



DIRECTIONS IN DEVELOPMENT
Infrastructure

State Water Agencies in Nigeria

A Performance Assessment

Berta Macheve, Alexander Danilenko, Roohi Abdullah,
Abel Bove, and L. Joe Moffitt

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Foreword

Municipal water and sanitation in Nigeria is in a difficult situation. Historical reasons and the complex institutional settings of the water and sanitation sector prevent its development on par with the country's growth. Demand from residential, commercial, and institutional customers outpaced supply a long time ago, and the gap between demand and supply continues to grow in both urban and rural areas. State water agencies are working to provide water to their customers, connecting about 600,000 new residents to their networks each year. However, this number is far below the more than two million new residents urbanization brings to the cities in that same time period. Currently, only about 25 percent of residents in urban settlements have direct water connections inside their premises. If the situation continues, only 15 percent of urban residents will be able to enjoy tap water in their homes by 2020. Water is rarely provided around the clock, and water losses are dangerously high.

The study was initiated at the request of Marie Françoise Marie Nelly, the World Bank Country Director for Nigeria (September 2011–June 2015). Jointly produced by the Nigeria Federal Ministry of Water Resources and the World Bank, it documents a complex and challenging story of water sector status in the country. It sheds light on the sector's performance in 2011–13 with the hope that sector interests will be properly addressed and converted into a pipeline of investment projects soon. Together with our Nigerian colleagues, we also hope that these investments will be accompanied by institutional and tariff reforms that will make the water sector technically and financially sustainable, as well as attractive for needed investments from all interested parties.

Water is a key element of a country's security and can be the largest impediment to its development. Proper investments and accompanying reforms will provide affordable water for all and inevitably bring down the production costs for country industries, reduce the health costs of the government, and eliminate the need for direct financial subsidies to utilities. Appropriate water services will also reduce coping costs of the population, who then can spend the money they save on improving their standard of living and education.

The proposed plan is difficult. The expected investment costs are in the US\$600 million range each year until 2030, when all Nigerian citizens will have potable water at their homes provided 24/7. However, it is doable. Together with

the government of Nigeria, the National Ministry of Water Resources, and state water agencies, we stand ready to help Nigerian water and sanitation services improve their performance in accordance with the country's development status.

Junaid Ahmad
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The project was co-led by Alexander Danilenko and Berta Macheve (WSP) and Benson Ajisegiri (FMWR). The document was co-authored and analysis undertaken by a team composed of Roohi Abdullah (WSP consultant), Michael Alofe (national consultant), Abel Bove (Governance Global Practice), Alexander Danilenko (WSP), and Berta Macheve (WSP). Prof. L. Joe Moffitt (University of Massachusetts) undertook the economic assessments. The team benefited significantly from the contributions of Klas Ringskog, and Biokou Mathieu Djayeola, who undertook the tariff assessments. Prof. Antonio Estache (Université Libre de Bruxelles) and Richard Schlrif (Macroconsulting) provided valuable comments during the study development and review stages. Imran Amir Ali, Katherine Bain, Michel Duret, Hassan Kida, Miguel Vargas-Ramirez, Pier Mantovani, and Rosemary Rop also provided valuable comments during different phases of document preparation, for which we are grateful. Aroha Bahuguna offered priceless help in the final stages of the study.

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Abbreviations

AICD	African Infrastructure Country Diagnostic
AWWA	American Water and Wastewater Association
BNDES	Brazilian Development Bank
CWSRF	Clean Water State Revolving Fund
DEA	data envelopment analysis
EPSA	<i>Empresas Prestadores de Servicios de Agua Potable y Alcantarillado</i> (Water Supply and Wastewater Service Providers)
ERDF	European Regional Development Fund
EU	European Union
FMWR	Federal Ministry of Water Resources
GDP	gross domestic product
HR	human resource
IBNET	International Benchmarking Network for Water and Sanitation Utilities
IBT	increasing block rate tariff
IFI	international financial institution
JICA	Japan International Cooperation Agency
JMP	WHO/UNICEF Joint Monitoring Program
LGA	local government authority
LGC	local government council
LMP	Joint Monitoring Program
lpcd	liters per capita per day
MDG	Millennium Development Goals
NC	North Central
NE	North East
NUWSRP I	First Nigeria Urban Water Supply Reform Project
NUWSRP II	Second Nigeria Urban Water Supply Reform Project
NUWSRP III	Third Nigeria Urban Water Supply Reform Project
NW	North West
O&M	operations and maintenance

PAC	Program for the Acceleration of Growth
PPP	public-private partnership
PSP	private sector participation
RBDA	River Basin Development Authority
SE	South East
SG	state government
SOE	state-owned enterprise
SRF	State Revolving Funds
SS	South South
SW	South West
SWA	state water agency
SWB	state water board
TA	technical assistance
UNICEF	United Nations Children's Fund
WHO	World Health Organization
WIMAG	water investment mobilization and applications guidelines
WSP	Water and Sanitation Program (World Bank); water service provider
WSS	water and sanitation services
€	European Union euro
NGN	Nigerian naira
R\$	Brazilian reais
US\$	United States dollar

Overview

What the Report Does

The main objectives. This document provides the government of Nigeria with a structured and coherent quantitative snapshot of the state of national urban water sector. The focus is on water provision by state water agencies (SWAs) or water boards which are the only regulated agencies that provide water to urban residents. Sanitation is not addressed because most SWAs do not provide this service.

The main purpose of this quantitative assessment is to identify issues related to SWA performance, tariff levels and structures, and financing mechanisms and any concerns about their governance. To the extent possible, the document highlights how institutional weaknesses affect customer costs, subsidies to the sector, and the financing required to scale up investment and showcase how SWA operational and maintenance spending can actually be covered from the various financing sources.

Analytical approach. The report builds on a series of background studies, each looking at the water sector in Nigeria through a different lens: (1) assessment of SWA performance based on data from the International Benchmarking Network for Water and Sanitation Utilities; (2) a tariff evaluation study; (3) an assessment of SWA governance; and (4) an economic assessment that reviewed how current services cope with costs and estimates of future costs associated with a reform directed to delivering services to all. The process followed and details of information collected and missing are thoroughly analyzed in the report and in the appendixes.

Where the report fits into Nigeria's agenda. The Federal Ministry of Water Resources (FMWR) is leading the reform program. Its purpose is to significantly increase investment and put in place structural reforms to help the troubled sector move forward and become more coherent, spurred by demand based on economic development and related urbanization. The FMWR is well aware of how fragmented the water sector is and of the institutional difficulties that may have prevented it from achieving development on par with the economic

development of the country. It has therefore made significant efforts to improve understanding of the sector and awareness of these issues among its main stakeholders.

How the report can support government efforts to raise local awareness of the issues. The FMWR and the World Bank Water and Sanitation Program (WSP) together conducted a series of workshops to set up and understand the baseline for the current municipal water situation, find ways to reform its institutions efficiently, and determine investment strategies that will lead to universal coverage with water and sanitation services (WSS). Of the 37 state water providers, 35 participated in these studies and provided useful insight into the sector's structure, progress, and difficulties. This is the first effort to collect information at the utility level. For a few items the quality of the data was not satisfactory for rigorous analysis, but even not-so-good data can reveal a lot about the status of the sector and its development prospects.

The long-term value of the report. Ultimately, this report is a first step toward performance benchmarking in Nigeria's water and sanitation sector. The findings summarized here should ultimately serve as a resource for utilities, the authorities, and stakeholders, as well as for donors who wish to monitor the performance and progress of each water provider as well as the sector as a whole.

Background

How the water sector got where it is today. Since 1991, the year of the major administrative reform that created new states and assigned responsibilities at the state level, water services have been an integral part of state responsibilities. The creation of state water boards (SWBs) and SWAs in 1997 was the very first step toward water reform in Nigeria. However, it stopped short of ring-fencing water operations and giving real autonomy to the new SWAs by spreading some water sector mandates across several government levels.

Water and sanitation as a shared public sector responsibility. Federal, state, and local government all share statutory responsibility for the delivery of WSS. Since the 1997 restructuring of the sector, all have been directly involved in WSS through government responses to community demand through elected representatives. The responsibilities are shared as follows:

- The FMWR is charged with policy advice and formulation, data collection, and monitoring and coordination of water resources development, of which water supply is a component, at the national level. It is therefore responsible for formulating national policy and coordinating the activities of all the SWAs in the country. Through its Department of Water Supply and Quality Control, it gives policy advice to states on water supply activities, issues related to expected levels of service (quality and quantity), standards for equipment and materials, guidelines on loan sourcing, and other technical information necessary for planning and effective operations.

- At the state government level, SWAs or SWBs are responsible for urban, semi-urban, and rural water supplies, although some states have separate agencies for supplying water to rural and to urban and semi-urban areas. SWAs give the FMWR basic information on all their current and proposed projects covering water supply sources, volume of water pumped, quantities of chemicals used, water quality, pipe types, sizes, and lengths, and any other information the FMWR might require. The SWAs also give technical support to local government authorities (LGAs) in planning, design, and supervision of their own water supply activities. The SWAs are intended to be autonomous and self-accounting, but for fast and effective decision making there is a supervisory unit headed by an official who outranks the SWA general manager.
- The 774 LGAs and local government councils (LGCs) are responsible for providing potable water to rural communities in their jurisdictions. However, because of the lack of funds and a gross shortage of staff in some areas this function has not been carried out effectively. The LGAs are responsible for keeping records of their water supply activities, especially operations, and making the information available to the State Supervisory Unit twice a year.

This division of responsibilities is clearly not neutral with respect to SWA performance, but it will be referred to in this report only when it is relevant to performance. This issue was also raised by federal and local governments and goes beyond the scope of this initial quantitative diagnostic. But how responsibilities are allocated is an issue that will eventually have to be addressed.

The Main Challenges Confronting the SWAs

Factors that explain SWA operational performance can be categorized in four main categories:

1. Accelerated urbanization
2. Lack of investments and investment projects
3. Institutional limitations, including some that prevented successful execution of an investment projects portfolio to expand and guarantee water supply for all
4. Fiscal constraints in a sector where incomplete cost recovery is the norm

Urbanization. Especially in recent decades SWAs have been struggling with accelerated urbanization and migration of population into the cities. Though the average urbanization rate used by SWAs to assess population under their nominal responsibility is 3 percent a year,¹ actual urbanization is much higher, especially in large cities, such as Abuja, Lagos, and a few others in the South region that are magnets for migrants. Although the number of people served continues to grow by millions of customers a year, on average coverage declines by 1 percent annually as urbanization moves too fast for SWAs to cope with. Thus more and more customers rely on alternative water providers

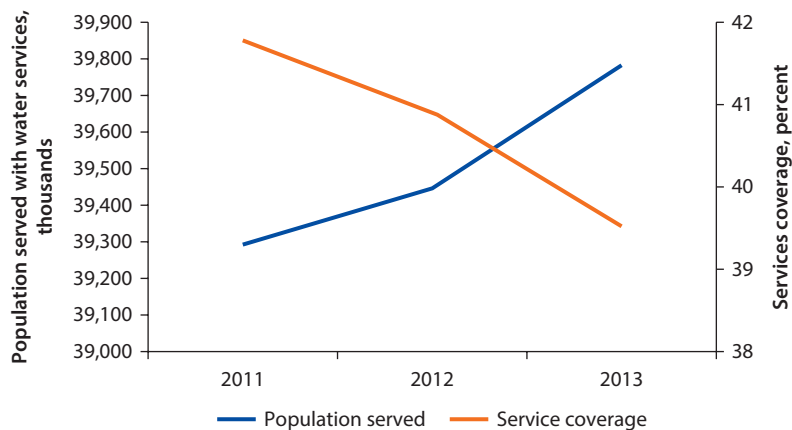
(see figure O.1). In extreme cases, as in Port Harcourt in 2013, private household solutions account for nearly 99 percent of the water supply, leaving the utility to supply just slightly more than 1 percent of households.

Currently, less than 40 percent of urban residents get water from state-controlled utilities; the rest get water from other sources and generally consume substantially less water than the World Health Organization (WHO) recommends while paying substantially more for this life-supporting service.² The national cost of water from alternative providers is estimated at US\$650–700 million a year—four times more than the combined revenue of all 35 SWAs. If this trend continues, within the next 10 years less than a third of the municipal population will get water from SWAs, and the costs will swell to US\$1.5–2 billion a year for just basic water services.

Investment. The lack of investment coupled with the lack of finances of most state water providers makes Nigeria’s water service unusually inadequate even when compared with much poorer African nations. Water consumption is adequate only in the North Central region, though it is close to the WHO recommendation of 50 liters per capita per day (lpcd) in the North East region. In all other regions consumption is significantly lower than recommended (figure O.2). Low consumption affects providers as well as users: Service below 50 lpcd does not correspond to the design standards for water supply systems—no utility can be sustainable and guarantee safe water when consumption is so low. There are, however, other elements of service that require swift attention and that need to be built into the assessment of investment needs. For instance, water services tend to be intermittent, with only Abuja (in the Federal Capital Territory) and Cross Rivers reporting 24/7 service; in the last three years, the national average has dropped below 12 hours a day.

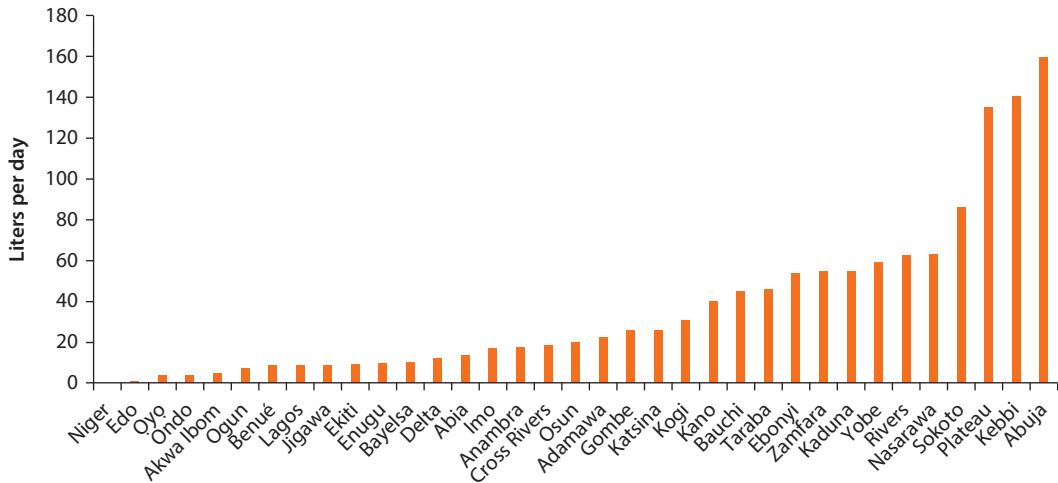
Institutions. Evolution of Nigeria’s water services has resulted in a situation in which each state has a unique institutional structure for service provision, tariffs

Figure O.1 Water Services Coverage



Source: International Benchmarking Network for Water and Sanitation Utilities (IBNET).

Figure O.2 Residential Consumption in Nigerian States, 2013



Source: International Benchmarking Network for Water and Sanitation Utilities (IBNET).
 Note: No data are available for Niger State.

and revenues, and principles of cost recovery and investment. Their autonomy is quite limited, however, since no water utility can borrow money or be made fully responsible for financial or investment support to water operations. The reason is that most such operations are delegated to other state agencies either by SWBs or state water ministries. There is also no mechanism to transfer federal financial resources directly to SWAs.

These limitations on SWA financial initiatives deter investment. The outcome is a lack of incentives for water providers to attract new customers. Every new (subsidized) customer means a loss to SWA operations. The quantitative evidence confirms the incentive problem: Only 17 of 35 SWAs reported having had investment projects valued at more than US\$10 million during the past 10 years; most of those that did were located in the North Central, North West, and South West regions. In the South East on average no such investments had been made for more than 15 years. Eight SWAs had had no investment projects since they were created in 1991. Only 22 of the 35 SWAs studied have continuing projects, but none was created by a utility. Also, none of the current or past projects had an investment value above US\$25 per customer; the WHO Guide on estimating costs of supply interventions suggests that an average one-time cost of about US\$50 is required for connecting an individual to the water supply system.³

Financial autonomy. To establish incentives for good performance, some SWAs, such as Lagos and Abuja, were given some autonomy and converted into corporations. In many others, support to water providers was extended to cover their investment costs and slowly assume all or a significant proportion of operation and maintenance costs. Some states moved further into the decision process; today many SWAs neither issue bills nor collect payments. Nor do they engage in any actions beyond technical operation of facilities and networks.

The fiscal dimension. The SWA cost recovery ratio is about 63 percent. This means that state authorities are actively subsidizing utilities by paying a large part of their operational costs, such as labor, electricity, and chemicals, in addition to any direct money transfers to the SWA from the state government. The annual investment subsidy averages about US\$75–80 million, and the subsidized costs of labor, electricity, chemicals, and third parties are in the US\$70 million range. No SWA recovers these costs: subsidies are passed on to customers through free water, below-cost tariffs, and noncollection of bills. Such implicit subsidies cost the sector about US\$100–110 million a year and do not help balance the finances of state water providers, or the sector as a whole.

What Does All This Imply for the Next Reform Steps?

Despite the many information gaps exposed by the diagnostic, the information collected has made it possible to identify a number of dimensions that are directly relevant to the debate on sector reform. Among them are the need for more precise estimates of the cost of achieving full coverage, more transparent assessment of the scope for financing, ideas for how to complement the funding sources available, and finally a clearer sense of the institutional dimensions of the challenge. The main insights can be summarized as follows:

The Magnitude of the Challenges

- It is necessary to institutionalize a federal performance benchmarking system. The report confirms that many utilities are able to collect and report performance information but their reports need to be analyzed at the federal level. It is also important to go beyond SWAs to reach informal providers, water vendors, and self-provision in order to get a comprehensive picture of the urban water situation.
- The magnitude of the reforms needed may have been underestimated. The current investment path is not aligned with the evolution of demand. It seems evident that the urban water supply is struggling to cope with intensive urbanization and the constant movement of Nigerians within the country.
- Between 2011 and 2013 about 1 million new customers were connected in the 35 SWAs but there were about 9 million new urban dwellers. Because urban growth is outstripping new water connections, urban water coverage dropped by almost 3 percent, to less than 40 percent. At the current rate, within 10 years water coverage may drop below 30 percent and only 20 percent of urban residents will have a direct water connection.
- The current rate of investment, US\$70–80 million a year, is not enough to maintain sector performance. Moreover, 10 years is the average age of the most recent SWA investment projects, and 18 SWAs have never had an investment project valued at more than US\$10 million.
- To achieve universal water supply, the country needs to invest about US\$6 billion within the next 10 years (see appendix I). It is estimated that even the less ambitious goal of connecting all current municipal residents

would cost US\$2.9 billion. It will also require construction of 20–30 water treatment plants to guarantee the needed volume and at least 100,000 kilometers of additional mains to carry the water to customers.

The Scope for Financing

- There is evidence that customers could contribute to utility financial requirements because they already pay a lot more for alternative sources, such as dealing with informal water providers or constructing and maintaining their own wells and roof tanks. The national cost for getting water from alternative providers is assessed at US\$700 million a year and growing. This flow could be diverted into a significant source of SWA investment financing.
- Even if full cost recovery may be unrealistic in the short to medium run, better cost recovery would help in 26 states (in 2011 the country average was 63 percent, but it varied from 0 in Bayelsa, where water is free, to 250 percent in Abuja). This is why subsidies in a form of payment for labor, electricity, and chemicals may need to cover explicit costs for some time.
- Subsidies are already quite substantial. Utilities receive about US\$100 million in operational subsidies. In terms of the financing margin an investor would look for, these US\$100 million flows added to the US\$700 million in flows diverted from alternative providers could be used to invest in the sector.
- An option to help mobilize the additional resources needed would be to create a national water fund to identify, assess, and help market a pipeline of investment projects, based on reported performance, objective needs, and guarantees from the states that infrastructure built will be properly financed, operated, and maintained.

The Need for Better Institutions

- In terms of data acquisition, the government understands the need to establish a baseline and monitor progress. This is a first step in establishing well-thought-out investment programs based on objective information and reporting on performance.
- Excessively complex tariff structures in many SWAs confuse consumers and risk encouraging corruption through assignment of consumers to categories with lower tariffs.
- Improving the transparency of financing will require significant improvements in processes and institutional responsibilities, which may need to be addressed explicitly as part of the reform agenda. For instance, it may be necessary to require adherence to international accounting standards.
- If states are expected to make good decisions to increase investments in the sector, they and their SWAs need to get ready to do so, with a special concern for the financial sustainability of future investments and the implications for tariff policy and state subsidies.
- Targeted use of private sector participation (PSP) and public-private partnerships (PPPs) could be effective. If the private sector is considered as a complementary financing source that can be tailored to the state context and

vision, it is likely that reforms will also have to (1) grant SWA management more autonomy and (2) clarify the rules governing the relationship between the state government and SWAs to heighten predictability and specify how power is to be shared for decisions that rest with the state government while responding to local preferences for the organization of service delivery.

- Since reforms could lead to a variety of institutional arrangements, all SWAs need not necessarily be corporations with private participation as in Lagos. However, in all cases, the rules need to be clear, predictable, and enforceable, and the SWAs will need to have enough autonomy to be able to adapt to changes in needs and move forward their plans and objectives for service delivery.

Notes

1. <https://www.cia.gov/library/publications/the-world-factbook/fields/2212.html>.
2. Drinking, sanitation, and hygiene needs constitute the basic human survival needs for water. Supplying these minimum needs requires about 50 liters per person per day. <http://www.waterencyclopedia.com/St-Ts/Survival-Needs.html#ixzz3L9RXR0Aj>.
3. http://www.who.int/water_sanitation_health/economic/chapter7.pdf.

Nigeria's Water Sector

Nigeria is the most populous country in Africa, and the continent's largest economy ("Africa's New Number One" 2014). It has an estimated population of about 162.5 million people, half of whom live in urban areas. It also has one of the fastest-growing economies in the world: gross domestic product (GDP) growth in 2013 was about 5.4 percent and GDP was nearly US\$509 billion. The economy is becoming more diversified and complex, with agriculture, oil and gas, and trade now covering only 54 percent of the inputs rather than 85 percent as before.¹

In spite of its relatively strong economic track record, Nigeria is still confronting significant development challenges. Constraints to enhanced growth have been linked to, among other things, the investment climate, infrastructure, incentives and policies that affect agricultural productivity, and the quality and relevance of tertiary education. Poverty is high: on the Human Development Index,² Nigeria ranks 152nd, and there are major disparities between and within its regions and states. Fifty-five percent of the total population and over 75 percent of agricultural households in the north live below the poverty line, and the northern part of the country performs below the national average on most development indicators.

Nigeria appears not to be on track in terms of access to adequate infrastructure, despite its economic growth and the huge investments that have been made in ensuring safe and reliable water supply and sanitation services (WSS).³ According to the 2014 update to the WHO/UNICEF Joint Monitoring Program (JMP) report *Progress on Drinking Water and Sanitation*, access to reliable water sources in Nigeria's urban areas has barely changed, from 78 percent in 1990 to 79 percent in 2012. Moreover, these numbers do not guarantee that all those with access are connected to a dedicated point on their premises through a state water agency (SWA) network: JMP data also show a significant decline in the proportion of households with access to piped water to premises, which dropped from 33 percent in 1990 to 6 percent in 2012. Over the same period other non-utility-improved water sources, such as boreholes in

compounds, climbed from 45 percent to 73 percent. In Port Harcourt, private household solutions or self-provisioning accounted for 99 percent of water supply; the SWA served just 1 percent of households.⁴ For this report, however, the team studied only water services provided by SWAs; because all the indicators discussed, including coverage, refer only to SWAs, they differ from those of the JMP.

The government sees the water sector as fundamental for the country's development and has made the provision of water and basic sanitation the responsibility of the Federal Ministry of Water Resources (FMWR) and state and local agencies. The FMWR is responsible for formulating and elaborating policies and guidelines in consultation with stakeholders. It also provides technical assistance to state and local governments on promoting water and sanitation activities, monitors and evaluates water services, and coordinates the water-related activities of development partners. State and local governments are responsible for establishing agencies for planning, provision, and supervision of water and sanitation services.

Over the last 10 years, with the support of international partners the government has invested in both water infrastructure and sector reforms. The 2000 *National Water Supply and Sanitation Policy* promoted affordable and sustainable provision of safe water and adequate sanitation for all. Additional federal documents, such as the *National Low Income Household Strategy for Water Supply and Sanitation*, the *Model Water Supply Service Regulatory Law*, the *Framework for Public Private Partnership in Water Supply*, and *National Water Sanitation Policy* have been drafted to support reforms.

Responsibilities for providing water and sanitation service in urban areas are delegated to SWAs or water boards depending on the geographic subdivision. Usually SWAs are responsible for establishment, operation, quality control, and maintenance of urban and semi-urban water supply. However, this responsibility is often only nominal.⁵ In most rural areas provision of water supply is the responsibility of local government authorities (LGAs). There are 37 water agencies in Nigeria, one for each state and one in Abuja. Most of the SWAs in the South region, such as Lagos and Port Harcourt, and a few in the North region, such as Abuja, although fully owned by the state government are established as corporations and operate under corporation law. The others belong to a state and are run according to civil service rules as part of the state government. Generally, each SWA is established by an edict to develop and manage water supply facilities within its state and to meet sound financial objectives. Because the SWAs also bear primary responsibility for proposing reviews of water tariffs, tariff structures differ around the country and at the central government level. Moreover, there is no regulation or incentives to set tariffs that would help urban water utilities more effectively achieve financial sustainability. In some states, SWAs do not serve certain areas where alternative providers operate. The SWAs in most cases are thus not financially viable and have serious operating problems, notably lack of financial and operational autonomy, legal and regulatory constraints, and lack of expertise, to mention only a few.

With the exception of Abuja and Lagos, university campuses and industries in Ibadan, Lagos, and Zaria, and a sewerage treatment plant in Port Harcourt, there are virtually no functioning sewer networks or treatment facilities in Nigeria. There is heavy dependence on on-site sanitation, and in most states where the responsibility lies for providing sanitation services is not clear. Except for Abuja, Lagos, and Port Harcourt (Rivers), however, the SWAs are also responsible for wastewater disposal in urban areas connected to the network.

