF's mandate to accelerate the development of a framework to develop the water sector M&E process and requested AWF undertake a rapid assessment of the current status, stakeholders and key activities supporting the water sector M&E in Africa. In particular, it concluded that there was insufficient understanding of the (1) country level M&E systems and processes, and (2) dynamics of M&E among RBOs and RECs. It agreed that a Pan African assessment comprising of an M&E mapping exercise was needed to assist AWF in taking decisions about harmonizing and strengthening water sector M&E in Africa.

As a consultant you will be required to prepare yourself by reviewing all available documentation and undertaking orientation and training for the assignment. You will then arrange for and undertake rapid assessments in ____ pre-selected countries, prepare separate reports on these rapid assessments, including diagnostic assessments and related recommendations, and attend a workshop to discuss and compare the results of your and similar assessments undertaken across Africa.

REVIEW, ORIENTATION AND TRAINING

The review of available documentation will focus on this AWF initiative, the selected countries, their water sector and its M&E systems. You will be provided with a set of background documentation and be required to search the internet and your own contacts for available reports and documentation. Orientation and training will take place in ____ over a period of five (5) working days, the dates for which are to be determined. The first two days of orientation will be spent in reviewing the country's water sector's institutional structure, roles and responsibilities of primary and affiliated institutions, policy environment, budgets, financing mechanisms and activities of donors, monitoring and evaluation systems (data collection, survey methods, indicators, data collation and analysis, storage, report preparation and dissemination).

The subsequent three days of training will focus on the Rapid M&E Assessment (RM&EA) itself and the use of the Template in your selected countries. It will include guidance on preparation for the assignment, selection and making of appointments, itinerary, identification of a contact person in-country, time efficiency, essential versus courtesy visits, information gathering, information verification, diagnosis and preparation of recommendations and report preparation. The training will include the consultant trainees' preparation of an example assessment of the country in which the training takes place. In view of limited availability of time it will necessarily be brief and focus only on M&E systems rather than the sector's institutional background.

PREPARATION

During and immediately following the orientation and training you will prepare for the in-country assessments. Using the background information you have acquired you will prepare an outline institutional framework for each country which will be used to assist in identifying which institutions and individuals are best used to obtain the required information during the in-country visits. The Template's Guidelines can be used to assist in identifying the key institutions, organizations and agencies to interview. Where needed and feasible you will identify a "local contact person" who can assist you in sourcing documentation, identifying interviewees and setting up appointments. This local contact is to assist on an informal basis before and during your in-country assignment. S/he will also be useful in obtaining missing information following your assignment should gaps be identified. Prior to your visit you will have acquired a broad understanding of the sector and its M&E systems and its strengths and weaknesses.

You will be responsible for scheduling, preparing your itinerary, travel arrangements and setting up appointments. These should be arranged at least two weeks prior to the visit and an itinerary/work plan submitted to AWF for approval and confirmed prior to your departure.

IN-COUNTRY ASSESSMENT

In-country rapid assessments will be undertaken in the ___ selected countries. Based on the Template's Guidelines, the assessments and subsequent reports will closely follow the table of contents provided in the template Part B. Following the approval of your schedule and work plan, interviews will be conducted with sector and sub-sector personnel over a period of seven days (including one rest non-working day) in each country. The information gathered will be analysed and form the basis of the assessment report. Key information will be verified through third party contacts from both government and non-government sources such as international organizations and NGOs involved in the sector.

REPORT PREPARATION

A report on each country's assessment will be separately prepared using the Template's table of contents (Part B) as a guide. The reports will include a diagnosis (strengths, weaknesses, opportunities and challenges) of each country's sector status providing (1) an overview of the country's progress towards and potential of reaching the Africa Vision 2025 and MDGs, (2) the sector's stage of development such as progress towards SWAp and performance assessment, (3) status of all sub-sectors' M&E, (4) status of the sector's central M&E and (5) recommendations for potential directions and initiatives for the sector M&E advancement and development. Further, suggestions will be made of key contacts and potential consultants who could play significant roles in M&E development in each country.

REPORTING WORKSHOP

A fifteen minute summary will be prepared by the consultant in PowerPoint form on his/her findings for each country assessed for presentation at a reporting workshop on conclusion of the Africa-wide M&E assessment. The workshop will be held to draw comparisons between the approximately thirty countries assessed. A comparative overview will be drawn up including a summary sheet highlighting stages of M&E development and gaps and opportunities in each country. Finally, the participants will outline an indicative work plan with schedule and budget for each country assessed for strengthening their water sector M&E systems.

Annex E: Sample Rapid M&E Assessment Report (Congo)

INTRODUCTION

The following section provides a provisional sample Rapid M&E Assessment Report similar to those that will be produced for countries in Africa recently emerging from conflict with weak or non-existent M&E systems. The objective of annexing this sample assessment report is to provide a rough illustration of the output of a Rapid Assessment using the Rapid Assessment Template (Annex C) and associated TORs (Annex D).

RAPID ASSESSMENT REPORT: THE REPUBLIC OF CONGO

This report was produced over the course of one week in May 2008, which included the Consultant's five-day mission to Brazzaville as a part of the Pan African Water M&E Assessment assignment and two subsequent days of analysis and writing.

The length of the report is similar to that of future reports on countries in similar situations to that of the Congo. Though it does not follow precisely the same format as the Template for the Rapid Assessment of Water Sector M&E designed by the Consultant, it contains most of the content requested in the Template. Exceptions include full illustrations of the Congo's water sector institutional architecture; information on available water resources in the country and explanations of all of the national water sector development strategies; policies and underlying legislation (though electronic or soft copies of most such documents were made available by local officials upon request). A list of officials met during the mission, whose comments informed the majority of the report, is attached in Annex F.

INSTITUTIONAL ARRANGEMENTS

Water Resources: Though the *Ministère de l'énergie et de l'hydraulique* (MEH) has existed since 1983, it has been largely unable to carry out its mandate as the primary water sector planning institution due to significant resource shortfalls and its compartmentalization across other governmental institutions. In the absence of a strong central coordinating mechanism for water resources policy development and management, the work of the Republic of Congo's (the Congo) handful of water sector institutions has historically been conducted in a relatively compartmentalized fashion (this has begun to change with the creation of several new agencies within the MEH). Moreover, the quality of each institution's work is often limited to the dynamism of its limited human resources and even more limited financial capacities. The following institutions are the primary organs responsible for water resources management in the Congo under its 2003 Water Code and subsequent legislation.

As noted above, the 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: *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 water, groundwater and meteorological data emanating from the Congo's hydrological, hydrogeological and climatogical monitoring networks. The MRS, through its *Direction Générale de recherche scientifique* (GRSEN - a combination of the former UREA, UREE and URPAB research branches) and its *Unité de Service hydrologique et météorologique*, is in the process of developing a water resources monitoring database with technical assistance from France's *Institut de recherche pour le développement* (IRD) and conducts research on water resources in the Congo. The MRS is an active member of the International Commission of the Congo-Oubangui-Sangha Basin (CICOS), described below.

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.

CICOS was created under the auspices of the Economic and Monetary Community of Central Africa (CEMAC) to facilitate cooperation between member states for the sustainable management of the Congo River basin; to study ecological, economic and social issues related to the Basin; to harmonize national legislation vis-à-vis water and the environment; to facilitate water-based transport between states; to manage the implementation of the Interior Navigation Code (CEMAC/RDC); to coordinate and manage development works on shared waterways; and to provide information on the state of water resources and transportation on shared waterways. Member states include Cameroon, the Central African Republic, the Republic of Congo and the D.R. Congo.

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 that can only be considered as rough estimates of actual figures. Due to human resource shortages and the loss of equipment during civil wars, SNDE's water quality control capacity is very limited.

Ongoing urban water supply network development activities include the rehabilitation of water treatment stations in Djoué and Djéno, working with the DGH (its main source of financing) on The *Programme nationale de municipalisation accélérer* to increase water production and access at the municipal level; conducting a feasibility study in Point Noire on increasing the exploitation of surface water and groundwater resources; and the rehabilitation of water distribution networks. Beyond the challenges posed by the need to rehabilitate the Congo's water distribution and treatment network, the SNDE is also challenged by the retirement of skilled personnel, a lack of technical and business administration specialists, and a lack of appropriate equipment. Initial efforts to privatize the SNDE in recent years fell through due to continuing questions over the scope and quality of the SNDE's water distribution network.

The *Agence nationale de régulation du secteur de l'eau (ARSE)* is the agency within the MEH responsible for overseeing and coordinating the liberalization of the Congo's water sector (as

per Decree No 2008-66), including the privatization of the SNDE. It is intended to ensure adhesion to contracts between the state and service providers (though none currently exist), track performance indicators (currently under development with support from counterpart institutions in D.R. Congo and Burkina Faso) and to ensure water tariffs are both fair and equitable to all income groups.

While playing a coordinating role at the urban and peri-urban level, the MEH's *Agence nationale de l'hydraulique rurale* (ANHR) – only recently created – aims to support the development of water and sanitation infrastructure in rural areas and small towns of 2000-5000 people. It is funded primarily through the national budget and is seeking the support of former development partners such as UNICEF, GTZ, AFD, JICA, UNDP and the WHO to help implement its National Rural Water Infrastructure Development Programme (PMEHER), which aims to pick up where previous development programs left off prior to the war and provide an estimated 1 million rural Congolese with access to water.

Two additional institutions were meant to be created within the MEH to manage the water sector under the auspices of the recent Policy on the Provision of Potable Water Supply and Electricity of the Government of the Congo: the *Comite nationale de l'eau et assainissement* (CNEA) and the *Fond de développement des secteurs de l'eau et d'électricité* (FDSEE). However, the CNEA was disbanded shortly after its inception and the FDSEE has not yet been put in place and is awaiting the adoption of its formal institutional mandate (decree).

Urban and rural sanitation: Serious resource shortfalls have limited improved sanitation coverage to 19% in urban areas and 21% in rural areas according to the latest figures from the JMP. This can be compared to overall figures reported in the Congo's 2005 Enquête congolaise auprès des ménages (ECOM), which sampled 5000 households and was conducted using the World Bank's *Questionnaire des indicateurs de base du bien-être* (QUIBB) method. The survey indicated that 51.8% of Congolese households have a "healthy" sanitation system. The vast majority of these in both urban and rural areas are covered latrines and only 6% use flush toilets.

The primary institutions responsible for urban sanitation in large cities are municipal governments, 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; the construction and management of municipal works projects, including rainwater evacuation systems; and, the treatment of industrial wastewater. In lieu of a citywide sewerage transportation and treatment system, which does not yet exist, the City is developing a plan to treat household waste extracted from individual septic tanks.

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). Supporting the work of the DHG is the *Service de génie sanitaire* (SGS), which conducts studies on household hygiene conditions on a project basis and sends its reports to the DHG and the MSP. The SGS bases its evaluations on the *Règles de construction modernes* and focuses on the quality of sanitation infrastructure.

DATA COLLECTION AND MANAGEMENT SYSTEMS

Most relevant ministries suffer from serious shortfalls in funding and capacity to collect, analyze and disseminate data through their sectors' decentralized structures, and each department with a database uses its own methods for collecting, storing, and disseminating

this information. Most records are only available in hard copy. The country's past civil wars have played a large part in destroying the equipment and systems necessary to facilitate the operation of effective monitoring systems and prevented the collection of any relevant data through most of the 1990s and the first few years of this decade. As a result, current figures related to access to water and sanitation are only rough estimates and population figures are based on projected growth rates since the 1984 census.[47] Nevertheless, some data collection and management systems do exist and collect hydrological, hydrogeological, meteorological and environmental data despite serious capacity constraints. Below is a summary of relevant estimates:

- Access to water (urban and peri-urban): 62.1%[48]
- Access to water (rural): 11%[49]
- Access to sanitation (urban and rural): 51.8%[50]

Water resources data is collected and analyzed primarily by the 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 climatological database that will store available water resources data (1949-1982; partial data from 1983-1992; little data from 1993 to present). 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 SCEVN – which monitors river levels and the presence of liquid and solid discharge through a network of seven monitoring stations – and ANAC for climatological and additional hydrometric data, and 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). The operationalization of this unified water resources database depends significantly on available financing, which is currently extremely limited.

In addition to the development of their water resources database, the GRSEN is also focused on producing backdated annual hydrological reports. It is currently producing the report for 1983, followed by subsequent years up to 1992. The GRSEN is also receiving support from the IRD's *Programme d'observatoire hydrologique du Centre Afrique* to reinforce their monitoring network in exchange for sharing water quality data.

