



Conference edition only

An AMCOW Country Status Overview

Water Supply and Sanitation in Angola

Turning Finance into
Services for 2015
and Beyond



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Strategic Overview

Angola is emerging from a protracted civil conflict, confronting significant challenges in the water and sanitation sector such as a need to: rebuild damaged or decrepit infrastructure; establish an appropriate institutional framework; update policies and approaches; upgrade professional and technical skills; ensure transparent and equitable service delivery; strengthen planning and performance monitoring; and bolster coordination across all levels, stakeholders, and regions.

The war sparked unparalleled growth in the urban population as people migrated to the relative safety of the larger cities to avoid unpredictable violence in the countryside. Working in its favor is an abundance of financial resources in striking counterpoint to many of its regional neighbors.

As to whether or not Angola is on-track to meet the MDG targets, the lack of reliable data on access and the limited availability of results from on-going investment programs make it difficult to estimate both sector needs and progress. The scale and scope of recent investments is nonetheless

impressive, and if efficiently and effectively utilized is likely to result in meeting the Millennium Development Goal target for water supply, though progress in rural areas is less certain than in urban. The same applies to sanitation, with likely success in urban areas, but progress lagging and limited investments on the horizon for rural sanitation. Reaching the targets would be a remarkable achievement considering the fact that Angola's decades-long conflict ended only recently in 2002.

With the current emphasis on infrastructure installation, service quality is likely to remain unsatisfactory until new institutional arrangements and service delivery models designed to achieve sustainability can be successfully deployed, which may require upwards of a decade. So far, however, Angola shows positive signs of making up for so much lost ground.

This second AMCOW Country Status Overview (CSO2) has been produced in collaboration with the Government of Angola and other stakeholders.

Agreed priority actions to tackle these challenges, and ensure finance is effectively turned into services, are as follows:

Sectorwide

- An immediate assessment of sector needs in human resources, leading to the development of a comprehensive plan for building capacity at all levels (national, provincial, municipal/utility, and community), and within all strata (decision makers, managers, technicians, and users) in the private and public spheres.
- Fast-track approval of the National Water Law Regulations.
- Development of a national investment program for rural sanitation and hygiene promotion.
- Increased and permanent support for a sectorwide information management system, including regular performance monitoring with targeted integration into government planning systems, and public dissemination.

Rural water supply

- Renewed and reinvigorated efforts to develop a strategic plan for rural water supply, and put into place new implementation and management models to improve service delivery and sustainability.

Urban water supply

- Renewed and reinvigorated efforts to develop and put into place new implementation and management models for urban water supply to improve service delivery and cost recovery.

Rural sanitation and hygiene

- Immediate and sustained resumption of efforts to develop and implement a national sanitation policy and strategic plan (including the development of a national investment program).

Urban sanitation and hygiene

- Immediate and sustained resumption of efforts to develop and implement a national sanitation policy and strategic plan.
- Renewed and reinvigorated efforts to develop and put into place new implementation and management models for urban sanitation to ensure operation and maintenance in the medium term.



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Acronyms and Abbreviations

AfDB	African Development Bank	MINEA	Ministry of Energy and Water (Ministério da Energia e Águas)
AMCOW	African Ministers' Council on Water	MINSa	Ministry of Health (Ministério da Saúde)
AOA	Kwanza (Angola currency)	MU	Municipal utility
PAT	Water for All Program (Água para Todos)	NGO	Nongovernmental organization
CAPEX	Capital expenditure	O&M	Operations and maintenance
CLTS	Community-Led Total Sanitation	ODA	Official Development Assistance
CSO2	Country Status Overviews (second round)	OPEX	Operations expenditure
DNAAS	National Directorate for Water Supply and Sanitation (Direcção Nacional de Abastecimento de Água e Saneamento)	PDISA	Water Sector Institutional Development Project (Projecto Desenvolvimento Institucional do Sector das Águas)
ECP	Poverty Reduction Strategy (Estratégia de Combate contra à Pobreza)	PDSA	Water Sector Development Program (Programa de Desenvolvimento do Sector das Águas)
ELISAL	Solid Waste and Sanitation Company of Luanda (Empresa de Limpeza e Saneamento de Luanda)	RSH	Rural sanitation and hygiene
EPAL	Public Water Utility of Luanda (Empresa Pública de Águas de Luanda)	RWS	Rural water supply
GNI	Gross national income	SEA	Secretary of State of Water Affairs (Secretaria de Estado das Águas)
GoA	Government of Angola	SIA	State Implementing Agency
HH	Household	SSA	Sub-Saharan Africa
IBNET	International Benchmarking Network for Water and Sanitation Utilities	SSIP	Small-Scale Independent Providers
JMP	Joint Monitoring Programme (UNICEF/WHO)	SWAp	Sector-Wide Approach
LG	Local government	UNICEF	United Nations Children's Fund
LIC	Low-income country	USH	Urban sanitation and hygiene
M&E	Monitoring and evaluation	UTNSA	National Technical Unit for Sanitation (Unidade Técnica Nacional para Saneamento)
MDG	Millennium Development Goal	UWS	Urban water supply
MED	Ministry of Education (Ministério de Educação)	WASH	Water, Sanitation and Hygiene
MIC	Middle-income country	WHO	World Health Organization
MICS	Multiple-Indicator Cluster Survey (UNICEF)	WSP	Water and Sanitation Program
MINAMB	Ministry of the Environment (Ministério do Ambiente)	WSS	Water supply and sanitation

Exchange rate: US\$1 = AOA 91.9.¹

1. Introduction

The African Ministers' Council on Water (AMCOW) commissioned the production of a second round of Country Status Overviews (CSOs) to better understand what underpins progress in water supply and sanitation and what its member governments can do to accelerate that progress across countries in Sub-Saharan Africa (SSA).² AMCOW delegated this task to the World Bank's Water and Sanitation Program and the African Development Bank who are implementing it in close partnership with UNICEF and WHO in over 30 countries across SSA. This CSO2 report has been produced in collaboration with the Government of Angola and other stakeholders during 2009/10.

The analysis aims to help countries assess their own service delivery pathways for turning finance into water supply and sanitation services in each of four subsectors: rural and urban water supply, and rural and urban sanitation and hygiene. The CSO2 analysis has three main components: a review of past coverage; a costing model to assess the adequacy of future investments; and a scorecard which allows diagnosis of particular bottlenecks along the service delivery pathway. The CSO2's contribution is to answer not only whether past trends and future finance are sufficient to meet sector targets, but what specific issues need to be addressed to ensure finance is effectively turned into accelerated coverage in water supply and sanitation. In this spirit, specific priority actions have been identified through consultation. A synthesis report, available separately, presents best practice and shared learning to help realize these priority actions.

2. Sector Overview: Coverage and Finance Trends

Coverage: Assessing Past Progress

The last national census in Angola was in 1970. It would be asking too much to expect the government to have reliable coverage figures for either urban or rural areas. Though a national database and information management system are currently being designed and implemented, for the time being data from the Joint Monitoring Programme (JMP)³ are referenced in sector reports along with some unofficial government estimates.

According to the JMP, access to improved water supplies in Angola increased from 36 percent in 1990 to 50 percent in 2008, disaggregated at 38 percent rural and 60 percent urban. For sanitation, the JMP estimates improved access as being 25 percent in 1990, increasing to 57 percent in 2008, disaggregated at 18 percent rural and 86 percent urban. The data used for the JMP calculations are limited, suggesting that the real access figures are probably not known with any degree of certainty. National censuses and surveys have been impossible during the war years, and the urban population growth rates have been estimated as being among the highest in the world, making any

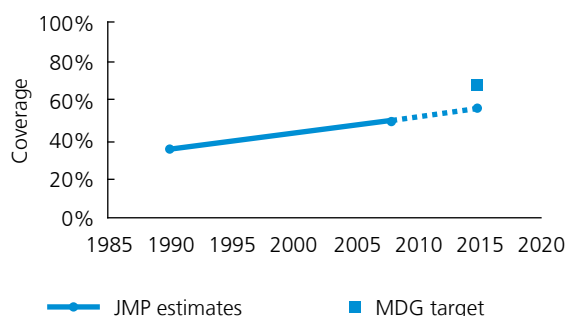
collected urban data obsolete within a few short years. However, if the JMP data are correct, then the urban shares of the Millennium Development Goal (MDG) coverage targets are reportedly either already met or very close to being met, for sanitation and water supply, respectively. Few in Angola, however, accept this to be the case.

On the rural side, neither water nor sanitation access figures from the JMP suggest that the respective shares of the MDG targets will be met, though it can be argued that the huge Water for All Program, if fully implemented, could easily surpass the rural water access targets. Figure 1 should, under these stated circumstances, be read with caution.