Context

The World Bank Group engagement with the water sector in the country started more than a decade ago and has focused not only on building infrastructure but also on providing support for needed reforms. Of the three major World Bank projects, one, launched in 2004, has been completed, the second, approved in 2005, continues, and the third, which was just approved in June 2014, centers on supporting sector reform. The first two projects were directed to improving SWA reliability and financial viability and increase access to piped water in certain urban areas. The beneficiary states were mainly Kaduna, Ogun, and Enugu in the first Nigeria Urban Water Supply Reform Project (NUWSRP I); and Lagos and Cross Rivers in the second one (NUWSRP II). The first NUWSRP was completed in 2013 and even though there are still questions about the financial viability and sustainability of the beneficiary SWAs, progress was made on service reliability and access to water supply. NUWSRP II is still active, with additional financing provided in 2012.

The new NUWSRP III aims to improve the coverage, quality, and efficiency of water utilities in Ekiti, Bauchi, and Rivers.⁶ It also has an institutional component—to support reforms and build capacity in nine states (Abia, Anambra, Bayelsa, Benué, Gombe, Plateau, Jigawa, Kano, and Ondo) and at the federal level, monitor the performance of SWAs and create a sector financing model, with the option of a water fund.

To better inform preparation of the NUWSRP III, in 2011–13 performance data from 35 SWAs were collected and analyzed. The analysis results were used as a criterion for eligibility for funding for large project infrastructure investments. This exercise helped to train staff of the FMWR and SWAs on how to monitor and evaluate SWA performance. Additional data later collected on tariff and governance are presented in this report.

The report is intended to fill a knowledge gap in terms of understanding how the urban water sector in Nigeria is evolving. It is also an attempt to inform federal and state governments, international organizations, and donors on SWA operational challenges and opportunities to invest in reforms and finance infrastructure. It is thus an overview of the performance and current achievements of water and sanitation services provided by the 35 SWAs and how they are organized.⁷ It also reports on the analysis of governance aspects and tariff systems in place and attempts to show the influence that the water sector may have on the local economy.

Study Objectives

The main objective of this study is to inform the federal government about the status of the urban water sector, specifically aspects of SWA performance, tariff structures, and governance of SWAs, state water boards (SWBs), and state government. The study will also inform the government about the associated service costs, costs to customers, sector subsidies, and investments in SWA operations and maintenance.

Methodology

This study started with assessment of the performance of water utilities using the data toolkit of the International Benchmarking Network for Water and Sanitation Utilities (IBNET). However, to better assess what and how other factors influence service to customers while ensuring that SWAs are sustainable in the environment in which they operate, it was necessary to look at other factors that may have implications for service provision. It was also necessary to assess the cost implications to determine whether SWAs would be able to provide better service to consumers.

This assignment therefore had four independent components so as to view Nigeria's water sector from a variety of perspectives: (1) SWA performance assessed using IBNET benchmarking tool; (2) a tariff evaluation study; (3) an assessment of SWA governance; and (4) an economic assessment that reviewed how costs of current services are covered and the costs that would be entailed in providing services to all.

Collection and Analysis of Performance Data

The IBNET toolkit for data collection was used to collect raw data on utility performance (see IBNET indicators, table 1.1).⁸ The toolkit was provided to the 35 participating SWAs at training workshops in Abuja in 2012, 2013, and 2014. During these sessions, data quality was also assessed and verified in terms of the IBNET data quality protocol. Data received from SWAs were checked for inconsistencies and quality was controlled for before the analysis. At the 2014 workshop, results of the analysis of the 2011 through 2013 data were presented for review and discussion (see appendix B). Workshop participants were mainly SWA general managers and monitoring and evaluation officers.

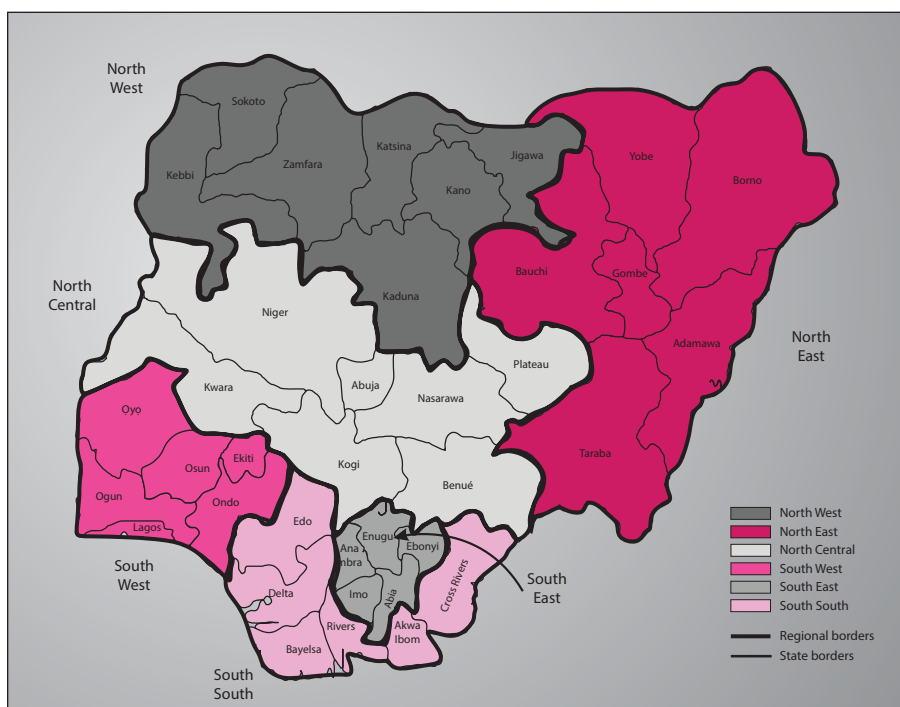
Sample Definition

The basis for the analysis was IBNET reports from 34 SWAs and the Federal Capital Territory (Abuja) water company. The states of Kwara and Ebonyi did not participate. SWAs significantly vary in the scope of their operations: the Bayelsa, Lagos, Katsina, and Delta SWAs serve only the state capitals, while Ondo reports providing water to almost 1,800 towns and settlements. However, the vast majority serve 20–50 cities and towns. There are significant regional differences due to development status and history. Nigerian states are aggregated into

Table 1.1 Selected IBNET Indicators, Selected Nigerian SWAs, 2011–13

<i>IBNET indicators</i>	2011	2012	2013
1.1 Coverage	42%	41%	40%
1.2 Coverage with direct supply	28%	28%	27%
1.3 Coverage with standpipes, kiosks, etc.	14%	13%	13%
4.1 Consumption total, lpcd	35	36	34
4.7 Consumption residential, lpcd	26	26	26
4.3 Residential consumption	70%	66%	69%
15.1 Hours of operations per day (average)	12.5	12.3	12.8
6.1 Unaccounted losses	40%	34%	39%
6.2 Unaccounted losses, m ³ /km of the network a day	55	44	44
11.1 Production cost, US\$/m ³	0.51	0.53	0.57
18.1 Revenue billed, US\$/m ³	0.29	0.29	0.27
23.2 Collection rate	54%	60%	57%
24.1 Cost-recovery ratio	0.65	0.59	0.63
100.1 Female staff	16%	16%	18%
100.2 Female staff salary vs. average salary	15%	10%	17%

Note: IBNET = International Benchmarking Network for Water and Sanitation Utilities; lpcd = liters per capita per day; SWAs = state water agencies.

Map 1.1 Nigeria Regions and States

Source: Renaissance Capital. 2013. "Nigeria Unveiled: Thirty Six Shades of Nigeria."

six regions (map 1.1): North Central (NC), North East (NE); North West (NW); South East (SE); South South (SS); and South West (SW). There are patterns in governance structure and performance that are related to the north-south divide. The regional structure goes back to the administration boundaries that prevailed in the early years of independence. As a result, the new states within each former

Table 1.2 Geographic Distribution of State Water Agencies, Nigeria

<i>North region</i>			<i>South region</i>		
<i>North Central (NC)</i>	<i>North East (NE)</i>	<i>North West (NW)</i>	<i>South East (SE)</i>	<i>South South (SS)</i>	<i>South West (SW)</i>
Benué State Water Board (SWB)	Adamawa SWB Taraba State Water Supply Agency	Kaduna SWB Kano SWB Sokoto SWB Zamfara SWB	Anambra State Water Corporation	Akwa Ibom Water Company Ltd. Delta State Urban Water Board	Ekiti State Water Corporation Ogun State Water Corporation
Federal Capital Territory (Abuja) Water Board	Bauchi Water and Sewerage Corporation	Kebbi SWB Jigawa SWB Katsina SWB	Enugu State Water Corporation Imo State Water Corporation	Edo State Urban Water Board Port Harcourt Water Corporation	Ondo State Water Corporation Osun State Water Corporation
Niger SWB Plateau SWB Kogi SWB Nasarawa SWB Kwara	Yobe State Water Corporation Gombe SWB Borno SWB		Ebonyi State Water Corporation Abia SWB	Bayelsa SWB Cross Rivers SWB Ltd.	Lagos Water Corporation Water Corporation of Oyo State

Note: Ebonyi State Water Corporation and Kwara did not provide data.

region have similar institutional and governance structures, making it possible to group utilities by region (table 1.2).

Data Quality

All participating SWAs, FMWR staff, and the Bank team made every effort to keep data quality high. All information was reviewed, analyzed, and corrected as needed, and then returned to SWA data collectors for additional quality review and verification. Two special data accreditation exercises were conducted to address and improve data quality at the utility level. In some cases, a substantial proportion of the data requested was beyond SWA ability to provide due to institutional and other limitations, and this is noted in the assessment. For example, only nine utilities meter water usage; the country average for metering is 16 percent, and only three states bill based on metered usage (Abuja, Oyo, and Cross Rivers, and a tiny part of Lagos). Because production is metered only in Abuja, Lagos, Cross Rivers, Enugu, Ogun, and Kaduna, most of the water volume data are engineering estimates (see appendix A).

Data were collected in three annual rounds with special sessions on data verification. It was agreed with FMWR that for the data collection exercise starting in 2014, data collection and data quality verification would be formally carried out by the ministry.

Economic Assessment of Water Sector Performance

The intent of this assessment was to understand the economic impact of Nigerian urban water provision on the sector's performance and on users. The assessment covered, among other areas, the economic effects of water sector performance on its sustainability; costs to customers; subsidies to the sector, both direct and implicit; and large investment needs—with associated operational and

maintenance costs. All of the data used in this analysis were taken from the IBNET online database for 2013 (see appendix H).

Tariff Evaluation

For this part of the assessment, which was mostly a desk review, SWAs provided their approved tariff structures, which were discussed with the SWAs and FMWR before analysis. The methodology was to collect information not only on the actual tariff structures but also on political economy factors that influenced tariff systems, such as any competition from alternative service providers. Among the recommendations of the study are several on how to better draw up tariff schemes that would best achieve the desired outcomes of cost recovery and financial sustainability (see appendix G).

SWA Governance

To assess governance, a questionnaire was drafted which the SWAs completed and submitted during the 2014 workshop in Abuja.⁹ The questionnaire dealt with four areas: (1) general institutional arrangement, (2) financing and spending, (3) investments, and (4) customer relations. The workshop provided a brief introduction about the general concepts and clarification of the scope of the questionnaire modules. This information was then analyzed for a rapid institutional and governance assessment (see appendixes C, D, E, and F).

Structure of the Report

In what follows, chapter 2 describes the institutional and governance structure of the sector and issues related to the prevailing tariff systems. Chapter 3 presents the findings on sector performance. Chapter 4 presents conclusions about the effects of current water policies and recommendations on the tariff regime and financing mechanisms. Finally, the appendixes substantiate the chapter discussions, providing most of the information collected from the SWAs that stakeholders may use to benchmark their own performance.

Notes

1. Data are from the World Development Indicators database, World Bank; and the Nigeria Economic Report, World Bank, July 2014.
2. United Nations Development Programme's (UNDP's) *Human Development Report*, 2014.
3. According to the *MDG Report 2014* on Africa, in Nigeria, the total coverage for water in 2012 was 64% and for sanitation 27%. In urban areas, the coverage for both water and sanitation are slightly higher at 79% and 31%, respectively.
4. "Delivering Water, Sanitation, and Hygiene in Fragile and Conflicted Affected States: Learning Review of WSP's Technical Assistance Program," P131964, Water and Sanitation Program, World Bank, 2014.

5. In 2013, for example, Port Harcourt Water Corporation served just over 1 percent of its nominal constituency, and Abia State Water Board served about 25 percent. All other customers either self-served or secured water from informal providers. In Bauchi the Water and Sewerage Corporation serves only 4 of the 20 towns in the state.
6. The project was approved by the board of the World Bank in June 2014 and is effective from February 2015.
7. Nigeria is made up of 36 states and the Federal Capital Territory (Abuja). Although all 37 SWAs were always invited to participate in the workshops, only 35 consistently provided data; Kwara never participated or submitted data. Borno participated in 2014 and submitted performance data for 2011 plus information on governance.
8. For more information on IBNET, its scope, and methodology, visit <http://www.ib-net.org>.
9. Ebonyi and Kwara SWAs did not participate or respond to the questionnaire.

Reference

- "Africa's New Number One: Nigeria's Suddenly Supersized Economy Is Indeed a Wonder; but so Are Its Still-Huge Problems." 2014. *The Economist*, April 12. <http://www.economist.com/news/leaders/21600685-nigerias-suddenly-supersized-economy-indeed-wonder-so-are-its-still-huge>.

Water Sector Institutions and Governance

Water governance refers to the “range of political, social, economic and administrative systems that are in place to develop and manage water resources, and the delivery of water services, at different levels of society” (Rogers and Hall 2002). However, given the scope of this study, it was not possible to address all aspects of governance. Governance in water sector is here viewed more in terms of the institutional, economic, and administrative systems in place, with some consideration of the social aspects. First, the institutional background is briefly described, then current governance is assessed, with a discussion of how state water agencies (SWAs) operate and interact with state governments (SGs) and local governments. This is followed by a description of how institutions manage revenues, tariffs, spending, investments, and customer service.

Institutional Arrangements

The Federal Ministry of Water Resources’ (FMWR) 2000 *National Water Supply and Sanitation Policy* defined the roles of the different tiers of government in Nigeria: The three levels of government—federal, state, and local—share statutory responsibility for the delivery of water and sanitation services.

Federal Government

Through the FMWR, created in 1975, the federal government is responsible for formulating and coordinating national water policies; managing water resources, including allocations to states; and approving development projects. It is also responsible for data collection, resource and demand surveys, monitoring, evaluation, and coordination of water supply development and management, research and development, national funding and technical support, and creation of an environment that will, among other factors, enable meaningful private participation. The federal government also operates through all 12 River Basin Development Authorities (RBDAs), created in 1976 to plan and develop water resources, handle irrigation, and collect hydrological, hydrogeological, and meteorological data.

The main involvement of RBDAs in potable water supply has been building multipurpose dams and supplying water in bulk to some urban water systems. Finally, the federal government also operates the National Water Resources Institute, established in 1985 as a branch of the FMWR, which is responsible for engineering research related to major water resource projects and for training sector professionals and technicians.¹

While the responsibility of the FMWR for water supply is clear, the responsibility for sanitation is shared between several federal ministries, among them those for health and the environment. On the operational side, the responsibility is shared between local governments and the ministries or state agencies usually responsible for health, water resources, and environment.

State Governments

SGs through such agencies as water supply authorities, state water boards (SWBs), and the Small Towns Water and Sanitation Agency are responsible for the establishment, operation, quality control, and maintenance of urban and semi-urban water supply systems and in some cases for rural supply. They are also responsible for licensing and monitoring private water suppliers, monitoring the quality of water supplied to the public, and providing technical assistance to local governments. Responsibility for potable water supply was traditionally entrusted to departments of SGs. As the importance of drinking water supply grew during the 1970s, most water departments were gradually transformed into SWAs, one per state plus the Federal Capital Territory (Abuja), for a total of 37. Generally, SWAs were established by edict to develop and manage water supply services within a given state and to meet sound financial objectives. The SWAs are accountable to SGs, generally through a state Ministry of Water Resources. In some states, responsibilities for rural water supply remain with or have been transferred back to the SG or a rural water supply and sanitation agency.

Local Government

The local government through local government authorities (LGAs) and local government councils, of which there are 774, are responsible for establishing, operating, and maintaining rural water supply and sanitation facilities in conjunction with the beneficiary communities. They also have the responsibility to establish, equip, and fund water and environmental sanitation departments. However, only a few have the resources and skills to address their tasks. Moreover, not all LGAs have rural water supply divisions that can construct small water systems, such as open wells and impoundments of surface water. As a result, they cannot carry out their activities effectively, and some are handled by state institutions.

Current Governance

Institutional Setting

SWAs were established over time (table 2.1) to develop and manage urban water supply and sanitation services within a state. Of 32 SWAs, 10 (31%) were

Table 2.1 Longevity of SWAs

<i>When created</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Total</i>
In the last decade	0	1	0	0	1	1	3 (9%)
10–20 years ago	1	1	2	3	3	0	10 (31%)
More than 20 years ago	3	0	4	1	0	2	10 (31%)
No answer	2	2	1	0	2	2	9 (28%)

Note: *N* = 32. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Table 2.2 Cities and Towns within SWA Areas of Service and Number Served

	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Total</i>
Cities and towns for which SWA is responsible ^a	1,162	106	745	107	169	1,116	3,405
Cities and towns actually served by SWAs	1,031	76	732	33	124	353	2,349
Percentage	89	72	98	31	73	32	69

Note: *N* = 34. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

a. In 2013, Ondo (SW) was formally responsible for 1,823 settlements, Kano (NW) for 585, and Abuja (NC) for 858.

created 10–20 years ago and another 10 more than 20 years ago. Only 3 were created in the last decade—Rivers (2012), Ogun (2006) and Lagos (2004); these may have more modern institutional settings and more management autonomy than the others.

Altogether SWAs reported being responsible for 3,405 cities and towns but actually served only 69 percent of these (table 2.2). There are, however, a few outliers whose coverage is particularly narrow (5–15 percent). This suggests that resources provided for water-related investments over time were limited compared to the original commitment of an SWA at its creation; it may also suggest a lack of political will in the SG or simply unrealistic expectations for the extent of services that could actually be delivered.²

Legally, SGs control the SWAs fully or partially through administrative or federal mandate. Only 5 of 34 SWAs are corporations that issue shares, but these in fact are state-owned enterprise (SOEs) because SGs own 100 percent of the shares in four of them and 90 percent in the fifth. Every SWA except Borno State has a board, which is dominated by government and political appointees, though some members may be consumers or represent the private sector (table 2.3). However, only three SWA boards have consumer members and only eight have private businesspeople as members. The SWA general manager is a member of the board in only 14 SWAs, which suggests that interaction between SWAs and the SWBs is minimal.

Although 12 of the 35 SWAs are legally corporations, only 4 stated they were corporations when asked about legal status. Moreover, most decisions are made by the SG jointly with the board, which shows how dependent SWAs are on SGs.

Day-to-day SWA management is handled by the general manager, who in all cases is appointed (and dismissed) by the SG. Boards of only eight SWAs reported proposing candidates and only two participated in the final decision. Moreover,

Table 2.3 SWAs That Issue Shares and Board Composition

	NC	NE	NW	SE	SS	SW	Total
SWAs that issue shares ^a	1	1	0	1	2	1	6 (18%)
Boards with consumer representatives	0	1	0	1	0	0	2 (5%)
Boards with political representatives	3	4	1	2	1	4	15 (44%)

a. *N* = 34. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Table 2.4 Number of SWA Civil Servants and Human Relations Autonomy

	NC	NE	NW	SE	SS	SW	Total
SWAs with staff that are civil servants	6	6	6	2	3	4	27 (77%)
SWAs with no autonomy to hire staff	6	6	2	2	5	2	23 (66%)
SWAs consulted when hiring new staff ^a	2	3	4	3	5	2	19 (54%)

Note: *N* = 35. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

a. *N* = 28.

only in two SWAs did the board have jurisdiction to dismiss a general manager (one of them only in agreement with the SG). It appears from the data that general manager turnover has been high for the last decade, with a change in management on average about every three years. This may be more due to seniority situations rather than manager competence and vision: Retirement was the reason for a third of the SWA manager changes (13 of 29). The other two-thirds cited human resource (HR) management issues, such as end of the contract term approaching or transfer or promotion of the departing SWA manager.

As civil servants, SWA staff are at least implicitly employed by the SG. It appears from the data that usually staff are not only paid but also hired and dismissed by the SG. SWAs have no authority to hire or dismiss staff and are rarely consulted on staff hiring (see table 2.4).

Mostly SWAs are accountable to the SG, not the SWA board. In fact, in practice SWAs are accountable to the State House (the governor) and the federal government. Only two indicated they were accountable to the SWA boards. Four SWAs mentioned direct reporting to the state legislature in addition to reporting to the SG. Their reports are largely limited to operations, planning, and finance—mostly internal reporting except for Finance, where eight SWAs were audited, four by independent auditors and the rest by SG auditors.

SWAs were asked whether they report on different categories and to which agencies they report. Table 2.5 presents details on the areas SWAs report on, apart from finance, operations, and planning. For instance, only 22 SWAs responded to the question whether they report on environmental issues—16 do and 6 do not. When asked to which agencies they reported on different categories (table 2.6), 34 report on all to the SG and only 1 reports on operations to the federal government and donors.

In most cases SWA disclosure to the public is limited, even though in a democracy like Nigeria information on spending, cost recovery, service delivery,

Table 2.5 SWA Accountability by Reporting Category

	NC	NE	NW	SE	SS	SW	Total
Environment (N = 22)	3	1	3	1	4	4	16 (73%)
Land (N = 15)	0	1	4	1	3	4	13 (87%)
Labor (N = 19)	3	2	4	3	3	4	19 (100%)
Operations (N = 29)	4	5	6	3	5	6	29 (100%)
Finance (N = 30)	6	4	6	3	6	5	30 (100%)
Annual planning (N = 28)	4	4	6	4	4	5	27 (96%)
Strategy (N = 25)	3	1	4	3	5	5	21 (84%)
Tariff (N = 16)	3	2	4	1	3	3	16 (100%)
Technical (N = 16)	3	2	5	0	3	3	16 (100%)
Human resources (N = 10)	0	3	1	1	2	1	8 (80%)
Local government authorities (N = 14)	1	—	1	1	2	2	7 (50%)
Customer (N = 14)	2	1	2	2	2	2	11 (79%)
House (N = 4)	0	0	0	1	0	0	1 (25%)
Water quality (N = 1)	0	0	1	0	0	0	1 (100%)

Note: — = not available. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Table 2.6 SWA Accountability by Reporting Category and Agency

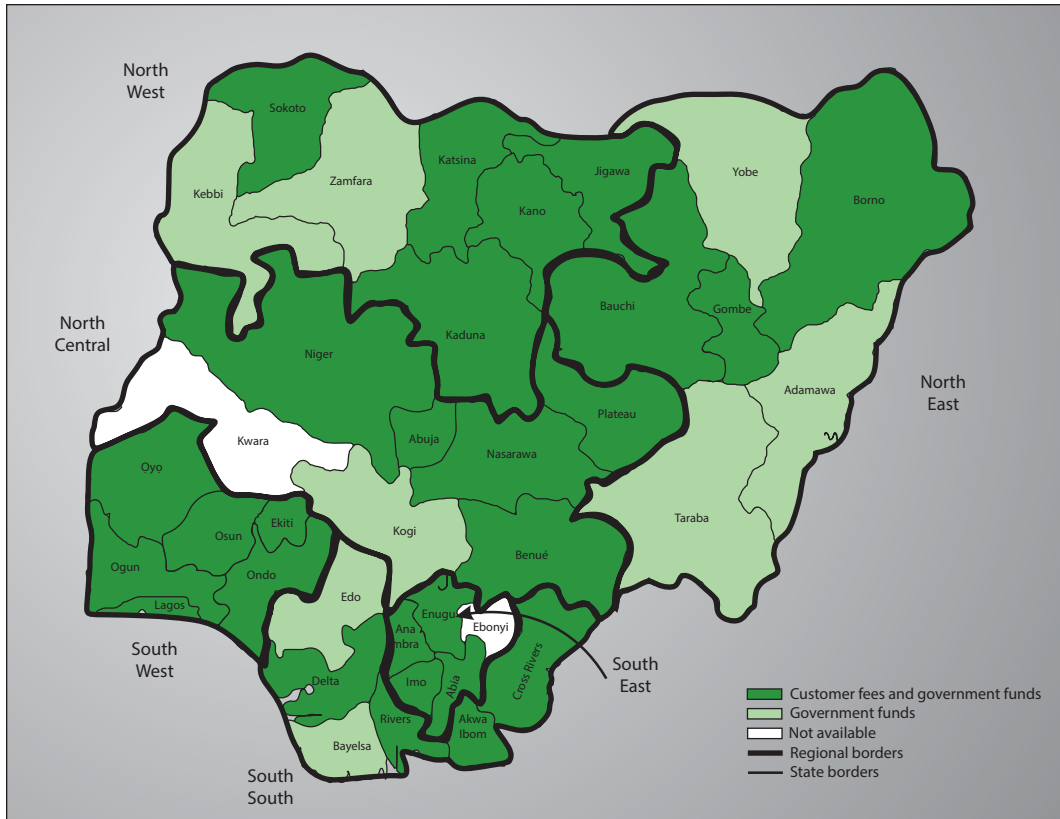
	Agencies reported to									
	1	2	3	4	5	6	7	8	9	10
Environment (N = 16)	14	10	3	1	0	0	1	0	0	1
Land (N = 13)	12	9	3	0	0	0	0	0	0	1
Labor (N = 19)	19	15	3	1	0	0	0	0	0	0
Operations (N = 23)	23	15	4	2	1	1	2	2	1	0
Finance (N = 29)	28	23	3	0	1	1	1	0	0	1
Annual planning (N = 30)	23	17	2	0	0	4	2	0	0	0
Strategy (N = 27)	18	13	4	0	1	0	1	0	0	2
Technical (N = 16)	16	12	4	0	0	0	0	0	0	0
Human resources (N = 8)	5	5	0	0	0	0	2	0	0	1
Total (%)	88	66	15	2	2	3	5	1	1	3

Note: 1 = All state governments (SGs) and the Federal Capital Territory (FCT; Abuja); 2 = Only SGs/FCT; 3 = SGs and State Water Board (SWB); 4 = SGs and federal government (FG); 5 = SGs and donors; 6 = SGs and State House; 7 = SWB only; 8 = State House only; 9 = FG and donors only; 10 = Did not provide data of who was the reporting party. SWA = state water agency.

and planning (by default) should be disclosed to the public. Only 38 percent of SWAs report to the public, more often on finance (47 percent) and annual planning (59 percent) than on other categories; for instance, although 62 percent (18 of 29) report on operations, none of those reports was made the public.