While there exist no mechanisms to measure or control pollution in the Congo, the *Direction Général de l'Environnement* collects information on the state of the environment (water, soil,

[47] A census was undertaken in 2006 to update these numbers, but it is unclear when results will be made available.

[48] Access in this case is defined as those whose primary source of drinking water comes from protected wells and public or private taps. According to the 2005 ECOM survey, a further 20.3% use river water and 3.6% use rainwater. Only 26.5% of the population receives water directly from the SNDE, the quality and supply of which is unreliable. Contrasting figures stemming from the UNICEF's 2005 DHS indicate that 58% of the population uses improved drinking water sources.

[49] This figure is an estimate provided by the Congo's Ministry of Energy and Water. Officials note that it is only a very rough estimate due to outdated census figures and uncertainty over the number of functioning water points, each of which is estimated to serve between 100 and 300 people. The Government of the Congo's rural water MDG was set at 75% (from 11%), but this will not be met.

[50] According to the 2005 ECOM survey, 45.7% of households use covered latrines, while only 6.2% use flush toilets. These comprise the definition of sanitation facilities judged as "healthy." A further 7.8% use the outdoors. The ECOM summary report did not differentiate between access to rural and urban sanitation.

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. In that report, developed with support from UNEP, the DGE identified the development of information management systems for monitoring the state of the environment as one of the priority actions needed to assure the "rational management of the environment in the Congo." This entails four priority actions:

- Strengthening of the current environmental information system;
- Support to a national documentation and information centre on the environment;
- Strengthening and technical support for the *Conseil supérieur de l'environnement*;
- The creation of a national commission for sustainable development.

With respect to urban and peri-urban water supply monitoring, the country's primary water provider, SNDE, relies largely on the under-resourced *Laboratoire de bromatologie* of the DHG for water quality testing and notifications regarding deficiencies not caught by the SNDE's own mini-laboratories. 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. All of their equipment has been donated by the WHO, however some of it has broken down and cannot be repaired locally, and their supply of testing chemicals is currently limited to three months. The lab currently does not possess any computers but state the need for at least three.

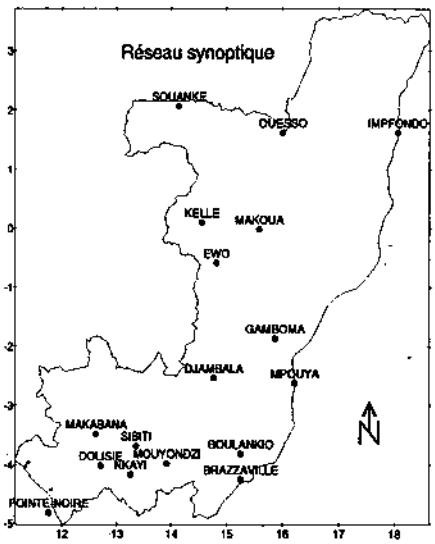
The SNDE's water consumption and quality monitoring network is plagued by the lack of automatic counters at the household (consumption) and industrial (production) level. However, an inventory was conducted recently and water meters have been ordered based on its results. In the absence of meters, access figures are calculated on the basis of water pumped minus estimates of losses and consumption per capita. In addition, the SNDE notes that an estimated 30% of water produced is lost to leakage. The SNDE's information management system is "embryonic" according to officials: hard copy archives are "nearly non-existent" and no GIS system is in place to enable the monitoring of breakdowns. However, the SNDE recognizes the need to develop a centralized information and knowledge management system. Figures covering the 2000-2003 period cover performance indicators such as water produced, amount of treatment chemicals consumed, number of household connections, revenues, expenses and investments, but these can only be considered as rough estimates.

Rural water supply monitoring is now the responsibility of the 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. The project aims to acquire sufficient technical and scientific material for the effective monitoring and management of the rural water sector; develop a database at the ANHR and acquire associated software; gain a baseline understanding of the current situation in rural areas; and, determine precise figures regarding access to potable water and basic sanitation by district, region and for rural Congo as a whole. The project is currently awaiting financing.

Given the severe weakness and/or absence of waste water disposal and treatment works in the Congo's major cities, there is no monitoring system in place to track access or quality indicators regarding basic sanitation. Some studies, such as the 2005 Congolese Household Survey (ECOM), a nationally representative poverty assessment baseline survey (published February 2006) conducted with technical and financial support from the World Bank,

AFRISTAT and the UNDP and discussed in more detail below, paint a broad picture of access to various types of sanitation infrastructure and services.

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. Hard copy reports are issued to relevant partners, including the SNDE, for action on identified shortfalls, and the reports are sometimes collated into an annual hard copy report. Officials indicate that most household and industrial wastewaters and effluent are deposited directly into the environment without treatment, and the DHG lacks the capacity to assess both wastewater quality and its impact on the environment.



As noted above, the *Direction de la météorologie* collects agro-meteorological data. It operates a network of 18 functioning synoptic stations (see graphic), some of which are being fitted with solar panels, 10 climatological stations, 212 rainwater monitoring stations, 2 radio transmission stations (located in Pointe Noire and Cuesso and 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, which is considered reliable following a single treatment by ANAC following its arrival from the regions. The DM receives material support from the World Meteorological Organization (WMO) and from the Voluntary Cooperation Program (PCV), through which member countries, including the UK, Belgium and France, provide technical and logistical support.

With regards to transboundary water basin monitoring, CICOS plans to create an Information System for the Congo Basin (SIBCO) 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. The SIBCO network is currently in its inception phase, and CICOS is receiving financial and technical support from GTZ as well as the European Commission-driven African Monitoring of the Environment for Sustainable Development (AMESD) program to support its development.[51] In the future, this system will also be fed by national focal points that will collect information from relevant member state-level institutions, such as the MEH and MRS in the Congo. Below is an excerpt from a September 2007 address by Mr. Benjamin Ndala, Secretary General of CICOS, to African water ministers at the Development Policy Forum of InWEnt Capacity Building International in Germany.[52] The remarks provide more detail on the work needed to be done to improve integrated water resources monitoring in the Congo River basin:

[51] The purpose of AMESD "is to launch a program that will allow all African stakeholders- policy makers, the private sector, civil society- led by African Regional Economic Communities (RECs) to improve the management of their environment through a more timely and efficient use of relevant data, information and analysis, including from Remote Sensing and Information and Communication Technologies (ICT).

[52] http://www.inwent.org/ef/events/water/09029/index_p.en.shtml

The Congo River basin is the largest on the African continent and lies on both sides of the equator. It is the second largest in the world after the Amazon basin, and is shared by nine countries. Although the river network formed by the Congo River and its tributaries is very dense (almost 20,000 km of navigable waterways), the countries in the basin possess only a limited water infrastructure capacity with which to harness the surface water. Water infrastructure in the Congo basin is made up of 48 dams either operational or under construction. The operational dams serve mainly for electricity generation, and the the total volume of reservoirs is approximately 61,368 000 m^3.

Development of trans-boundary water infrastructure
All water management activity must be based on a precise knowledge of the water resources available so as to be able to plan the infrastructure. Water resources are subject to variations in time and space, and it is difficult to measure and evaluate these resources in a totally reliable manner. Nevertheless, since the mid-1990s, the hydrological measurement network has not been maintained owing to a lack of funds available to the National Hydrological Departments (SHN). This has moreover jeopardized a tradition of measurements dating back over a century.

Efforts have in fact already been made to maintain the hydrological measurement network, and this is thanks to various institutions such as the Joint Navigable Waterways Maintenance Service (SCEVN), the Waterways Authority (RVF) and also certain development partners, for instance the Development Research Institute (IRD). These bodies lend their assistance in the context of measuring water resources; they help with monitoring and evaluation work at hydrometric stations including:

- The Brazzaville hydrometric station;
- The Ouesso hydrometric station;
- The Kinshasa hydrometric station;
- The Bangui hydrometric station.

It is necessary to quantify the water resources of the Congo basin in order to develop the transboundary water infrastructure. That is why, for the sake of efficiency, the CICOS General Secretariat wishes to set about improving the entire network of hydrometric stations. The intended aim is to provide users with data sets that are as reliable as possible and cover all parts of the Congo basin.

Summary of the Project to Improve the Network of Hydrometric Stations in the Congo basin
One of the project's aims would be to guarantee the quality of data in the Congo Basin Information System (SIBCO). Its quality depends in particular on that of the observations, field installations and management practices. For this reason, the installation, monitoring and exploitation criteria should be similar for all stations and should comply with the international standards of the HYCOS system. It is therefore necessary to:

- Repair the old hydrometric stations and their observation posts;
- Retrain the observers who collect data at the stations belonging to the network;
- Collect and process the data, then forward them to the CICOS countries.

Activities
- Acquisition of hydrometric equipment and delivery to the countries;
- Calibration of the stations;
- Water monitoring using the Acoustic Doppler Current Profiler (ADCP);
- Appraisal and processing of data by the National Hydrological Departments of the CICOS countries;
- Forwarding of data to the CICOS General Secretariat.

Congolese socio-economic data is collected through periodic national censuses and studies managed by the *Centre national de la statistique et des études économique* (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 results of the latter were deemed invalid due to the possible political manipulation of results and difficulties in surveying all households during a civil conflict that dominated the latter half of the 1990s. Current

population projections are therefore calculated based on estimations derived from the 1984 census. As mentioned above, the most current and reliable socio-economic data stems from the 2005 ECOM survey.[53] The CNSEE intends to carry out this survey at least every five years to inform the development of the country's Poverty Reduction Strategy Paper (PRSP) and track progress towards meeting the MDGs. The CNSEE process and analyzes its data using SYSPRO and SPSS software and their reports are available in hard copy, CD-ROM and/or the institution's website.

Finally, the Ministry of Agriculture does not conduct independent monitoring of water resources, and officials from the Ministry note that the absence of significant irrigation systems in the country due to sufficient rainfall precludes the need for irrigation monitoring. If necessary, the Ministry can access water resources data from SCEVN or the MRS but maintains its own rough estimates of agricultural production and more accurate statistics on livestock holdings derived from periodic agricultural censuses.

CONCLUSION AND RECOMMENDATIONS

The presence of an effective water sector M&E system in any particular country typically 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 and means through which human waste can evacuated and treated; a stable security environment throughout most of the country and reasonable access to rural areas to allow for the construction and maintenance of public works; stable financing and effective regulation of water sector institutions; and, the existence of sufficient technical expertise to manage sector programming, operate public works and set and monitor national standards vis-à-vis WSS infrastructure and water resources management.

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, the 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, the two largest cities, which severely limits 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.

[53] 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 indicators 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.

- The absence of stable sector financing, attributable in part to institutional weaknesses and insufficient regulatory control at the project and program management level and the absence of many development partners present in the Congo prior to the outbreak of civil conflict.[54]

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 either weak or non-existent.

Nevertheless, many senior sector officials are cognizant of the importance of such systems and are looking for partners who can assist in the development of appropriate M&E mechanisms in parallel with or following the rehabilitation of WSS infrastructure. Furthermore, the Congo developed a PRSP in 2003 with assistance from development partners that serves as a framework for addressing sector-related MDGs. Building upon the PRSP were subsequent studies, including the 2005 ECOM and a Demographic Health Survey (DHS), which provide the most relevant data from which sector strengthening efforts can be built.

Taking each of these positive factors and the weaknesses noted above into account, donor-financed water sector M&E initiatives in the Congo's would likely be most effective in the short to medium term if they were to provide basic but focused support for the development of M&E systems *in parallel* with efforts to reconstruct essential water supply and sanitation infrastructure. Such efforts can include the installation of basic surface water, groundwater and potable water monitoring meters while their associated water exploitation and distribution networks are being constructed or rehabilitated. But they can also include sector strengthening activities such as bringing representatives from all relevant institutions together to clarify roles and responsibilities and to identify M&E priorities.

As a country having only recently emerged from a devastating civil conflict that caused much of its previous sector infrastructure to be destroyed or looted, the coming years represent an opportunity for the Government of the Republic of Congo and its development partners to establish basic but well-functioning WSS and water resources M&E systems from the ground up alongside the reconstruction of associated basic WSS infrastructure, the government's priority in this sector for the foreseeable future.