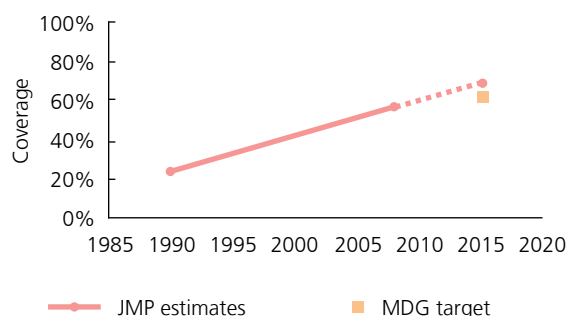
It bears mentioning that the recently completed Multiple-Indicator Cluster Survey (MICS) III survey published preliminary results as follows: rural water supply, 25 percent; urban water supply, 82 percent; rural sanitation 31 percent; and urban sanitation, 85 percent. Methodological issues prevent these results from being fully accepted, so the true coverage figures may have to wait for successive surveys or a national census.

Figure 1
Progress in coverage

Water supply



Sanitation



Source: JMP 2010 report.

Given the unreliable coverage estimates, it is consequently challenging to estimate total investment needs. The Government of Angola (GoA) currently operates under the rationale that massive investment is clearly justified, despite a lack of trustworthy coverage data. Upon examination, and recognizing the uncertainty of the coverage estimates, it appears that water supply (both rural and urban) has sufficient levels of funding. Required investment is US\$151 million per year, compared with planned investments of US\$358 million per year. For sanitation, the total anticipated investment amount also appears to be sufficient (US\$190 million per year against requirements of US\$101 million per year) though upon closer scrutiny rural sanitation is underfunded. Figure 2 and Table 1 demonstrate the estimated funding requirements and anticipated public investments for meeting the MDG targets.

Contrary to nearly all other SSA countries, Angola does not rely significantly on donor grants or multilateral loans—approximately 97 percent of its investment funding comes from the government budget or from bilateral commercial lending. This has allowed the country to jumpstart investments, though somewhat haphazardly given a lack of policy instruments and consolidated institutional arrangements.

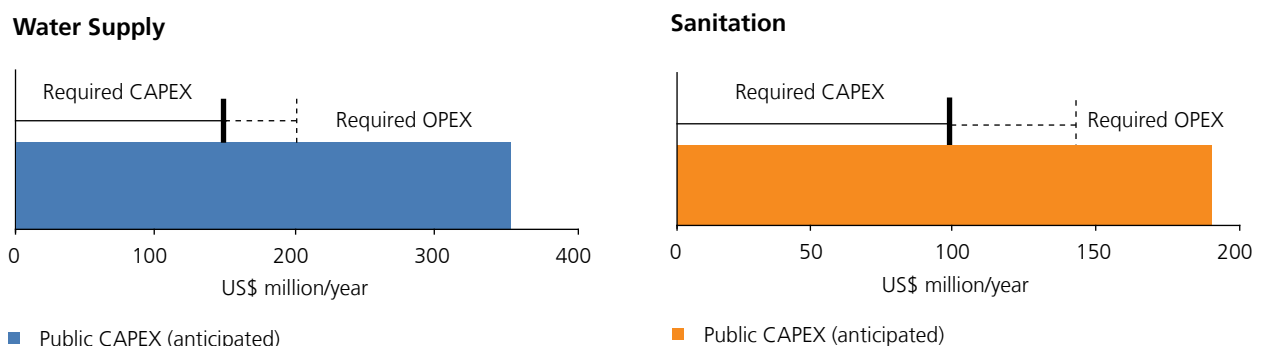
Angola does not require households to contribute to the capital investment costs, and there are no clear plans to increase cost recovery for operations and maintenance

(OPEX, estimated in Table 2). For urban sanitation, the government is allocating the majority of funds for high-cost services such as networked sewerage with wastewater treatment, instead of lower-cost on-site options or lower-cost network solutions. Expected operations and maintenance costs for high-end sanitation services will be elevated, and the government has demonstrated its willingness to provide significant operational subsidies for urban service delivery, making it unlikely that cost recovery will become a policy concern anytime soon. Similarly, a significant percentage of new investments in rural water supply are directed toward piped systems which will also present long-term cost recovery concerns, though not as severe as in the case of urban sanitation. Consequently, these OPEX requirements could dramatically increase the strain on anticipated public finance.

Nonetheless, the overall figures suggest that investment funding is not the immediate concern in Angola, although some have suggested that it would be preferable to reduce investment levels at this time since commercial credits are being accessed for high unit cost solutions. The absorptive capacity for utilizing the available funds remains deficient, though it has improved year-on-year. Furthermore, it remains to be verified whether or not the quality of works meets both the government's and households' standards.

These considerations are only part of the picture. Bottlenecks can, in fact, occur throughout the service

Figure 2
Required vs. anticipated public investment



Source: CSO2 estimates.

Table 1
Coverage and investment figures

	Coverage		Target	Population requiring access	CAPEX requirements	Anticipated public CAPEX			Assumed HH CAPEX	Total deficit
	1990	2008	2015			Domestic	External	Total		
	%	%	%	'000/year		US\$ million/year				
Rural water supply	40%	38%	70%	400	86	183	2	185	0	-
Urban water supply	30%	60%	65%	339	65	159	15	174	0	-
Water supply total	36%	50%	67%	740	151	342	16	358	0	-
Rural Sanitation	6%	18%	53%	428	20	7	1	8	0	12
Urban Sanitation	58%	86%	79%	229	80	180	2	182	0	-
Sanitation total	25%	57%	68%	657	101	187	3	190	0	-

Sources: For coverage, JMP 2010 report; for investments, CSO2 costing (some rounding errors introduced).

Table 2
Annual OPEX requirement.

Subsector	O&M US\$ million/year
Rural water supply	19
Urban water supply	30
Water supply total	49
Rural sanitation	2
Urban sanitation	40
Sanitation total	42

Source: CSO2 costing.

delivery pathway—within all the institutions, processes, and actors that translate sector funding into sustainable services. Where the pathway is well developed, sector funding should turn into services at the estimated unit costs. Where it is not, the above investment estimates may be grossly understated. The rest of this report evaluates the service delivery pathway in its entirety, locating the bottlenecks and presenting the agreed priority actions to help address them.

3. Reform Context: Introducing the CSO2 Scorecard

The sector reform history of Angola has become synchronized with the 2002 peace accords. While several reform actions pre-date 2002, policies from this era were never fully activated. After the peace accords, however, reforms materialized rapidly. The first milestone is approval of the National Water Law in 2002 which introduced key reform elements such as the designation of the water basin as the basic water resources planning unit, recognition of water as both a social and an economic good, decentralized implementation at the provincial level, and the possibility of alternative management models for urban service provision. The regulations for the Water Law, however, have not as yet been approved.

A further important aspect of the legal framework is the Law of Local State Administrative Units in 2007, complementing the 1999 Decentralization Law and further extending powers and responsibilities to provincial and municipal governments, primarily through a process of deconcentration of central power, with the eventual goal of political and fiscal decentralization. The country's 18 provinces are now responsible for executing sector plans and policies.

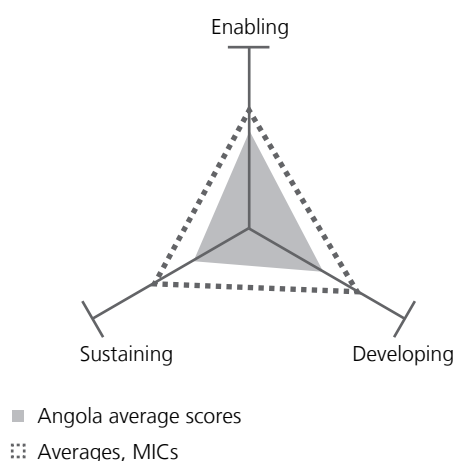
The sector's recent history puts the service delivery pathway in context, which can then be explored in detail using the CSO2 scorecard, an assessment tool providing a snapshot of reform progress throughout the pathway. The CSO2 scorecard assesses the building blocks of service delivery in turn: three building blocks which relate to enabling services, three which relate to developing new services, and three which relate to sustaining services. Each building block is assessed against specific indicators and scored from 1 to 3 accordingly.⁴

Angola's reform efforts appear to have focused on the enabling building blocks of the service delivery pathway, particularly with regard to planning. Figure 3 shows that this is where Angola registers the highest scorecard result, though it is below average for its economic peer group of middle-income countries (MIC) participating in the CSO2. In addition to the Water Law, a 2003 Strategy for Water Sector Development and the 2004 Water Sector

Development Program (PDSA) have paved the way for the development of water and sanitation master plans in the provincial capitals, and promise an eventual comprehensive assessment of the rural water and sanitation subsector. The primary sector principles established by these reforms include: the user pays; the polluter pays; no wastewater collection without wastewater treatment; and all services managed at the lowest possible level.⁵ However, the PDSA has not been fully implemented.

To restructure and modernize the urban water supply and sanitation subsector, the GoA joined with the World Bank in creating a Water Sector Institutional Development Project, PDISA, under which a new set of state actors is being introduced. These include Autonomous Provincial Water and Sanitation Utilities, a regulatory agency for urban water supply and sanitation, and a National Institute for Water Resources. An asset management unit for urban infrastructure will be established within the Ministry of Energy and Water (MINEA). Nine major cities in two phases will eventually come under the proposed arrangement. More than a year after project approval, however, progress has been limited.