Revenues, Tariffs, and Spending

SWAs have limited financing and spending capabilities because the SGs supply most of the funds for daily operations, expenses, and salaries. For no SWAs are customer tariffs and fees the sole source of income. Map 2.1 shows the main

Map 2.1 Main Sources of State Water Agency Income

sources of income for urban utilities in Nigeria. Even those that do collect customer revenue still largely depend on SG transfers to cover all operational expenses. Map 2.2 shows who is responsible for collecting tariffs from customers. Even though 28 of 35 SWAs (80%) claim that customer tariffs and fees are one of their main sources of income, in some of these the SG does the actual collections. In those cases tariffs and fees are, like taxes, more motivated by SG political decisions than by recovery of water distribution costs. When the tariffs and fees collected are not enough to cover operational costs, as is usually true, the deficit is covered by the SG through subsidies.

Nigeria generally lacks an explicit water tariff policy. The original 2000 *National Water Supply and Sanitation Policy* promulgated by the FMWR contains only oblique references to tariff policies. The 2004 *National Water Policy*, updated in 2009, repeats the “affordability” criterion and adds that operators should be allowed to raise revenue to allow them to break even financially. It is therefore not surprising that water tariffs vary significantly from state to state. While Bayelsa, Benué, and Zamfara provide water free to residential consumers, others charge based on groupings of customers, which can mean they have 20 or more different tariff schedules. Consumption metering and

billing is operational only in Cross Rivers (100 percent of connections), Abuja (86 percent), Kano and Oyo (35 percent) and parts of Lagos State (1 percent). In most other areas a variety of tariffs are set in the form of taxes on specific municipal industries.

Generally, since there are few reliable commercial systems with monitored meter readings, customer bills are not related to service actually provided. From the performance data collected, it appears that less than 20 percent of water sold is metered. In fact, the share of sales related to consumption that is reliably metered may be lower than reported since so few cities and states use metering, which may lead both SWA staff and consumers to estimate tariffs inaccurately (for tariff system details, see appendix G).

On the question of setting tariffs, SWAs reported that not only do they not have power to set tariffs, they do not regularly review them. SGs set tariffs for SWAs, and it is not clear who is responsible for regular tariff review. On the questionnaires, 16 SWAs (46 percent) reported that their tariffs had been reviewed in the previous four years and 10 (29 percent) had not been reviewed for four years or more (see table 2.7).

When water is seen as an economic good, customers are charged for the service, and providers issue bills to all customers and then collect the revenue. In Nigeria, however, not all SWAs follow this practice. In fact, only 18 of 35 SWAs (51 percent) reported that they issue the bills, and 2 of these do not collect the payments. In all, 17 SWAs, 5 of them in the North West region, reported that they do not issue bills or collect payment from customers (see table 2.8).

Of the SWAs that issue bills to customers, 10 (30 percent) reported that not all customers get invoices and those that do are mainly fire departments, schools, hospitals and public buildings, and offices. However, only 5 of the 10 that do not issue bills to all customers stated that they receive compensation from the SG. The

Table 2.7 Last Tariff Review

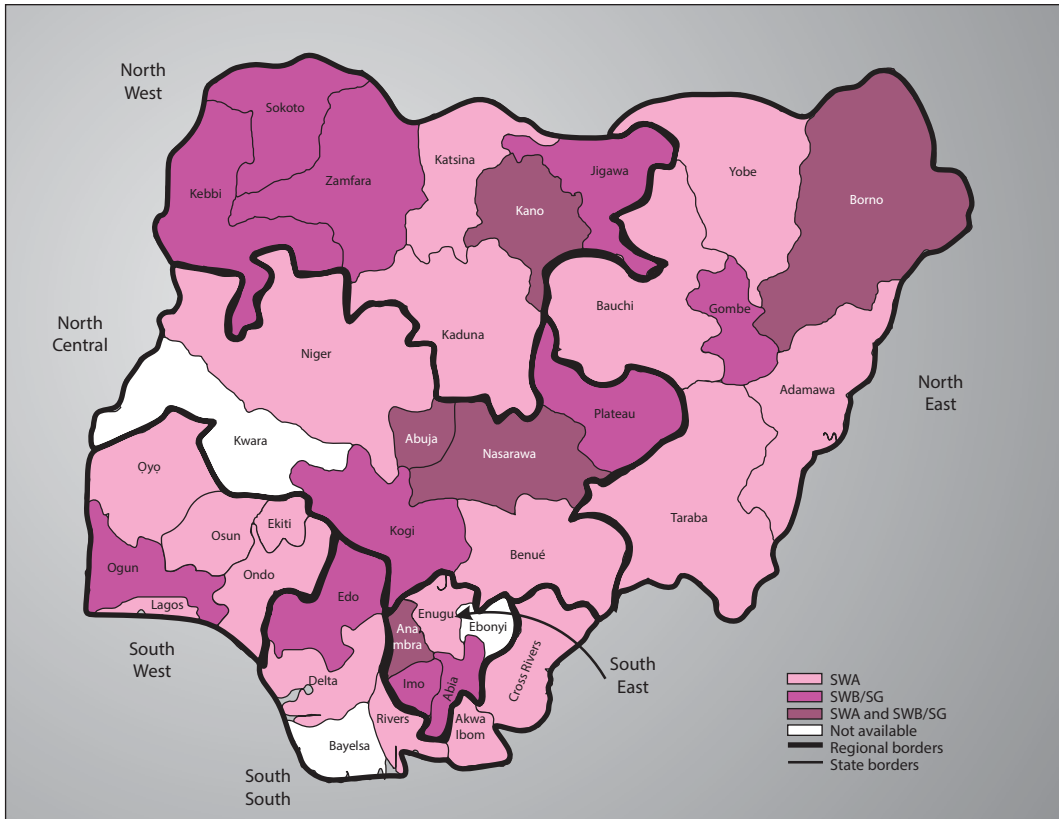
	NC	NE	NW	SE	SS	SW	Total
Less than 4 years	3	0	2	0	2	2	9 (26%)
From 4 to 10 years	3	2	2	2	1	3	13 (37%)
More than 10 years ago	0	2	2	1	0	1	6 (17%)
SWAs that did not respond	0	2	1	1	3	0	7 (20%)

Note: N = 35. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Table 2.8 Billing and Collection by SWAs

	NC	NE	NW	SE	SS	SW	Total
SWAs issuing bills	2	5	2	1	2	6	18 (51%)
SWAs collecting payments	2	4	2	1	2	5	16 (46%)
SWAs not responsible for bill issuance or collections	4	1	5	3	4	0	17 (49%)

Note: N = 35. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Map 2.2 Entity Responsible for Collecting Payments for Water

Note: SWA = state water agency; SWB = state water board; SG = state government.

fact that many public institutions do not pay for their water consumption may be one reason the SG heavily subsidizes the SWA—to ensure service continuity.

Of the revenues generated, almost 50 percent of SWAs (17 of 35) do not have the authority to decide how to allocate the revenue, and only 26 percent (9) have discretion on how to spend money in their accounts. For the other 8 (23 percent) the decision is made jointly by the SWA and the SG.

The SG pays for the main operating expenses, electricity and chemicals, for more than half the SWAs. In fact, only 10 (29 percent) of 35 SWAs pay for both electricity and chemicals and only 2 (6 percent) pay for electricity, chemicals, spare parts, and other disposables. Five (14 percent) reported not having to pay any expenses. Finally, when there is a deficit, all SWAs reported that the SG would cover additional expenses through budget transfers after the SWA provides financial statements or letters requesting additional funding (table 2.9 and appendix D).

Investment

The state dominates every phase of SWA development, from financing or guaranteeing capital investments, to approving the investment program, providing

Table 2.9 SWA Authority to Manage Operational Expenses

	NC	NE	NW	SE	SS	SW	Total
SWAs with authority for spending	0	1	1	1	2	4	9 (26%)
SWAs that pay for electricity ^a	0	1	3	3	5	3	15 (43%)
SWAs that pay for chemicals	1	1	2	3	4	2	13 (37%)
SWAs that pay for additional operating expenses	0	1	1	2	4	1	9 (26%)

Note: *N* = 35. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

a. *N* = 34. Electricity includes spending on fuel for generators.

Table 2.10 Financing of SWA Capital Investment

	NC	NE	NW	SE	SS	SW	Total
Federal ^a	3	0	1	1	1	3	9 (26%)
State	5	5	7	4	6	6	33 (97%)
Donors	0	1	2	0	2	5	10 (29%)
Self/SWA	0	0	0	0	0	1	1 (3%)
Multiple	2	1	2	1	2	5	13 (38%)

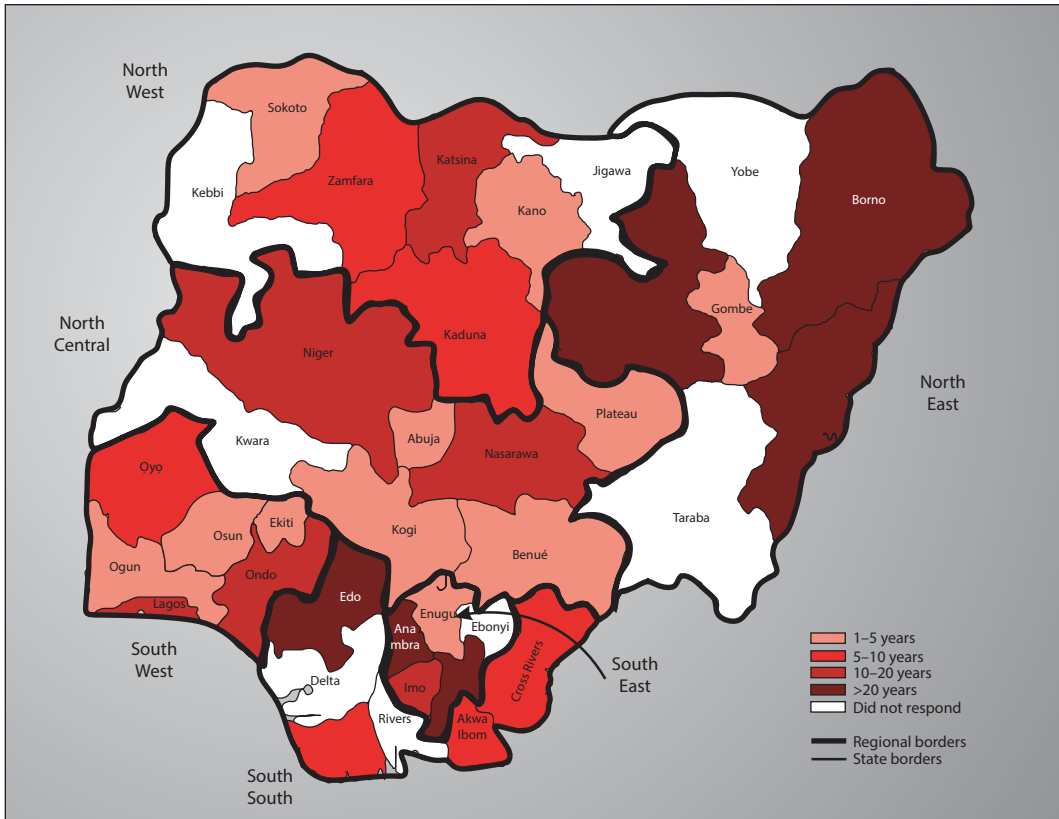
Note: *N* = 34. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

a. International financial institution investment programs. There is no channel for direct transfer of funds from the federal levels to SWAs.

the necessary permissions to proceed, approving the design and the financial plans, and managing the bidding process. SGs also lead when it comes to supervision of projects (more than 60 percent of SWAs), commissioning the investment, and then transferring it onto the SWA balance sheet. The role of the SWA itself is usually limited to consultation about the decision (and even then, fewer than 20 percent have been consulted) or review of the proposed bids. No utility has ever financed any investments and no utility has ever conducted its own investment program (table 2.10).

Nine SWAs (26 percent) reported that the federal government had provided some investment funds. These are usually national projects financed by large international financial institutions (IFIs), such as the World Bank, the African Development Bank, the French Development Agency, Japan International Cooperation Agency (JICA) and the Islamic Development Bank. However, again, the financing usually comes, not directly to the utility, but to the SG, which finances installations for the utility and then transfers them to the SWA balance sheet. While about 33 SWAs (97 percent) confirmed that some form of investment funding was channeled through the SG, 13 (38 percent) reported getting it through multiple sources. In the end only one (3%) stated that investment funds were available in-house.

The nature of water investment practice varies by state according to the institutional structure, socioeconomics, and state needs. The common thread across all SWAs in Nigeria, however, is that they do not have the authority to borrow

Map 2.3 Number of Years since Last Completed Investment Project Costing More Than US\$10 Million

on their own from capital markets or donors or to securitize future collections as collateral for investment borrowing. This situation may to some extent explain why all SWAs without exception are in dire need of investment in order to develop new projects; 20 of 35 (57 percent) have identified the need for expansion of water intakes and 21 (60 percent) recognize a need to expand networks and rehabilitate old distribution systems.

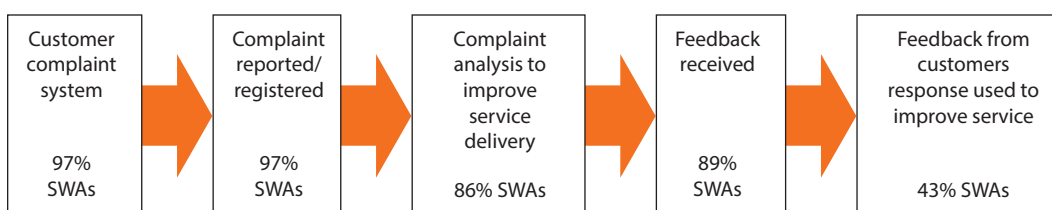
Based on the response of 29 SWAs (83 percent), it appears that the last SWA investment project valued at about US\$10 million took place 11 years ago. Geographically the situation looks even more dismal, ranging from 18 years in the North East region and 16 in the South East to 14 in the South South (table 2.11). Moreover, six (17 percent) SWAs had never had an investment. Map 2.3 shows the number of years since the last completed investments costing more than US\$10 million.

At present, 22 SWAs (63 percent) have projects under way, but none were developed by the utilities themselves. Also, none of the projects, current or past, invested more than US\$25 per customer. Interestingly, though, 25 SWAs (71 percent) had investment plans and only 10 (29 percent) did not—even though access to resources to undertake or fulfill investment needs may be

Table 2.11 Age of Last Completed SWA Investment Project

	NC	NE	NW	SE	SS	SW	Total
Average age (yrs.) of investment project valued at more than US\$10 million	7.3	18.3	7.2	16.3	14.3	7.2	11.0
10 or fewer years	4	1	4	1	3	4	17 (59%)
11–20 years	2	0	1	1	0	2	6 (21%)
More than 20 years	0	3	0	2	1	0	6 (21%)
Total value of completed projects (US\$ million), as of August 2014	287	194	110	49.5	120	79	n.a.

Note: N = 29. n.a. = not applicable; SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Figure 2.1 Customer Orientation Overview

Note: SWA = state water agency.

a stretch, in terms of planning the SWAs seem to be looking ahead. Moreover, at least 25 (71 percent) have a detailed engineering design for an investment project ready, and 29 (83 percent) stated they had shovel-ready projects that they cannot finance; 27 (almost 77 percent) also had a feasibility study or design document ready for such a project. Given that access to finance is such a big constraint for these SWAs, it is very encouraging that so many have invested the time to have projects ready to go as soon as finance is made available (see appendix E).

Customer Orientation

Data collected on customer orientation was meant to help establish how and to what extent the SWA takes into account customer views, behavior, and needs for connections, billing, collection, payment information, and disconnection. While the SWAs are somewhat customer-centric, information is still largely centralized, and customer service and response are not deployed effectively to improve service (figure 2.1).

Almost 74 percent of SWAs (26) confirmed that they have customer relations departments, and on average the departments had been in existence for at least 17 years—some were as old as 32 years and others as young as 1 year, but almost 56 percent were 10–20 years old. In addition, though nine of the SWAs that responded (26 percent) stated they did not have a department, eight of those did have staff dedicated to customer relations.

In 2014, Nigeria emerged as one of the fastest-growing countries in terms of access to global information technology, rising above the United Kingdom in

the ratings.³ However, among SWAs, only eight (23 percent) reported having a public website, which means almost 77 percent (27) do not. SWAs seem to be behind the curve in embracing technology, though there may be other factors affecting their online presence.

For the eight SWAs that had an online presence, the information most commonly reported, by seven of them, on the website was the mission statement and customer relations contact information. Six also posted information related to tariffs and bill payment locations, but only five posted information explaining bills and information related to major projects planned, in the pipeline, and active. Among the few SWAs that did have a website, the information disclosure was encouraging.

According to the World Bank *Nigeria Economic Report* (2014), on the one hand Nigeria has one of the world’s highest rates of economic growth, averaging 7.4 percent. On the other hand, the official per capita national poverty line at 33.1 percent shows that a large number of Nigerians are still just barely above the poverty line. The geographic variance of poverty may also be significant. Within this context, when asked about targeting of the poor, 49 percent of SWAs could not identify the poor in their database. In the North Central region,

Map 2.4 How SWAs Identify the Poor

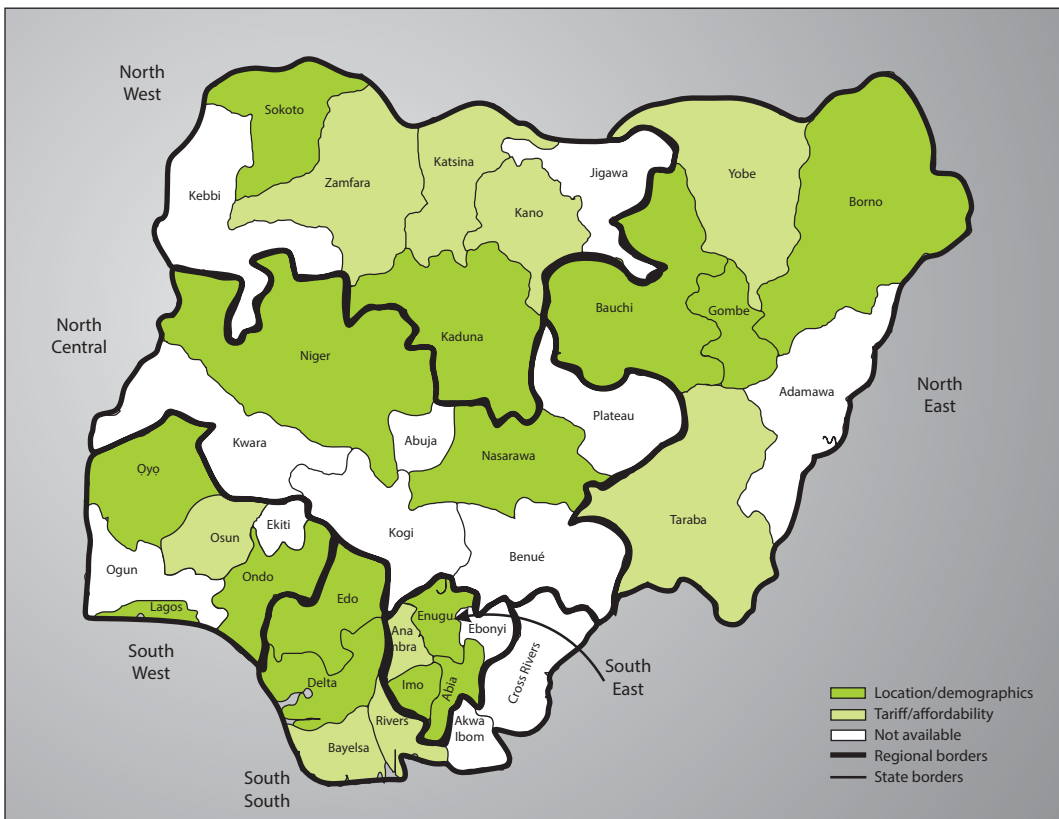


Table 2.12 How SWAs Identify the Poor in Their Databases

	NC	NE	NW	SE	SS	SW	Total
Location	1	3	1	3	3	4	15 (63%)
Audit	1	0	0	1	0	0	2 (8%)
Tariffs	0	2	1	0	0	1	4 (17%)
Affordability	0	1	2	0	1	0	4 (17%)
Demographics	1	1	2	2	1	1	8 (33%)
Multiple criteria applied	1	2	1	2	1	1	8 (33%)

Note: *N* = 24. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Table 2.13 Use of SWA Customer Databases

	NC	NE	NW	SE	SS	SW	Total
Billing	6	6	7	4	5	6	34 (97%)
Collection	5	5	7	4	5	6	32 (91%)
Disconnection due to nonpayment	6	5	7	4	4	6	32 (91%)
Targeting the poor	1	2	3	1	3	3	13 (37%)
Service expansion	4	3	4	4	5	4	24 (69%)
Other	0	0	1	0	2	3	6 (17%)
Multiple uses	6	5	7	4	6	6	34 (97%)

Note: *N* = 35. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

83 percent of SWAs—the highest by far—cannot identify poor households. The first step toward having an effective pro-poor strategy or a targeting mechanism for water service is to be able to identify who the poor are. The most common criterion SWAs deployed to identify the poor was location, followed by demographics, especially how population is distributed and how it grows, and then tariffs and affordability (map 2.4 and table 2.12).

Based on responses from 24 SWAs (69 percent), almost 63 percent of the SWAs used location to identify poor households, followed by demographics (33 percent), then tariffs and affordability (17 percent). A large group (33 percent) used multiple definitions to identify poor households.

Of the 34 SWAs (97 percent) that responded to a question about having separate tariffs for the poor, there was a 50/50 split, which explained the response to the question of whether the utilities were able to identify the poor SWAs in the North West region were most inclined to have a separate tariff for the poor (71 percent); far behind were the North Central region (33 percent) and South East (25 percent).

SWAs effectively deployed the customer database (table 2.13), when available,⁴ for billing (34, 97 percent); collection (32, 91 percent); disconnection due to nonpayment (32, 91 percent); service expansion (24, 69 percent); targeting the poor (13, 37 percent) and other (6, 17 percent). Moreover, 34 SWAs used the database for several purposes. However, when it came to targeting the poor, the SWAs lagged. The SWAs did confirm that they were sensitive to the needs

of customers when it came to service expansion (24, 69 percent), based on the knowledge at hand.

Finally, for those SWAs that were directly responsible for issuing bills and collection, there was a question about whether there was a mechanism or means for customers to rectify billing errors. Almost 88 percent of SWAs reported having a process in place for contesting charges; thus the majority of SWAs duly recognized the rights of consumers. Of those that did, 97 percent reported having the mechanism as part of the customer complaint system and for 71 percent a telephone-based complaint system as their primary, secondary, tertiary, or quaternary source of reporting—by far the largest cohort. This was followed by 46 percent that use survey and other means, and another 20 percent that use computer/Internet-based reporting and filing of complaints at the SWA offices. Only 6 percent reported that they had no system in place. In addition, 74 percent of SWAs reported having more than one platform for registering complaints and communicating with SWAs. However, even with the system in place, 33 percent of SWAs took no action on complaints.

Disclosure is an important piece of water utility accountability to customers. Tariff disclosure did not seem to be a common practice nationally, except in the North Central region, where 67 percent of SWAs reported tariff changes. In the North West, South East, and South West regions, only 17–25 percent of SWAs did so. On conducting public hearings for investment and undertaking major rehabilitation projects, disclosure ranged from 57 to 67 percent of SWAs in the North West, South South, and South West regions. No NC SWAs conducted public hearings, and in the NE and SE regions, only 17–25 percent did so. On reporting on water quality monitoring, the highest level was in the South South, where about 83 percent of SWAs did so; in the South East region, none did so (see appendix F).

Notes

1. The Nigerian government's "Water Supply & Sanitation Interim Strategy Note," November 2000.
2. The average is skewed by Abuja and Kano. Setting them aside, most SWAs on average cover 28 cities.
3. <http://www.thisdaylive.com/articles/nigeria-now-ahead-of-uk-in-internet-access/174390/>.
4. All 35 SWAs reported having a customer database; what varied was how well it was maintained (see appendix F).

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Performance of the Water Sector in Nigeria

Service Coverage

Despite all efforts to expand service, declining and low water coverage is the central issue for all state water providers. State water agencies (SWAs) have been providing water to more people over time, and the length of SWA water mains grew from 21,900 kilometers in 2011 to 24,669 kilometers in 2013, more than 12 percent, but constant lack of investment coupled with slow reforms and effective absence of incentives are now having their effects. More than 100 million people live in areas served by SWAs, though only a fraction receive services (see map 3.1 and figure 3.1). In 2013 formal water services coverage by SWAs dropped from an already low 43 percent in 2011 to less than 39 percent, even though the number of people served went up slightly, by 500,000.¹ SWAs cannot cope with urbanization rising by 3 percent a year. Only Enugu, Kaduna, and Sokoto States reported water service coverage at more than 50 percent of their constituents. In the South, 9 of the 16 SWAs serve less than 20 percent. In many SWAs where coverage is relatively high, water is provided only by shared services, mainly water kiosks, standpipes, and multifamily yard connections.² Imo SWA reported a decline between 2011 and 2013 in the absolute number of people covered, reflecting significant reduction of subsidies and revenue from nondomestic customers.