[54] Exceptions include the Agence francaise de développement (AFD), whose efforts in the sector are focused on the strengthening of urban rainwater management infrastructure; UNICEF, WHO and Doctors Without Borders, who are building basic water and sanitation infrastructure and promoting good hygiene practices in the Pool Region; and, GTZ.

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 Developpement 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 General	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 Hydrogeologie	DGPRE
Gora Ndiaye	Chef de Division Hydrologie	DGPRE
Abdou Diouf	Directeur de la Strategie 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	Coordinateur 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 Quality Assurance and Planning	Ministry of Water and Environment
Mr. Ronald Kato	District Water Officer - Mukono	
Mr. Isingoma David	Head of Planning	National Water and Sewage Corporation
Mr. Jackson Opwonya	Acting. Managing Director	National Water and Sewage Corporation
Nebert Wobusobozi	Acting. Comm.	WRMA
Joel Almadri	Information Specialist	Nile Basin Initiative
James Muwonge		Uganda Bureau of Statistics – Household Statistics
Ronald Kagwa	Economist/Planner & Head, Environmental Health Division	Ministry of Health, Environmental Health Division
Mukaila A. Ojelade	Resident Representative	African Development Bank
Patrick Kahangire	Consultant Water and Sanitation Expert	African Development Bank
Benedict S. Kanu	Country Operations Officer	African Development Bank
Disan Ssozi	Principal Engineer	Directorate of Water Development
Mr. Callist Tindimugaya	AG. Commissioner for Water Resources Regulation	Directorate of Water Resources Management
Julius Musilementa	Managing Director	Hydraulic & Sanitation Consult. Ltd.
Alex Gisagara	Chief Manager Engineering Services	National Water and Sewage Corporation
Dr. Silver Mugisha	Chief Manager Institutional, Development & External Services	National Water and Sewage Corporation
Mariam Yiga	Legal and Management Support Officer	National Water and Sewage Corporation
Dr. Rose Kaggwa	Manager External Services	National Water and Sewage Corporation
Alex Gisagara	Chief Manager Engineering Services	National Water and Sewage Corporation
John K. Ogwang	NBI Regional Monitoring and Evaluation Specialist	Nile Basin Initiative
Mogens Mechta	Water and Sanitation Specialist	PEM Consult
Helen Nviiri	Principal Statistician - Population Statistics	Uganda Bureau of Statistics
James Muwonge	Manager - Socio-Economic Surveys Division	Uganda Bureau of Statistics
Charles Kyegonza	Geographic Information Section	Uganda Bureau of Statistics
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	Department of Environmental Affairs
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	Global Water Partnership
Mr. Charles Machinjili	Commissioner for Census and Statistics	National Statistics Office

REPUBLIC of CONGO– May 4-9, 2008

Name	Position	Institution
Nicolas LABARRE	Directeur Général de l"Hydraulique	Ministère de l'Energie et de l"Hydraulique
M. Rubens KAYA	Chef de Service	Agence Nationale de l'Hydraulique Rurale (ANHR), MEH
Alain ROBERT	Ingénieur Coordonnateur & Administrateur	Groupement d'Intérêt Economique pour le Service Commun d'Entretien des Voies Navigables (GIE-SCEVN)
Dr Alexis MINGA	Directeur Général	Direction Générale de l'Environnement, Ministère du Tourisme et de l'Environnement
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	Direction de l'Hygiène Générale, Ministère de la Santé et de la Population
Dr. Bertin NGOLO	Chef de Laboratoire de l'Hygiène	Ministère de la Santé et de la Population
Dr. Jean-Pierre TATHY	Coordonnateur du GRSEN	Ministère de la Recherche Scientifique
M. Bienvenu NAZIEZOULA	Responsable de l"Unité de Service Hydrologique et Météorologique	Ministère de la Recherche Scientifique
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	Agence Nationale de l'Aviation Civil (ANAC)
Vincent LOEMBET MAKAYA	Directeur	Direction de l'Environnement et de la Propreté de la Ville, Mairie de Brazzaville
Maixent ELENGA BANINGOBERA	Coordonnateur	Agence Nationale de l'Hydraulique Rurale (ANHR), MEH
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	Centre National de la Statistique et des Etudes Economique, Ministère des Plans
M. Benjamin NDALA	Secrétaire Général	CICOS
Xavier BLANCHARD	Directeur	Agence Française de Développement, 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

* 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.

Annex G: UN Affiliated Global Water Monitoring Organizations

UN AFFILIATED WATER MONITORING ORGANIZATIONS/ DATABASES ELIGIBLE FOR INCLUSION IN PAN AFRICA M&E FRAMEWORK
UN-HABITAT has developed a comprehensive framework to monitor water and sanitation coverage in 17 towns as part of the Lake Victoria Region Water and Sanitation Initiative (LVWATSAN). This process will help in tracking progress towards meeting the water and sanitation targets set out in the Millennium Development Goals (MDG 7 Goal 10) and the Johannesburg Plan of Implementation. It will also ensure that investments in the LVWATSAN Programme target the poorest communities in these towns. The monitoring framework incorporates a baseline household survey (the Urban Inequities Survey), development of a Geographic Information System (GIS) for each secondary urban centre, application of Remote Sensing Technology in community profiling (through the acquisition of High Resolution Satellite data), and building the capacity of local authorities to maintain and update the information.
AQUASTAT is FAO's global information system of water and agriculture developed by the Land and Water Development Division of FAO. The objective of AQUASTAT is to provide users with comprehensive information on the state of agricultural water management across the world, with emphasis on developing countries and countries in transition. The AQUASTAT database contains: spatial data on water resources and irrigation; data on renewable water resources and agricultural water use per country; information on national and regional institutions; and, related documentation, links and definitions.
UNEP/GEMS Collaborating Centre for Freshwater Quality Monitoring and Assessment is hosted at the National Water Research Institute of Environment Canada. The UNEP GEMS/Water Programme is a multi-faceted water science programme oriented towards understanding freshwater quality issues throughout the world Major activities include monitoring, assessment, and capacity building. The implementation of the GEMS/Water programme involves several United Nations agencies. GEMS/Water Programme provides scientifically-sound data and information on the state and trends of global inland water quality required as a basis for the sustainable management of the world's freshwater to support global environmental assessments and decision- making processes. More than 100 countries participate in GEMS/Water, providing in excess of 2 million data entries. Data records range from 1977 to the present. Starting from March 22nd 2005, World Water Day, GEMS Water Programme has launched GEMStat an online searchable database of global water quality data and statistics for global water assessment. It includes surface waters such as lakes, reservoirs, streams, rivers, estuaries, and wetlands; and groundwater aquifers. All data are subject to standard data integrity review processes.
UNEP GRID - United Nations Environment Programme -Global Resource. GRID is a global network of environmental data centres facilitating the generation and dissemination of key environmental geo-referenced and statistical data-sets and information products, focusing on environmental issues and natural resources. GRID centres typically have the ability, expertise and specialized information technology (environmental data management, remote sensing/ Geographic Information Systems) to prepare, analyze and present environmental data and information, which are the basis for reliable environmental assessments. The GEO Data Portal is the authoritative source for data sets used by UNEP and its partners in the Global Environment Outlook (GEO) report and other integrated environment assessments. Its online database holds more than 450 different variables, 136 related to water, as national, subregional, regional and global statistics or as geospatial data sets (maps), covering themes like Freshwater, Water Supply and Sanitation, Population, Forests, Emissions, Climate, Disasters, Health and GDP. They could be displayed over internet as maps, graphs, data tables or downloaded in different common formats by region, sub-region and country. The set of databases available is significant and comprehensive, ranging from political boundaries through arable land extents to energy production and protected areas. This is an impressive collection of data from many sources coupled with a map interface to navigate the data. An innovative structure and interface make the site easy to use. The 136 water datasets are available through http://geodata.grid.unep.ch/results.php.
GGIS-IGRAC: The development of a Global Groundwater Information System (GGIS) is one of the main IGRAC's

activities. IGRAC is a noncommercial centre that facilitates and promotes global sharing of information and knowledge required for sustainable groundwater resources development and management. In 1999 UNESCO and WMO took an initiative to set up an international groundwater centre that resulted in launching of IGRAC in March 2003. IGRAC is hosted by the Netherlands Institute of Applied Geoscience TNO in Utrecht, The Netherlands. For the initial years IGRAC receives financial support from the Dutch government. IGRAC has been identified by the World Water Assessment Programme as a pillar of their groundwater assessment programme.

Promotion, improvement and development of Guidelines and Protocols for adequate groundwater data acquisition and groundwater monitoring are one of centre's main activities. IGRAC has prepared a Global Inventory Report on existing guidelines and protocols for groundwater assessment and monitoring. On-line database on inventoried guidelines and protocols in the field of groundwater data acquisition contains at the moment more than 400 document titles. New guidelines are being developed by international working groups established for this purpose. www.igrac.nl

Global Runoff Data Centre: The GRDC is the digital world-wide depository of discharge data and associated metadata. GRDC's role is to serve as a facilitator between data providers and data users. It serves under the auspices of the World Meteorological Organization (WMO) and has been established at the Federal Institute of Hydrology (BfG), Germany, as early as 1988 in order to support the hydrological and climatological research community by collection and dissemination of a comprehensive and sound runoff data base (see also History). Its role has been emphasized by WMO Resolution 21 (Cg-XII), 1995, requesting member countries to provide discharge data to the GRDC. A frequently Quoted Primary Data Source the Global Runoff Data base at Global Runoff Data Centre is focusing the multifaceted world of global river discharge data for the sake of key research linking local and global change issues. Discharge data of rivers of the world (historical time series) 1807 - present. http://grdc.bafg.de

Global Water Partnership: The GWP seeks to support integrated approaches to sustainable water management by encouraging stakeholders at all levels to work together in more effective, efficient and collaborative ways. The Partnership is an international network open to all organizations involved in water resources management, including governments of developing as well as developed countries, UN agencies, multilateral banks, professional associations, research organizations, the private sector and non-governmental organizations.

The GWP's objectives are to:

- Clearly establish the principles of sustainable water resources management,
- Identify gaps and stimulate partners to meet critical needs within their available human and financial resources,
- Support action at the local, national, regional or river basin level that follows principles of sustainable water resources management,
- Help match needs to available resources.

The World Bank, the United Nations Development Program (UNDP) and the Swedish International Development Agency (Sida) created the Global Water Partnership (GWP) in 1996. This initiative was based on promoting and implementing integrated water resources management through the development of a worldwide network that could pull together financial, technical, policy and human resources to address the critical issues of sustainable water management.

The International Benchmarking Network for Water and Sanitation Utilities (IBNET) is an initiative to encourage water and sanitation utilities to compile and share a set of core cost and performance indicators, and thus meet the needs of the various stakeholders. It sets forth a common set of data definitions; a minimum set of core indicators, and provides software to allow easy data collection and calculation of the indicators, while it also provides resources to analyze data and present results. Sharing of results is critical to successful performance comparisons (benchmarking), and hence tools for data analysis, resources and links to benchmarking organizations. It includes a direct access to a large database for water and sanitation utilities performance data. IBNET supports and promotes good benchmarking practice among water and sanitation services by:

- Providing guidance on indicators, definitions and methods of data collection;
- Facilitating the establishment of national or regional benchmarking schemes;
- Undertaking peer group performance comparisons;
- Establishing links between utilities, utilities associations and regulators

http://www.ib-net.org is currently offered in English, Spanish and Russian.

Joint Monitoring Programme (JMP): See Section 1.4.2 and Annex A.4 of this report for a full profile of the JMP.

Transboundary Freshwater Database: To aid in the assessment of the process of water conflict prevention and resolution, over the years has been developed the Transboundary Freshwater Dispute Database, a project of the Oregon State University Department of Geo-sciences, in collaboration with the Northwest Alliance for Computational Science and Engineering. It includes:

- Water Law and Standards
- Atlas of International Freshwater Agreements: Contains an historical overview of international river basin management; a detailed listing of more than 400 international freshwater agreements; and a collection of thematic maps.
- International Freshwater Treaties Database: A searchable database of more than 400 international, freshwater-related agreements, covering the years 1820 to 2002.
- Transboundary Freshwater Spatial Database: Biophysical, socioeconomic, and geopolitical data relating to the world's international river basins are accessible and searchable through spatial and tabular formats.
- International water event database: A searchable database documenting historical international water relations from 1948 to 1999.
- International River Basin Register (updated August 2002): This register lists the world's international river basins, delineated by continent.