Figure 3
Average scorecard results for enabling, sustaining, and developing service delivery, and peer-group comparison



Source: CSO2 scorecard.

Table 3
Key dates for sector reform in Angola

Year	Event
1999	Decentralization Law
2002	Final Peace Accords
2002	National Water Law approved (regulations pending)
2003	Strategy for Water Sector Development
2003	Poverty Reduction Strategy (ECP)
2004	Water Sector Development Program
2007	Law of Local State Organs
2007	Water for All Program
2007	Secretary of State for Water Affairs (SEA) created
2008	Ministry of the Environment (MINAMB) created

Moving downstream along the service delivery pathway from enabling to actually developing services and infrastructure, the most notable reform instrument on the rural side is the 2007 Water for All Program (PAT) which is designed to install or upgrade 7,000 wells and boreholes with handpumps, and install or rehabilitate 265 piped systems in 140 of the country's 164 municipalities—expected to benefit more than 5 million persons in rural areas by 2012. The total projected cost of the initiative was initially estimated at US\$651 million, though by 2009 the price tag had risen to nearly US\$1.3 billion.⁶ The program is administered by the president's office, with funds going directly to the provinces for project execution. By the end of the program it is expected that 80 percent of all rural inhabitants will have improved access to water. The program does not, unfortunately, address or finance rural sanitation.

The final grouping along the service delivery pathway relates to sustaining services, where Angola scores lowest (Figure 3). Angola has made some progress in systems for supporting rural water schemes in the long term: the PAT includes the development of a system for operation and maintenance (O&M) support to communities, management models for rural water supply, and training opportunities for public and private sector professionals and entrepreneurs. For rural sanitation, the context for sustaining services differs, with a greater emphasis on ensuring the supply chain of goods and services to allow households to maintain their facilities. However, lack of a national sanitation policy means that no clear set of reforms is being designed and implemented, though Community-Led Total Sanitation (CLTS) is recently

being piloted as a potential way of promoting rapid progress in rural sanitation access and hygiene improvements.

Meanwhile, small towns in Angola have grown for the same reasons urban areas have, and the decentralization reform effort has created a large number of bona fide administrative centers. There are now more than 700 local government centers, all of which are slated for piped water supplies, and in theory some sort of wastewater elimination. In fact, the overwhelming percentage of PAT funding of works (69 percent) is being allocated for these small towns. It becomes critical that appropriate models be developed that ensure the long-term viability of these systems while keeping service provision affordable. One of the primary components of the PAT Program is the development of management models, though to date there has been no identifiable progress on this front.

For major urban areas, the PDISA project aims to create autonomous water utilities and a water and sanitation tariff strategy, both of which may help to increase the financial sustainability of the urban subsectors.

Sections 4 to 6 highlight progress and challenges across three thematic areas—the institutional framework, finance, and monitoring and evaluation (M&E)—benchmarking Angola against its peer countries based on a grouping by gross national income (GNI). The related indicators are extracted from the scorecard and presented in charts at the beginning of each section. The scorecards for each subsector are presented in their entirety in Sections 7 to 10.

4. Institutional Framework

Priority actions for the institutional framework

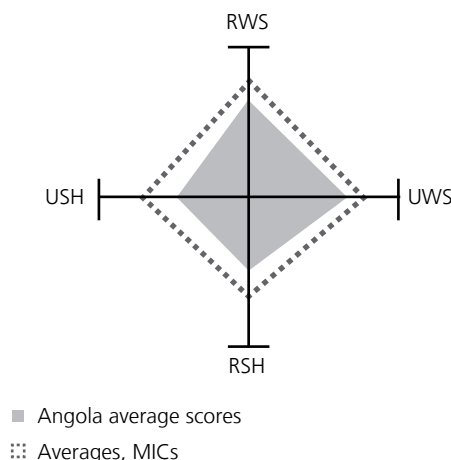
- An immediate assessment of sector needs in human resources, leading to the development of a comprehensive plan for building capacity at all levels (national, provincial, municipal/utility, and community), and within all strata (decision makers, managers, technicians, and users) in the private and public spheres.
- Fast-track approval of the National Water Law Regulations.

Though institutional reform has begun, and framework laws have been put in place, the clear delineation of roles and relationships, along with specific subsector policies, has yet to be arranged. The average scores for related scorecard indicators (Figure 4) show that Angola is behind its peer group in all subsectors. The lead agency for water supply in Angola is MINEA which recently re-established its standing after briefly relinquishing sector leadership to the Secretary of State for Water Affairs (SEA) from 2007–09. MINEA operates primarily through its National Directorate for Water Supply and Sanitation (DNAAS). For sanitation, the newly designated lead agency is the Ministry of the Environment (MINAMB), made operational through the National Technical Unit for Sanitation (UTNSA), though the Ministry of Health takes a promotional role using its local staff, while the Ministry of Education assumes these responsibilities in schools. The parastatal agency ELISAL is responsible for operations of the small wastewater system in Luanda, and the state enterprise EPAL is responsible for Luanda's water supply.

Figure 5 outlines the existing institutional framework, though it must be recognized that game-changing modifications not reflected in the diagram are being planned in the area of urban service provision. The following paragraphs identify this and other key challenges with regard to institutional reform. It must be recognized that the challenge of building institutions while rolling out massive new investments in infrastructure is a considerable one, especially in a postwar context where professionals are attracted to the burgeoning private sector, and state-sponsored construction activities compete with the private

Figure 4

Scorecard indicators relating to institutional framework, with average of indicator scores by subsector and peer-group comparison (see endnotes)⁷



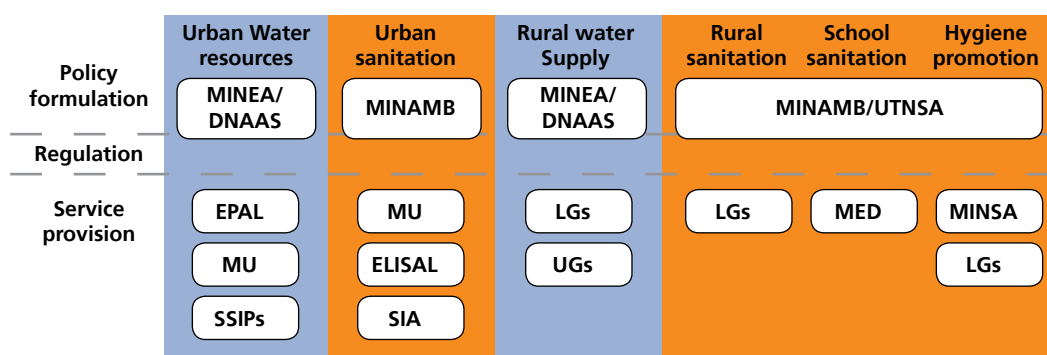
Source: CSO2 scorecard.

sector for everything from limited space on the docks to consulting services. Even when works are in progress, lax inter-agency coordination, performance monitoring, and progress reporting introduce inefficiencies and make planning difficult.

National funding agencies: Ensuring coordination.

The sector is still highly centralized at the national level (though the institutional arrangements remain in a state of flux), with funding proposals and new sector initiatives

Figure 5
Institutional roles and relationships in the water supply and sanitation sector



DNAAS: National Directorate for Water Supply and Sanitation. Policy lead on water supply, also some service provision.

ELISAL: Solid Waste and Sanitation Company of Luanda. Para-state company operating Luanda's sewerage network.

EPAL: Luanda parastatal water utility.

LGs: Local governments. Includes provincial, municipal, and district authorities.

MED: Ministry of Education. Provides and maintains school sanitation infrastructure.

MINAMB: Ministry of the Environment. Lead agency for sanitation.

MINEA: Ministry of Energy and Water. Lead agency for water supply.

MINSA: Ministry of Health. Undertakes national and local hygiene promotion efforts.

MU: Municipal utilities. Primarily for water supply, and a few for sanitation.

SIA: State Implementing Agencies. Several ministries and presidential offices not a formal part of the water sector, but engaged in national reconstruction efforts, primarily large urban sanitation and drainage works.

SSIPs: Small-Scale Independent Providers. Currently supplying a high percentage of water users from tankers, primarily in urban areas.

UGs: User groups. Operate and maintain many village water supplies and some urban standpipes.

UTNSA: National Technical Unit for Sanitation.

Note: Additional institutions are currently being created, but not yet operational; see text for details.

coming primarily from the office of the president and MINEA/DNAAS. Unfortunately, there is no inter-agency coordination group which meets regularly regarding sector investment plans and activities. Key public policy initiatives are routinely reviewed by the Council of Ministers. MINEA assumes responsibilities for policy development, strategic planning, and M&E, along with an increasingly large project portfolio. Other governmental institutions play a significant role in system construction, the largest of which is the National Reconstruction Office managed directly by the Executive. In addition, the Office of Special Works under the Executive, the National Development Fund, and the Ministry of Public Works also undertake large civil works, especially sewerage and drainage systems. The Social Support Fund is actively funding smaller scale water and sanitation works.