A corollary of the low coverage is a thriving market for informal water providers that operate alongside every SWA. These informal providers commonly charge 10–100 times more than provision through the state would cost—around NGN500–1,000 (US\$3–6) per cubic meter. Most informal providers sell water in 20 liter jerricans for NGN25–50 (US\$0.15–0.25)—clearly, water is not cheap. Based on average consumption of 10 liters per capita per day (lpcd), the annual coping cost to Nigerians is at least US\$700 million a year.³

In summary, water availability and coverage varies widely by state (figure 3.2). In the North West (NW) and North East (NE) regions, where water is scarce, utilities tend to connect more customers: coverage in the NW at over 60 percent is the highest among all regions. The two best performers, the Jigawa and Kaduna

Map 3.1 State Water Agency Coverage

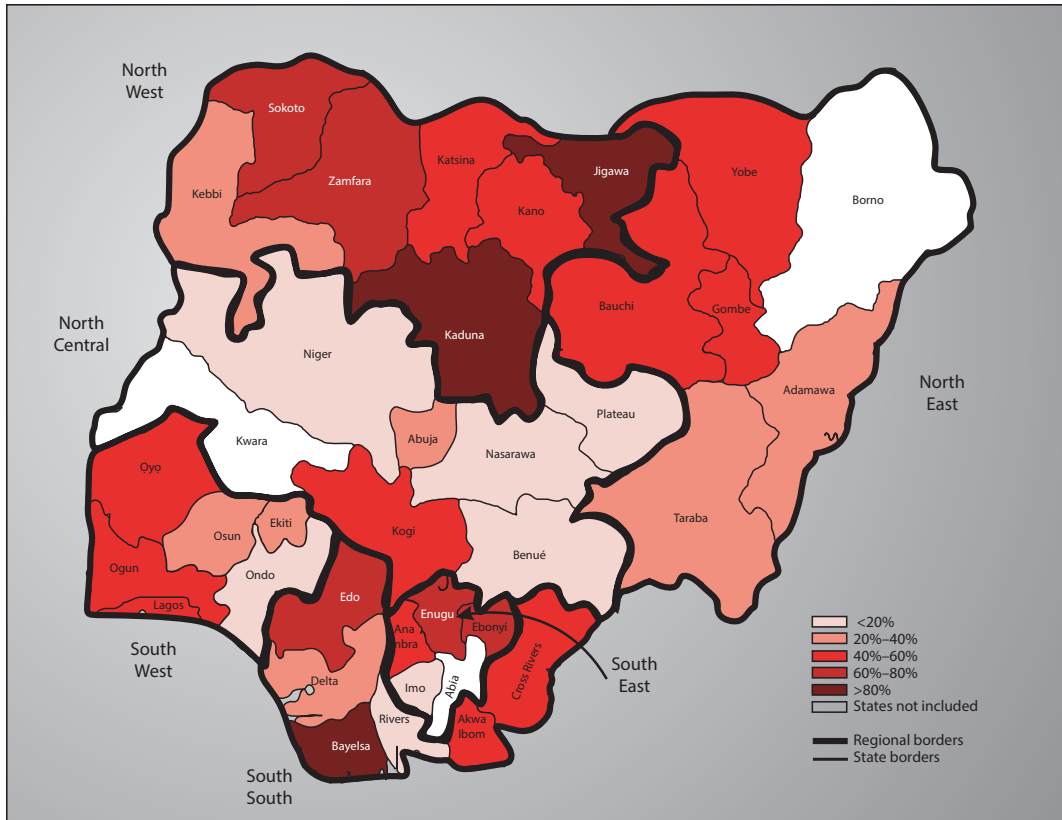
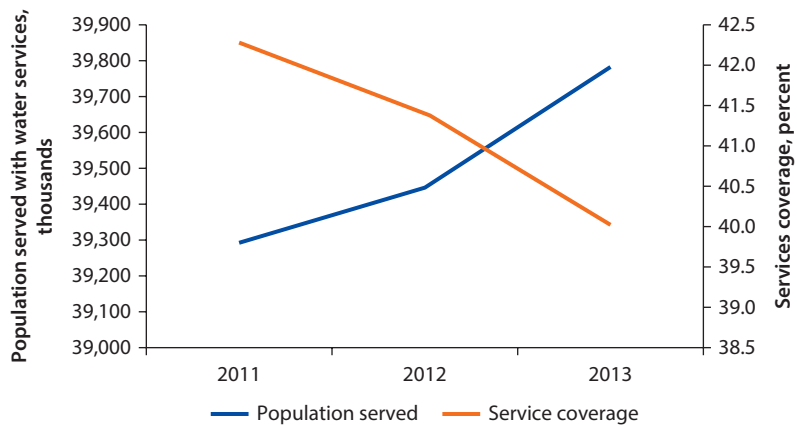
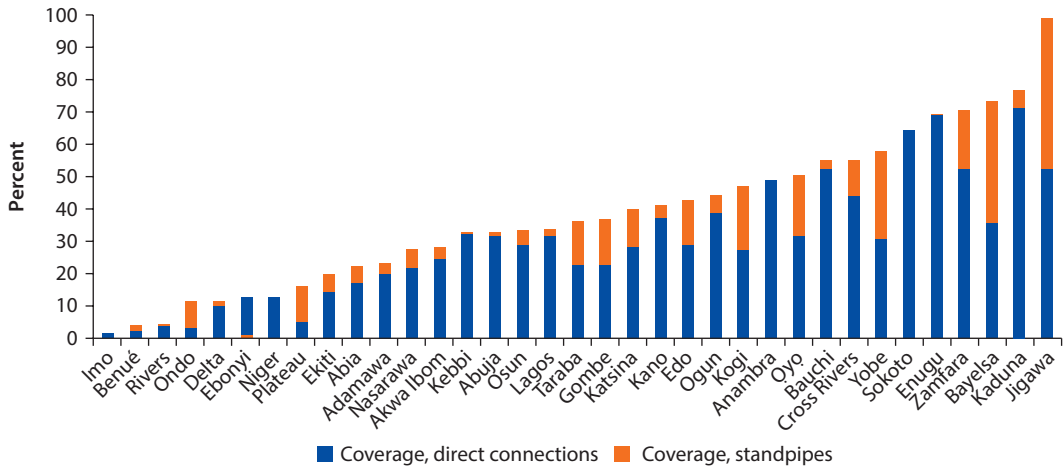


Figure 3.1 Population Served and Water Service Coverage



Source: International Benchmarking Network for Water and Sanitation Utilities (IBNET).

Figure 3.2 Coverage by State



SWAs, are in the NW. Kaduna’s success is explained by participation in the World Bank First Urban Water Project, and Jigawa has benefited from significant European Union support.⁴ In Bayelsa State located in the South South (SS) region, the third best performer in coverage, water is free.

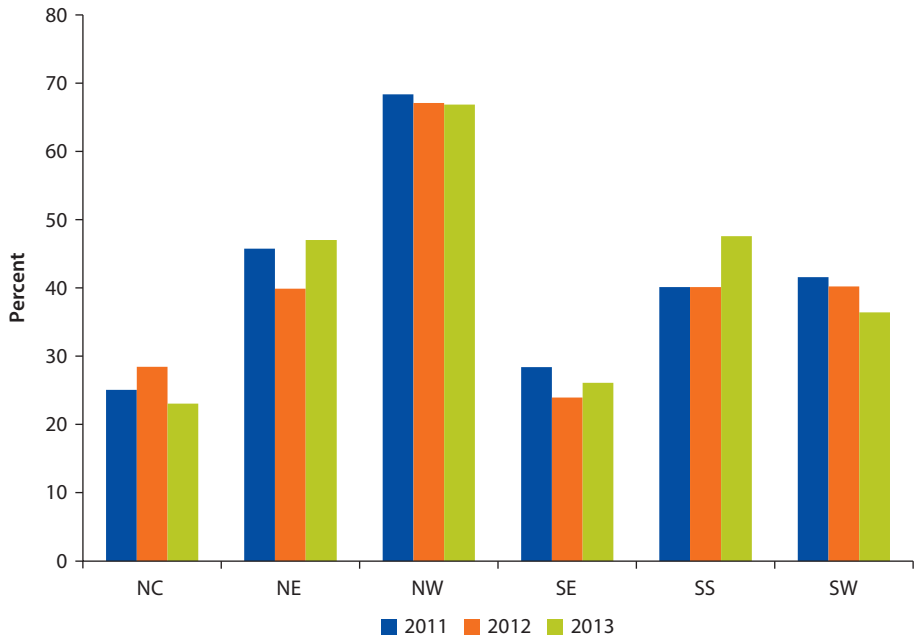
State governments (SGs) provide significant resources to connect as many people as possible. In southern regions, especially South East (SE), where water is abundant and precipitation high, the coverage tends to be lower because residents can easily access water either from ground sources or by harvesting rain water.

The absolute number of people covered in Nigeria changed only modestly between 2011 and 2013 (figures 3.3 and 3.4). Economic and political turmoil significantly affected water services in the NE and South West (SW), where the water connection rate has been dropping; in other regions coverage has somewhat improved.

If current population and coverage trends continues, coverage will continue to decline; by 2020, water coverage may drop below 30 percent across Nigeria, making water connection from an SWA a luxury available to less than 20 percent of municipal residents covered (figure 3.5).⁵

Larger cities are attracting more people because of job opportunities and perhaps easier accommodations. These cities are finding it much harder to maintain coverage as their total population grows (figure 3.6).

However, to reach full water services coverage at the national level by 2030, the Nigerian government will need to connect about 9 million people annually starting in 2016, assuming annual urbanization of 3 percent in 2014–20 and 2 percent in 2021–30. With simple calculation, to make this a reality, the sector will require an investment influx of about US\$450 million annually in 2016–30, for a total cost of at least US\$5.8 billion in 2014 prices, based on the United Nations (UN) benchmark for connection to the water network of US\$50 per person (figure 3.7).⁶

Figure 3.3 Total Water Coverage by Region, 2011–13

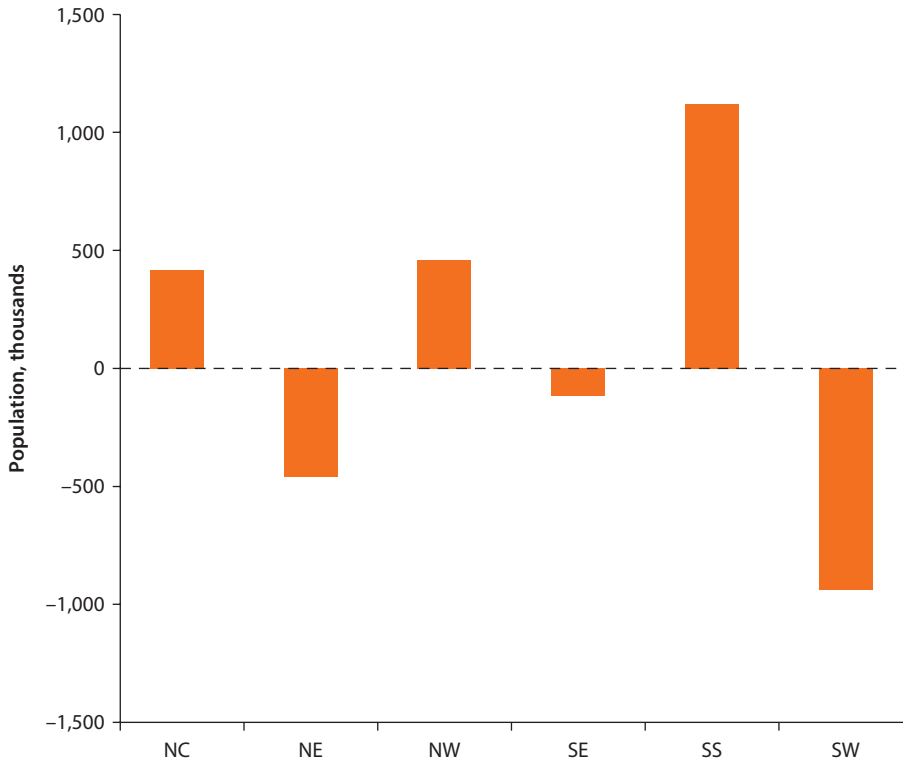
Note: Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Water Consumption, Hours of Operation, and Losses

In Nigeria water consumption is low for all SWAs except those in North Central (NC) (see box 3.1). From an engineering point of view, water sales of less than 50 lpcd are too low to sustain proper water flow and maintain the pressure needed in the system. The usual engineering benchmark for residential consumption is 50–100 lpcd to guarantee enough water speeding through the pipes to prevent their aging and contamination from small breaks in the pipes and from piping material. Consumption below 50 lpcd also affects the balance between fixed and variable utility costs: operating below a specified production significantly reduces the proportion of variable costs, mainly because electricity must be drawn to maintain pressure in the water networks when water is not being consumed.

Some industrial consumption is also low due to lack of water availability from SWAs and because the tariff policies of many SWAs encourage large industrial and commercial customers to have their own intake facilities. Water consumption is especially low in the southern part of the country. This is usually explained by the fact that residents there rely more on precipitation and ground water than on utilities (figure 3.8).²

Based on the data, 25 SWAs provide less than 50 lpcd to residents; of these 25, 16 fall below 20 lpcd, the World Health Organization recommended benchmark, including the three largest utilities in South South (figure 3.9).

Figure 3.4 Populations Served by SWAs by Region, 2011–13

Note: SWA = state water agencies. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Shortage of water forces SWAs to ration water supply. This indicator has shown some improvement: in 2013 two utilities, Abuja and Cross Rivers reported operating 24/7. In 2011 and 2012 no SWA reported 24/7 service. However, the situation is worsening in many places. Intermittent water supply is a significant factor in accelerated depreciation of water systems due to the hydraulic hammer effect that destroys valves, gates, and pipes. As a result of this artificial aging of water systems and the intrusion of ground water surrounding pipes when pressure is intermittent, the quality of the water supplied deteriorates significantly, forcing users to incur extra costs for boiling and filtering water (see map 3.2 and figures 3.10–3.12).

Larger utilities tend to provide better service, but Lagos, the largest utility, suffers constant water shortages and relies on rationing (figure 3.12).

Nonrevenue water—Nonrevenue water (water distributed but not paid for because of, for example, leaks and illegal diversion) is a common problem for many of Nigeria's SWAs, averaging 39 percent in 2011, 34 percent in 2012, and 40 percent in 2013. Even though measuring it correctly is difficult since metering is not universal, all SWAs are concerned about losses and regularly establish actual and proxy measurements of losses. This is especially common for water-scarce

Figure 3.5 State Water Agency Coverage, 2011–20

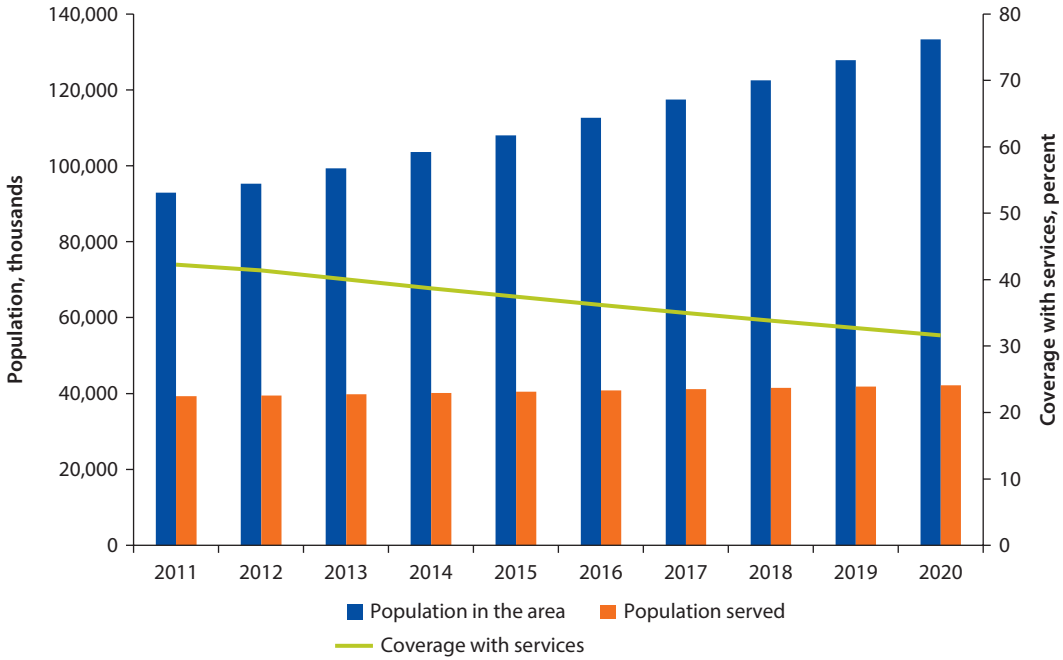
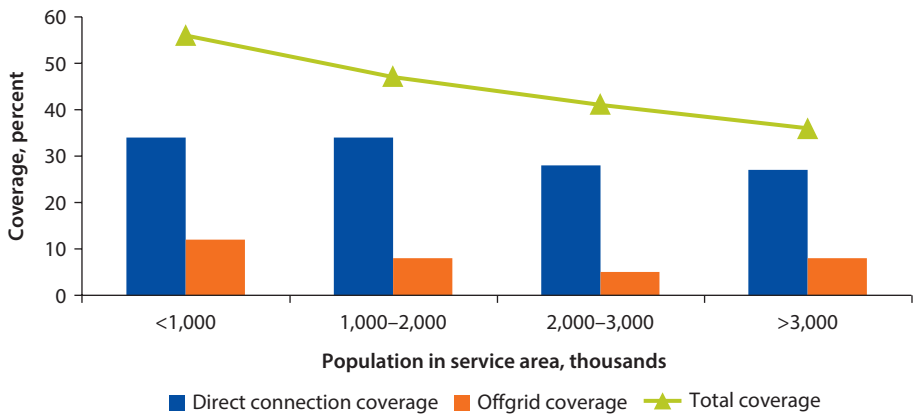


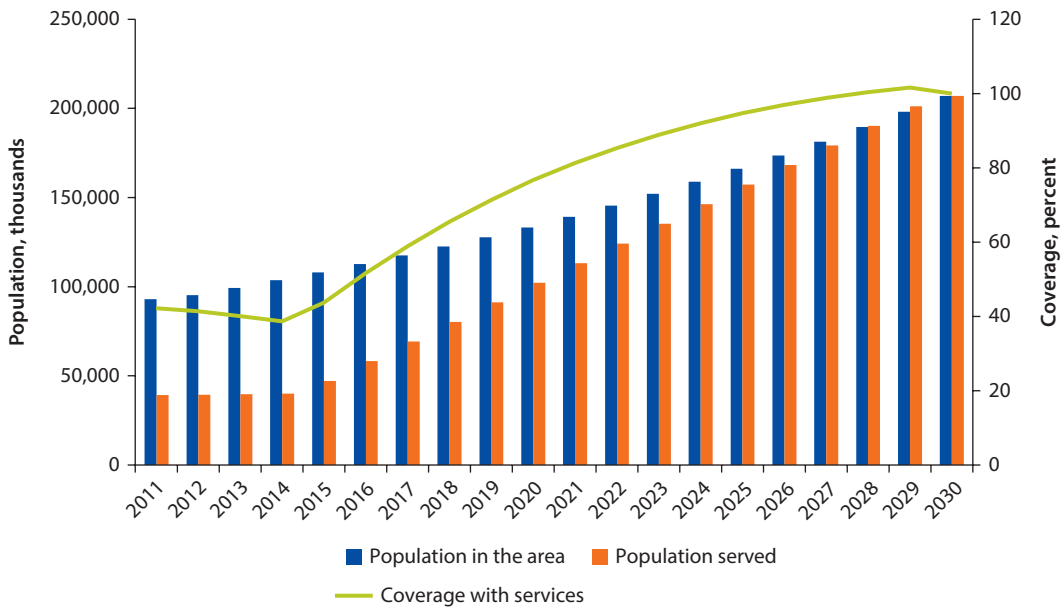
Figure 3.6 Water Coverage per Population in Service Areas, 2013



states in the NE, North Central (NC), and to some extent the SE. Intermittent water supply is also a factor in underestimating real losses because no loss occurs when no water is supplied. Still, the reported level of water loss—it averages 40 percent—is well above the 20 percent that the vast majority of companies would consider tolerable; it reflects both the lack of investment and poor maintenance of water systems (figures 3.13 and 3.14).

The physical losses, measured in cubic meters per kilometer (m^3/km) of the network a day, by state, by year, and by region, is also not satisfactory. The current

Figure 3.7 Coverage Forecast to Achieve Universal Coverage within 2011–30 Period

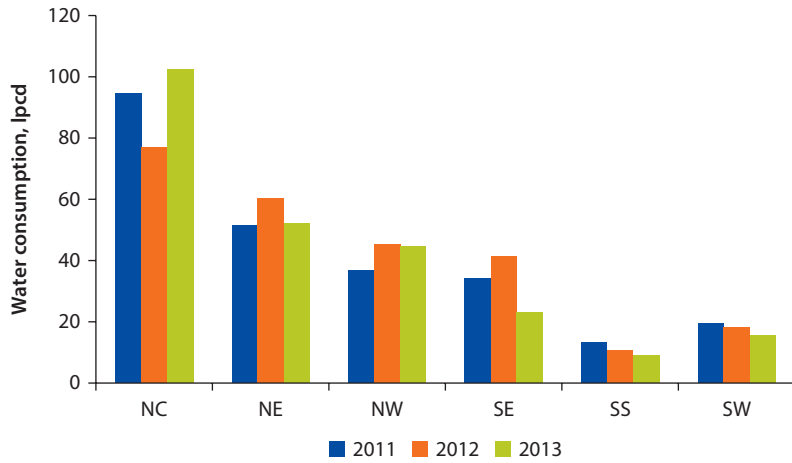


Box 3.1 Technical Issues Related to Low Consumption

The minimum consumption required is determined by the minimum velocity requirement for the water distribution system. A minimum velocity is important to maintain water quality, prevent water reacting with the piping material, maintaining the right concentration of residual chlorine, and preventing the overheating of potable water within the piping system. It is also necessary to keep water flow to prevent buildup of the sediments that for a variety of reasons are inevitably generated within water systems. Although there is no fixed standard for the minimum velocity of water, the American Water and Wastewater Association (AWWA) recommends at least 2.5 feet/second (0.762 m/s) velocity to prevent buildup (AWWA standard C651). Since the usual diameter of the distribution pipes is 0.6 inch (15 mm), average consumption has to be at least 50 lpcd to guarantee water quality. If there is an established sewerage system, the minimum consumption needs to be higher for proper operation and to prevent clogging of the small-diameter wastewater network.

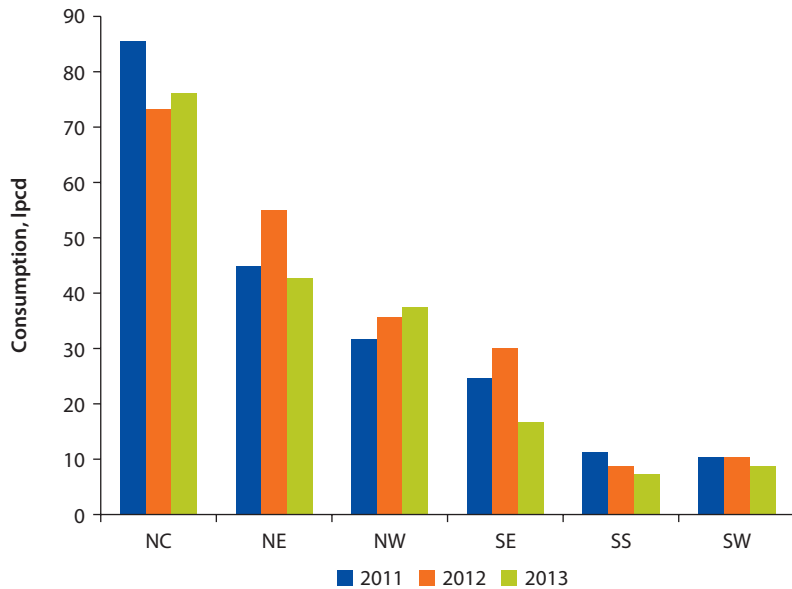
average of about 50 m³/km a day is about 10 times higher than what the International Benchmarking Network for Water and Sanitation Utilities (IBNET) reports for well-managed utilities.⁸ The physical losses are quite similar for all SWAs. Relatively low losses in SS are explained by the short period of water supply and low consumption in this region of Nigeria. The reduction seen in SE in 2013 is also related mainly to reduction in hours of operations and to water availability (figure 3.15).

Figure 3.8 Total Water Consumption, 2011–13



Note: lpcd = liters per capita per day. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

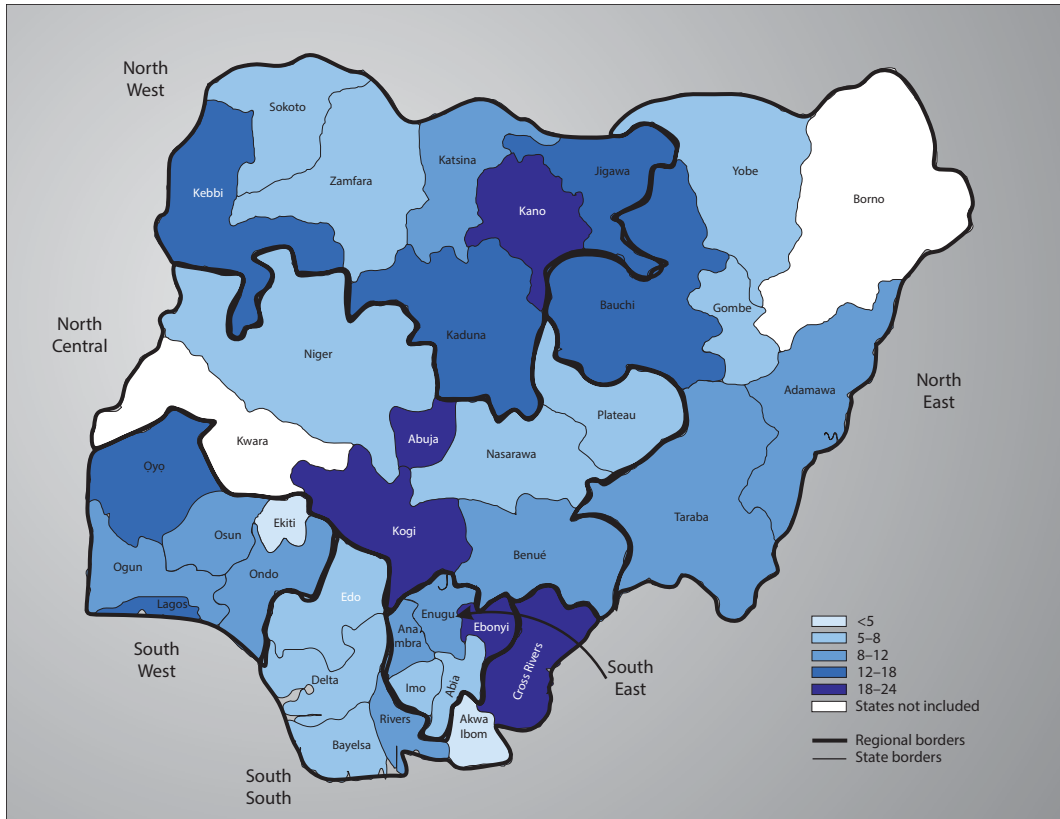
Figure 3.9 Residential Consumption



Note: lpcd = liters per capita per day. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

The number of pipe breaks, more than 5 per kilometer per year, is also very high due to poor maintenance and operations in every state water provider except perhaps Abuja (3.6) and Lagos (2.5), where significant funds are allocated specifically to monitor and tackle the problem. The benchmark of breaks at

Map 3.2 Hours of Supply



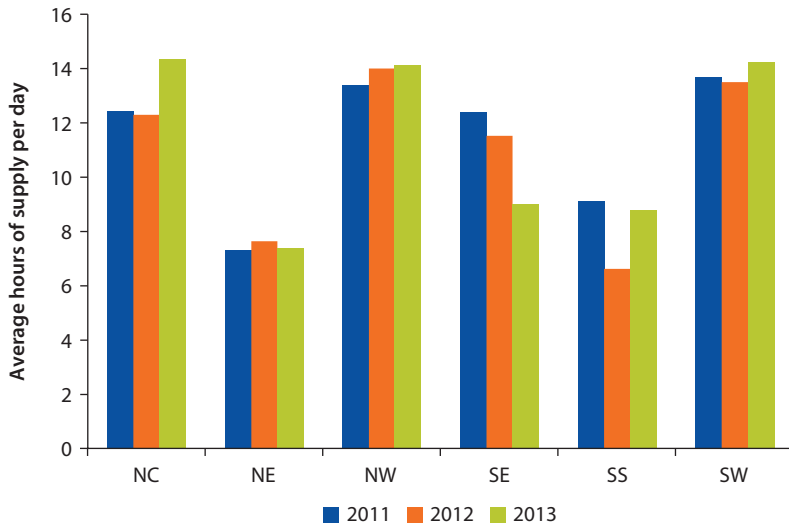
5 per kilometer of the network is the usual number for most of the SWAs that record water breaks (figure 3.16).