UNCDB: The UN Common Database draws selectively on statistics from throughout the UN system and covers all countries and areas and over 300 series from more than 30 specialized international data sources. It includes comprehensive footnotes and meta-information on sources, definitions, and frequency of updates, and provides technical definitions and standards verbatim from their original sources. Users may view data, compile graphs, calculate derived measures, and export data. The set of UN Statistical databases is comprised of a comprehensive and well-designed set of sites that concentrate on delivering data and some information in an efficient manner.

The **World Hydrological Cycle Observing System (WHYCOS)** is a WMO program aimed at improving the basic observation activities, strengthening the international cooperation and promoting free exchange of data in the field of hydrology. The programme is implemented through various components (HYCOSs) at the regional and/or basin scale. It is guided by the WHYCOS International Advisory Group (WIAG).

WHYCOS is developed for promoting a bottom up approach, from the country level through the basin to global scale. WHYCOS and its components primarily focus on strengthening technical and institutional capacities of National Hydrological Services (NHSs) and improving their cooperation in the management of shared water resources. WHYCOS supports the NHS's to better fulfil their responsibilities, by improving the availability, accuracy, and dissemination of water resources data and information through the development and implementation of appropriate national and regional water resources information systems thereby facilitating its use for sustainable socio-economic development. www.whycos.org

Endnotes to Annex B

[1] Source: Danvi, Comlan Célestin, "Situation Générale des Informations et Connaissances sur l'Eau au Bénin," Facilité Africaine de l'Eau, Février, 2006.

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African Water Facility
Facilité africaine de l'eau

Mobilising Resources for Water in Africa

PAN AFRICAN WATER SECTOR MONITORING AND EVALUATION ASSESSMENT

Template for Rapid Assessment of Water Sector Monitoring and Evaluation

July 2009

African Water Facility | Facilité africaine de l'eau

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LIST OF ACRONYMS

ABHS	Agence de Bassin Hydrographique Sahara
ACMAD	African Centre of Meteorological Application for Development
AEIN	Africa Environmental Information Network
AFRISTAT	l'Observatoire Économique et Statistique d'Afrique Subsaharienne
AfWA	African Water Association
AMCOW	African Minister's Council on Water
ANBO/ROAB	African Network of Basin Organisations
ANEW	Africa Civil Society Network on Water and Sanitation
APRM	African Peer Review Mechanism
AQUASTAT-FAO	Food and Agriculture Organisation's Global Information System on Water and Agriculture
ARTEMIS	Advanced Real Time Environmental Monitoring Information System
AWICH	African Water Information Clearing House (TIGER Initiative)
AWF	African Water Facility of the African Development Bank
Cap-Net	International Network for Capacity Building in IWRM
CBO	Community-based organisation
CICOS	Commission Internationale du Bassin Congo-Oubangui-Sangha
CILSS	Permanent Interstate Committee for Drought Control in the Sahel
CREPA	Centre Régional pour l'Eau Potable et l'Assainissement à Faible Coût
DBMS	Database management system
DHS	Demographic and Health Surveys
ECOWAS-WCRU	Economic Community of West African States' Water Resources Coordination Unit
EIS-Africa	Network for the Cooperative Management of Environmental Information
EMWIS	Euro-Mediterranean Water Information System on Know-how in the Water Sector
ESI	Environmental Sustainability Index
GDP	Gross Domestic Product
GEMS	Global Environment Monitoring System
GIS	Geographic information system
GIWA	Global International Waters Assessment
GWA	Gender and Water Alliance
GPS	Global positioning system
GWP	Global Water Partnership
HDI	Human Development Index
IBNET	The International Benchmarking Network for Water and Sanitation Utilities
INBO	International Network of Basin organizations
ISW	International Secretariat for Water
ISW-Africa	International Secretariat for Water Africa

IWRM	Integrated water resources management
IWSD	Institute for Water and Sanitation Development – Africa
JMP	Joint Monitoring Programme
LVEMP	Lake Victoria Environmental Management Project
M&E	Monitoring and Evaluation
MDG	Millennium Development Goals
MICS	Multiple Indicator Cluster Surveys
MIS	Management information system
MoU	Memorandum of Understanding
NDDC	Niger Delta Development Commission,
NEPAD	New Partnership for Africa's Development
NETWAS	Network for Water and Sanitation
NGO	Non-governmental organisation
NWASCO	National Water and Sanitation Company
OMVS	Organisation pour la Mise en Valeur du Fleuve Sénégal
OSS/ROSELT	Long Term Ecological Observatories Monitoring Network
RBO	River basin organisation
RCW	Ramsar Convention on Wetlands
REC	Regional economic community
RMC	Regional member country
RWSS	Rural water supply and sanitation
SPBNET	Water Supply and Sanitation Service Provider Performance Indicators and Benchmarking Network
UCC-Water	UN-Water and UNEP Collaborating Centre on Water and the Environment
UDBS	Unified database system
UNECA	UN Economic Commission for Africa
UN-ECE	United Nations Economic Commission for Europe
UNICEF	United Nations' Children's Fund
UNSGAB	UN Secretary-General's Advisory Board on Water and Sanitation
WAWI	West African Water Observatory
WBO	Water basin organisation
WHO	World Health Organisation
WMA	Water Monitoring Alliance
WOP	Water Operators Partnership Africa
WPI	Water Poverty Index
WSP	Water and Sanitation Programme
WSS	Water supply and sanitation
WSSCC	Water Supply and Sanitation Coordinating Council
WUA	Water users' association
WWAP	World Water Assessment Programme
WWC	World Water Council

INTRODUCTION

This template, intended to serve as a guide and to promote inclusiveness, consistency and quality of information obtained to facilitate cross country comparisons, is composed of two parts. Part 1 is composed of guidelines on what can be expected and what to look for in carrying out the rapid assessment.[55] It provides background material on the water sector's institutional framework and roles and responsibilities of the sector's stakeholders, and it describes the types of organizations to review and interview, information to be acquired and assessments to be made.

Part 2 is more specific. It provides a suggested Table of Contents and checklist for the assessment report. Under each section heading are questions that need to be responded to during the rapid assessment. The purposes of both parts are, of course to (1), provide guidance on rapid assessment of the sector's M&E and (2), to encourage uniformity and consistency between country assessments. Several documents pertaining to assessments of the water sector in Africa are listed in Section 1.6. They provide good background reading.

It should also be noted at this stage that the water sector's principal components have historically been water resources and water supply and sanitation. In recent decades, however, optimization of multiple uses of water resources has introduced integrated water resources management (IWRM) at the country level. At the same time, the water supply and sanitation sector has increased in priority in development programmes in response to poverty reduction initiatives such as Poverty Reduction Strategy Papers (PRSPs). This template therefore covers all three sub-sectors: IWRM, water supply, and sanitation.

[55] 'Rapid' means that the assessment should take no longer than two weeks of in-country work.

5. RAPID ASSESSMENT OF WATER M&E GUIDELINES

5.1. Introduction

Monitoring and evaluation of the water sector is considered the weakest link in efforts to achieve the Africa Water Vision 2025 and the Millennium Decade Goals (MDGs). At the Paris Conference in 2005, the African Ministers of Water and Finance committed to establishing a regional mechanism for tracking progress towards achievement of the MDGs. The first Governing Council of the AWF, 2005 agreed that M&E and Information and Knowledge Management should be priority areas of intervention for the AWF. The overall objective of the M&E subcomponent is "to support the establishment of water sector M&E systems and management capabilities at national and regional levels in consultation with stakeholders. As a result, improved M&E standards and methodologies will be developed, and regular M&E reporting mechanisms will be established and become operational in RMCs. The availability of timely and regular monitoring and evaluation results will enhance planning, implementation and management of water sector investments."[*]

Subsequently, in September 2006, the AWF held a regional forum in Tunis of stakeholders involved in sector M&E work in the region to define key requirements for harmonized results oriented M&E in the African water sector. The forum reaffirmed the centrality of RMCs, River Basin Organizations (RBOs), and Regional Economic Communities (RECs) as the prime stakeholders, and it confirmed AWF's mandate to accelerate the development of a framework to develop the water sector M&E process. It then requested AWF undertake a rapid assessment of the current status, stakeholders and key activities supporting the water sector M&E in Africa and agreed that a Pan African assessment comprised of an M&E mapping exercise was needed to assist AWF in taking decisions about harmonizing and strengthening water sector M&E in Africa. In November 2007, the AWF contracted Cowater International of Canada to undertake a "Pan African Water M&E Assessment" to support these objectives. This template for rapid in-country assessment of M&E systems is part of the Pan African Water M&E Assessment initiative.

5.2. Assessment Guidelines

5.2.1. Pre-Assessment: An Overview of Sector Organizations

Before undertaking a rapid assessment, the assessor should acquire a good understanding of the country's sector organizations, their mandates and programmes. This is best done through internet searches, available documentation and networking contacts in-country. The objective is to get a broad understanding of the sector's stakeholders, their programmes and M&E capabilities from the outset from which a plan of action for the assessment can be developed. A list of the key players needs to be drawn up, especially those that would willingly provide reliable information. For verification purposes, visits need to be made to facilities such as water basin organizations, offices responsible for maintaining databases and some projects both rural and urban. The several NGOs operating in the sector can provide another perspective. One such NGO is WaterAid, which has offices in eleven African countries and maintains useful oversight across the sector. Listed below are several other global, regional and sub-regional organizations that may be of relevance to this research; it is not a complete list but offers a good starting point.

[*] 2005, African Water Facility, "Operational Programme for 2005-2009", AfDB Tunis.

Global: the Joint Monitoring Programme (JMP) of the WHO and UNICEF, the Water and Sanitation Programme (WSP) of the World Bank, the Global Water Partnership (GWP), the World Water Council (WWC) hosting the Water Monitoring Alliance (WMA), UN Secretary-General's Advisory Board on Water and Sanitation (UNSGAB), UN-Water and UNEP Collaborating Centre on Water and the Environment (UCC-Water), International Network of Basin organizations (INBO), The International Benchmarking Network for Water and Sanitation Utilities (IBNET), Water Supply and Sanitation Service Provider Performance Indicators and Benchmarking Network (SPBNET), AQUASTAT-FAO, GEMS-Water, Global International Waters Assessment (GIWA), International Secretariat for Water (ISW), International Water and Sanitation Centre (IRC), Institute for Water and Sanitation Development – Africa (IWSD), Water Supply and Sanitation Coordinating Council (WSSCC), World Water Assessment Programme (WWAP), and Cap-Net (the International Network for Capacity Building in IWRM).

Regional: African Minister's Council on Water (AMCOW), New Partnership for Africa's Development (NEPAD), African Water Facility of the African Development Bank (AWF), African Network for Basin Organizations (ANBO), formerly Interagency Group for Water in Africa (IGWA) now UN-Water-Africa, Advanced Real Time Environmental Monitoring Information System (ARTEMIS), UN Economic Commission for Africa (UNECA), Network for the Cooperative Management of Environmental Information EIS-Africa, African Peer review mechanism (APRM), Africa Environmental Information Network (AEIN), L'Observatoire economique et statistique d'afrique sub-saharienne (AFRISTAT), and IDEA-Africa, African Water Association (AfWA), Africa Civil Society Network on Water and Sanitation (ANEW), Water Operators Partnership Africa (WOP), International Secretariat for Water Africa (ISW-Africa).

Water basin and Sub-regional Organizations: The Euro-Mediterranean Water Information System on Know-how in the Water Sector (EMWIS), the Center for Environment and Development for the Arab Region and Europe (CEDARE),. the Economic Community of West African States' Water Resources Coordination Unit (ECOWAS-WRCU), Organisation pour la mise en valeur du fleuve Sénégal (OMVS-SOE), Centre régional pour l'eau potable et l'assainissement à faible coût (CREPA), Permanent Interstate Committee for Drought Control in the Sahel (CILSS) and the AGRHYMET Regional Centre, Long Term Ecological Observatories Monitoring Network (OSS/ROSELT), TREND), Network for Water and Sanitation (NETWAS), Lake Victoria Environmental Management Project (LVEMP), Niger Delta Development Commission, Autorité du basin du Niger, Mano River Union, Volta Basin Authority, Awash Basin Water Resources Administration Agency, Nile Basin Initiative, National Water Research Center, Suivi des bassins hydrographiques Burkina, Zambezi Basin Action Plan - Southern African Development Community, Benin Country Water Partnership, Agence de bassin Algérois, Commission internationale du bassin Congo-Oubangui-Sangha, Agence de bassin hydrographique Sahara.