Local governments—18 provinces, 164 municipalities, and 557 *comunas* (the lowest tier of government)—all have some level of responsibility and authority for water supply and sanitation (WSS) activities. The provinces, through their Provincial Departments of Water, are responsible for provincewide sector planning and implementation. Municipal governments maintain existing public water and drainage systems. The *comunas* are funded under the municipal governments' budgets, and perform assigned tasks on behalf of the municipality, including the management of designated piped water systems. Rural water points are also managed by local government, though community groups are increasingly expected to assume this role. Expectations that local government entities will provide quality services may be misplaced given the current weak institutional capacities. In addition, higher-

level government agencies are limited in their own ability to provide backstopping and training to lower levels.

Urban service provision: Preparing for sweeping reforms. The PDISA project is expected to introduce a new set of state actors as a way of modernizing urban service provision. These include Autonomous Provincial Water and Sanitation Utilities, a regulatory agency for urban water supply and sanitation, and a National Institute for Water Resources, with urban infrastructure asset management coming under MINEA. There is one professionalized public utility in Angola, EPAL, which supplies water services to Luanda. All other cities and towns have their water and/or sewer systems managed by one form of local government, either provincial or municipal. Hundreds of small independent water providers exist, consisting almost exclusively of water tanker services for the peri-urban areas of Luanda and several other cities. ELISAL, a parastatal agency, operates Luanda's sewerage system. Some overlap and lack of clarity of responsibilities exists for sanitation, for example, operation of sewage treatment plants. Similarly, potential conflicts exist

between municipal governments and the soon-to-be-created Provincial Utilities regarding the management and operation of water systems. It is unclear at this point exactly which agencies and institutions will remain, which will be eliminated, and which will be significantly modified under the PDISA project.

Reviews and discussion: Bringing government and other actors together. Other nongovernmental stakeholders include aid partners such as multilateral and bilateral funding agencies, national and international nongovernmental organizations (NGOs), and the private sector. However, the Angolan state is the primary driver for reform and implementation in all subsectors given its overwhelmingly large percentage of direct funding responsibility. Outside partners have key roles in limited and specific areas of technical assistance such as urban service provision reform, Management Information System (MIS) support, and CLTS piloting. Sector forums are notably absent, but are in the process of being created at both the national and provincial levels. There is currently no multistakeholder, annual review exercise in place.

5. Financing and its Implementation

Priority actions for financing

- Development of a national investment program for rural sanitation and hygiene promotion.

As discussed in Section 2, the main financing challenges in Angola are not ostensibly about availability of funds, except perhaps for rural sanitation. However, in terms of the quality and performance of systems for organizing those funds (indicators for which are shown in Figure 6) all subsectors lag behind peers. This is partly because of the nature of Angola's sector: one scorecard indicator is the presence of a Sector-Wide Approach (SWAp), for which the government has little incentive given the limited role of external partners. But others are clearly required in Angola's resource-rich subsectors. This is especially the case for rural sanitation which lacks any strategic, needs-assessed investment plan. The 2009 budget for the water and sanitation sector amounts to nearly US\$1 billion, with less than US\$30 million (3 percent) coming from Official Development Assistance (ODA) sources including grants and loans. Approximately 37 percent comes from internal government resources, with the remaining 60 percent of funds coming from commercial credits extended primarily by China and Brazil, linked to the future sale of petroleum. Major challenges for effectively using these resources are described here.

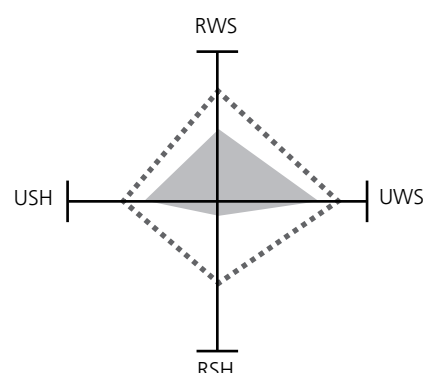
Disbursement: Absorbing massive budget outlays.

The challenge of allocating and efficiently utilizing such large sums is daunting, and disbursement rates are characteristically low, but improving year-to-year. In 2005, for example, only US\$15 million was spent of the US\$185 million in allocations, or around 8 percent of the total. By 2008 the amounts had risen to US\$194 million and US\$432 million, respectively, implying a utilization rate of nearly 45 percent. While the percentage actually disbursed remains low, the nominal amount disbursed has experienced a 12-fold increase. However, one recent report suggests that while utilization rates are increasing, actual project completion rates remain low.⁹ For example,

in 2007, only 25.6 percent of all projects listed in the official investment plan were completed (589 of 2,300), while in 2008 the percentage had dropped to a mere 10 percent (376 of 3,733). Tracking disbursement (and allocations) is difficult because data are not comprehensively segregated by sectors, though it is stated that 58 of the 376 projects completed in 2008 were water supply or sanitation projects.

Planning: Due for an overhaul. Due to a lack of availability of detailed planning and reporting documents, assessing the sector's financial planning and performance is challenging. In the case of Angola, with several large national programs under way through different ministries as well as the president's office, consolidating data and

Figure 6
Scorecard indicators relating to financing and its implementation, with average of indicator scores by subsector and peer-group comparison (see endnotes)⁸



■ Angola average scores

⋯ Averages, MICs

Source: CSO2 scorecard.

information is unlikely to occur without specific forums and mandates in place.

Finance availability: Considering contingencies.

Despite the uncertainty surrounding both urban and rural access figures, owing to the sheer volume of funds available, Angola appears to have more than enough investment financing to meet the MDGs—with only rural sanitation and hygiene having a funding gap due to the absence of a targeted funding mechanism or subsector program. If, however, government revenues were to drop unexpectedly (due to a dramatic fall in crude oil prices, for example), the targets might be put in jeopardy. However, as pointed out by Mueller et al.,¹⁰ the sector would probably do better to achieve a more sustainable rate of service delivery by limiting the use of commercial credits, while simultaneously reducing current high operational subsidies.

Expenditure tracking: A challenge. The budget structure, reporting system, and limited availability of information make it difficult to track total water and sanitation expenditures and results, specifically (a) it is difficult to separate expenditures on water supply from those on sanitation; (b) detailed budget execution reports are unavailable, either from individual projects or as consolidated reports; (c) GoA reporting does not clearly

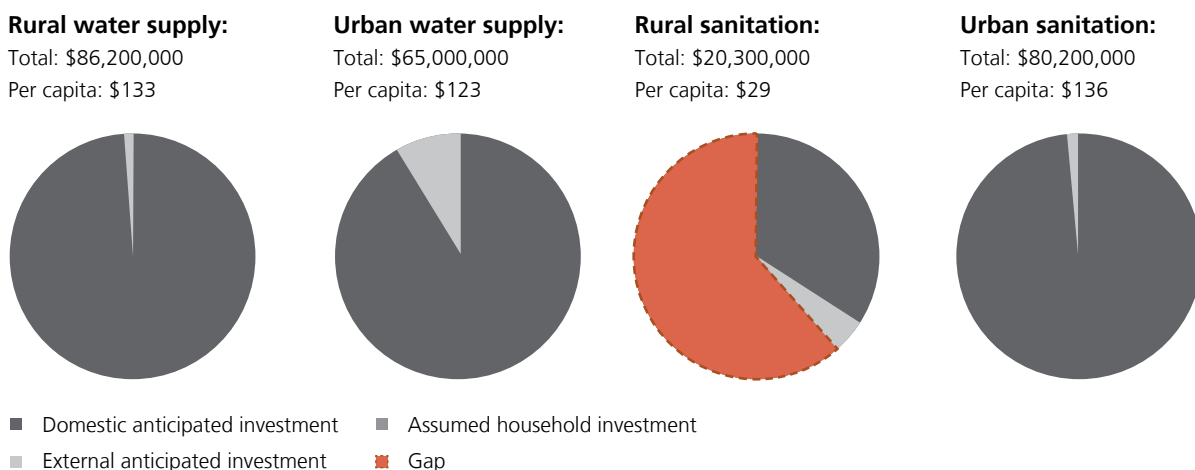
link investment amounts to specific works or types of works; (d) O&M costs or community contributions are not tracked in any meaningful way; and (e) subsidies for O&M expenses, connection fees or latrine slabs are not always tracked or reported.

Donor involvement: Balancing transaction costs with benefits.

As mentioned earlier, traditional donor financing represents less than 5 percent of all sector funding, and its impact comes primarily in the form of technical assistance in specific areas of need such as urban sector reform or MIS development (see Figure 7 for the breakdown by subsectors). Interestingly, as opposed to nearly every other SSA country, Angola has not subscribed to the Paris Declaration and is not pursuing donor harmonization or coordination. In effect, from the Angolan perspective, the transaction costs of harmonizing the donor organizations may exceed the sums donated and lent. One consequence of limited donor funding is that Angola has exceptional freedom in the design of its sector programs. On the other hand, large-scale donor participation tends to lead to improvements in annual planning, reporting, and information sharing, all of which are currently weak. By way of comparison, Angola's financial strength far surpasses that of nearly every African nation participating in the CSO exercise.

Figure 7

Overall annual and per capita investment requirements and contribution of anticipated financing by source



Source: CSO2 model.