The issue of water losses is critical for the discussion of reform and operating improvements. Currently 32 of 35 (91 percent) of SWAs have a shortage of 3 million m³/day in terms of what would be needed to provide 50 lpcd to all customers.⁹ With accelerated urbanization and slow reforms, the shortage can grow to 7 million m³/day, especially for large urban areas. Even with tolerable water loss of 20 percent—a distant target for many SWAs—the Lagos Water Corporation is short by almost 1 million m³/day, followed by Benué and Imo, which fall short by about 200,000 m³/day. The expected cost of these water treatment facilities is assessed at US\$900 million.¹⁰

Financial Performance

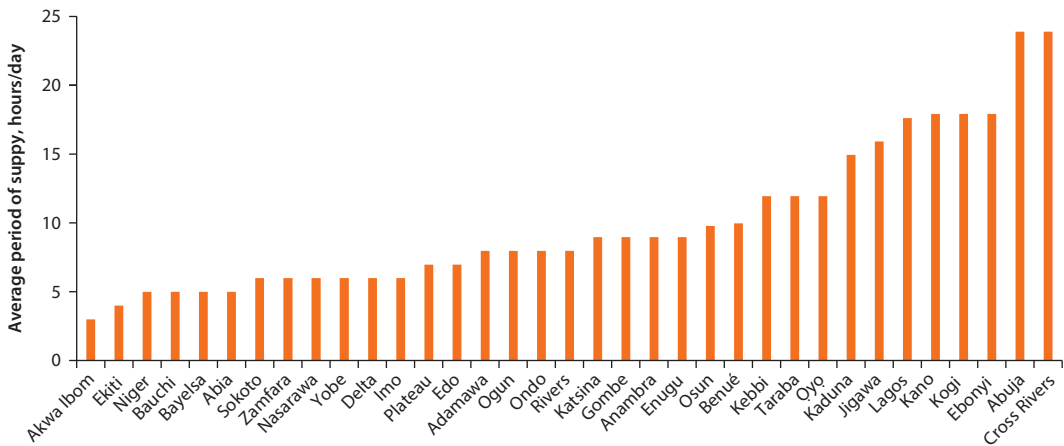
Both billing and collection are complex problems for many of Nigeria’s states. Water is free for all customers (domestic, commercial, industrial, and public entities) in Bayelsa and Benué and for domestic and public entities in Zamfara, with all costs for water supply and sanitation absorbed by the state in both cases.

Figure 3.10 Average Hours of Supply per Day, Regions, 2011–13



Note: Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Figure 3.11 Average Hours of Supply per Day in Nigerian States, 2013



In addition, in 14 states, fire department and public entities do not pay for water. Also in many cases, billing is done by an entity external to SWAs or by another state agency, such as the tax authorities. Eight SWAs do not know what their uncollected balances are. In Ogun and Borno, water is billed by the utility but payments are collected by the state tax authorities. The 16 SWAs that issue bills and collect payments themselves are Kaduna, Katsina, Benué, Niger, Adamawa, Taraba, Bauchi, Yobe, Ekiti, Ondo, Osun, Lagos, Oyo, Akwa Ibom, Rivers, and

Figure 3.12 Consumption, Hours of Supply, and Population in Service Area, 2013

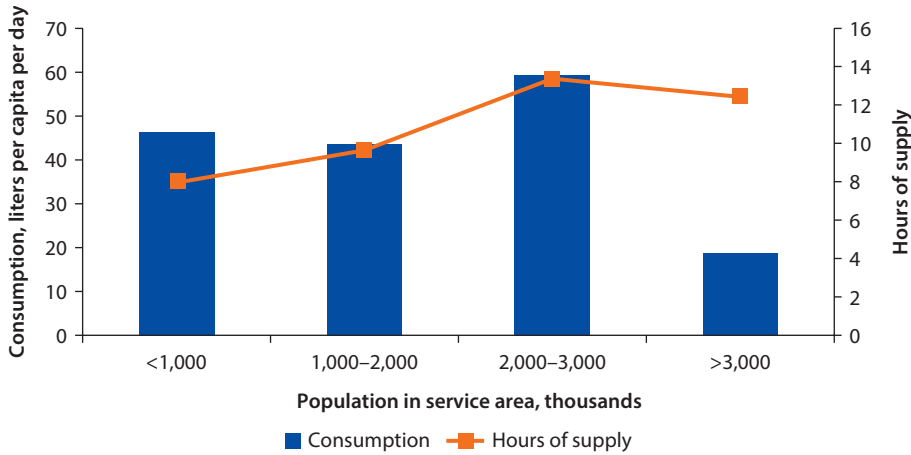
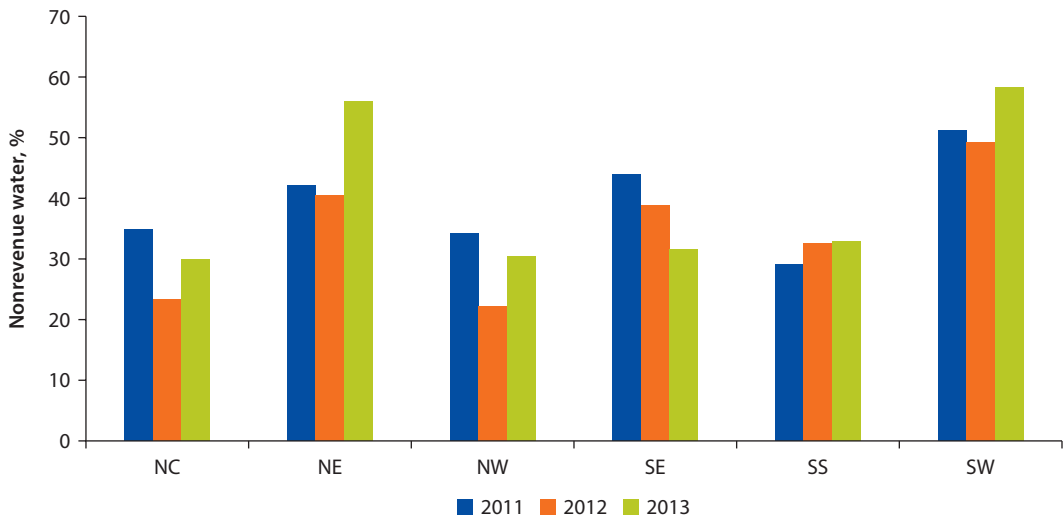


Figure 3.13 Percentage of Nonrevenue Water, by Region, 2011-13



Note: Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Enugu (see appendixes C, D, and E). SWAs are, however, informed on the status of billing cycles, have established systems of tariffs, and are well-informed on the revenue collected from their operations (see figures 3.17 and 3.18). Tariffs tend to be higher in the South, and lower in the North (map 3.3).

States that do not charge residential customers still get revenue from industrial users, except Bayelsa, where water is free for all customers (map 3.3).

Although nominal tariffs are higher in the South, because consumption in the southern states is very low, actual payments per month are fairly uniform, varying slightly from US\$1.50 to US\$2.00 per family per month (figures 3.19 and 3.20).

Figure 3.14 Nonrevenue Water in Nigerian States, 2013

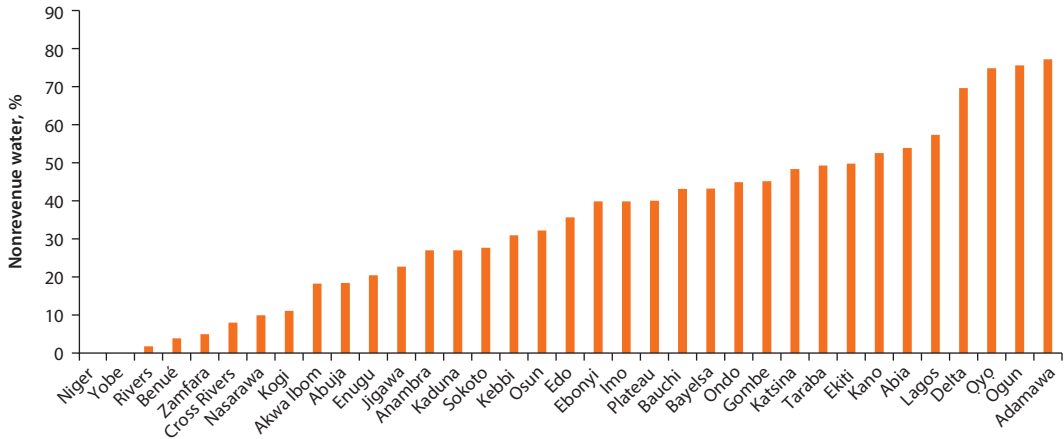
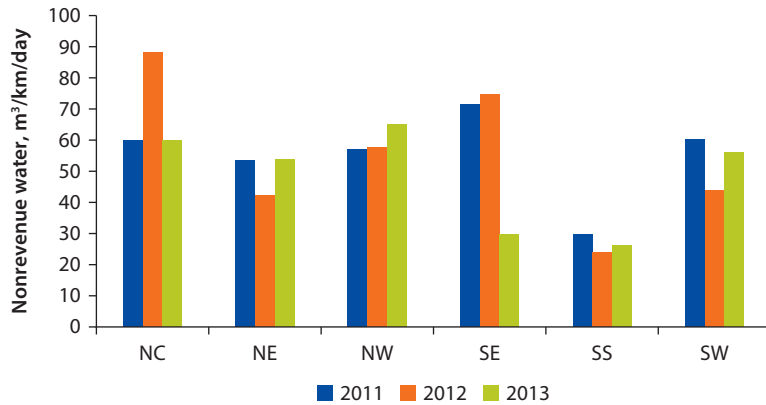


Figure 3.15 Nonrevenue Water, by Region, 2011–13



Note: Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Costing of water services (see chapter 2) is even more complex given that many SWAs do not pay for some or all inputs. In Edo State all costs are covered by the government. For 26 SWAs labor costs are paid by the states, since SWA staff are mostly civil servants. For 19 the SGs pay electricity companies directly for SWA usage. All SWAs, however, pay for spare parts and other disposables. In the NC region none of the SWAs pay operations and maintenance (O&M) costs. Overall, Kano, Rivers, Enugu, and Imo are the only SWAs that pay all O&M expenses, including labor.

SWAs do know their O&M costs, however, because they collect cost information and then pass it on to the State Ministry of Finance to cover the bills. SWAs are often required to provide annual reports of all inputs and their costs,

Figure 3.16 Connection Density, Nonrevenue Water, and Population in Service Area

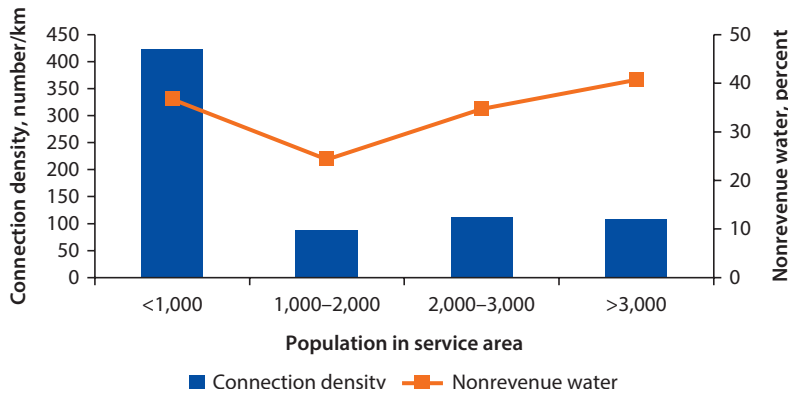
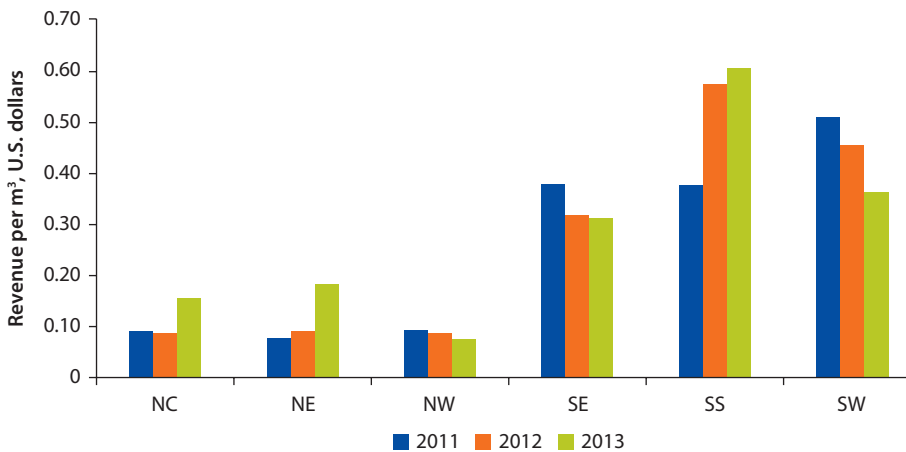


Figure 3.17 Revenue by Region, 2011–13

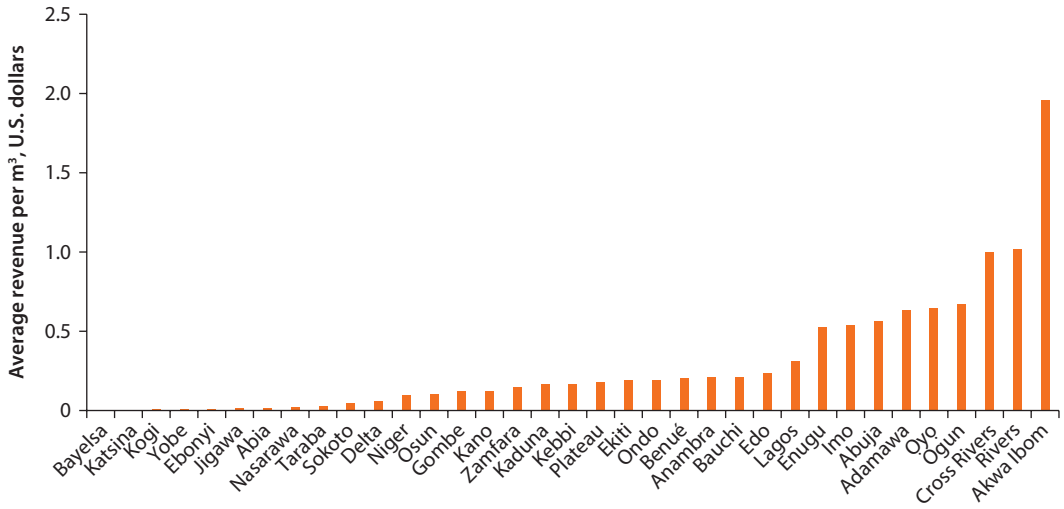


Note: Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

including those that are not their responsibility. Many SWAs reported an increase in electricity tariffs, to cover higher overall production costs. And in some cases it was reported that this increase was reflected in water tariff adjustments (table 3.1 and map 3.4).

Because financial policy has been inconsistent, when costs and revenues are outside an SWA's competence, these performance elements have limited incentive power. In the vast majority of cases “cost recovery” is achieved through direct subsidies to SWAs and SG payment of their labor and electricity costs. No SWA reported a threat of insolvency even though only two companies in the NC region, Abuja and Plateau, covered their costs (except for a significant dip in 2012). The collection rate is also outside the competence of the vast majority of SWAs. The inference is that SWAs handle technical operations

Figure 3.18 Average Revenue Billed, by State, 2013



Map 3.3 Revenue by State

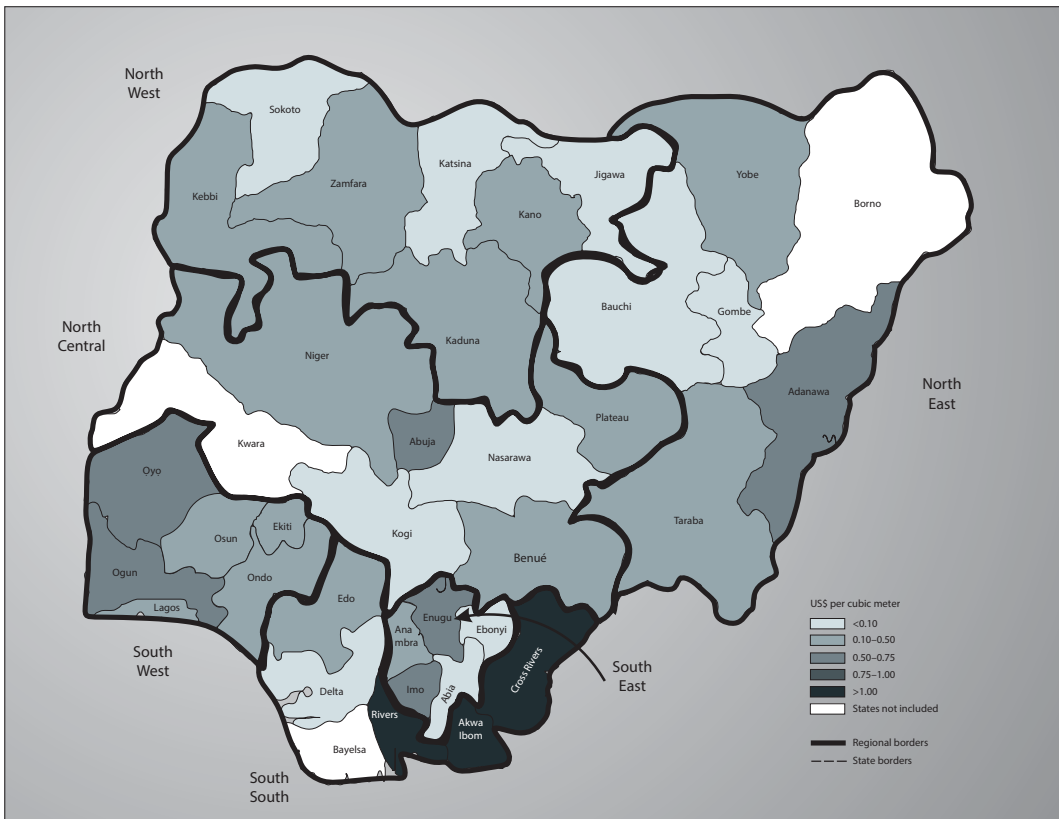
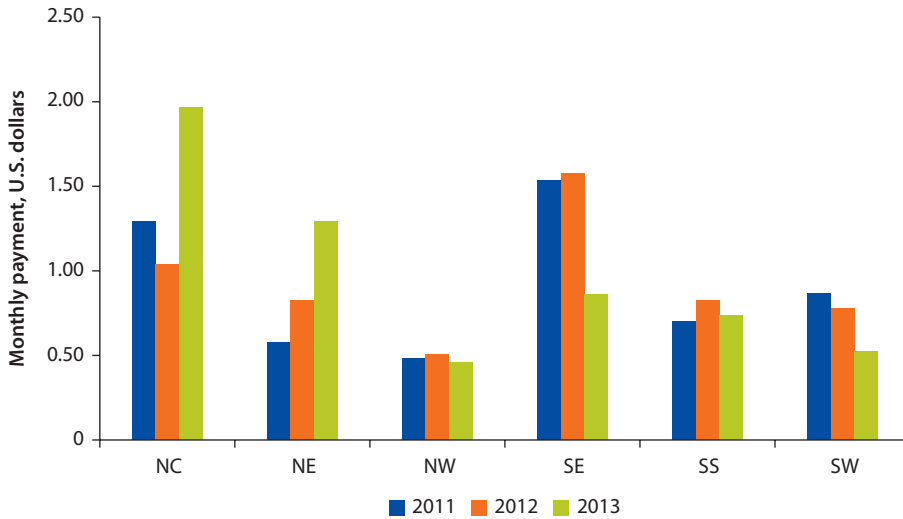
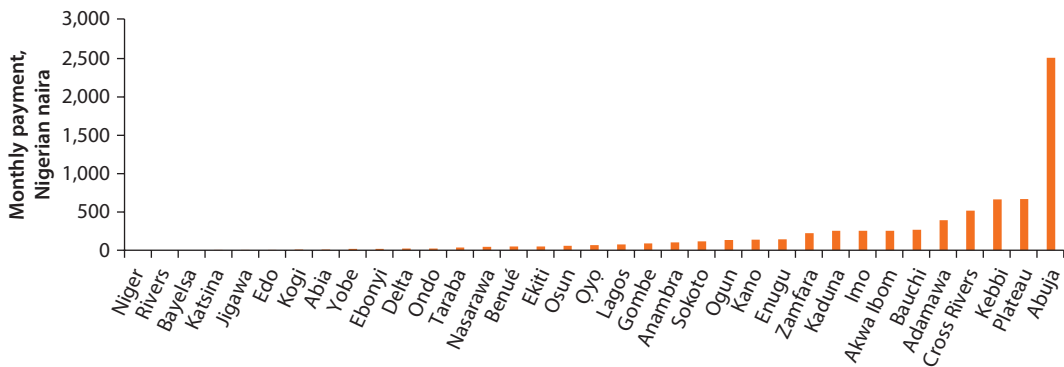


Figure 3.19 Monthly Payment per Household for Water Services, by Region, 2011–13



Note: Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Figure 3.20 Monthly Payment per Household for Water Services in Nigerian States, 2011–13



Source: International Benchmarking Network for Water and Sanitation Utilities (IBNET).

Note: Average size of household is 5.5 people, per the Federal Ministry of Water Resources. Water is free for domestic users in Bayelsa, Niger, and Rivers. NGN168 = US\$1.

only, with all economic and financial operations remaining with their SGs (figures 3.21–3.24).

Pro-poor services: Asked if they have pro-poor tariffs, 20 SWAs responded positively (map 3.5). The NE region had the most utilities with lower tariffs for the poor and the NC region the least; 14 SWAs said they did not have any pro-poor tariff. However, there seems to be no clear policy or guideline on how to address water supply for the poor. As a consequence, each SWA does what it perceives to be the best way to provide services for this group. Most SWAs provide water for the poor through standpipes or public taps, some of which charge

Table 3.1 Expenses Paid by State Water Agencies in Nigerian States

State	Salary	Electricity	Chemicals	Spare parts and disposables
Edo				
Zamfara				
Kebbi				
Jigawa				
Benué				
Niger				
Plateau				
Kogi				
Nasarawa				
Adamawa				
Taraba				
Bauchi				
Yobe				
Ogun				
Osun				
Sokoto				
Katsina				
Abuja				
Borno				
Oyo				
Delta				
Anambra				
Abia				
Kaduna				
Gombe				
Ekiti				
Ondo				
Lagos				
Akwa Ibom				
Bayelsa				
Cross Rivers				
Kano				
Rivers				
Enugu				
Imo				

a lower tariff and others do not charge at all. Other forms of providing for the poor are a flat tariff of 200 NGN/month (US\$1.20) for people living in low-density areas like Gombe or a tariff structure that has categories for the poor with a cross-subsidy to finance the gap, as in Kaduna.