5.3. Integrated Water Resources M&E

Water resources monitoring refers to the comprehensive collection, storage and analysis of information on the quantity, quality, character, location, patterns of use, and response of the resource to use and user demands, pollution, water quality degradation and environment. M&E is essential to the water resource planning and management process. The information on availability and use facilitates water allocations so that socioeconomic activities within a basin can be optimized within the capacity of the resource. The information assists central, local and municipal governments, as well as investors take decisions on planning and development. The objective is to enable preparation of country-wide inventories of

resources so that development opportunities can be quantified and mapped for planning, and implementation. Thus, it is crucial that this IWRM data collection, analysis and dissemination process be transparent, accountable and equally accessible to all users.

5.3.1. Policies, Strategies and Legislation

Most countries now have approved National Water Strategy and Policy documents. They are often sub-divided between sub-sectors, but go a long way to describe sector planning and development options. They often include M&E strategies and policies. Many countries are undergoing sector reform so that policies and background reports detailing the reforms will be available and useful to the M&E assessment. These sector reforms are aimed at achievement of the Africa Water Vision 2025 which is described in the footnote below.[57] Typically, these include sector reform programs strengthening IWRM and separating regulatory from executive functions, public service reforms, the introduction of performance measurement systems, and local government decentralization and reform. In addition, all agreements and MoUs related to trans-boundary waters are needed. They normally include agreements on monitoring of the trans-boundary water resource.

5.3.2. Institutions

The organizational structure of sector institutions is to be provided. An example is given below in Figure 1.1 of the planned Tanzanian organizational structure for water resources management. M&E functions should be shown on the organization chart or a separate more detailed M&E organization chart can be prepared. It should show the various levels of information collection, collation, verification, analysis, report preparation, storage, dissemination and use. As a minimum the organizational chart should describe the various M&E responsibilities of each stakeholder.

Most countries will be at the early stages of IWRM development. Water user associations (WUAs) will probably be in their formative stages and be influencing basin policy only on major issues such as the sharing of the resource between irrigation and hydro-power. Seldom are water user associations participating in data collection, but they should be. WUAs provide appropriate platforms for consultations and cooperation amongst the different stakeholders and communities. They have important and constructive roles to play

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[57] The shared Africa Water Vision 2025 is for: *An Africa where there is an equitable and sustainable use and management of water resources for poverty alleviation, socio-economic development, regional cooperation, and the environment.*

1. There is sustainable access to safe and adequate water supply and sanitation to meet the basic needs of all;
2. There is sufficient water for food and energy security;
3. Water for sustaining ecosystems and biodiversity is adequate in quantity and quality;
4. Institutions that deal with water resources have been reformed to create an enabling environment for effective and integrated management of water in national and transboundary water basins, including management at the lowest appropriate level;
5. Water basins serve as a basis for regional cooperation and development, and are treated as natural assets for all within such basins;
6. There is an adequate number of motivated and highly skilled water professionals;
7. There is an effective and financially sustainable system for data collection, assessment and dissemination for national and trans-boundary water basins;
8. There are effective and sustainable strategies for addressing natural and man-made water-resources problems, including climate variability and change;
9. Water is financed and priced to promote equity, efficiency, and sustainability;
10. There is political will, public awareness and commitment among all for sustainable water – resources management, including the mainstreaming of gender issues and youth concerns and the use of participatory approaches.

in the self-regulation of water use, monitoring pollution, and reporting. Each of these is part of the M&E framework.

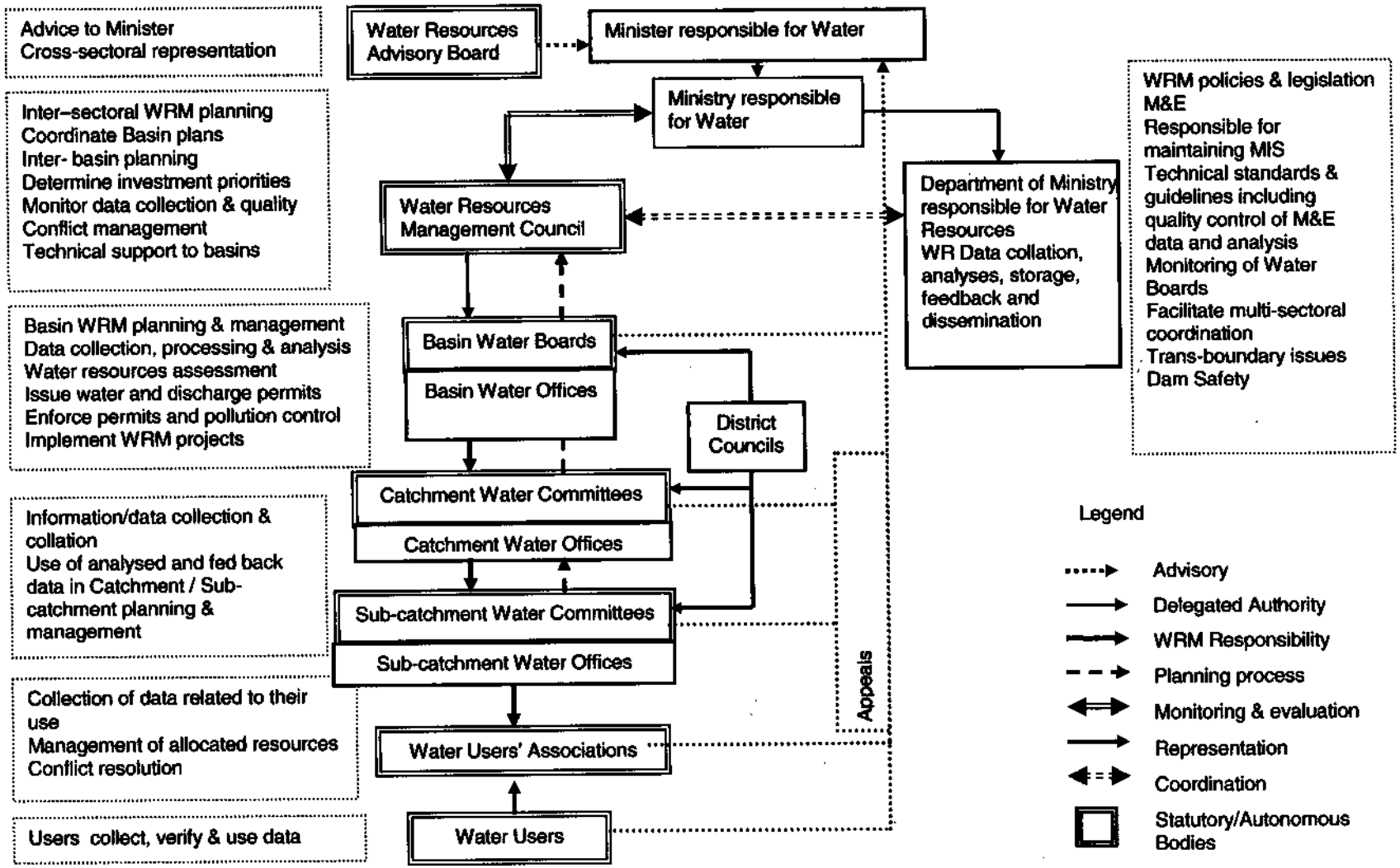
Typically, water basin organizations in Africa are influential only in the major basins and where their input is critical to water sharing and/or trans-boundary considerations. They hold prime responsibility for data collection. In large basins they will have catchment and sub-catchment organizations as well as offices, staff and monitoring networks, all of which will need to be documented for the rapid assessment. In most countries the hydrometric, water use and water quality information will be poor and in some non-existent. Nevertheless, having realized the costs of either under-designing projects resulting in loss of economic opportunity or over-design, resulting in over-exploitation and negative environmental impact, most are trying to improve the quality of their data collection systems and analysis. The upper echelons of the institutional framework usually comprise such bodies as:

- Water resources management councils responsible for resource planning, determination of investment priorities, conflict resolution, and policy dialogue
- International trans-boundary committees responsible for monitoring and maintaining trans-boundary agreements and
- The ministry and its various departments responsible for water resources.

These need to be described, with particular attention paid to the water resources ministry. The Ministry typically takes charge of information and data collation gathered from the basin boards and will likely have a special M&E section or department coupled to a mechanism for dissemination, such as annual reports, an MIS and a web-site. All need to be documented along with their ability to (1) maintain reliability, consistency and accuracy of information, (2) use the information effectively in planning and managing the sector, and (3) inform the public, stakeholders and government.

Surrounding this structure are the various sub-system organizations and stakeholders. These will represent interests of the environment, energy, agriculture, statistics, local government and the media.

Figure 5-1 An Example of an Institutional Framework and M&E Roles in Water Resources Management



5.3.3. Monitoring Networks

The monitoring networks within the basin, their equipment, facilities, offices and staff are crucial to M&E data quality and reliability. An overall assessment of the existing monitoring stations in each basin is required. This will include river gauging stations, rainfall gauges, meteorological stations, water quality measurement and groundwater observation points. They will need to be quantified.

Table 1.1 can be used as an example of the kind of information needed and the level of detail required. In addition to groundwater observation wells, hydrometric stations, meteorological stations, rainfall stations, a basin water testing laboratory, transport and data storage facilities, properly resourced water basin offices will require the following:

- *Surface water monitoring*: current meters, gauging reels, sinkers, sediment samplers, portable boats, bridge cranes, field computers, sediment samplers, GPS, and related tools and accessories.
- *Groundwater monitoring*: dippers, well loggers, resistivity meters, terrameters, geophysical systems (magnetometers), GPS, and related tools and accessories.
- *Water quality monitoring*: field kits and accessories for chemical and bacteriological water quality testing.

Assessments can be recorded in the table as they have seen in the column headed "Remarks ands Recommendations" in Table 1.1. Consideration should be given to existing and future needs for surface water monitoring. There may be plans already prepared and available for upgrading the monitoring stations and offices. These can be used as a basis for making recommendations.

5.3.4. Data Analysis, Storage and Dissemination

Water resources assessment and mapping refer to the comprehensive collection and assembly of information on the quantity, quality, character, location, patterns of use and response of the resource to user demands, pollution and water quality degradation processes and environment. Assessment and mapping are prerequisites in the water resources planning process and depends heavily on data collection, storage and analysis at the basin level.

Information on the availability, quality and use of water resources must be available to facilitate decision making in water allocations so that all socio-economic activities within given basins arte optimized within the sustainable limits of the resource. Ultimately, countrywide inventories of resources, current and potential uses of water, and all sector-wide development opportunities need to be identified, quantified, and mapped to provide essential information for planning and implementing various development options. This includes a survey and mapping of existing dams/reservoirs, and preparation of guidelines for development of the resource for different purposes. Thus, the IWRM data collection, analysis, and dissemination process must be transparent, accountable, and accessible to all users.

Table 5-1 Example Chart of Monitoring Stations and their Status

BASIN	TYPE OF STATION					REMARKS AND RECOMMENDATION
	RIVER GAUGING	RAINFALL	METEOROLOGICAL	WATER QUALITY & POLLUTION	GROUNDWATER	
River A	63 river gauging stations (29 were rehabilitated and upgraded under previous Project but most stations destroyed by floods, vandalism, or stolen)	45 rain gauging stations all in working condition, spatial distribution inadequate	10 meteorological stations - partially working due to malfunctioning anemometers, thermometers.	12 stations but systematic monitoring required (currently spot monitoring is done)	11 observation boreholes have been drilled, await installation of data loggers.	Review of network and improvement/upgrading of the network are needed to meet present needs. May require 12 additional groundwater observation wells. Basin will have three sub-offices for data gathering and O& M of stations.
River B	48 (operational) 4 (new) 5 (temporary)	50 – all in good working condition, spatial distribution inadequate.	11 - all in good working condition	12 but systematic monitoring required (currently spot monitoring is done)	16 observatory boreholes have been drilled, await installation of data loggers, two more will be drilled.	Review of network and improvement/upgrading of the network is needed to meet present needs. Requires four additional hydrometric stations, five temporal stations, two met stations, and 14 groundwater observation stations. Basin will have five sub-offices for data gathering and O& M of stations.
River C	48 (all in bad condition)	15 (are in good condition, 1 needs rehab, 15 additional required)	Six (all are not functioning)	No systematic monitoring exists (network design and establishment urgently required).	Eight (six fair, two not working, 22 additional stations needed)	29 River Gauging stations and six met stations will be rehabilitated through a future project, 19 to be rehabilitated. Basin will have two sub-offices for data gathering and O& M of stations.