6. Sector Monitoring and Evaluation

Priority actions for sector monitoring and evaluation

- Increased and permanent support for a sectorwide information management system, including regular performance monitoring with targeted integration into government planning systems, and public dissemination.

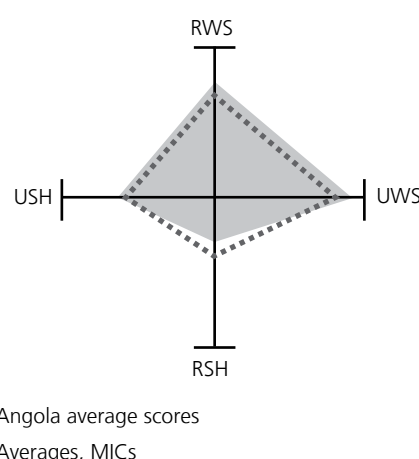
Attempts to improve sector M&E, including reporting of expenditures and outputs, are progressing, and broadly Angola equals its peer-group average in terms of performance against related scorecard indicators (Figure 8). As for financing, rural sanitation is the most neglected subsector. Specific challenges with regards to sector M&E are described here.

Sector reporting: Driving accountability and performance. Sector financial and budget execution data made available by the GoA were incomplete, making it difficult to fully assess whether or not the country is on track to meet its annual or longer-term targets. Similarly, annual sector plans and reports were not always made available, and in some cases may not exist. In part, this is understandable, given the recent end of hostilities, the unconsolidated institutional arrangements, and the number of state implementing agencies with high-volume investment. Nonetheless, the lack of consolidated planning and reporting tools suggests that current management processes require significant strengthening and present a weak foundation for meaningful reform.

Utility benchmarking is not comprehensively practiced; EPAL, for example, does not provide basic information on its operations to IBNET, the International Benchmarking Network for Water and Sanitation Utilities. Information from other urban utilities is not collected and collated by any government agency.

Coverage: Getting a handle on baseline data. There is a two-year-old initiative in place in the MINEA to develop a national water supply and sanitation information management system with support from the EU and

Figure 8
Scorecard indicators relating to monitoring and evaluation, with average of indicator scores by subsector and peer-group comparison (see endnotes)¹¹



Source: CSO2 scorecard.

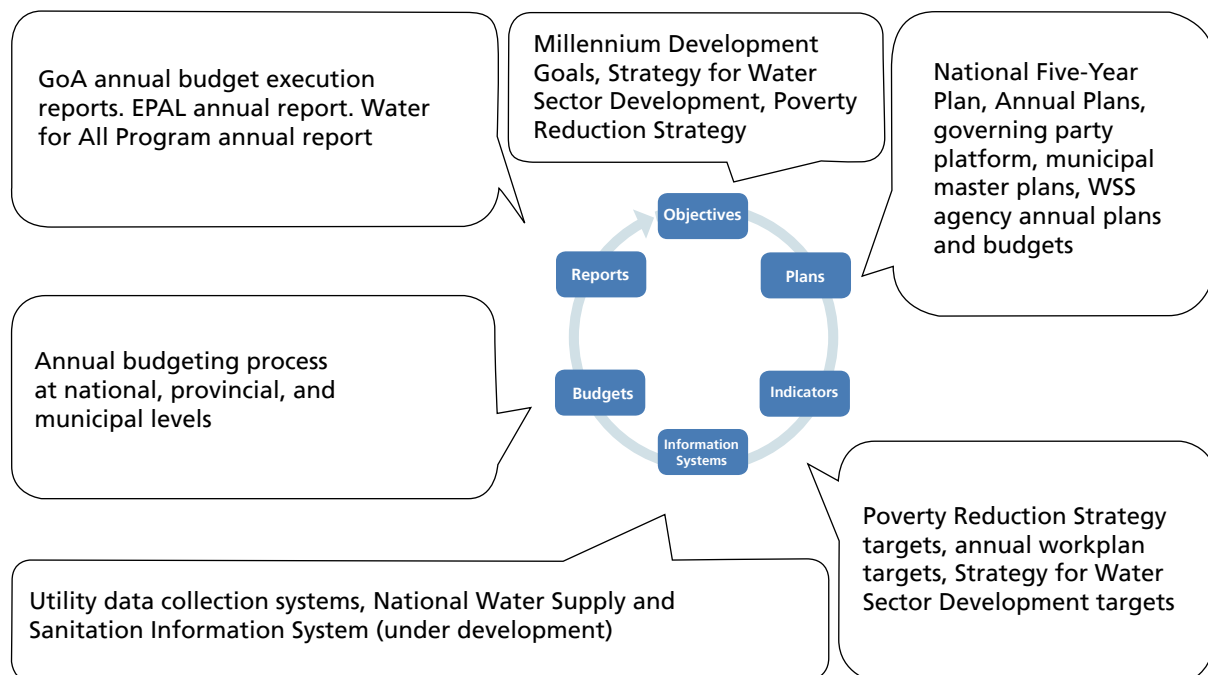
UNICEF. To date, a geo-referenced database has been established that contains basic information on water and sanitation access for both urban and rural households, resulting from a national survey whose data points are still being entered into the database. The MICS III survey, started in 2008 and expected to provide final results by the end of 2010, will serve to confirm the database results. Provisional data agree with the JMP estimates for urban sanitation, but differ greatly for urban water supply, rural water supply, and rural sanitation. The large jump for urban water supply access may be due to methodological concerns with the MICS III survey where obtaining water

from a neighbor's water tank is considered access, though for the JMP this is not considered to represent access. For this reason, the CSO report utilizes the JMP figure. Interestingly, the differences tend to even out for the national totals, which each differ from one another by six or fewer percentage points.

Additional data on service quality (degree of functionality and water quality, for example) are expected by the end

of 2010 with completion of the MICS III. Considering that Angola has not even undertaken a national census since 1970, reliable functioning of the database will prove to be of significant value if the sector chooses to maintain and expand it over time. The database does not yet include any components for subsector performance monitoring, budget and expenditure tracking, human resources development, or water resources, though this is being contemplated for future years.

Figure 9
The monitoring and evaluation cycle in the Angolan water sector



7. Subsector: Rural Water Supply

Priority actions for rural water supply

- Renewed and reinvigorated efforts to develop a strategic plan for rural water supply, and put into place new implementation and management models in order to improve service delivery and sustainability.

JMP data suggest that rural water coverage has declined slightly since 1990, from 40 percent to 38 percent, largely in response to the long-running armed conflict. Complementary data on basic parameters such as numbers of functioning and nonfunctioning water points are currently unavailable. The proportion of the rural population accessing water through piped household connections remains a fraction of the total.

Anticipated investment of US\$185 million per year appears more than sufficient for estimated CAPEX requirements, at US\$86 million per year. Additionally, annual OPEX requirements of US\$19 million per year would also at first glance appear to be met, should operational cost recovery systems not be put in place. However, the unknown state of existing infrastructure suggests that the real costs may be much higher, and the long-term implications of state-subsidized O&M costs are unclear.

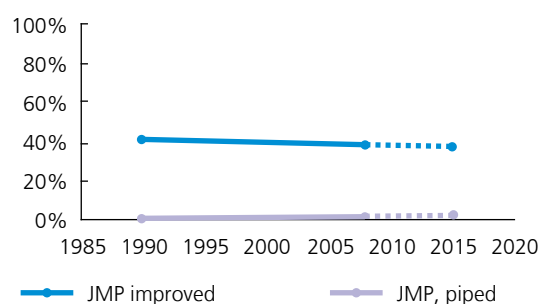
The rural water supply scorecard results suggest a decline through the service delivery pathway, from the performance of enabling building blocks, to those related to sustaining systems on the ground. The scorecard uses a simple color code to indicate: building blocks that are

largely in place, acting as a driver on service delivery (score >2, green); building blocks that are a drag on service delivery and require attention (score 1–2, yellow); and building blocks that are inadequate, constituting a barrier to service delivery and a priority for reform (score <1, red).

Maintenance, in particular, is a concern, registering a score below 1 (Figure 12, red color). Angola's scores for enabling building blocks are comparable to its economic peer countries, but it performs below average in developing and sustaining building blocks (Figure 13).

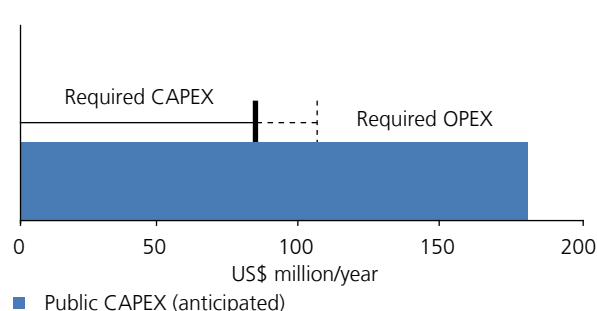
With regard to enabling services, there is a need for an approved rural water and sanitation strategic plan, which would include a comprehensive set of policy instruments and approaches. Angola does have a needs assessed investment plan (an indicator for **planning** in the scorecard) in the form of 2007 Water for All Program (PAT). Nonetheless it is unclear from the program legislation how the critical software components are to be implemented. These include: capacity building at all levels; hygiene promotion; operations and management; and monitoring and evaluation.