However, the majority of the poor must rely on water from alternative providers. Many SWAs know their “competitors” and even track their charges. In the North, water from alternative providers cost US\$6–8 (NGN1,000–1,500) per cubic meter, and in the South, where reliance on alternative sources is higher,

Map 3.4 Unit Cost by State

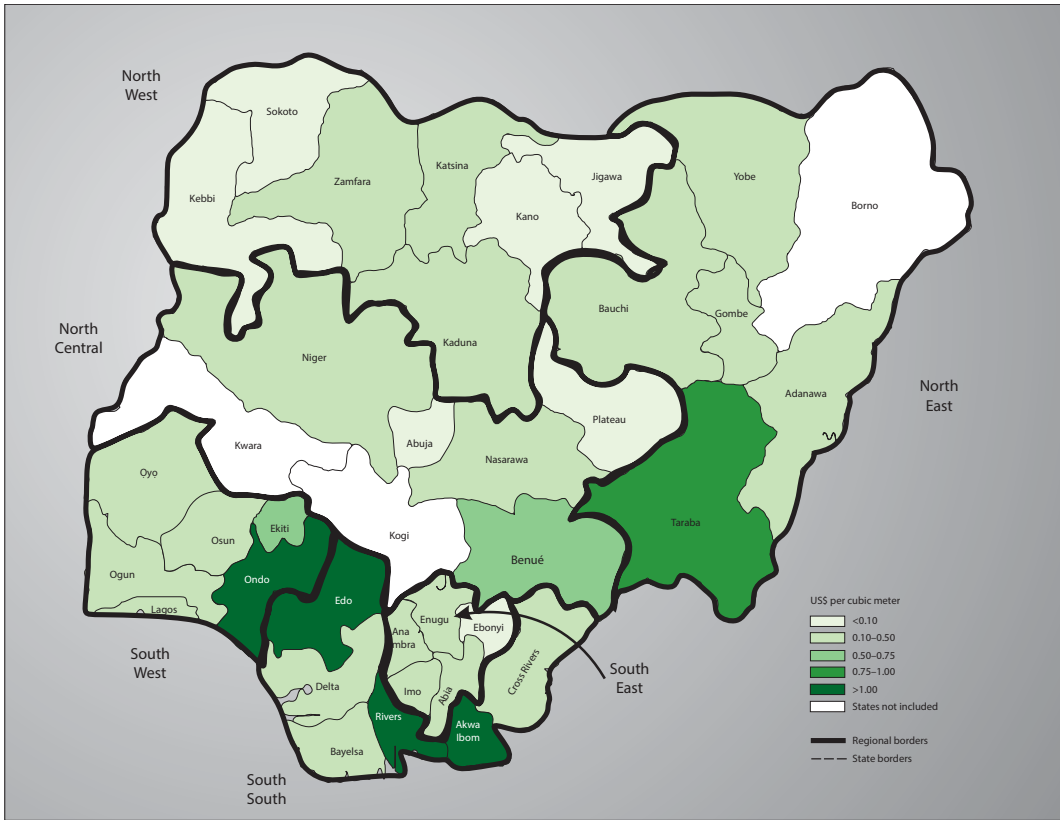
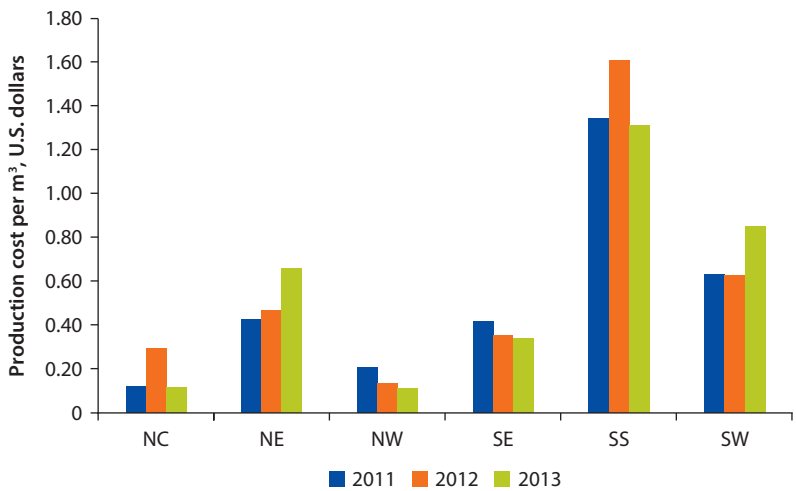
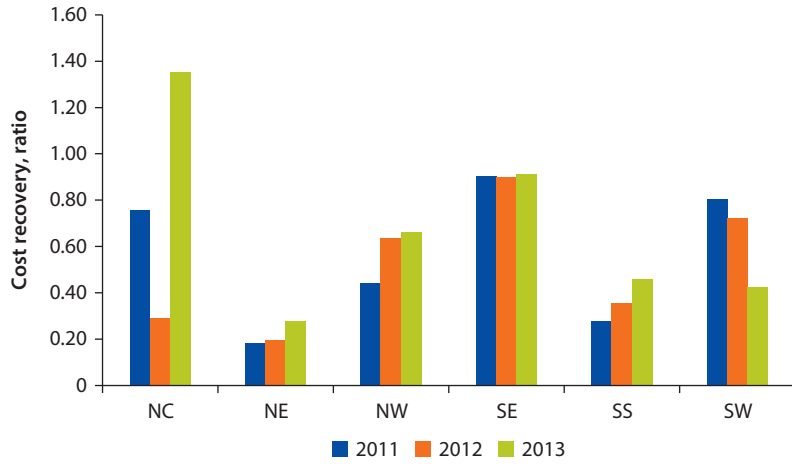


Figure 3.21 Production Cost, 2011-13



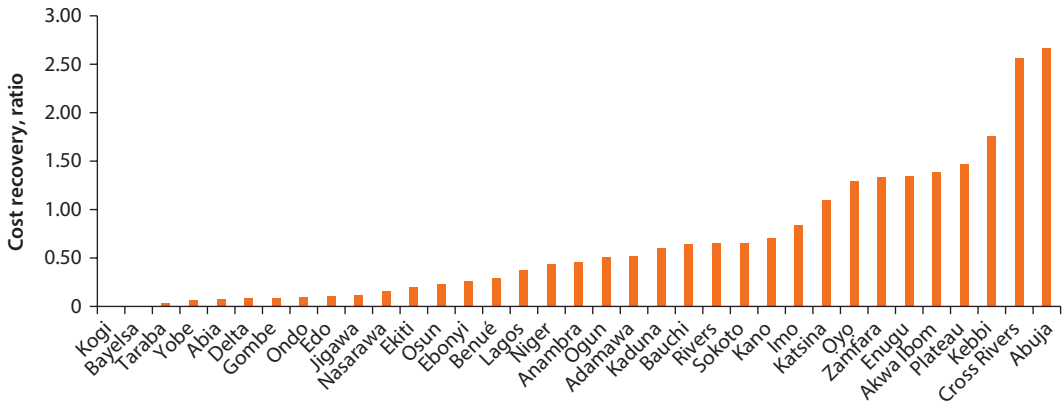
Note: Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Figure 3.22 Cost Recovery Ratio, by Region, 2011–13



Note: Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Figure 3.23 Cost Recovery Ratio in Nigerian States, 2013



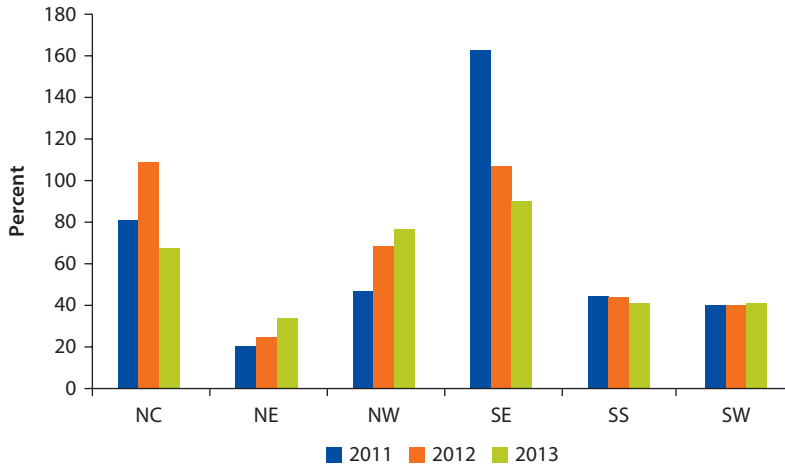
Note: No data were available for Kogi, in Bayelsa water is free.

the price for water alternatives was US\$2–4 (NGN250–600). Seemingly high water prices are compensated by the fact that such water is bought in small volumes—in 20-liter plastic cans—so for the customer each payment seems low for relatively high-quality water.

Subsidies

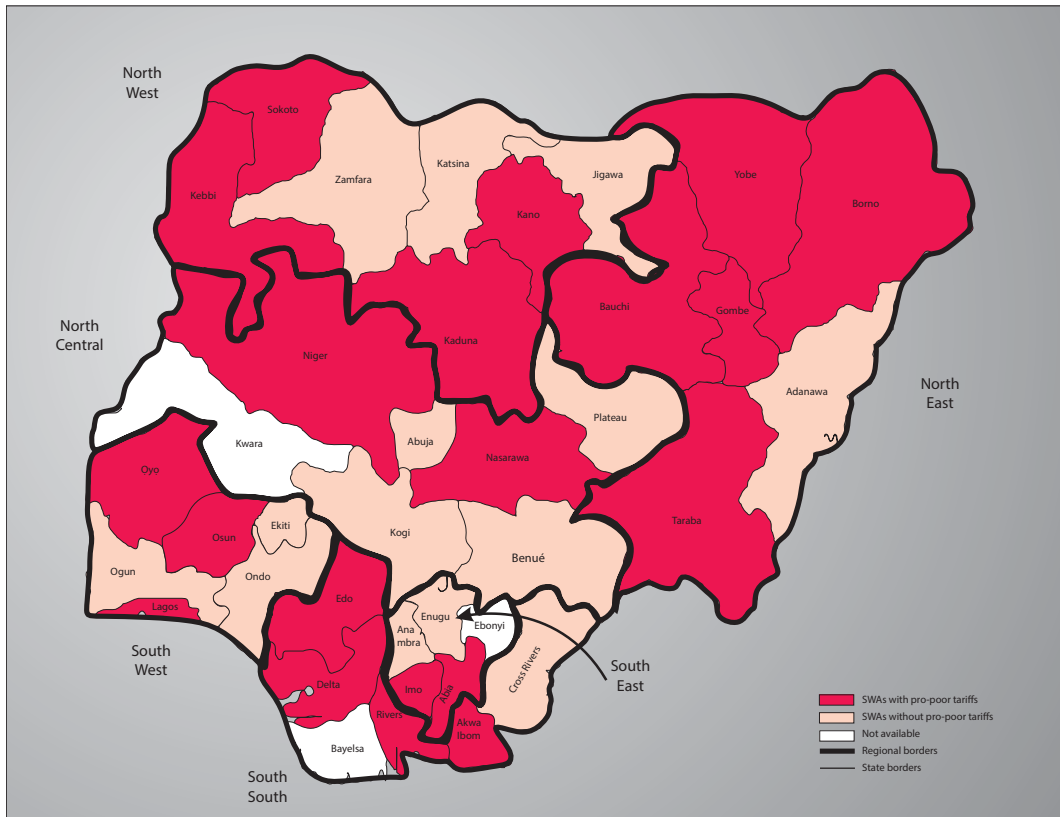
Lack of incentives to attract new customers to connect means that every new (subsidized) customer causes a loss for SWA operations, which should be a major concern for state water boards (SWBs). To establish incentives for good

Figure 3.24 Payment Collection Rates, 2011–13



Note: Collection rate above 100 percent includes collection of arrears. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Map 3.5 State Water Agencies with Pro-Poor Tariffs



performance, Lagos and Abuja have been given some autonomy and converted into corporations.¹¹

In many other SWAs, support was extended to cover investment and all or a significant proportion of O&M costs. Where this did not help, SGs moved further into the SWA decision-making process, so that many SWAs where water is not free do not issue bills, collect revenues, or do other than technical operation of their facilities and network (see appendix D). The result of the evolution of water services in Nigeria is that each state has a unique (formal and informal) structure of service provision, system of tariffs and revenues, and principles of cost recovery and investment. However, no water provider can borrow money or be fully responsible for financial or investment support to water operations, which are strictly guarded by either SWBs or state ministries of water.

The way such subsidies operate can deter new investment. Ten years is the average time SWA investment projects worth more than US\$10 million have been in existence, while in the SE and SW regions on average no such investments have been made for more than 15 years. Eight SWAs have had no investment projects since the 1991 administrative reform. Only 22 SWAs out of 35 have ongoing projects, none of which was developed by the utility. Also, no project, past or current, has had an investment value above US\$25 per customer, although UN guidelines estimate that it takes a one-time cost of US\$50 on average to connect an individual to the water supply system.

The current subsidy scheme has three major elements:

1. *Investment subsidy*: The state develops an investment program by itself or jointly with an SWA.
2. *Direct subsidy to the O&M costs of an SWA*: This typically covers costs of either labor, electricity, or chemical separately or paying all costs (for example, Bayelsa).
3. *Implicit subsidies*: These go to customers in two ways: (1) water is free or sold below production price, and (2) revenues billed for the services provided are not collected.

Investment Subsidy

Between 2011 and 2013, 18 of 35 SWAs (51 percent) received some form of investment subsidy. The value varied from US\$8–15 million (Lagos, Kaduna, Kano, Delta, Osun, and Ondo) to a symbolic amount of US\$100,000 or even less. Authorities provided no investment support to 17 SWAs (49%). As reported by the SWAs, the average investment subsidy from the state was about US\$75 million a year.

Direct Subsidy to Cover O&M Costs

Virtually all SGs provide this form of subsidy to SWAs. The state Ministry of Finance or the SG through other channels covers part of SWA costs or gives an earmarked subsidy to cover a specific cost (for example, electricity, labor, maintenance). The annual amount, which was US\$52 million in 2011, ballooned to US\$69 million in 2013—almost a 33% increase.¹² The demand for such subsidies

is likely to grow over time with the needed expansion of services, establishing proper patterns of consumption, and associated electricity costs. Providing adequate services (24/7 water supply, consumption of 50 lpcd on average, and leaks reduced to 20 percent) will require at least US\$470 million from SGs as a direct subsidy. This growth and dependence is a direct threat to the sustainability of SG support. Also, subsidizing specific costs creates incentives that are far from cost-efficient. They can also give the false impression that water providers are solvent when they are not.

Implicit Subsidies

Free water, tariffs below costs, and forgiveness for failure to pay are considered a great method of social protection by providing cheap water to customers (Ebinger 2006). However, these costs are rarely compensated properly. The same applies to the common practice of failing to collect payments and regularly writing off bad debt without compensation to SWAs. The total cost of these implicit subsidies is some US\$100–110 million a year, though there is a slight tendency for them to go down over time. However, they are still not counterbalanced by direct subsidy for O&M costs.

Analysis

Because subsidies are ubiquitous in the Nigerian water sector, it is interesting to look at how subsidization affects utility efficiency—whether it promotes or inhibits utility efficiency or has no effect—to evaluate the role of subsidies in the water sector. Efficiency is measured through data envelopment analysis (DEA¹³), using the most recent annual observations for each of 35 SWAs in Nigeria. Output is measured by the volume of water sold (millions of cubic meters); capital by the length of the water distribution network (in kilometers) and labor inputs by the total number of staff.

The DEA results show that the relationship between efficiency and the percentage of costs subsidized is only about 0.18—suggesting that there is little relationship between subsidy and utility efficiency. This low correlation does not, however, suggest that efficiency would be advanced by further subsidies. In fact, expectations that subsidies could serve the dual purpose of supporting short-run operations while promoting efficiency gains for the future do not get much support from this result.

Notes

1. The WHO/UNICEF Joint Monitoring Program (JMP) collects information on the basis of household surveys regardless of the water services provider, including self-service. The urban improved coverage reported by JMP in the 2014 update to *Progress on Drinking Water and Sanitation*, a report by the World Health Organization and UNICEF, was 79 percent; only 6 percent of Nigerians were covered by water piped on the premises. And 73 percent was by other improved. This report discusses only the performance of the SWAs established and managed by state governments.

2. While population served is to some extent tracked and assessed regularly by SWAs, the population living in the administrative area is assessed based on the 2006 national census adjusted to annual urban population growth of 2.6–3.0 percent, using estimates provided by either the Federal or the State Bureau of Statistics. However, many utilities consider those numbers significantly underestimated due to both accelerated overall urbanization and a steady stream of internally displaced people and refugees from politically unstable areas (see appendix B).
3. About 60 million people living in areas served by SWAs get water from informal providers.
4. <https://www.dailytrust.com.ng/daily/news/1476-500-000-people-benefit-from-eu-water-project-in-jigawa>.
5. Informal water services are on the rise due to insufficient SWA coverage; for details, see www.rural-water-supply.net/en/resources/details/618.
6. http://www.who.int/water_sanitation_health/economic/chapter7.pdf. In 2010 the World Bank's country status overview for Nigeria estimated that the financing required to meet the Millennium Development Goals was US\$1.1 billion a year for urban water supply and US\$1.2 billion a year for urban sanitation (*Water Supply and Sanitation in Nigeria: Turning Finance into Service for 2015 and Beyond*, <http://www.wsp.org/sites/wsp.org/files/publications/CSO-Nigeria-En.pdf>).
7. No SWA has universal metering. While production is relatively well monitored, with production metering in place in more than 75 percent of SWAs, domestic consumption is generally assessed based on water billed at a flat fee to a household rather than on actual metering of all users. On the other side, consumption for most commercial, industrial, and public users is metered. Water is also metered in kiosks, where it is sold into jerricans or small buckets. Many SWAs are measuring consumption on a pilot basis (for details, see appendix G, which covers tariffs).
8. www.ib-net.org.
9. Current shortage of supply is assessed by the production capacity of SWAs and an assumed reduction of losses to 20 percent. At least 23 water treatment plants with capacity of 150,000 cubic meters per day would need to be constructed to guarantee water for about 65 million Nigerians.
10. The average cost of a new water treatment plant with capacity of 150,000 cubic meters per day is about US\$50 million.
11. Despite the transition to corporate status, Lagos still gets significant subsidies: in 2013, the subsidy was about NGN2.7 billion (US\$18 million), covering 41 percent of total water service costs.
12. Based on the performance data collected from the SWAs.
13. DEA is a nonparametric approach to measuring the relative efficiency of firms, often referred to in the literature as decision-making units, in an industry. Relative efficiency refers to how well a utility performs relative to other utilities in the industry.

Reference

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Conclusions and Recommendations

The Nigerian government is dedicated to developing a sustainable system for providing water and wastewater systems throughout the country. If water services are to advance and provide sustainable services for the entire urban population, significant institutional and sector reform will be required.

The current system of governance is characterized by major differences in the institutional settings of state water agencies (SWAs) and the presence of other water providers, who will remain on the scene for the foreseeable future. To finance the necessary investment, the government is encouraging innovative mechanisms to complement budget support, such as a water fund. It is expected that such a fund will be able to address the differences and accommodate the needs of different states regardless of how their institutions are structured and at the same time provide resources for the water sector based on objective criteria.

It is understandable that the federal government cannot provide all the needed infrastructure investment because it lacks the resources, and that private participation and external borrowing by state entities would complement the public funds available. While the government can allocate a portion of the financial resources needed, public-private partnerships (PPPs) are expected to play a key role in financing strategic infrastructure. Safe regulation is expected to be amended soon to allow public entities and PPP projects to issue bonds to fund specific infrastructure projects. The sustainability of such investment often depends on the availability of longer-term financing. The terms, especially the interest rate and the maturity of debt, make a difference to the financial sustainability of investments. Higher interest rates or shorter maturities raise the cost of annual debt service and often require higher tariffs or increased public support.

Conclusions

Urban water supply is struggling to cope with the continuing urbanization of Nigeria. Although about 1 million new customers were connected in 2011–13, water coverage dropped by almost 4 percent, to less than 40 percent. If the

current trend continues, water coverage may drop below 30 percent within 10 years, and only 20 percent of urban dwellers will have a direct water connection.

It may be imperative to expand service. The Federal Ministry of Water Resources (FMWR) has announced the start of a reform that, if it is to guarantee water services to current residents, will cost an estimated US\$3.3 billion. It will require construction of 20–30 water treatment plants to guarantee needed volume and at least 100,000 kilometers of additional mains to distribute the water to customers.

The magnitude of reform should be managed pragmatically. The size of the reform challenge may have been underestimated and the current investment path is not tracking the evolution of demand, since SWAs are struggling to cope with urbanization and population movement within the country.

Current investment planned for the sector is not sufficient. The current rate of the investment of US\$70–80 million a year will not sustain sector performance. The average investment project is now 10 years old, and 18 SWAs have never had an investment project valued above US\$10 million. To reach universal coverage, the country will need to invest about US\$6 billion over the next 10 years.

The financial orientation of the SWAs may need to shift. The SWAs, the main providers of water services, tend to be highly dependent on state governments (SGs); they have very limited institutional power and financial capacity of their own to take on massive investment without governmental support. In case the decision is made to increase investments in the sector, SGs and their SWAs need to prepare by giving special attention to the financial sustainability of future investments and the implications for tariff policy and state subsidies.

The SWAs depend on SGs for their operational and financial management. SGs pay most of the major operational costs (labor, electricity, and chemicals), and the SWAs also receive direct budget transfers or subsidies from the SG. Furthermore, in three SWAs service is provided free of charge for domestic customers and in several others public institutions do not pay for the water they consume. As a result, there is no incentive for SWA managers to improve performance and customer service. This situation can hardly lead to sustainable service in the long term.

The water sector is in dire need of investments, and customers are able to pay. The cost to Nigerians of getting water from alternative providers is assessed today at US\$700 million a year, and the amount is growing. The need for investment to expand coverage and services is high, on one hand, and on the other, customers already pay for more expensive alternative water providers and coping mechanisms. Improving currently poor cost recovery performance would at least in theory make available financial resources to contribute to investment and attract investors.

Attracting the needed investment will require state intervention as well as management adjustments. SWAs get about US\$100 million in operational subsidies that cover labor, electricity, and other costs of operations. A substantial proportion of these subsidies is passed on to customers in the form of free water,

tariffs below cost, and poor collection of payments. Attracting the needed investment will require a mix of the following measures, which can take diverse forms depending on state context and vision: (1) increase SWA management autonomy; (2) clarify the rules for the partnership between SGs and the SWAs to heighten predictability; and (3) define how power is shared for decisions that rest with the SG. Given the variety of institutional arrangements for the water sector in Nigeria, this does not mean that all SWAs should be corporations with participation from the private sector as in Lagos. It does mean that the rules must be clear, predictable, and enforceable, and that the SWAs be given more management authority in some areas so that they can adapt as needed and go forward according to their plans and service delivery objectives.

Recommendations

The information gap needs to be closed. The first priority is to establish a clear and unambiguous baseline for water services. This should include not only SWAs, but also services provided by local government authorities, small local water providers, self-services, and rural water.

The water services are in significant financial and technical crisis. The FMWR currently does not have the institutional means and capacity to assess the needs and provide either financial resources or technical assistance (TA) to water providers.

Although the national statistics agency collects some general SWA performance data, little of the data is useful for monitoring the sector and informing decisions. Ad hoc donor reports to the government and to parliament and studies by national and international agencies are the only sources of sector information for national decision makers. The few attempts by international agencies to set up data collection and analysis institutions were not sustainable.

The government understands the need to set a baseline and monitor trends in the development of water services in order to establish proper investment programs based on objective information and performance indicators. There is also growing demand to monitor wastewater operations. This will be partially addressed by the new World Bank Nigeria Urban Water Supply Reform Project (NUWSPR) III and its Component 3 for SWAs, but other water services will soon require a similar effort.

The sustainability of the information system has to be linked with sector financing and guarantee a constant flow of information. The experience of Brazil and Tanzania can be helpful: in both, no utility can get any support of any kind unless it provides verified performance data to the national regulator.

The corporate status of SWAs has to be clear and their technical and financial activities made more transparent. Few of the SWAs have a truly separate legal status, meaning that they do not operate separately from the SG or have a right to engage in any economic activities independently. Despite the nominal financial independence of a few SWAs, the lack of transparency in operations and inefficient tariff policy lead to SWAs being de facto state departments of water

services, and all decisions, including those about investment, are made by SGs. No SWA has a credit history, has assessed its borrowing capacity, or has published its technical and financial performance results.

The corporatization process supported by NUWSPR III will be required for three states with investment programs. Other states will eventually follow suit.

At the same time it is important that there be a mechanism that allows financial transfers directly to the SWAs from the federal and state levels, at least for the early stages of the corporatization process. This will allow utilities to get state or national guarantees, and develop other sound instruments for medium- and long-term borrowing.

National and state tariff policy guidelines and regimes have to be improved. There is no clear, transparent, shared, and detailed definition and description of tariff policy and its application in terms of objectives, responsibilities, and methodologies for setting up cost-recovery tariffs, reviewing and indexing them, and designing an efficient and equitable tariff structure.

Tariffs should be reviewed for adjustment in terms of both cost recovery and affordability. As of now, the state sets the tariffs. Because low tariffs are considered an important element of social policy, SGs make affordability a key argument for them, but this argument does not match Nigeria's development situation. Tariffs have not been changed even to account for inflation or the rising cost of energy resources; in some extreme cases they have not been changed for decades. This results in a financial paradox: even as almost all SWAs get subsidies of some kind, they still provide services below cost, thus subsidizing all customers, including public and commercial companies, as they wear out their assets and accumulate debt. For SWAs it is just technically and financially simpler to continue to provide poor service and remain in deep debt rather than conduct sustainable operations. Meanwhile, water service quality is going down and the future of the sector is unclear unless there are substantial reforms in both tariff policy and the mechanism for financing municipal water infrastructure. Also, this practice prevents expansion of services: each new customer exacerbates SWA losses because the revenue collected is usually below the costs associated with providing the service.

The federal government should issue clear general guidelines on setting tariffs. The SWAs should then draw on the government guidelines and simplify the structures to send a clear signal to consumers of what their consumption costs are. Preferably the tariff structure should be a fixed monthly charge for lifeline consumption (say, 6 cubic meters per month plus connection costs) and then a unit rate for metered consumption above the lifeline allowance.

Metering of both water production and consumption needs to be institutionalized at all SWAs. This will help to get clear performance data; it is also the basis for accurate billing and cost-accounting, water conservation, and demand management.

Customers should be considered a potential source of revenue for services rendered. Customers seem to be in a position to pay the SWAs because they are

already paying a lot more for alternative sources and self-provisioning. The coping costs of getting water from alternative water providers is assessed at US\$700 million a year, and this amount is growing. This flow could be turned into a significant source of financing to cover the costs of investment.

SWAs have to prepare for short-term financing and a pipeline of projects. Most SWAs are operating at the very edge of their ability to serve their current customers. It is important to create a state grant program using a formula of “reforms-for-investment” where investment grants will be allocated competitively to SWAs that are interested in and ready for reforms, such as corporatization, universal metering, tariff revisions, coverage of the poor, or other objective and measurable targets. As many SWAs already have shovel-ready projects, the program can start operating very quickly and bring quick results in terms of stabilizing the water sector and generating a new pipeline for investments.

SWAs and SGs together need to prepare for sector medium- and long-term financing for projects. It is important to ensure that the legal standing of the SWAs makes them eligible to seek credit.

SWAs should explore access to medium- and long-term financing. There is no financial mechanism or financial instrument that allows long-term loans or guarantees for investment in municipal or private utilities. There is no direct financial channel to SWAs from the federal government. Reported federal assistance is in fact international financial institution projects. Other than Abuja, no SWA has the right to provide guarantees. However, even participation in limited budget programs does not guarantee long-term financing of a water investment, which is maintained at the “mercy” of the owner, the state. Subsovereign guarantees to states are in their infancy and if any SWA wishes to make a deal with any investor or to take out a loan, it must get approval from all levels of authorities from local councils to the federal ministry. Further down the road the state continues to be active through its assessment of the SWA’s investment needs and in setting the associated tariff increases.

For similar reasons financial grants from such international funds as the Global Environment Facility or the Carbon Fund are also complicated. The Ministry of Environment, the formal focal point of these grant facilities, simply cannot transfer funds to water utility beneficiaries because of the way the sector is structured.