Lake D	21 partially working	45 partially working	10 partially working	122 (operational)	Nil	Additional stations required: seven hydrometric stations, 15 groundwater, five met stations and four rainfall stations to meet present needs. Basin will have three sub-offices teams for data gathering and O& M of stations.
River E	30 (all stations not working properly)	None	None	Nil	Nil	The network is in bad shape-requires review and improvement/upgrading to meet present needs. Basin will have three sub-offices for data gathering and O& M of stations.
Lake F	35 hydrometric stations – all in bad shape	None	Five meteorological stations	Nil (but urgently needed)	Nil (but urgently needed)	The network is in bad shape-requires review and improvement/upgrading to meet present needs. Basin will have two sub-offices for data gathering and O& M of stations.
Lake G	26 (24 in bad condition)	18 in good condition but below standard (at least 10 additional stations are needed)	Six (all in bad condition)	Nil (but urgently needed)	Nil (at least 10 stations are needed)	24 hydrometric stations need rehab/upgrading. Basin will have two sub-offices for data gathering and O& M of stations.

After collection, basin offices are the first point of data storage. Such offices normally have a data base management system (DBMS) and a GIS database. The DBMS is used in storage, processing, validating, and analysing the many types of multi-disciplinary data, including time series and spatial data on climate, surface water, ground-water, water quality, sediment, other natural resources, as well as related information such as water rights and actual abstractions.

The data management chain must be defined and assessed from initial data collection by basin (and possibly sub-catchment) offices (and WUAs) up to regional and central levels. The responsible Department of the central Ministry typically holds ultimate responsibility for quality of data, its storage, analysis and dissemination. Each level needs to be reviewed, described and assessed. Although the headings will need to be tailored to each country, Table 1.2 below can be used as a template for description, analysis and recommendations.

The Ministry's department responsible for water resources may not be adequately resourced to fulfill its role as the central manager of knowledge and information on water resources. Also, there may be more than one database in operation separately funded by different donors. Such duplication is unfortunate but not uncommon. The M&E assessment will document the current capacity of the department to adequately gather together the information and data, store and analyse it and, just as importantly, report on and disseminate it. It will assess the situation and make recommendations as to its strengthening and upgrading.

Necessarily, dissemination goes far beyond storage and publishing annual reports. It should include pro-active feedback to the basin, sub-catchment, WUAs and users. The feedback should target the needs of the reader and be of sufficient quality and relevance to remain in demand. Its use at the various levels needs to be assessed to determine if it is actually being used as intended in planning, management and investment decisions basin level.

The needs of other stakeholders and the extent to which they are being met should also be assessed. These stakeholders include:

- The environment, especially in the areas of pollution control, deforestation, and minimum environmental flows;
- Local, regional and central governments;
- Trans-boundary water resources management;
- Tourism;
- Agriculture;
- Hydropower;
- Industry and commerce;
- Water supply and sewerage;
- Transport/navigation;
- National and regional development planning; and
- The media and civil society.

This may call for holding a workshop amongst the many stakeholders to determine if their needs are being met and, if not, determining what information is required, in what format, and how it is best disseminated.

Table 5-2 Data Management Matrix

LEVEL	METHOD OF COLLECTION	INFORMATION COLLECTED	COLLATION AND STORAGE	ANALYSIS	DISSEMINATION	RECOMMENDATIONS
Users & WUAs						
Sub-catchment						
Basin Office/ Organization						
Water Resources Council						
Ministry Department						
Water Resources Advisory Board						
Media and Private Sector						

5.4. Rural Water Supply and Sanitation M&E

Rural water supply and sanitation are key elements of both the Africa Water Vision 2025 and the Millennium Decade Goals (MDGs).

Typically, monitoring and evaluation in the water and sanitation sub-sector is necessarily spread across several organizations. To complicate matters more, there are many indicators used and definitions given to what is acceptable coverage. The best starting point is with the formally approved national strategies and policies for water supply and sanitation. These will likely provide the public sector organizational framework and the nationally accepted indicators and standards.

M&E is commonly divided four ways between urban and rural, and water and sanitation. Active collection of data across the sub-sector is rare. Even if the various organizations are gathering information, coordination is uncommon. This M&E rapid assessment is the beginning of what may eventually become a coordinated and managed M&E program.

5.4.1. Rural Institutions and Monitoring Networks

The first task is to identify all of the institutions working in and monitoring the rural water supply and sanitation sub-sector. These will likely include the lead ministry such as a ministry of water, which may be collecting information from others and then collating, analyzing, storing and disseminating the information. The information gathering may be done by the sub-offices of the ministry at the provincial/state level responsible for the monitoring. In turn, these would likely have district, county, and sub-county level offices collecting information. In those countries that have undergone devolution the responsibility would be passed to the more autonomous district offices that would link to the ministry of local government. In this case one would probably identify a department of water supply within district government which would have monitoring responsibility. Fully devolved governments may have established information collection through village level organizations and extension agents. These need to be identified. The entire network of monitoring water supplies needs to be described. Likewise, its monitoring efficacy and reliability needs to be assessed.

The Ministry of Health, its sub-offices, clinics and BHUs and their outreach networks may be collecting and analyzing data on sanitation. Likewise under devolved government the district and sub-district departments of health and hygiene will have a role to play in collecting information. These networks need to be identified and described; they also need to be assessed in terms of their coverage, reliability and accuracy.

Other sources of information on monitoring RWSS include donor assisted projects and NGOs. These may themselves be collecting information from their projects and areas of operation. One such NGO is WaterAid which usually maintains a useful overview of the sub-sector.

Survey and/or statistical departments regularly undertake household surveys, censuses and socio-economic surveys. The questionnaires used often include questions related to water supply and sanitation (although seldom are they sufficiently targeted to provide reliable coverage information). These organizations and surveys need to be identified and their relevance to M&E of the water sector assessed. The Joint Monitoring Program (JMP) of WHO and UNICEF have found household surveys (DHS) and Multi-indicator Cluster Surveys (MICS) useful in estimating broad coverage to determine progress towards the MDGs. Under normal circumstances, however, the JMP has had to adapt and interpret the information before using it in inter-country comparisons. Certainly, the local WHO and UNICEF offices should

be approached to get a better understanding of sources and data available and used by the JMP. Identifying, describing and assessing their relevance and reliability will be important.

5.4.2. Data Collection

Quality of information: in most cases, the information collected will be of the "coverage" type in the form of numbers and accessibility of standpipes, house-connections or tube wells and open wells. In some instances the quality of water provided and access to sanitation will be measured. The quality of such information, its accuracy and relevance needs to be assessed as do the monitoring systems themselves.

Type of information: The type of information collected usually varies widely from the numbers of water points and technologies used to the degree of access and the safety of the supply. Determination of whether or not a given technology and source is classified as safe, and whether or not a particular type and situation of latrine is acceptable is often made by the implementing agency. These local definitions need to be acquired and assessed in the context of the definitions and criteria set by the MDGs.

Geographic spread of information: an assessment needs to be made as to the geographic extent of information collection. Is it collected only in project areas? Does it include NGO projects? Are privately owned supplies (such as household handpumps) considered coverage and included?

Timing, reliability and verification of data collection: How often are surveys undertaken? Are they regular and of consistent design? Are there instances where data is reported on but not actually collected? In other words are assumptions made by the data collectors and their institutions about coverages without actually visiting the field to collect the data?

Survey Design: the designs of surveys need to be assessed. Countries will not be able to undertake a 100% sample, so sample size, clustering, timing of surveys and the representativeness of the sample taken need to be assessed.

Water quality: Details are needed of the tests used to assess the drinking water quality. These may include total or thermo-tolerant coli forms and faecal streptococci, turbidity, dissolved solids, pH, arsenic, fluorides, and heavy metals. Local standards for "safe water" also need to be obtained from sector institutions. The caliber and reliability of the staff used for sample collection and their methods need to be determined and assessed, as does the accuracy and reliability of laboratory testing.

Population: Most coverage information is reported as percentages for comparative purposes. The denominator (being the total population) is important to get right. The source and accuracy of population data being used needs to be determined and assessed as should the methods used for any projections or estimates of population. Some methods of estimating coverage avoid the use of population entirely by counting the number of areas (such as sub-counties or hamlets) with at least one water supply. All the local methods being used to estimate coverages need to be identified, documented and assessed.

Table 1.3 can be used during the rapid assessment as a guide. Each significant survey or data collecting initiative should be reported on separately in its own table.

Table 5-3 Indicators and Sampling for Data Collection

QUESTION	RESPONSE	COMMENTS
For what purpose (related to water supply and sanitation) is the data being collected?		
Is the data being collected by direct observation (such as through household surveys) or through knowledge of delivery of services by projects (supply side)?		
Which indicators are being used? How do they compare to the indicators used by the JMP to measure progress towards the MDG?		
What is the geographic area and/or population being surveyed?		
Is the survey held on a timely basis? Are there disparities which require interpretation, and if so, does the interpretation reflect reality?		
Comment on the survey design and the sample and its representativeness.		
Are there quality checks on the data collection? Is the data verified?		
Coverage is the most common objective. Does the survey and its indicators give a realistic/accurate determination of coverage?		
Is the local definition of coverage the same as that of the MDGs.		
Is water quality tested and do the sample collection, indicators and water analysis give a realistic/accurate determination of water safety?		
Are the coverage rates based on area, or population? If based on area, do they accurately reflect population? If based on population, is the total population up-to-date and accurate or have interpretations been made which are of doubtful quality?		

5.4.3. The Definition of Coverage

There are many definitions for coverage. Even within a single country there will be variations. National policies on water supply and sanitation will have the officially accepted definitions for coverage. These should be compared to the internationally accepted definitions used by the MDGs. These are proxy indicators. Being technology based, they are relatively easy to determine in the field, they are verifiable, comparable and quantifiable. So they are accepted as adequate for the purpose of measuring sector progress towards the MDGs. There are however, questions being raised about their consistency. For example, there are wide variations in the safety of water provided by the same technologies under different installation procedures and operating regimes.

5.4.4. Data Storage and Analysis

The information collected will be passed upwards to a point of storage and analysis. The chain needs to be identified and assessed for its reliability and consistency. For example, where information is not in regular demand, the impetus to collect it dissipates. Methods of data storage range from stacks of dusty files on the shelf to websites giving access to databases. They need to be identified, documented and assessed.

5.4.5. Information Dissemination and Use

What happens to the data after analysis and storage?

- Is it compiled into reports which are then disseminated to other government offices, or is the dissemination pro-active and targeted?
- Are the information and reports readily available from sector institutions, libraries and the internet?
- Has the information been institutionalized, do sector institutions own, respect and utilize the information effectively?
- Is there a two-way flow of information between those collecting the data and those who analyse and store it? In other words, do the collectors and providers get fed back the information in analysed format?

Who uses the information, for what purpose, and how often?

- Is the information from the M&E system used by management for sector planning, budgeting and reporting and how?
- Is it used by the media, educational institutions such as universities and the public at large, such as private sector consultants?
- Is it used locally, regionally and internationally to assess coverage and progress towards local targets and MDGs?
- Is there feedback on the quality and reliability of the information provided?

What is being said here is that without dissemination and effective use of the information, there is little point in collecting it in the first place. Dissemination and use is seldom stressed but is, in fact, just as important as its collection and storage. Dissemination and use must be given the priority it deserves by the rapid assessment.

5.5. Urban Water Supply and Sanitation M&E

There are many parallels between rural and urban in water supply and sanitation. Urban water supply and sanitation are also key elements of both the Africa Water Vision 2025 and the MDGs. The reader is therefore encouraged to review the sections above, as much of what has already been said about rural WSS also applies to urban WSS.

5.5.1. Institutions

One should begin with the local definition of urban. It is usually subdivided between market centres and towns, municipalities and cities. Responsibility for water and sanitation in the smaller towns is usually held by local government or regional water boards. Municipalities and city councils or assemblies often hold responsibility for their water supply and sanitation. Increasingly, however, public private partnerships are being used in the management of urban water supplies, which involve leases, concessions or management contracts between private organizations and government. These usually improve service delivery by achieving greater financial viability and monitoring capacity. A case in point is the regulatory agency NWASCO of Zambia, which licences 10 commercial utilities, 13 local authorities and six private water

providers running water supply and sanitation services. Each year their progress is published in annual reports and made available to the public, a process which engenders improvements in monitoring through competition for top marks amongst service providers.