Figure 10
Rural water supply coverage



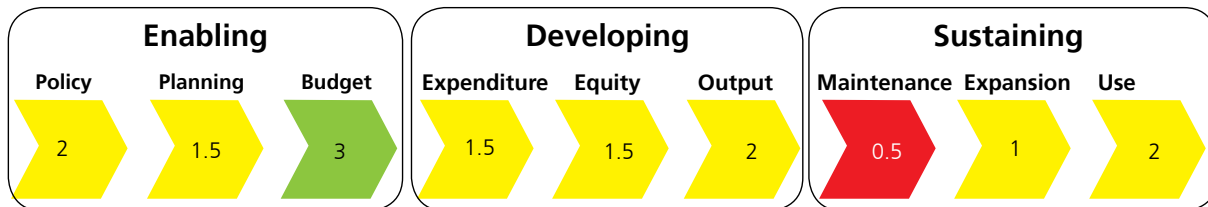
Sources: JMP 2010 report.

Figure 11
Rural water supply investment requirements



Source: CSO2 costing.

Figure 12
Rural water supply scorecard

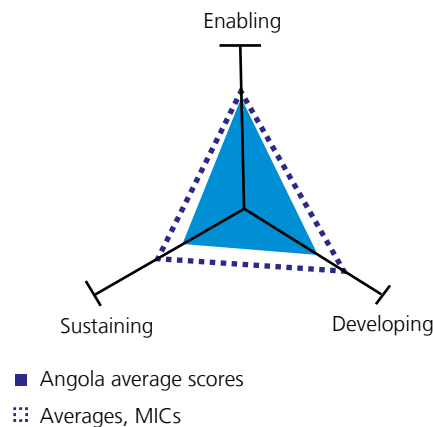


Source: CSO2 scorecard.

Building blocks of the pathway relating to development of services include **equity**, which is assessed against indicators including local participation in planning and allocation criteria to match finance to need. Angola scores well for the former, but lacks the latter, a concern given the large financial resources flowing to the sector. **Output**, the quantity and quality of infrastructure actually being built, also scores low: the most recent progress report suggests that since its inception PAT has provided improved access to 800,000 rural inhabitants, though it is already over 1 million people behind its ambitious target for 2009.¹² Unit costs have risen dramatically such that the initial estimated program cost of US\$650 million has doubled to US\$1.3 billion. It is interesting to note that Angola is one of the few countries where per capita investment cost estimates for rural water service are higher than those for urban areas (Figure 7). This is due in part to the fact that an estimated 60 percent of the rural population is expected to be served by piped systems (though not necessarily household connections), added to the fact that rural service delivery indeed does cost more upfront than urban services provided at the same level.

The downstream building blocks of the pathway, for sustaining services, receive the lowest average score. The preference for piped schemes returns as an issue here, since it is also unclear whether or not rural populations can afford to sustain the higher service levels over time, and how potentially challenging decentralized management might be in the short to medium terms. The PAT is finding that local and provincial governments are often unprepared to manage the program and that O&M of completed works is already categorized as inadequate. Lack of progress on the program's major software components is one of the key likely causes of both the delays and operational challenges, though this was to be expected when moving from practically no investment in rural infrastructure to hundreds of millions of dollars per year within a few short years.

Figure 13
Average RWS scorecard scores for enabling, sustaining, and developing service delivery, and peer-group comparison



Source: CSO2 scorecard.

A prerequisite for sustaining services (and an indicator for maintenance) is the presence of systems for monitoring functionality. The PDSA provides some thin data on rural water supply. There were in 2004 an estimated 3,319 functioning handpumps on wells or boreholes in Angola, with approximately 300 users per handpump, for an estimated total of 1 million persons served.¹³ No information is available for small town service delivery. This amounts to access for at least 22 percent of the rural population, below the MICS II (39.9 percent) and JMP estimates, but above the provisional MICS III data.¹⁴ The PAT 2009 annual report estimates coverage at 33 percent taking into account all newly installed infrastructure under the program, but not including any water points that went out of service during the reporting period.¹⁵ Final data from the MICS III survey and the national water supply and sanitation census, expected to become available by the end of 2010, will go a long way toward solidifying access figures.

8. Subsector: Urban Water Supply

Priority actions for urban water supply

- Renewed and reinvigorated efforts to develop and put into place new implementation and management models for urban water supply in order to improve service delivery and cost recovery.

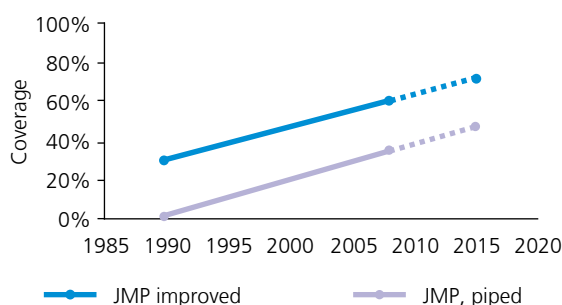
JMP figures suggest that urban water access jumped by 100 percent (from 30 percent to 60 percent) between 1990 and 2008, despite rapid urbanization. During the long period of internal strife, people streamed out of the insecure rural areas to the safety of the cities. From 1975 to 2005, the percentage of Angolans living in urban areas exploded from 19 percent to 54 percent. Compare this with the rest of Southern Africa, where during this same period the percentage only increased from 22 percent to 35 percent.¹⁶ These coverage estimates are, however, disputed by other sources—as discussed elsewhere in this report.

For the urban water supply subsector to meet its share of the MDG coverage target would require US\$65 million per year. Anticipated investments of US\$174 million per year again appear to be more than sufficient. However, the lack of confidence in the true coverage figures makes investment planning challenging. Per capita costs are higher

than might be expected: the primary reason given is the significant cost of compensation paid to urban property owners for land ceded for the installation of sanitary works, especially in Luanda where years of unregulated construction activity and poor urban planning has led to a chaotic and over-crowded urban space.

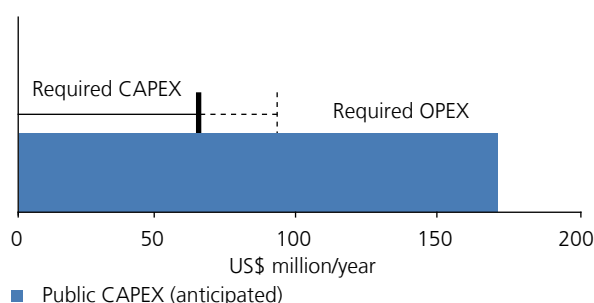
The urban water supply scorecard (Figures 16 and 17) follows an emerging pattern for Angola—the enabling building blocks score highest, followed by those for developing and then sustaining services. Among enabling building blocks, further clarity on institutional roles (an indicator for **policy**) is expected with the progress on the PDISA Project. This expects to accomplish the professionalization of nine water supply systems over the next six years, while creating Provincial Water and Sanitation Utilities, a regulatory agency, an asset management unit, and a National Institute for Water Resources. With a reform agenda of this magnitude it

Figure 14
Urban water supply coverage



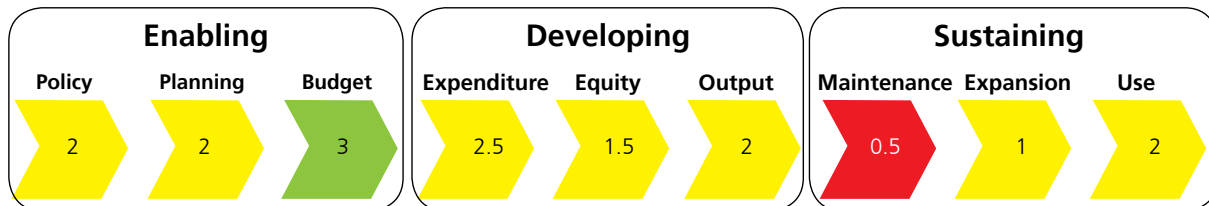
Source: JMP 2010 report.

Figure 15
Urban water supply investment requirements



Source: CSO2 costing.

Figure 16
Urban water supply scorecard



Source: CSO2 scorecard.

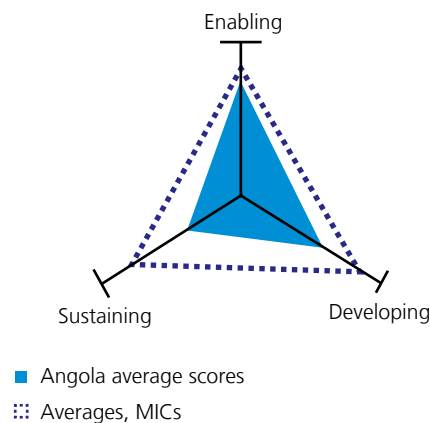
is, however, possible that investment flows may slow in the short term. **Budgeting** (in terms of the sufficiency of finance, and clarity and comprehensiveness of the budget itself) is a notable strong point, receiving the maximum possible score (3, green color).

Equity does not score highly: local participation procedures for planning and implementation are in place, but are not consistently applied, and as for rural water supply there is a lack of allocation criteria to direct finance to areas most in need.