If the current system continues, Nigeria will continue the system of state-controlled investment in water, where the SGs build new facilities and then transfer them to utilities for operation. Rehabilitation of capital assets will also be funded from sources that are outside SWA control. The alternative would be financial reform in infrastructure with liberalization of the tariff policy and establishing mechanisms for long-term investment in the sector. Without these reforms there will be no investment and government-sponsored build-operate-transfer will be the only chance to attract investors.

Creation of a water fund is a possibility that should be explored. In view of the variety of SWA institutional structures, a national water fund could help

develop a pipeline of investment projects, based on reported performance information, objective needs, and guarantees from the state that the built infrastructure will be properly financed, operated, and maintained. The concept of a water fund is already incorporated into Component 3 of the NUWSPR III project. The following steps would need to be taken to establish one:

1. Launch national performance indicators for the SWAs, with compulsory participation.
2. Do a technical and financial audit of the SWAs.
3. Draft new tariff mechanisms to encourage efficient operations of SWAs.
4. Do urgent rehabilitation work, which is required in lending projects.
5. Corporatize pilot SWAs, get them credit ratings, and calculate their borrowing capacity.
6. Design medium- and long-term financing mechanisms for budget credits from a water fund for eligible utilities in the pilot.
7. Pilot the medium- and long-term financing mechanisms for budget credits in eligible SWAs and prepare them for borrowing externally.
8. Graduate the pilot SWAs from budget-supported programs and grants to full operation that allows them to borrow from international development agencies and banks.

A water fund can also support SWAs in identifying, originating, and preparing projects by providing the following, either with government money or by attracting private investors:

1. Grants for TA for, for example, project feasibility studies, advisory services for project design and structuring, credit rating services, and investment and financial planning
2. Support to project implementation and financing
3. Grants to subsidize public and PPP projects
4. Equity investments in PPP projects
5. Junior, subordinated loans for public and PPP projects
6. Concessionary low-interest-rate loans for public and PPP projects
7. Standard loans for public, PPP, and private projects
8. Guarantees (full and partial credit or partial risk guarantees) for public borrowers, PPP projects, and private sector projects.

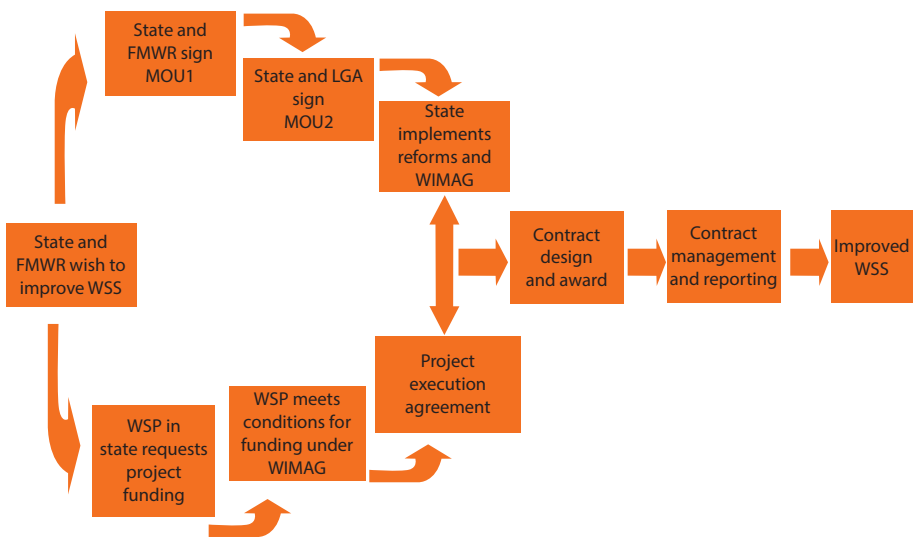
Terms for each financial product need to be tailored to the individual project with due attention to the rules for deployment of financial instruments and the risk of moral hazard. Water fund mechanisms could be expanded to private water providers as soon as their legal status is cleared up and they are included in the system for monitoring water performance.

The WIMAG concept needs to be reviewed and its applicability evaluated. Nigeria has had experience in development of the water fund concept through water investment mobilization and applications guidelines (WIMAG), which

were designed as part of the NUWSRP I project. The government did not put this initiative fully in place because it came in the middle of the financial crisis. Now FMWR wants to review the concept and perhaps adapt it to the water fund concept (box 4.1). There are a few options developed in other countries that the government and the FMWR can also draw on (see appendix J).

Box 4.1 WIMAG Model

In 2009 the government drew up water investment mobilization and applications guidelines (WIMAG) to help accelerate financial investment in the water sector. The program expected to correct water supply sector inadequacies, sustainably for better delivery of water, and sanitation services (WSS) delivery through coordination of all stakeholders making water investments. This is how the suggested WIMAG system would work:



WIMAG was intended to foster strategic partnership among federal and state governments, water service providers (WSPs), and local governments in the areas of investment planning, funds contribution, and implementation of necessary sector reforms, such as public-private partnerships to ensure sustainable water supply and sanitation service delivery. The WIMAG has been prepared to cover primary of responsibility, institutional arrangement, investment planning, financing arrangements, program implementation, sustainable operation and maintenance, reporting, and monitoring and evaluation.

Note: MOU = memorandum of understanding.

APPENDIX A

Data Quality

All participating state water agencies (SWAs), the staff of the Federal Ministry of Water Resources (FMWR), and the World Bank team have made all possible efforts to keep data quality at the highest possible level. All information was reviewed, analyzed and corrected if needed, and then returned to the SWA data collectors for additional review and verification. A special data accreditation exercise was conducted twice to address data quality improvements. At the same time substantial proportions of the data items were beyond SWA areas of competence due to institutional and other limitations.

Data quality was an issue throughout the study but improved consistently as all the utilities gained significant training and experience in data reporting and analysis. At the workshops, one day each was given to data quality and data quality improvement training. Each participating SWA drew up a data quality improvement program that was discussed with peers and FMWR.

The study team put significant effort into ensuring data quality by verifying the information collected and checking data consistency within an individual report, within the entire SWA group, and within the entire International Benchmarking Network for Water and Sanitation Utilities (IBNET) sample.

IBNET data were collected for 91 performance parameters for each SWA according to IBNET standards and data collection protocol. The study team also collected information on services for the poor, informal water providers, and gender issues. All the information was tested by the standard IBNET Excel-based toolkit, which had 24 checks for internal consistency of data submitted, and then compared with the data for a region, nationally, and for SWAs within the region that had similar populations and development status.

Every utility had a chance to add missing data at each round of data collection and review and correct the information from the previous year. The three-year data were vetted by each SWA and the FMWR before they were incorporated into the final report.

The project team conducted a special accreditation for data quality that included analysis of data sources, their measurement process, assessment data, and overall data quality assessment.

For most SWAs, population living in the service areas was based on an approximation from the 1996 and 2006 censuses. In seven states this number was provided by the State Population Commission, which conducted sampling and reviewed SWA population figures. The Port Harcourt water company recently hired an external company to verify its numbers.

Population served was measured by 16 SWAs and their technical and financial departments using their own enumeration and services database. In six, the assessment was based on the approximate number of people served by a connection or a standpipe. Four SWAs used official information from the state statistical bureau. Bayelsa and Rivers did not have such information; their estimates were based on metered water consumption.

Almost all SWAs have a system of customer accounts based on number of connections, which are therefore well recorded in all companies except one, where the number of connections was estimated based on population density. The same applies to the number of active connections and connections with meters.

Although metering is done on average for only about 16 percent of all connections, a couple of states have reasonable numbers of metered connections averaging 45 percent (Cross Rivers, 100 percent, and Abuja, 46 percent) with billing based on operating meters. Production volumes were assessed generally by hours of operations multiplied by the design capacity of the water pumps at intake. Consumption calculations were based on billing.

Average hours of operation were recorded based on actual operation of main intakes and pumps, something that all SWAs record and report well. The same applies to pressure in the system, which most SWAs constantly monitor.

Thirty-three states have an established system for water mains inventories and have a systematic record of their network. Ogun SWA even has an operational geographic information system (GIS) map for all networks, connections, and meters. It also has an asset management system that records age of pipes and their material, number of breaks, and other elements necessary for proper operations. At the other extreme, Kano and Niger have not had a chance to conduct inventories and so have no useful information on their mains.

Revenues are billed and collected by only half the SWAs because this function is commonly not their direct responsibility; it is delegated to the state government (SG) or state water board (SWB). However, all SWAs have access to the information and get it annually. In two states revenue is estimated based on the tariff set because water is charged on a flat tariff basis. Water for domestic consumption is completely free in Bayelsa and Port Harcourt.

About 10 SWAs collect payments themselves and have comprehensive information about accounts receivable and collections. For the rest, this information is generally not in their information systems, being collected and monitored by SWBs. SWAs can get the information on request.

Labor costs can be a challenging issue for five SWAs, all of whose staff are state employees with salaries paid from SG accounts. About 20 SWAs have their own staff, but they only account for salaries, and money for salaries is provided by the SWB, which collects all water revenues.

Electricity is free for most SWAs because in 30 SWAs out of 35 the electrical utilities bill the SWBs directly. Only Abuja, Lagos, Imo, Ogun, and Osun have complete information on their electricity consumption and costs, and only Lagos and Abuja pay the electricity utility directly for their consumption. Information on electricity costs and consumption is, however, available for all SWAs from electricity providers and is thus reported by 30 SWAs.

All SWAs have operations laboratories that collect samples and report data quality to the operating units.

APPENDIX B

Performance Data for Nigeria, by Region and State Water Agency, 2013 (Unless Otherwise Specified)

Nigeria

Population in the administrative zone of responsibility, millions	99.3
Population coverage	40%
Average staff salary per month, US\$	335.95
Staff per 1,000 customers	0.49
Km of mains per 1,000 users	0.42
Collection rate	57%
Operation and maintenance subsidy, US\$	69,716,923
Implicit subsidy to residential customers, US\$	102,158,456
Cross-subsidy ratio	3.11
Production capacity short of water to provide all residents with 50 lpcd, m ³ /year	124,655,587
Investment need to connect all residents, US\$ millions	2,900

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	42%	41%	40%
1.2 Coverage with direct supply	28%	28%	27%
1.3 Coverage with standpipes, kiosks, etc.	14%	13%	13%
4.1 Consumption total, lpcd	35	36	34
4.7 Consumption residential, lpcd	26	26	26
4.3 Residential consumption	70%	66%	69%
15.1 Hours of operations per day (average)	12.5	12.3	12.8
6.1 Unaccounted losses	40%	34%	39%
6.2 Unaccounted losses, m ³ /km of the network a day	55	44	44
11.1 Production cost (US\$/m ³)	0.51	0.53	0.57
18.1 Revenue billed (US\$/m ³)	0.29	0.29	0.27
23.2 Collection rate	54%	60%	57%

IBNET = International Benchmarking Network for Water and Sanitation Utilities; lpcd = liters per capita per day; n.a. = not applicable.

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
24.1 Cost-recovery ratio	0.65	0.59	0.63
100.1 Female staff	16%	16%	18%
100.2 Female staff salary vs. average salary	15%	10%	17%

North Central Region

Population in the administrative zone of responsibility, millions			19.7
Population coverage			23%
Average staff salary per month, US\$			301.88
Staff per 1,000 customers			0.57
Km of mains per 1,000 users			0.96
Collection rate			67%
Operation and maintenance subsidy, US\$			2,196,352
Implicit subsidy to residential customers, US\$			858,631
Cross-subsidy ratio			1.74
Production capacity required to provide all residents with 50 lpcd, m ³ /year			69,321,269
Investment needed to connect all residents, US\$ millions			640

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	25%	28%	23%
1.2 Coverage with direct supply	16%	17%	15%
1.3 Coverage with standpipes, kiosks, etc.	9%	11%	8%
4.1 Consumption total, lpcd	94	77	102
4.7 Consumption residential, lpcd	86	73	76
4.3 Residential consumption	91%	95%	74%
15.1 Hours of operations per day (average)	12	12	14
6.1 Unaccounted losses	35%	23%	30%
6.2 Unaccounted losses, m ³ /km of the network a day	60	88	60
11.1 Production cost (US\$/m ³)	0.12	0.29	0.12
18.1 Revenue billed (US\$/m ³)	0.09	0.09	0.16
23.2 Collection rate	81%	109%	67%
24.1 Cost-recovery ratio	0.76	0.29	1.35
100.1 Female staff	17%	17%	20%
100.2 Female staff salary vs. average salary	16%	7%	9%

North East Region

Population in the administrative zone of responsibility, millions			4.1
Population coverage			47%
Average staff salary per month, US\$			275.31
Staff per 1,000 customers			1.77
Km of mains per 1,000 users			0.43
Collection rate			34%
Operation and maintenance subsidy, US\$			2,667,223
Implicit subsidy to residential customers, US\$			3,585,630
Cross-subsidy ratio			1.34
Production capacity required to provide all residents with 50 lpcd, m ³ /year			17,589,569
Investment needed to connect all residents, US\$ millions			107

<i>IBNET indicators</i>	2011	2012	2013
1.1 Coverage	46%	40%	47%
1.2 Coverage with direct supply	27%	22%	27%
1.3 Coverage with standpipes, kiosks, etc.	19%	18%	20%
4.1 Consumption total, lpcd	51	60	52
4.7 Consumption residential, lpcd	45	55	43
4.3 Residential consumption	87%	91%	82%
15.1 Hours of operations per day (average)	7	8	7
6.1 Unaccounted losses	42%	41%	56%
6.2 Unaccounted losses, m ³ /km of the network a day	54	42	54
11.1 Production cost (US\$/m ³)	0.43	0.47	0.66
18.1 Revenue billed (US\$/m ³)	0.08	0.09	0.18
23.2 Collection rate	20%	25%	34%
24.1 Cost-recovery ratio	0.18	0.19	0.28
100.1 Female staff	7%	7%	7%
100.2 Female staff salary vs. average salary	8%	8%	19%

North West Region

Population in the administrative zone of responsibility, millions	17.9
Population coverage	67%
Average staff salary per month, US\$	260.52
Staff per 1,000 customers	0.40
Km of mains per 1,000 users	1.56
Collection rate	77%
Operation and maintenance subsidy, US\$	2,171,5962
Implicit subsidy to residential customers, US\$	2,506,676
Cross-subsidy rate	6.45
Production capacity required to provide all residents with 50 lpcd, m ³ /year	73,837,223
Investment needed to connect all residents, US\$ millions	297

<i>IBNET indicators</i>	2011	2012	2013
1.1 Coverage	68%	67%	67%
1.2 Coverage with direct supply	48%	48%	48%
1.3 Coverage with standpipes, kiosks, etc.	20%	19%	19%
4.1 Consumption total, lpcd	37	45	45
4.7 Consumption residential, lpcd	32	36	37
4.3 Residential consumption	85%	79%	84%
15.1 Hours of operations per day (average)	13	14	14
6.1 Unaccounted losses	34%	22%	31%
6.2 Unaccounted losses, m ³ /km of the network a day	57	58	65
11.1 Production cost (US\$/m ³)	0.21	0.13	0.11
18.1 Revenue billed (US\$/m ³)	0.09	0.09	0.07
23.2 Collection rate	47%	68%	77%
24.1 Cost-recovery ratio	0.44	0.64	0.66
100.1 Female staff	5%	5%	5%
100.2 Female staff salary vs. average salary	3%	3%	2%

South East Region

Population in the administrative zone of responsibility, millions	9.5
Population coverage	26%
Average staff salary per month, US\$	255.10
Staff per 1,000 customers	0.65
Km of mains per 1,000 users	1.01
Collection rate	90%
Operation and maintenance subsidy, US\$	497,031
Implicit subsidy to residential customers, US\$	1,079,033
Cross-subsidy ratio	2.36
Production capacity required to provide all residents with 50 lpcd, m ³ /year	29,596,852
Investment needed to connect all residents, US\$ millions	350

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	28%	24%	26%
1.2 Coverage with direct supply	17%	16%	19%
1.3 Coverage with standpipes, kiosks, etc.	11%	8%	7%
4.1 Consumption total, lpcd	34	41	23
4.7 Consumption residential, lpcd	25	30	17
4.3 Residential consumption	72%	73%	73%
15.1 Hours of operations per day (average)	12	12	9
6.1 Unaccounted losses	44%	39%	32%
6.2 Unaccounted losses, m ³ /km of the network a day	72	75	30
11.1 Production cost (US\$/m ³)	0.42	0.35	0.34
18.1 Revenue billed (US\$/m ³)	0.38	0.32	0.31
23.2 Collection rate	163%	107%	90%
24.1 Cost-recovery ratio	0.90	0.90	0.91
100.1 Female staff	24%	25%	25%
100.2 Female staff salary vs. average salary	25%	25%	22%

South South Region

Population in the administrative zone of responsibility, millions	11.7
Population coverage	48%
Average staff salary per month, US\$	370.29
Staff per 1,000 customers	0.38
Km of mains per 1,000 users	0.86
Collection rate	41%
Operation and maintenance subsidy, US\$	1,611,892
Implicit subsidy to residential customers, US\$	1,158,601
Cross-subsidy ratio	2.21
Production capacity required to provide all residents with 50 lpcd, m ³ /year	45,639,901
Investment needed to connect all residents, US\$ millions	375

<i>IBNET indicators</i>	2011	2012	2013
1.1 Coverage	40%	40%	48%
1.2 Coverage with direct supply	21%	21%	24%
1.3 Coverage with standpipes, kiosks, etc.	19%	19%	23%
4.1 Consumption total, lpcd	13	11	9
4.7 Consumption residential, lpcd	11	9	7
4.3 Residential consumption	86%	82%	82%
15.1 Hours of operations per day (average)	9	7	9
6.1 Unaccounted losses	29%	33%	33%
6.2 Unaccounted losses, m ³ /km of the network a day	30	24	26
11.1 Production cost (US\$/m ³)	1.35	1.61	1.31
18.1 Revenue billed (US\$/m ³)	0.38	0.57	0.60
23.2 Collection rate	45%	44%	41%
24.1 Cost-recovery ratio	0.28	0.36	0.46
100.1 Female staff	30%	31%	32%
100.2 Female staff salary vs. average salary	33%	33%	35%

South West Region

Population in the administrative zone of responsibility, millions	36.5
Population coverage	36%
Average staff salary per month, US\$	424.97
Staff per 1,000 customers	0.37
Km of mains per 1,000 users	1.90
Collection rate	41%
Operation and maintenance subsidy, US\$	2,392,061
Implicit subsidy to residential customers, US\$	22,103,487
Cross-subsidy ratio	1.33
Production capacity required to provide all residents with 50 lpcd, m ³ /year	255,439,488
Investment needed to connect all residents, US\$, millions	1,200

<i>IBNET indicators</i>	2011	2012	2013
1.1 Coverage	42%	40%	36%
1.2 Coverage with direct supply	28%	30%	27%
1.3 Coverage with standpipes, kiosks, etc.	13%	11%	9%
4.1 Consumption total, lpcd	19	18	15
4.7 Consumption residential, lpcd	10	10	9
4.3 Residential consumption	53%	57%	57%
15.1 Hours of operations per day (average)	14	14	14
6.1 Unaccounted losses	51%	49%	58%
6.2 Unaccounted losses, m ³ /km of the network a day	60	44	56
11.1 Production cost (US\$/m ³)	0.63	0.63	0.85
18.1 Revenue billed (US\$/m ³)	0.51	0.45	0.36
23.2 Collection rate	40%	40%	41%
24.1 Cost-recovery ratio	0.81	0.72	0.43
100.1 Female staff	21%	21%	23%
100.2 Female staff salary vs. average salary	17%	9%	24%

In the following tables, the Ebonyi State Water Agency (SWA) has the lowest staff salary and length of network and is therefore used to compare with other SWAs.

Kaduna State

Capital city	Kaduna
Population in the administrative zone of responsibility, thousands	2,134
Population coverage	n.a.
Staff salary rank (Ebonyi = 1)	3.09
Average staff salary per month, US\$	258.40
Staff per 1,000 customers	n.a.
Km of mains per 1,000 users	2.70
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	266.25
Last tariff update, year	2012
Current investment project (yes/no)	Yes
Last investment project with value more than US\$10 million (year)	2013
Responsibility for issuing tariffs (yes/no)	Yes
Collection rate	n.a.
Responsibility for collecting revenue (yes/no)	Yes
Labor cost paid by SWA (yes/no)	Yes
Electricity cost paid by SWA (yes/no)	n.a.
Investment subsidy a year, US\$ (average for 2011–13)	7,969,936
Operation and maintenance subsidy, US\$	3,199,821
Implicit subsidy to residential customers, US\$	8,865,005
Cross-subsidy ratio	n.a.
Production capacity required to provide all residents with 50 lpcd, m ³ /year	2,621
Investment needed to connect all residents, US\$	9,692,600

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	92%	93%	92%
1.2 Coverage with direct supply	71%	71%	71%
1.3 Coverage with standpipes, kiosks, etc.	21%	22%	20%
4.1 Consumption total, lpcd	62.58	65.40	69.12
4.7 Consumption residential, lpcd	48.55	50.82	54.77
4.3 Residential consumption	78%	78%	79%
15.1 Hours of operations per day (average)	14	15	15
6.1 Unaccounted losses	30%	27%	27%
6.2 Unaccounted losses, m ³ /km of the network a day	23	21	22
11.1 Production cost (US\$/m ³)	0.25	0.19	0.28
18.1 Revenue billed (US\$/m ³)	0.19	0.18	0.17
23.2 Collection rate	30%	51%	66%
24.1 Cost-recovery ratio	0.76	0.98	0.60
100.1 Female staff	16%	16%	13%
100.2 Female staff salary vs. average salary	15%	12%	9%

Kano State

Capital city	Kano
Population in the administrative zone of responsibility, millions	5.324
Population coverage	41%
Staff salary rank (Ebonyi = 1)	3.06
Average staff salary per month, US\$	255.99
Staff per 1,000 customers	0.6
Km of mains per 1,000 users	1.40
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	138.56
Last tariff update, year	n.a.
Current investment project (yes/no)	Yes
Last investment project with value more than US\$10 million (year)	2014
Responsibility for issuing tariffs (yes/no)	No
Collection rate	165%
Responsibility for collecting revenue (yes/no)	No
Labor cost paid by SWA (yes/no)	Yes
Electricity cost paid by SWA (yes/no)	Yes
Investment subsidy a year, US\$ (average for 2011–13)	6,986,238
Operation and maintenance subsidy, US\$	n.a.
Implicit subsidy to residential customers, US\$	n.a.
Cross-subsidy ratio	27.28
Production capacity required to provide all residents with 50 lpcd, m ³ /year	100,657,297
Investment needed to connect all residents, US\$	171,446,117

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	41%	41%	41%
1.2 Coverage with direct supply	37%	37%	37%
1.3 Coverage with standpipes, kiosks, etc.	3%	4%	4%
4.1 Consumption total, lpcd	34.63	39.77	44.47
4.7 Consumption residential, lpcd	32.35	37.14	40.10
4.3 Residential consumption	93%	93%	90%
15.1 Hours of operations per day (average)	16	18	18
6.1 Unaccounted losses	49%	56%	53%
6.2 Unaccounted losses, m ³ /km of the network a day	92	123	127
11.1 Production cost (US\$/m ³)	0.27	0.31	0.17
18.1 Revenue billed (US\$/m ³)	0.12	0.13	0.12
23.2 Collection rate	104%	144%	165%
24.1 Cost-recovery ratio	0.45	0.41	0.71
100.1 Female staff	4%	6%	6%
100.2 Female staff salary vs. average salary	0%	0%	0%

Sokoto State

Capital city	Sokoto
Population in the administrative zone of responsibility, millions	1.933
Population coverage	65%
Staff salary rank (Ebonyi = 1)	3.01
Average staff salary per month, US\$	251.61
Staff per 1,000 customers	0.6
Km of mains per 1,000 users	0.28
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	28.13
Last tariff update, year	1984
Current investment project (yes/no)	Yes
Last investment project with value more than US\$10 million (year)	2013
Responsibility for issuing tariffs (yes/no)	No
Collection rate	101%
Responsibility for collecting revenue (yes/no)	No
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	Yes
Investment subsidy a year, US\$ (average for 2011–13)	2,838,208
Operation and maintenance subsidy, US\$	2,262,632
Implicit subsidy to residential customers, US\$	996,344
Cross-subsidy ratio	n.a.
Production capacity required to provide all residents with 50 lpcd, m ³ /year	35,278,382
Investment needed to connect all residents, US\$	33,828,600

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	64%	64%	65%
1.2 Coverage with direct supply	64%	64%	65%
1.3 Coverage with standpipes, kiosks, etc.	0%	0%	0%
4.1 Consumption total, lpcd	63.90	87.49	85.97
4.7 Consumption residential, lpcd	63.87	74.34	85.97
4.3 Residential consumption	100%	85%	100%
15.1 Hours of operations per day (average)	5	5	6
6.1 Unaccounted losses	40%	15%	28%
6.2 Unaccounted losses, m ³ /km of the network a day	109	40	83
11.1 Production cost (US\$/m ³)	0.20	0.13	0.07
18.1 Revenue billed (US\$/m ³)	0.07	0.06	0.05
23.2 Collection rate	100%	78%	101%
24.1 Cost-recovery ratio	0.33	0.45	0.66
100.1 Female staff	4%	4%	4%
100.2 Female staff salary vs. average salary	0%	0%	0%

Zamfara State

Capital city	Gusau
Population in the administrative zone of responsibility, thousands	773
Population coverage	75%
Staff salary rank (Ebonyi = 1)	5.03
Average staff salary per month, US\$	420.38
Staff per 1,000 customers	0.5
Km of mains per 1,000 users	2.19
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	216.52
Last tariff update, year	2012
Current investment project (yes/no)	Yes
Last investment project with value more than US\$10 million (year)	2007
Responsibility for issuing tariffs (yes/no)	No
Collection rate	42%
Responsibility for collecting revenue (yes/no)	No
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	No
Investment subsidy a year, US\$ (average for 2011–13)	n.a.
Operation and maintenance subsidy, US\$	1,802,313
Implicit subsidy to residential customers, US\$	797,116
Cross-subsidy ratio	n.a.
Production capacity required to provide all residents with 50 lpcd, m ³ /year	19,065,870
Investment needed to connect all residents, US\$	9,666,100