All such urban water supply and sanitation institutions and their organizational frameworks need to be documented along with their M&E programs. Where public sector agencies such as municipal departments and water boards hold responsibility for water and sanitation, care must be taken to ensure that M&E responsibilities are defined for all urban sectors including lowest income areas, and that sanitation is included. Urban sanitation is divided between on-site sanitation (latrines and septic tanks) and sewerage. Sewerage is normally the responsibility of municipal water and sewerage departments, while on site sanitation normally falls under departments of health. Unfortunately, health departments seldom assume responsibility for either implementing or for monitoring urban sanitation. Notable exceptions to this include health departments that monitor sanitation and hygiene practices (e.g. Lesotho) and track water quality and incidences of water-borne illnesses, such as in Tanzania

5.5.2. Monitoring Networks

The monitoring of water and sanitation is generally better in urban than in rural areas, since targets are more accessible, institutions are better resourced and households are in regular contact through water and sewerage rates collection. A good understanding of the monitoring networks is needed, e.g. who is responsible for data collection, of which sub-sector, where, and with what frequency. The impetus to collect the information and pass it through for analysis and storage needs to be understood.

5.5.3. Data Collected

Reference is again made to the preceding sections on rural water monitoring. In urban centres however, the majority of supplies will be through household connections, yard taps and standpipes. Monitoring would normally include water quality, reliability and hours/day of service.

5.5.4. Data Storage, Analysis and Dissemination

Same as the case of rural water supplies and sanitation. Please see sections 1.3.4 and 1.3.5 in the previous chapter on RWSS.

5.6. M&E Sub-systems

There are several subsystems that link to the water sector which both demand and supply information which need to be included in rapid assessments of water sector M&E. As listed above, they include the environment, forestry, local government and municipalities, trans-boundary water resources management, tourism, agriculture/irrigation, hydropower, health agencies, industry and commerce, training and research institutions, civil society and climate change. All are linked in one way or another to achievement of the Africa Water Vision of 2025. Each has its own monitoring requirements, some of which are provided by M&E of the water sector.

5.6.1. The Environment

Most countries have approved environmental strategies policies which give the institutional framework, criteria/standards, monitoring network information and even plans. These need to be reviewed to acquire an understanding of which are the key institutions and networks for the rapid assessment. The environment and transport/navigation sectors have minimum flow requirements and rely on water sector monitoring to provide information. Likewise, pollution control needs flow data and will be monitoring water quality. Deforestation affects runoff,

sediment and flooding. The environmental ministry or department will maintain information on deforestation trends which is important to water sector monitoring. There are numerous other environmentally related to sub-sectors which the rapid assessment must review for their information and M&E networks. These include fisheries, soil and land resources, biological diversity, industry, mining, climate and planning and development. Assessments as to their relevance and calibre/quality need to be made as do recommendations as to how they can best collaborate or be integrated with the water sector M&E networks and systems.

5.6.2. Physical Surveys

Physical and special information is normally collected and held in databases of surveys, land, and statistical departments. The information relates closely to the water sector and includes soil and geological characteristics, topography, land use, roads, administrative boundaries, government services, human settlements and rivers, lakes and wetlands. These databases and departments are normally long-standing and well established. Again, their calibre, shared interests, linkages and potential collaboration and integration with water sector M&E needs to be assessed and recommendations made.

5.6.3. Censuses

As previously mentioned, population censuses are important denominators for estimates of water and sanitation coverage. Often, demarcation of census areas conform to administrative or electoral boundaries. This makes their use difficult when monitoring or evaluating project areas that are not the same as those of the census. Censuses sometimes include questions that are socio-economic in nature and sometimes related to services provision such as water supply. The rapid assessment should review census methodology and identify constraints and opportunities of applying census data to monitoring water and sanitation coverage.

5.6.4. Meteorological Monitoring Networks

There will be numerous meteorological stations across the country operated by the meteorological and agricultural departments. These will be providing information on rainfall, temperature, wind, solar radiation, evaporation and atmospheric pressure. All are important to water sector monitoring and need to be integrated into the sector's M&E system.

5.6.5. Socio-economic Information

Several ministries and departments will be involved in the collection and use of socio-economic information. These include finance, planning and development, health, statistical offices, agriculture, local government and environment as well as the universities and private sector such as the NGOs. Most countries will have set up a socio-economic database which may be housed within the statistics, surveys or planning departments. The use of GIS databases and mapping is becoming widespread. Satellite imagery is a welcome addition to the tools available to the water sector M&E system.

5.6.6. Agriculture

Ministries of Agriculture are normally a source of information on the amount and quality of water demand and use by irrigation. They will also maintain information on the use of pesticide and fertilizer use which has important connotations for municipal drinking water quality. With depletion of surface waters in both quantity and quality, agriculture turns to groundwater. Most agricultural ministries maintain a network of groundwater observation stations, especially in the water stressed regions. In view of the high demand for irrigation water, agricultural groundwater monitoring networks are usually more developed than those of water ministries. Both need to be reviewed and assessed. Opportunities for their joint strengthening and even integration need to be identified and recommendations made. The

same can be said for hydrological stations which agricultural departments may be operating. Similarly, agricultural departments normally maintain meteorological networks. These are often already integrated with those of the meteorological departments.

5.6.7. Universities and Research Institutes

Universities and research institutions have strong interest in the water sector, especially within civil and environmental engineering, forestry and agriculture faculties. They will need to be contacted to determine their relevance, information requirements and areas of potential collaboration.

5.6.8. Trans-boundary Water Resources Management

Most trans-boundary waters have MoUs or agreements between the riparian countries. Some have commissions, committees or boards actively overseeing execution of the MoUs. The rapid assessment should obtain copies of the MoUs and agreements and investigate as to whether current M&E is meeting the oversight body's needs. They will contain agreed modes of water resource monitoring, the maintenance of databases and the sharing of information as well as the use of the information in shared resource development.

5.6.9. Climate Change

The impact of human activity on the world's climate was all-but-confirmed in the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report in 2007, which noted among other findings that the 1995-2006 period ranked among the twelve warmest years in the instrumental record of global surface temperature, and that globally the area affected by drought has likely increased since the 1970s. Yet most ordinary Africans who have witnessed increasingly frequent warm spells, heavy precipitation events and severe droughts over the last five decades likely needed little additional confirmation. Since 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 becoming increasingly important for African countries to develop monitoring systems capable of tracking its effects to inform strategies to adapt to and attenuate them.

In the context of the Rapid M&E Assessment, these efforts – such as the development of National Adaptation Action Plans like those already drafted by Mauritania, Niger and Senegal; improving climate information collection networks at the country and transboundary water basin level; and, developing national action plans on IWRM – should be reviewed and assessed. Given the multi-sectoral nature of climate change, touching on the environment, transboundary water basin management, meteorology and agriculture, climate change monitoring and adaptation measures can be assessed in conjunction with assessments of these and other sectors discussed above.

5.7. Documentation

The following is a brief list of useful documents pertaining to the Rapid Assessment:

- African Development Bank, "African Water Facility: Operational Procedures," African Development Bank, November 2005, www.afdb.org

- AFRICAN WATER FACILITY, "SUMMARY REPORT ON THE TUNIS REGIONAL CONSULTATIVE MEETING, 21-22 SEPTEMBER 2006, TUNIS," WATER SECTOR MONITORING & EVALUATION WORKING GROUP, AFRICAN WATER FACILITY, TUNIS, MARCH 2007,

WWW.WATERMONITORINGALLIANCE.NET/FILEADMIN/
WMA/DOCUMENTS/TUNIS_ME_MEETING_REPORT_DF.DOC

- Cap-Net, "Integrated Water Resources Management Plans: Training Manual and Operational Guide," Cap-Net, Global Water Partnership, UNDP, March 2005, http://www.adbi.org/3rdpartycdrom/2005/10/03/1907.iwrm.plans

- EasyInfo, "Technical and Financial Feasibility Studies of the National Water Information Systems in 12 Mediterranean Countries: Executive Summary," EMWIS/SEMIDE, January, 2006, www.emwis.net/documents/meetings/fol791509/ fol466073/ fol908769/exfile505487

- IPCC Working Group, "Climate Change 2007 Synthesis Report: Summary for Policymakers," Intergovernmental Panel on Climate Change, November 2007, http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf

- Water and Sanitation Program (WSP), "Country-level Sector Information and Monitoring Systems (SIMS) for Water and Sanitation in Africa," Practitioners Workshop, Nairobi, Kenya, March 27-29, 2007, www.wsp.org/regions/region.asp?id=11

- WSP-Africa, "Getting Africa on Track to Meet the MDGs on Water and Sanitation: A Status Overview of Sixteen African Countries," AMCOW, African Development Bank, EU Water Initiative, WSP, UNDP, December 2006, www.wsp.org/filez/pubs/319200725615_312007101903_MDGs_All_final3_high.pdf

- UNECA, Annual Water Development Report, "Indicators – Measuring the Progress of the Africa Water Vision".

6. RAPID ASSESSMENT REPORT OUTLINE & CHECKLIST

Part 2 of the Template provides the assessor with descriptions of the assessment report's contents and a checklist of recommended questions to be asked during the assessment 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.

The Rapid Assessment Report Outline and Checklist is to be used in combination with the Part 1: Template Guidelines, in which more detailed information is provided along with tables to be filled in and included in the main report or its annexes.

Executive Summary

Acronyms

1. Country Background (1/2 page)

- Briefly describe the country, its location, urban centres, population and its growth, economy governance and basic statistics such as GDP and HDI, WPI and ESI.

2. National Water Development Strategies and Policies (1 p. + annexed agreements)

- Are national strategies and policies for (a) IWRM, (b) rural WSS and (c) urban WSS approved or under development? If so, the assessor should obtain copies.
- What are the principal strategies and policies influencing M&E? For example, are the Africa Water Vision 2025 and the MDGs being used as targets and MDG indicators locally accepted and used? Refer to Guidelines Section 1.2.1.
- Are poverty reduction and gender equity strategies integrated into sector policies?

3. Overview of the Sector (4 pages)

- Provide an overview of the sector. This should give the reader a basic introduction to the sources, uses and management of water resources as well as the status of principal water and sanitation sector development programmes.

3.1 Water Resources and IWRM

3.1.1 Water Resources Description

- What are the country's principal sources of water? What are its main river basins, lake basins, aquifers, and their sizes?
- Which are trans-boundary waters?
- What is the distribution of rainfall across the country?

3.1.2 Water Resource Use

- Report available statistics on the volume of water used and its geographical, basin and/or seasonal distribution under the headings below:

3.1.2 (a) Irrigation
3.1.2 (b) Energy
3.1.2 (c) Transport
3.1.2 (d) Environment
3.1.2 (e) Industrial
3.1.2 (f) Domestic

- Broadly identify where water resources are being used for multiple purposes, e.g. a river that is used for both irrigation and energy production. Describe the multipurpose use of trans-boundary waters where applicable.

3.2 Water Supply

- Provide an overview of urban and rural water supply.
- What coverage rates are being reported? Are they accurate and representative?
- How is water supply being financed, through what mechanisms and what are the existing cost recovery policies and practices?
- Are there national water supply development programmes underway? If so, briefly describe them and their targets.
- Are there sector reforms (such as SWAP or governance devolution/decentralization) taking place? If so, what are the key reforms being made?
- What plans are there for future programmes and reforms?

- Are the Vision 2025 and MDG targets being met? What is the potential for their being met in the future?

3.3 Sanitation

- Provide an overview of on-site sanitation and sewerage (rural and urban).
- What are the coverage rates being reported? Are they accurate?
- What are the technologies being used and what are the ultimate means of waste and wastewater treatment and disposal?
- How are industrial and commercial wastewaters managed?
- What major investments, programmes and reforms are being undertaken and/or planned for the future?
- What are the principal means of financing sanitation and sewerage?

4. Principal Issues in the Water Sector (2 pages)

- List the ten principal issues facing the sector and provide a brief, one paragraph description of each principal issue. The following are some examples: (1) conflict over distribution of water (including transboundary waters) between multiple users, (2) ineffective management of groundwater or its pollution by industry,(3) inappropriate governance and institutional arrangements in managing water basins, (4) lack of policy and planning, (5) unreliability of coverage data, (6) depletion of water resources through pollution and environmental degration, (7) excessive subsidization of water and sanitation provisio, (8) variability of climate and rainfall coupled with climate change, and (9) growing water scarcity and desertification..