At the downstream end of the service delivery pathway, the sustaining building blocks follow the pattern established by rural water supply. **Maintenance** for urban water supply is assessed against indicators including levels of nonrevenue water and cost recovery. Data and information on nonrevenue water, nonpayment rates, service continuity, customer complaints, system repair times, number of utility employees per 1,000 connections, and other basic urban water metrics, are difficult to come by, and the limited information available nearly always refers to EPAL (Luanda) alone. According to the PDSA, nonrevenue water in urban areas is estimated to lie between 40 percent and 60 percent.¹⁷ Mueller et al. report low tariff collection rates for EPAL of 51 percent in 2006, which explains in part why EPAL received an operations subsidy of 48 percent that year.¹⁸

Use is assessed in terms of the quantity and quality of coverage. Despite the apparent strong progress in coverage according to JMP data (resulting in a high score for one indicator), there are reasons for caution. Data suggest that the quantity of water available to customers in urban

Figure 17
Average UWS scorecard scores for enabling, sustaining, and developing service delivery, and peer-group comparison



Source: CSO2 scorecard.

areas is among the lowest in Africa on a per capita basis, at only 37 liters. At least one source estimates that up to 63 percent of the urban population obtains its water from tanker trucks, which are not recognized as an improved source.¹⁹ One recent survey finds that approximately 90 percent of urban households are dissatisfied with their water service.²⁰ Given the extreme levels of annual population growth, this is understandable, but also suggests that true access figures may be lower than those currently reported. In addition, MICS III provisional data for 2009 suggest that 82 percent of urban residents currently enjoy access, which appears to be an unrealistic leap from the estimated 60 percent coverage figure put forward by the JMP just last year.²¹

9. Subsector: Rural Sanitation and Hygiene

Priority actions for rural sanitation and hygiene

- Immediate and sustained resumption of efforts to develop and implement a national sanitation policy and strategic plan (including the development of a national investment program).

According to the JMP, rural household access to improved sanitation has increased from an estimated 6 percent in 1990 to 18 percent by 2009. MICS III provisional data suggest that rural sanitation may have increased to 31 percent. However, the survey included traditional latrines which are not always considered by the JMP as improved access. There are currently no data on the number of households sharing facilities in Angola, which although counted as unimproved can give an indication of an intermediate form of access.

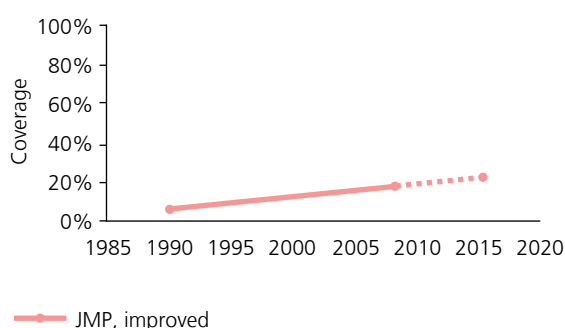
The estimated subsector annual funding gap of US\$12 million is a tiny fraction of the current financing available for either urban or rural water supply, and could easily be met using existing budget resources. However, as with the other subsectors, financing per se is not the key constraint. Given the fact that Angola has no national sanitation policy and no government program for rural sanitation,

the outlook for the rural subsector increasing coverage by half a million people each year (its contribution to the sanitation MDG target) is bleak.

The scorecard suggests that Angola has ample work ahead on each segment of the service delivery pathway, unlike the water supply subsectors which have clear upstream strengths (Figures 20 and 21). The rural sanitation subsector compares unfavorably not only with the set of countries in its grouping, but also with its urban counterpart.

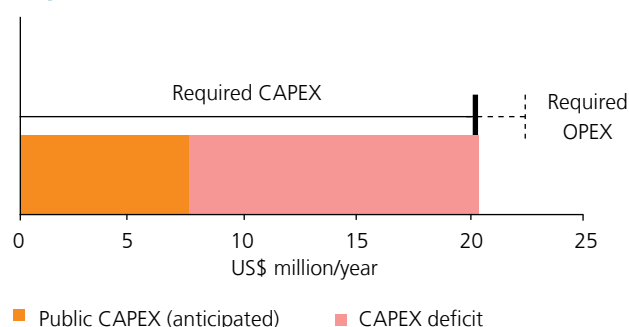
A major shortcoming in enabling building blocks is the absence of even the beginnings of a **policy**, let alone investment plan, for the subsector. Institutional coordination has thus far been limited: it remains to be seen what the impact the newly appointed MINAMB will have. Among indicators for **budget**, not only are anticipated investments inadequate relative to need,

Figure 18
Rural sanitation coverage



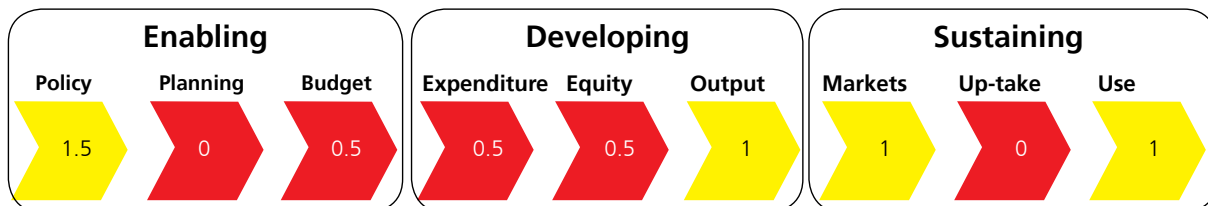
Source: JMP 2010 report.

Figure 19
Rural sanitation and hygiene investment requirements



Source: CSO2 costing.

Figure 20
Rural sanitation and hygiene scorecard



Source: CSO2 scorecard.

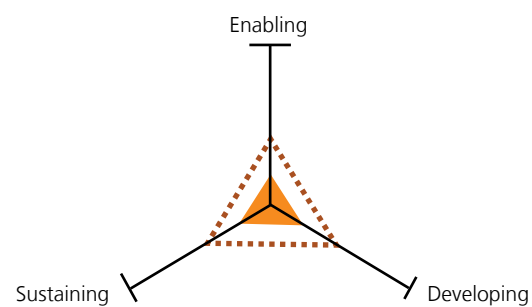
but the budget structure makes it hard to identify what resources are actually going to the subsector.

Among developing building blocks of the service delivery pathway, levels of **expenditure** are estimated to be low compared to other subsectors, though it is difficult to establish this because monitoring is largely absent. **Equity** faces the same lack of allocation criteria as the rural water supply subsector.

Output for sanitation is assessed not just in terms of material works, but also the extent of software activities which form another part of the state's responsibilities. Promotion tools are being developed: UNICEF in close collaboration with MINAMB/UTNSA is initiating a small pilot experience with CLTS.²² This approach has been highly successful in several countries throughout the world, though proof of long-term behavior change or continued investment by households in sanitation is not yet available. The initiative appears to be very thoughtfully designed, and will require close monitoring moving forward for in-country and wider regional learning.

Among sustaining building blocks, **uptake** registers a particularly disappointing score of zero—assessed both

Figure 21
Average RWS scorecard scores for enabling, sustaining, and developing service delivery, and peer-group comparison



■ Angola average scores
 ■ Averages, MICs

Source: CSO2 scorecard.

in terms of households building latrines and practicing hygienic behavior. Unfortunately, study of hygiene behaviors and practices has been limited to urban areas due to the armed conflict. Of concern is the observation by Mueller that hygiene and sanitation education are not currently being implemented, with social mobilization teams only recently being formed.²³

10. Subsector: Urban Sanitation and Hygiene

Priority actions for urban sanitation and hygiene

- Immediate and sustained resumption of efforts to develop and implement a national sanitation policy and strategic plan.
- Renewed and reinvigorated efforts to develop and put into place new implementation and management models for urban sanitation to ensure operation and maintenance in the medium term.

While the JMP put the access figure at 86 percent (2008), the MICS II (2003) reported urban sanitation access to be 74 percent,²⁴ and PDSA (2004) reported 60 percent access. The provisional results from the MICS III place urban sanitation access at 85 percent, suggesting that some consensus exists around the coverage figure. Considering the rapid urban growth of previous decades and the low incomes in most peri-urban areas, this result is extremely positive. The cholera epidemics of recent years may have provided strong public and household incentives for improving sanitation behaviors and infrastructure.

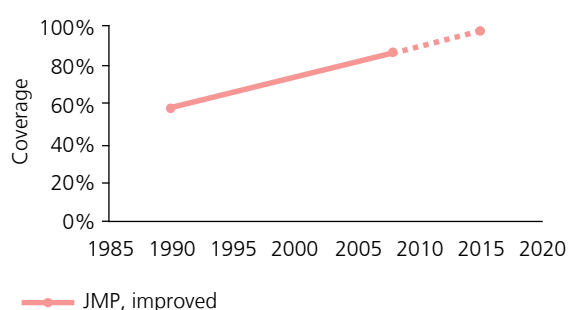
Required capital investment for urban sanitation, at US\$79 million per year, appears to be covered by anticipated financing to the subsector, even considering an estimated additional US\$40 million per year in OPEX requirements.