5. Institutional Framework (10 pages including charts)

- Monitoring and evaluation is covered in the subsequent sections of the assessment report. This section refers to roles and responsibilities in implementation and administering the sector.
- Describe the sector's institutional framework using an organizational chart if possible (refer to Section 1.2.2 and Fig. 1.1 of the Guidelines).
- What are the institutions, organizations, semi-government agencies, the private sector, NGOs, CBOs, and user associations involved in each of the sub-sectors?
- What roles do they play and at what level, i.e. advisory, policy, legislative, regulatory, quality control, facilitation, planning, financing, design, implementation, construction, operation, maintenance, rehabilitation and expansion?

5.1 Water Resources

- Using an organization chart, such as Figure 1.1 or a matrix, illustrate the principal ministry, boards and councils, its departments, water basin boards and offices, catchment committees and offices, water user associations and community based organizations and their roles and responsibilities. Describe linkages whether of a regulatory, advisory or information sharing nature between the various levels and organizations.
- How developed is the water resources management organizational matrix and infrastructure?
- What is the status of resource multi-use management? Is water users participatory consultation practiced?, Are effective legislation and local bylaws in place and are they enforced? Is conflict resolution practiced?
- What are the principal sources of funding for the IWRM framework? Are they sustainable?

5.2 Water Resource Related Organizations

- Which other stakeholders are active in the sector? These typically include actors from the following spheres:
    - Environment,
    - Local government,
    - Energy,
    - Agriculture,
    - Transport,
    - Surveys and statistics,
    - Meteorology,
    - Universities, research and training institutions,
    - NGOs,
    - Media, and
    - The private sector.
- How do these perform as stakeholders of the sector? What are their roles or interests?
- Describe their relationship to the principal IWRM institutions in the form of an organizational chart or matrix.

5.3 Rural Water Supply and Sanitation

- Which organizations are working in rural water and/or sanitation? They will likely include the lead water ministry and its departments, regional water boards, the health ministry, local government and its district offices, NGOs, CBOs, water management or user committees, and the private sector including commercial pipe manufacturers, pumps and plumbing distributors, latrine masons and septic tank installers.
- Describe these organizations and their primary roles using organizational charts. In particular, describe the roles of the water ministry, local government and health ministry in sanitation. Related institutions such as those of finance, environment, and community development and their roles should also be mentioned.
- Describe in broad terms the strengths and weaknesses of these organizations, their capacity to implement programmes and their sustainability.

5.4 Urban Water Supply and Sewerage/Sanitation

- As in the preceding section, describe the sector's stakeholders and their roles in the form of an organization chart or matrix. Responsibility for urban water and sewerage is typically held by a lead ministry such as that of water, local government or housing. Traditionally, within towns, municipalities and cities, the councils and assemblies manage the sector. Sector reform has brought in regulation of commercial water utilities through independent regulatory bodies (such as the National Water and Sewerage Council, Zambia).
- Describe the sector's mechanisms of self-financing, subsidization and donor support.
- List and describe the roles of stakeholders in sewerage and sewage treatment.
- Which organizations are involved in on-site sanitation (e.g. latrines, eco-san and septic tanks), and what are their roles? These will likely include the health departments of town and municipal councils and assemblies, peri-urban authorities, NGOs, and local government.
- As in the preceding section broadly describe the above institutions strengths and weaknesses, their implementation capacities and their sustainability.

6. IWRM Monitoring and Evaluation (10 pages)

- Which regional and global organizations are active in water sector monitoring and evaluation in the country? For example, ANBO, UNECA, AEIN, AfWA, GWA, GMA, INBO, GEMS-Water, and GIWA.
- What are their relationships and what is the nature of the M&E work they undertake with national organizations?
- Are there international transboundary basins such as OMVS or NBI functioning in the country? What role do they play?
- Is there a structured IWRM M&E framework? If so illustrate it in an M&E organizational chart showing institutions, their relationships and their roles.

6.1 Basin Monitoring Networks

- Review the resources, facilities and capabilities of national and transboundary water basins organisations, as described in Section 1.5.1.
- In a matrix, such as Table 1.1 of the Guidelines, briefly describe the facilities available to each basin in terms of human resources, river gauging, meteorological stations, rainfall, water quality and groundwater observation and quality. Refer to Section 1.2.3 of the Guidelines.
- What are the principal strengths and weaknesses of these basin offices? If the information is available, what would be required to make them fully operational?
- Is information available for each basin on the multiple uses of water resources? If so, briefly summarize them in Section 3.1.2.
- Has the M&E information been used in resolving multi-use conflict in the past?

6.2 Data Analysis, Storage and Dissemination

- What is the quality and timeliness of data being collected in each basin?
- What indicators are being used?
- What performance criteria are being used?
- Is the data verified, are there quality checks on its collection?
- How is the data managed/collated and analysed?
- Is the data collected regionally or centrally before or after analysis?
- How is the data analysed, stored and prepared for dissemination? Table 1.2 of the Guidelines can be used in reporting.
- Is an MIS or DBMS available, functional and used? Provide comment on the calibre, strengths and weaknesses of data storage and management. Refer to Section 1.2.4 of the Guidelines.
- Is the MIS or DBMS readily accessible at the basin and levels?
- Is the information prepared in a user-friendly format and fed back to regional basin levels?
- How is the information used?
- Has resource mapping been carried out and are inventories of resources available for each basin?

7. Rural Water Supply and Sanitation M&E (10 pages)

7.1 Rural Water Supply M&E

7.1.1 Institutions and Monitoring Networks

- Which institutions (Section 1.5.3) are collecting data on rural water supply and sanitation? *Note that there are often different institutions undertaking M&E for water versus sanitation. Refer to Section 1.3.1 of the Guidelines.*

- Is there a structured M&E framework for the WSS sub-sector? If so illustrate it in an M&E organizational chart showing institutions, their relationships and their roles.

7.1.2 Indicators and Sampling for Data Collection

- *Table 1.3 in Section 1.3.2 of the Guidelines can be used to record observations and comments about surveys and data collection being undertaken. Each survey or data collection initiative should be described and commented on using separate tables.*
- An overall assessment should be made of the M&E data collection approaches and methods being used in the country. Strengths and weaknesses should be identified and recommendations made for improvements.
- The assessment should note whether data is disaggregated by gender.

7.1.3 Data Storage and Analysis

- In each case, how is the data collated, stored and analysed?
- What is the quality of analysis, storage and access?
- Describe the data management chain.
- Are there one or several databases and institutions storing the data? Are they coordinated? Is the data and information harmonized between them?

7.1.4 Information Dissemination and Use

- How is collected data used, by what institutions, for what purposes and to what effect?
- Is there a two-way flow of information both to the central organization and back to the data collectors and providers?
- In what form is the data/information processed and published?
- On what platform is the data presented: reports, website, or survey documentation?
- Is dissemination pro-active and targeted? How and to whom?
- Is the information used in sector management, planning and development?
- Is it used to assess sector performance and progress towards targets?
- Does it reach those who need it most including the media, libraries, universities, research and training institutions, the public and the private sector?
- Is it used by regional and global organizations interested in sector progress and performance?

7.2 Rural Sanitation M&E (5 pages)

7.2.1 Institutions and Monitoring Networks

- *Refer to 7.1.1, which can be used as a guide to reporting on institutions and monitoring networks in rural sanitation.*

7.2.2 Indicators and Sampling for Data Collection

- What is the definition of adequate sanitation used locally to describe adequate sanitation?
- Does it conform to the definition used by the JMP in assessing progress towards the MDGs?
- *Table 1.3 of the Guidelines refers specifically to rural water supply but can be adapted and used to assess rural sanitation surveys and data gathering initiatives. Use one table for each.*
- Within that table, provide an estimate of the percentage of latrines and toilets which are shared by more than one family.
- Is data collected disaggregated by gender?

7.2.3 Data Storage and Analysis

- *Refer to Section 7.1.3, which can be used to report on data storage and analysis in the rural sanitation sub-sector.*

7.2.4 Information Dissemination and Use

- *Refer to Section 7.1.4, which can be used to report on information dissemination and use in the rural sanitation sub-sector.*

8. Urban Water Supply and Sanitation M&E (10 pages)

8.1 Urban Water Supply M&E

- *Section 1.4 describes the organizations involved in urban water supply and sanitation/sewerage. This section relates to M&E of urban water supply. Refer to sections 7.1.1, 7.1.2, 7.1.3 and 7.1.4, which relate to rural water supply. They can be used to guide the approach used and the questions to be asked about urban water supply with the understanding that they will need to be adapted to the very different nature of organizations working in urban areas.*

8.1.1 Institutions and Monitoring Network

8.1.2 Data Collection

8.1.3 Data Storage and Analysis

8.1.4 Information Dissemination and Use

8.2 Urban Sanitation

- *Refer to Sections 7.1 and 7.2, which relate to rural water supply and sanitation. These can be used to guide the approach used and the questions to be asked about urban sanitation. They will need to be adapted to reflect the different organizations responsible for urban sanitation and sewerage.*
- *Distinction should be made between on site sanitation and sewerage. In most instances, sewerage and septic tanks are available to the more wealthy and commercial areas of towns and cities. On-site sanitation refers primarily to latrines and eco-sanitation. These are used in the less wealthy and peri-urban residential areas. As suggested in Section 7.2.2, the local definition of adequate sanitation should be provided and compared to that used by the JMP and MDGs.*

9. M&E Subsystems (8 pages)

- *An outline of organizations that are related to water resources is provided in Section 1.5.2. Most of these will have their own M&E data collection, analysis, storage and dissemination systems. However, there will be overlaps with the water sector, which will need to be identified and reported on. Care should also be taken to identify where the water sector can utilize data from these subsystems and where the water sector M&E information can be of use to these subsystems.*

9.1 Environment

- What M&E systems and capacities do the environment related organizations possess?
- What areas are water sector related?
- Are there opportunities for sharing M&E data, especially in the subsectors of:
- Pollution control
- Deforestation
- Environmental flows?

9.2 Physical Surveys

- What data can be useful to the water sector?
- Is it M&E data? If so, how can it best be used?

9.3 Census and Socio-economic Surveys

- *Censuses and socio-economic surveys are of direct relevance to the water supply and sanitation sub-sectors in that they provide the baseline for population. Household surveys often include questions related to water supply and sanitation.*
- Is census data used in water and sanitation M&E?
- Report on the quality of census data and its relevance to sector M&E. For example, are the timelines for the census the same as those of WSS M&E or do interpretations have to be made and what is the quality of these interpretations?
- Are the boundaries used in the census the same as those used for monitoring WSS? That is, do they cover the same populations or are there unacceptable differences that are being overlooked?

9.4 Meteorological Surveys

- Obtain information on meteorological stations, surveys and reports. Is there data collection which can be utilized by the water sector? These will likely be found in the form of rainfall statistics. What is the calibre of this information?
- How can this data be integrated into the water sector's monitoring systems?

9.5 Agriculture

- *The Ministry of Agriculture and its statistical department will likely be gathering data on river flows, groundwater levels and ground cover and soils in river basins across the country. Refer to section 1.5.6 of the Guidelines.*
- How extensive are these monitoring networks? Describe them.
- How reliable is the information?
- How can it be integrated or at least used by the water sector?

9.6 Universities and Research

- Which universities, training institutions and research establishments are working in the water sector?
- Do they provide or utilize M&E data?
- How can the water sector better relate, serve and draw upon these institutions?

9.7 Trans-boundary Waters

- Identify those water basins that have trans-boundary waters. Obtain copies of agreements between riparian countries using the shared waters.
- Do trans-boundary committees exist with representation by riparian states? Are they active?
- What information is being shared between riparian countries?
- What monitoring systems have been established?
- What monitoring data are they providing and what is the quality and timeliness of the data?
- How can such data be better integrated into the sector's M&E system?

9.8 Climate Change

- What measures are being undertaken and tools are being used to monitor the impact of climate change on domestic and transboundary water resources?
- If climate change monitoring is being undertaken, is it the responsibility of one particular ministry or organization, or is a multi-sectoral approach being taken? Which ministries or organizations are involved in these activities?
- If the country has an IWRM Action Plan, to what extent does it address climate change adaptation?

10. M&E Issues, Conclusions and Recommendations (5 pages)

10.1 Issues

10.2 Conclusions

10.3 Recommendations

APPENDICES