Currently, substantial subsidies are delivered for networked sewerage systems, and cost recovery mechanisms have not been put in place.

When the urban sanitation scorecard is compared with Angola's peer-group countries, performance is slightly below average (Figure 25). However, in light of the extraordinary urban population growth of the past decades, and the recent end of hostilities, the progress made is admirable—registering intermediate scores throughout (between 1 and 2, yellow color—Figure 24).

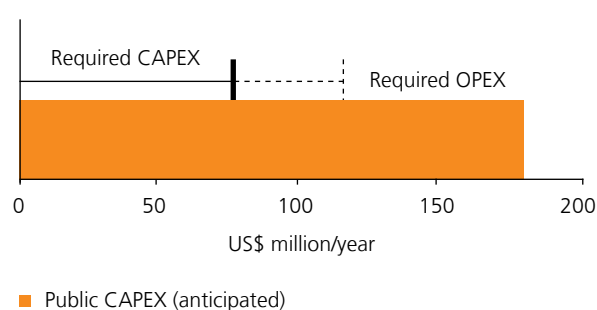
Urban sanitation in Angola is marked by a relatively high use of sewerage systems. Significant progress has been made in the past few years in the areas of master planning and engineering designs. Under the Poverty Reduction Strategy

Figure 22
Urban sanitation coverage



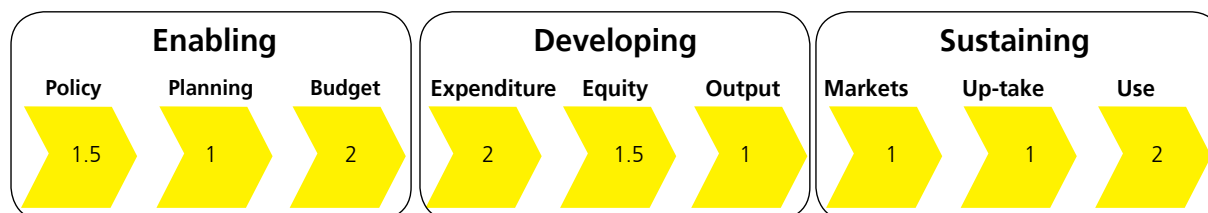
Source: JMP 2010 report.

Figure 23
Urban sanitation investment requirements



Source: CSO2 costing.

Figure 24
Urban sanitation and hygiene scorecard



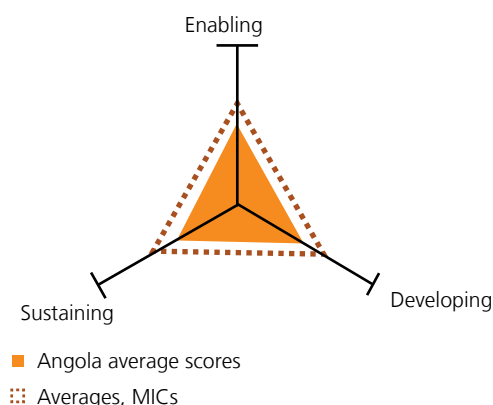
Source: CSO2 scorecard.

(ECP, 2003), Luanda and every provincial capital are to have an updated master plan, and all existing networks are to be scheduled for rehabilitation and extension. The master planning process has been completed, and several networks are already in the process of upgrading.

On the other hand, such technologies are expensive. Of the GoA's proposed US\$3 billion in sector financing over the period, approximately half that amount is for networked sewerage.²⁵ Currently only five Angolan cities have sewerage networks, and only two of these five actually have some level of sewage treatment. The Luanda system has been categorized as being "in a state of virtual collapse".²⁶ Subsidies are delivered to all the large sewerage systems, while only two, Lobito and Benguela, currently charge customers (though the tariffs do not meet operating costs). It remains to be determined by what mechanisms the sewerage networks will be operated and managed, though the PDISA project is expected to address the issues.

It is, in any case, not clear that sewerage will benefit all urban residents, including the poorest. Other on-site technologies are likely to continue to be used: pour-flush models, traditional latrines, and ventilated improved-pit latrines are all utilized, with the pour-flush being

Figure 25
Average USH scorecard scores for enabling, sustaining, and developing service delivery, and peer-group comparison



Sources: CSO2 scorecard.

the preferred option. In this context, software activities to encourage households to build latrines and use them properly remain an important consideration. Little information is available regarding sanitary practices of urban residents. However, one study finds that over 90 percent of respondents report hand-washing before meals and 86 percent report using soap and water,²⁷ though not all actually engage in the reported behaviors.

Notes and References

- ¹ 2010 average, Global Economic Monitor, The World Bank.
- ² The first round of CSOs was carried out in 2006 covering 16 countries and is summarized in the report, 'Getting Africa On-Track to Meet the MDGs on Water and Sanitation'.
- ³ WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation. 2010. Progress on Sanitation and Drinking Water, 2010 Update. JMP estimates are based on a linear regression of nationally representative household surveys.
- ⁴ The CSO2 scorecard methodology and conceptual framework are discussed in detail in the synthesis report.
- ⁵ República de Angola, Ministério da Energia e Águas (MINEA). 2004. Programa de Desenvolvimento do Sector do Águas.
- ⁶ MINEA. 2010. Relatório anual de balanço da Execução do programa Água para Todos referente ao exercício de 2009.
- ⁷ Scorecard indicators relating to the institutional framework section are as follows: All subsectors: targets in national development plans/PRSP; subsector policy agreed and approved (gazetted as part of national policy or as standalone policy); RWS/UWS: institutional roles defined; RSH/ USH: institutional lead appointed.
- ⁸ Scorecard indicators relating to the section on financing and its implementation are as follows: All subsectors: programmatic Sector-Wide Approach; investment program based on MDG needs assessment; sufficient finance to meet MDG (subsidy policy for sanitation); percent of official donor commitments utilized; percent of domestic commitments utilized.
- ⁹ República de Angola. 2009. Balanço da Execução do Programa Geral do Estado de 2007/2008.
- ¹⁰ Mueller, M., C. Figueiredo, and C. Santos. 2008. Angola: Study of the Water Supply and Sanitation Sector, Final Report.
- ¹¹ Scorecard indicators relating to the section on M&E are as follows: All subsectors: annual review setting new undertakings; subsector spend identifiable in budget (UWS: inc. recurrent subsidies); budget comprehensively covers domestic/donor finance; RWS, RSH, USH: domestic/donor expenditure reported; UWS: audited accounts and balance sheets from utilities; RWS, RSH, USH: periodic analysis of equity criteria by CSOs and government; UWS: pro-poor plans developed and implemented by utilities; RWS/UWS: nationally consolidated reporting of output; RSH/USH: monitoring of quantity and quality of uptake relative to promotion and subsidy efforts; All subsectors: questions and choice options in household surveys consistent with MDG definitions.
- ¹² MINEA. 2010. Relatório anual de balanço da Execução do programa Água para Todos referente ao exercício de 2009.
- ¹³ MINEA. 2004. Programa de Desenvolvimento do Sector do Águas.
- ¹⁴ Instituto Nacional de Estatísticas (INE). 2009. Inquérito Integrado sobre o Bem Estar da População (IBEP) 2008-09 Resultados Preliminares.
- ¹⁵ MINEA. 2010. Relatório anual de balanço da Execução do programa Água para Todos referente ao exercício de 2009.
- ¹⁶ United Nations Population Division. 2008. World Population Prospects: The 2008 Review.
- ¹⁷ MINEA. 2004. Programa de Desenvolvimento do Sector do Águas.
- ¹⁸ Mueller, M., C. Figueiredo, and C. Santos. 2008. Angola: Study of the Water Supply and Sanitation Sector, Final Report.
- ¹⁹ World Bank, PPIAF. 2005. Private Solutions for Infrastructure in Angola; MINEA would argue that nearly 90 percent of the tanker water comes directly from utility water systems, not from dubious sources.
- ²⁰ República de Angola, European Union, and UNICEF. 2007. Seminário Nacional sobre Saneamento, 22-23 de Outubro, 2007, Relatório do Seminário, Versão Final.
- ²¹ INE. 2009. Inquérito Integrado sobre o Bem Estar da População (IBEP) 2008-09 Resultados Preliminares.
- ²² The CSO2 investment requirement estimates do not include the cost of sanitation and hygiene promotion, or other software activities, relative to the targets, due to the difficulty of estimating such costs on a per capita basis.
- ²³ Mueller, M., C. Figueiredo, and C. Santos. 2008. Angola: Study of the Water Supply and Sanitation Sector, Final Report.
- ²⁴ INE. 2003. Inquérito de Indicadores Múltiplos II.
- ²⁵ República de Angola, European Union, and UNICEF. 2007. Seminário Nacional sobre Saneamento, 22-23 de Outubro, 2007, Relatório do Seminário, Versão Final.
- ²⁶ World Bank, PPIAF. 2005. Private Solutions for Infrastructure in Angola; See note 19.
- ²⁷ COSEP Consultoria. 2007. Relatório de Estudo da Linha de Base e Pesquisa Formativa sobre Água, Saneamento, e Higiene em Angola.





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