<i>IBNET indicators</i>	2011	2012	2013
1.1 Coverage	75%	75%	75%
1.2 Coverage with direct supply	53%	52%	52%
1.3 Coverage with standpipes, kiosks, etc.	22%	22%	23%
4.1 Consumption total, lpcd	59.83	89.04	78.00
4.7 Consumption residential, lpcd	41.88	62.33	54.60
4.3 Residential consumption	70%	70%	70%
15.1 Hours of operations per day (average)	6	6	6
6.1 Unaccounted losses	2%	2%	5%
6.2 Unaccounted losses, m ³ /km of the network a day	5	5	10
11.1 Production cost (US\$/m ³)	0.24	0.16	0.11
18.1 Revenue billed (US\$/m ³)	0.19	0.12	0.15
23.2 Collection rate	48%	46%	42%
24.1 Cost-recovery ratio	0.79	0.79	1.33
100.1 Female staff	0%	0%	0%
100.2 Female staff salary vs. average salary	0%	0%	0%

Kebbi State

Capital city	Birnin Kebbi
Population in the administrative zone of responsibility, thousands	958
Population coverage	33%
Staff salary rank (Ebonyi = 1)	3.35
Average staff salary per month, US\$	279.85
Staff per 1,000 customers	1.3
Km of mains per 1,000 users	0.94
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	93.08
Last tariff update, year	2004
Current investment project (yes/no)	No
Last investment project with value more than US\$10 million (year)	n.a.
Responsibility for issuing tariffs (yes/no)	No
Collection rate	125%
Responsibility for collecting revenue (yes/no)	No
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	Yes
Investment subsidy a year, US\$ (average for 2011–13)	n.a.
Operation and maintenance subsidy, US\$	1,432,266
Implicit subsidy to residential customers, US\$	n.a.
Cross-subsidy ratio	9.81
Production capacity required to provide all residents with 50 lpcd, m ³ /year	18,756,664
Investment needed to connect all residents, US\$	32,192,750

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	32%	32%	33%
1.2 Coverage with direct supply	32%	32%	32%
1.3 Coverage with standpipes, kiosks, etc.	0%	0%	0%
4.1 Consumption total, lpcd	89.43	153.82	151.80
4.7 Consumption residential, lpcd	82.98	142.72	140.61
4.3 Residential consumption	93%	93%	93%
15.1 Hours of operations per day (average)	10	12	12
6.1 Unaccounted losses	27%	27%	31%
6.2 Unaccounted losses, m ³ /km of the network a day	25	25	30
11.1 Production cost (US\$/m ³)	0.13	0.16	0.10
18.1 Revenue billed (US\$/m ³)	0.17	0.16	0.17
23.2 Collection rate	99%	99%	125%
24.1 Cost-recovery ratio	1.27	1.05	1.76
100.1 Female staff	8%	9%	9%
100.2 Female staff salary vs. average salary	9%	6%	5%

Jigawa State

Capital city	Dutse
Population in the administrative zone of responsibility, millions	4.783
Population coverage	100%
Staff salary rank (Ebonyi = 1)	2.58
Average staff salary per month, US\$	215.81
Staff per 1,000 customers	0.1
Km of mains per 1,000 users	1.35
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	133.46
Last tariff update, year	1994
Current investment project (yes/no)	No
Last investment project with value more than US\$10 million (year)	n.a.
Responsibility for issuing tariffs (yes/no)	No
Collection rate	35%
Responsibility for collecting revenue (yes/no)	No
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	No
Investment subsidy a year, US\$ (average for 2011–13)	n.a.
Operation and maintenance subsidy, US\$	2,996,184
Implicit subsidy to residential customers, US\$	1,956,315
Cross-subsidy ratio	0.58
Production capacity required to provide all residents with 50 lpcd, m ³ /year	97,002,810
Investment needed to connect all residents, US\$	15,000,000

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	100%	100%	100%
1.2 Coverage with direct supply	52%	52%	52%
1.3 Coverage with standpipes, kiosks, etc.	48%	48%	48%
4.1 Consumption total, lpcd	12.05	16.80	14.16
4.7 Consumption residential, lpcd	9.27	8.87	8.59
4.3 Residential consumption	77%	53%	61%
15.1 Hours of operations per day (average)	16	16	16
6.1 Unaccounted losses	31%	9%	23%
6.2 Unaccounted losses, m ³ /km of the network a day	0	0	0
11.1 Production cost (US\$/m ³)	0.17	n.a.	n.a.
18.1 Revenue billed (US\$/m ³)	0.01	0.01	0.01
23.2 Collection rate	0%	29%	35%
24.1 Cost-recovery ratio	0.08	n.a.	0.11
100.1 Female staff	2%	2%	2%
100.2 Female staff salary vs. average salary	0%	0%	0%

Katsina State

Capital city	Katsina
Population in the administrative zone of responsibility, millions	1.846
Population coverage	40%
Staff salary rank (Ebonyi = 1)	5.39
Average staff salary per month, US\$	451.04
Staff per 1,000 customers	0.3
Km of mains per 1,000 users	2.12
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	209.50
Last tariff update, year	2014
Current investment project (yes/no)	Yes
Last investment project with value more than US\$10 million (year)	1999
Responsibility for issuing tariffs (yes/no)	Yes
Collection rate	81%
Responsibility for collecting revenue (yes/no)	Yes
Labor cost paid by SWA (yes/no)	Yes
Electricity cost paid by SWA (yes/no)	No
Investment subsidy a year, US\$ (average for 2011–13)	968,955
Operation and maintenance subsidy, US\$	788,080
Implicit subsidy to residential customers, US\$	240,823
Cross-subsidy ratio	5.35
Production capacity required to provide all residents with 50 lpcd, m ³ year	34,936,362
Investment needed to connect all residents, US\$	62,891,300

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	40%	40%	40%
1.2 Coverage with direct supply	29%	28%	28%
1.3 Coverage with standpipes, kiosks, etc.	11%	12%	12%
4.1 Consumption total, lpcd	32.90	35.08	30.57
4.7 Consumption residential, lpcd	28.00	30.05	25.97
4.3 Residential consumption	85%	86%	85%
15.1 Hours of operations per day (average)	8	8	9
6.1 Unaccounted losses	49%	0%	49%
6.2 Unaccounted losses, m ³ /km of the network a day	34	0	34
11.1 Production cost (US\$/m ³)	0.27	0.32	0.25
18.1 Revenue billed (US\$/m ³)	0.18	0.14	0.00
23.2 Collection rate	118%	142%	81%
24.1 Cost-recovery ratio	0.67	0.43	1.09
100.1 Female staff	2%	2%	3%
100.2 Female staff salary vs. average salary	1%	2%	2%

Benué State

Capital city	Makurdi
Population in the administrative zone of responsibility, millions	4.254
Population coverage	6%
Staff salary rank (Ebonyi = 1)	3.7
Average staff salary per month, US\$	312.12
Staff per 1,000 customers	0.8
Km of mains per 1,000 users	0.25
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	24.29
Last tariff update, year	2010
Current investment project (yes/no)	No
Last investment project with value more than US\$10 million (year)	2012
Responsibility for issuing tariffs (yes/no)	Yes
Collection rate	100%
Responsibility for collecting revenue (yes/no)	Yes
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	No
Investment subsidy a year, US\$ (average for 2011–13)	n.a.
Operation and maintenance subsidy, US\$	770,769
Implicit subsidy to residential customers, US\$	734,065
Cross-subsidy ratio	0.89
Production capacity required to provide all residents with 50 lpcd, m ³ /year	78,381,748
Investment needed to connect all residents, US\$	215,982,050

<i>IBNET indicators</i>	2011	2012	2013
1.1 Coverage	8%	48%	6%
1.2 Coverage with direct supply	4%	22%	2%
1.3 Coverage with standpipes, kiosks, etc.	5%	26%	4%
4.1 Consumption total, lpcd	33.36	4.09	17.19
4.7 Consumption residential, lpcd	0.00	0.00	8.37
4.3 Residential consumption	0%	0%	49%
15.1 Hours of operations per day (average)	16	6	10
6.1 Unaccounted losses	4%	4%	4%
6.2 Unaccounted losses, m ³ /km of the network a day	1	0	1
11.1 Production cost (US\$/m ³)	0.57	1.09	0.70
18.1 Revenue billed (US\$/m ³)	n.a.	n.a.	0.20
23.2 Collection rate	100%	100%	100%
24.1 Cost-recovery ratio	0.26	0.22	0.29
100.1 Female staff	14%	17%	18%
100.2 Female staff salary vs. average salary	22%	17%	35%

Abuja / Federal Capital Territory

Capital city	Abuja
Population in the administrative zone of responsibility, millions	2.621
Population coverage	33%
Staff salary rank (Ebonyi = 1)	9.18
Average staff salary per month, US\$	767.61
Staff per 1,000 customers	0.7
Km of mains per 1,000 users	1.33
Length of mains rank (km of network per 1,000 customers, Ebonyi = 1)	131.48
Last tariff update, year	2010
Current investment project (yes/no)	Yes
Last investment project with value more than US\$10 million (year)	2014
Responsibility for issuing tariffs (yes/no)	No
Collection rate	38%
Responsibility for collecting revenue (yes/no)	No
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	No
Investment subsidy a year, US\$ (average for 2011–13)	4,561,776
Operation and maintenance subsidy, US\$	6,041,625
Implicit subsidy to residential customers, US\$	n.a.
Cross-subsidy ratio	0.94
Production capacity required to provide all residents with 50 lpcd, m ³ /year	61,355,245
Investment needed to connect all residents, US\$	88,074,700

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	32%	29%	33%
1.2 Coverage with direct supply	31%	27%	31%
1.3 Coverage with standpipes, kiosks, etc.	1%	2%	2%
4.1 Consumption total, lpcd	243.26	198.52	202.76
4.7 Consumption residential, lpcd	200.75	161.41	159.61
4.3 Residential consumption	83%	81%	79%
15.1 Hours of operations per day (average)	20	20	24
6.1 Unaccounted losses	22%	36%	18%
6.2 Unaccounted losses, m ³ /km of the network a day	157	263	133
11.1 Production cost (US\$/m ³)	0.12	0.17	0.10
18.1 Revenue billed (US\$/m ³)	0.31	0.33	0.57
23.2 Collection rate	0%	1%	38%
24.1 Cost-recovery ratio	2.52	1.94	5.52
100.1 Female staff	27%	27%	40%
100.2 Female staff salary vs. average salary	64%	0%	24%

Niger State

Capital city	Minna
Population in the administrative zone of responsibility, millions	3.955
Population coverage	13%
Staff salary rank (Ebonyi = 1)	2.51
Average staff salary per month, US\$	209.79
Staff per 1,000 customers	1.8
Km of mains per 1,000 users	3.71
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	366.16
Last tariff update, year	2012
Current investment project (yes/no)	No
Last investment project with value more than US\$10 million (year)	1996
Responsibility for issuing tariffs (yes/no)	No
Collection rate	100%
Responsibility for collecting revenue (yes/no)	Yes
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	No
Investment subsidy a year, US\$ (average for 2011–13)	0
Operation and maintenance subsidy, US\$	2,306,103
Implicit subsidy to residential customers, US\$	1,302,433
Cross-subsidy ratio	n.a.
Production capacity required to provide all residents with 50 lpcd, m ³ /year	76,891,589
Investment needed to connect all residents, US\$	187,738,600

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	13%	11%	13%
1.2 Coverage with direct supply	13%	11%	13%
1.3 Coverage with standpipes, kiosks, etc.	0%	0%	0%
4.1 Consumption total, lpcd	55.85	66.30	0.00
4.7 Consumption residential, lpcd	0.00	0.00	0.00
4.3 Residential consumption	0%	0%	54%
15.1 Hours of operations per day (average)	5	5	5
6.1 Unaccounted losses	n.a.	n.a.	n.a.
6.2 Unaccounted losses, m ³ /km of the network a day	12	12	12
11.1 Production cost (US\$/m ³)	0.27	0.32	0.23
18.1 Revenue billed (US\$/m ³)	0.11	0.11	0.10
23.2 Collection rate	100%	85%	100%
24.1 Cost-recovery ratio	0.41	0.33	0.43
100.1 Female staff	11%	11%	10%
100.2 Female staff salary vs. average salary	0%	0%	0%

Plateau State

Capital city	Jos
Population in the administrative zone of responsibility, millions	3.554
Population coverage	16%
Staff salary rank (Ebonyi = 1)	8.05
Average staff salary per month, US\$	673.16
Staff per 1,000 customers	0.7
Km of mains per 1,000 users	1.64
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	161.99
Last tariff update, year	2012
Current investment project (yes/no)	Yes
Last investment project with value more than US\$10 million (year)	2012
Responsibility for issuing tariffs (yes/no)	No
Collection rate	14%
Responsibility for collecting revenue (yes/no)	No
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	No
Investment subsidy a year, US\$ (average for 2011–13)	984,511
Operation and maintenance subsidy, US\$	3,397,214
Implicit subsidy to residential customers, US\$	2,710,031
Cross-subsidy ratio	5.53
Production capacity required to provide all residents with 50 lpcd, m ³ /year	65,152,854
Investment needed to connect all residents, US\$	157,094,123

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	16%	16%	16%
1.2 Coverage with direct supply	4%	5%	5%
1.3 Coverage with standpipes, kiosks, etc.	12%	11%	11%
4.1 Consumption total, lpcd	166.60	117.89	136.81
4.7 Consumption residential, lpcd	165.04	116.53	135.40
4.3 Residential consumption	99%	99%	99%
15.1 Hours of operations per day (average)	6	7	7
6.1 Unaccounted losses	41%	38%	40%
6.2 Unaccounted losses, m ³ /km of the network a day	89	54	62
11.1 Production cost (US\$/m ³)	0.15	0.23	0.12
18.1 Revenue billed (US\$/m ³)	0.14	0.20	0.18
23.2 Collection rate	0%	13%	14%
24.1 Cost-recovery ratio	0.92	0.88	1.47
100.1 Female staff	22%	23%	24%
100.2 Female staff salary vs. average salary	19%	22%	15%

Kogi State

Capital city	Lokoja
Population in the administrative zone of responsibility, millions	3.340
Population coverage	54%
Staff salary rank (Ebonyi = 1)	n.a.
Average staff salary per month, US\$	n.a.
Staff per 1,000 customers	0.1
Km of mains per 1,000 users	0.14
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	13.97
Last tariff update, year	2012
Current investment project (yes/no)	No
Last investment project with value more than US\$10 million (year)	2011
Responsibility for issuing tariffs (yes/no)	No
Collection rate	95%
Responsibility for collecting revenue (yes/no)	No
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	No
Investment subsidy a year, US\$ (average for 2011–13)	n.a.
Operation and maintenance subsidy, US\$	n.a.
Implicit subsidy to residential customers, US\$	n.a.
Cross-subsidy ratio	1.41
Production capacity required to provide all residents with 50 lpcd, m ³ /year	80,959,672
Investment needed to connect all residents, US\$	92,531,800

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	51%	51%	54%
1.2 Coverage with direct supply	26%	26%	27%
1.3 Coverage with standpipes, kiosks, etc.	25%	25%	27%
4.1 Consumption total, lpcd	35.67	51.89	61.24
4.7 Consumption residential, lpcd	24.32	27.57	30.62
4.3 Residential consumption	68%	53%	50%
15.1 Hours of operations per day (average)	16	18	18
6.1 Unaccounted losses	51%	29%	11%
6.2 Unaccounted losses, m ³ /km of the network a day	210	119	46
11.1 Production cost (US\$/m ³)	n.a.	n.a.	n.a.
18.1 Revenue billed (US\$/m ³)	0.01	0.01	0.01
23.2 Collection rate	100%	100%	95%
24.1 Cost-recovery ratio	n.a.	n.a.	n.a.
100.1 Female staff	13%	13%	13%
100.2 Female staff salary vs. average salary	n.a.	n.a.	n.a.

Nasarawa State

Capital city	Lafia
Population in the administrative zone of responsibility, millions	1.958
Population coverage	31%
Staff salary rank (Ebonyi = 1)	3.11
Average staff salary per month, US\$	260.15
Staff per 1,000 customers	0.5
Km of mains per 1,000 users	0.19
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	18.67
Last tariff update, year	2004
Current investment project (yes/no)	Yes
Last investment project with value more than US\$10 million (year)	1996
Responsibility for issuing tariffs (yes/no)	No
Collection rate	36%
Responsibility for collecting revenue (yes/no)	No
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	No
Investment subsidy a year, US\$ (average for 2011–13)	n.a.
Operation and maintenance subsidy, US\$	2,581,975
Implicit subsidy to residential customers, US\$	2,598,303
Cross-subsidy ratio	2.07
Production capacity required to provide all residents with 50 lpcd, m ³ /year	39,985,316
Investment needed to connect all residents, US\$	75,474,550

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	30%	31%	31%
1.2 Coverage with direct supply	21%	22%	21%
1.3 Coverage with standpipes, kiosks, etc.	9%	9%	10%
4.1 Consumption total, lpcd	67.36	78.73	82.75
4.7 Consumption residential, lpcd	50.52	59.78	63.25
4.3 Residential consumption	75%	76%	76%
15.1 Hours of operations per day (average)	4	6	6
6.1 Unaccounted losses	5%	7%	10%
6.2 Unaccounted losses, m ³ /km of the network a day	6	9	13
11.1 Production cost (US\$/m ³)	0.21	0.18	0.15
18.1 Revenue billed (US\$/m ³)	0.03	0.02	0.02
23.2 Collection rate	179%	381%	36%
24.1 Cost-recovery ratio	0.13	0.13	0.15
100.1 Female staff	17%	17%	18%
100.2 Female staff salary vs. average salary	12%	12%	9%

Adamawa State

Capital city	Yola
Population in the administrative zone of responsibility, millions	1.140
Population coverage	33%
Staff salary rank (Ebonyi = 1)	3.89
Average staff salary per month, US\$	325.37
Staff per 1,000 customers	3.4
Km of mains per 1,000 users	0.47
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	46.83
Last tariff update, year	2009
Current investment project (yes/no)	No
Last investment project with value more than US\$10 million (year)	1987
Responsibility for issuing tariffs (yes/no)	Yes
Collection rate	1%
Responsibility for collecting revenue (yes/no)	Yes
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	No
Investment subsidy a year, US\$ (average for 2011–13)	n.a.
Operation and maintenance subsidy, US\$	5,172,158
Implicit subsidy to residential customers, US\$	5,148,116
Cross-subsidy ratio	0.05
Production capacity required to provide all residents with 50 lpcd, m ³ /year	21,951,204
Investment needed to connect all residents, US\$	38,000,000

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	32%	24%	33%
1.2 Coverage with direct supply	12%	12%	20%
1.3 Coverage with standpipes, kiosks, etc.	20%	12%	13%
4.1 Consumption total, lpcd	58.85	77.61	30.40
4.7 Consumption residential, lpcd	53.95	68.48	22.13
4.3 Residential consumption	92%	88%	73%
15.1 Hours of operations per day (average)	8	8	8
6.1 Unaccounted losses	40%	37%	78%
6.2 Unaccounted losses, m ³ /km of the network a day	53	47	67
11.1 Production cost (US\$/m ³)	0.25	0.23	1.23
18.1 Revenue billed (US\$/m ³)	0.11	0.14	0.63
23.2 Collection rate	0%	1%	1%
24.1 Cost-recovery ratio	0.43	0.62	0.52
100.1 Female staff	11%	13%	13%
100.2 Female staff salary vs. average salary	13%	14%	82%

Taraba State

Capital city	Jalingo
Population in the administrative zone of responsibility, thousands	566
Population coverage	36%
Staff salary rank (Ebonyi = 1)	6.54
Average staff salary per month, US\$	546.83
Staff per 1,000 customers	1.4
Km of mains per 1,000 users	0.65
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	64.47
Last tariff update, year	n.a.
Current investment project (yes/no)	Yes
Last investment project with value more than US\$10 million (year)	n.a.
Responsibility for issuing tariffs (yes/no)	Yes
Collection rate	59%
Responsibility for collecting revenue (yes/no)	Yes
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	No
Investment subsidy a year, US\$ (average for 2011–13)	1,242,073
Operation and maintenance subsidy, US\$	2,822,344
Implicit subsidy to residential customers, US\$	2,756,290
Cross-subsidy ratio	10.00
Production capacity required to provide all residents with 50 lpcd, m ³ /year	10,607,073
Investment needed to connect all residents, US\$	18,098,350

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	36%	50%	36%
1.2 Coverage with direct supply	36%	36%	23%
1.3 Coverage with standpipes, kiosks, etc.	0%	14%	13%
4.1 Consumption total, lpcd	40.71	29.52	49.40
4.7 Consumption residential, lpcd	0.00	0.00	45.77
4.3 Residential consumption	0%	0%	93%
15.1 Hours of operations per day (average)	12	12	12
6.1 Unaccounted losses	40%	40%	49%
6.2 Unaccounted losses, m ³ /km of the network a day	15	14	26
11.1 Production cost (US\$/m ³)	0.50	0.50	0.76
18.1 Revenue billed (US\$/m ³)	0.04	0.04	0.03
23.2 Collection rate	25%	41%	59%
24.1 Cost-recovery ratio	0.08	0.08	0.04
100.1 Female staff	14%	14%	17%
100.2 Female staff salary vs. average salary	19%	19%	9%

Bauchi State

Capital city	Bauchi
Population in the administrative zone of responsibility, thousands	495
Population coverage	55%
Staff salary rank (Ebonyi = 1)	4.41
Average staff salary per month, US\$	368.96
Staff per 1,000 customers	1.0
Km of mains per 1,000 users	1.42
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	140.36
Last tariff update, year	2009
Current investment project (yes/no)	No
Last investment project with value more than US\$10 million (year)	1992
Responsibility for issuing tariffs (yes/no)	Yes
Collection rate	13%
Responsibility for collecting revenue (yes/no)	Yes
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	No
Investment subsidy a year, US\$ (average for 2011–13)	4,285,586
Operation and maintenance subsidy, US\$	2,374,290
Implicit subsidy to residential customers, US\$	2,229,173
Cross-subsidy ratio	0.77
Production capacity required to provide all residents with 50 lpcd, m ³ /year	11,884,337
Investment needed to connect all residents, US\$	11,128,550

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	54%	55%	55%
1.2 Coverage with direct supply	42%	43%	43%
1.3 Coverage with standpipes, kiosks, etc.	12%	12%	12%
4.1 Consumption total, lpcd	72.68	72.55	73.58
4.7 Consumption residential, lpcd	45.00	44.52	45.00
4.3 Residential consumption	62%	61%	61%
15.1 Hours of operations per day (average)	5	5	5
6.1 Unaccounted losses	54%	49%	43%
6.2 Unaccounted losses, m ³ /km of the network a day	57	41	34
11.1 Production cost (US\$/m ³)	0.42	0.46	0.33
18.1 Revenue billed (US\$/m ³)	0.22	0.22	0.21
23.2 Collection rate	14%	14%	13%
24.1 Cost-recovery ratio	0.51	0.47	0.64
100.1 Female staff	4%	4%	5%
100.2 Female staff salary vs. average salary	4%	4%	4%

Yobe State

Capital city	Damaturu
Population in the administrative zone of responsibility, millions	1.100
Population coverage	67%
Staff salary rank (Ebonyi = 1)	2.45
Average staff salary per month, US\$	204.69
Staff per 1,000 customers	1.1
Km of mains per 1,000 users	0.06
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	6.30
Last tariff update, year	n.a.
Current investment project (yes/no)	Yes
Last investment project with value more than US\$10 million (year)	n.a.
Responsibility for issuing tariffs (yes/no)	Yes
Collection rate	44%
Responsibility for collecting revenue (yes/no)	Yes
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	No
Investment subsidy a year, US\$ (average for 2011–13)	912,576
Operation and maintenance subsidy, US\$	2,105,302
Implicit subsidy to residential customers, US\$	2,039,745
Cross-subsidy ratio	n.a.
Production capacity required to provide all residents with 50 lpcd, m ³ /year	20,075,000
Investment needed to connect all residents, US\$	18,150,000

<i>IBNET indicators</i>	2011	2012	2013
1.1 Coverage	86%	67%	67%
1.2 Coverage with direct supply	56%	27%	31%
1.3 Coverage with standpipes, kiosks, etc.	30%	40%	37%
4.1 Consumption total, lpcd	43.80	60.31	58.97
4.7 Consumption residential, lpcd	43.80	60.31	58.97
4.3 Residential consumption	100%	100%	100%
15.1 Hours of operations per day (average)	6	6	6
6.1 Unaccounted losses	0%	0%	0%
6.2 Unaccounted losses, m ³ /km of the network a day	0	0	0
11.1 Production cost (US\$/m ³)	0.11	0.10	0.13
18.1 Revenue billed (US\$/m ³)	0.01	0.01	0.01
23.2 Collection rate	32%	28%	44%
24.1 Cost-recovery ratio	0.08	0.08	0.07
100.1 Female staff	2%	2%	2%
100.2 Female staff salary vs. average salary	0%	0%	0%

Gombe State

Capital city	Gombe
Population in the administrative zone of responsibility, thousands	759
Population coverage	41%
Staff salary rank (Ebonyi = 1)	1.47
Average staff salary per month, US\$	122.80
Staff per 1,000 customers	2.4
Km of mains per 1,000 users	0.21
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	21.12
Last tariff update, year	n.a.
Current investment project (yes/no)	Yes
Last investment project with value more than US\$10 million (year)	2013
Responsibility for issuing tariffs (yes/no)	No
Collection rate	50%
Responsibility for collecting revenue (yes/no)	No
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	Yes
Investment subsidy a year, US\$ (average for 2011–13)	n.a.
Operation and maintenance subsidy, US\$	1,112,342
Implicit subsidy to residential customers, US\$	7,031,745
Cross-subsidy ratio	0.89
Production capacity required to provide all residents with 50 lpcd, m ³ /year	15,981,950
Investment needed to connect all residents, US\$	22,207,500

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	40%	42%	41%
1.2 Coverage with direct supply	22%	23%	23%
1.3 Coverage with standpipes, kiosks, etc.	18%	19%	18%
4.1 Consumption total, lpcd	42.18	43.27	44.41
4.7 Consumption residential, lpcd	22.69	24.34	25.87
4.3 Residential consumption	54%	56%	58%
15.1 Hours of operations per day (average)	8	9	9
6.1 Unaccounted losses	40%	41%	45%
6.2 Unaccounted losses, m ³ /km of the network a day	80	60	73
11.1 Production cost (US\$/m ³)	1.85	1.75	1.44
18.1 Revenue billed (US\$/m ³)	0.11	0.11	0.12
23.2 Collection rate	41%	58%	50%
24.1 Cost-recovery ratio	0.06	0.06	0.09
100.1 Female staff	5%	5%	6%
100.2 Female staff salary vs. average salary	9%	8%	9%

Ekiti State

Capital city	Ado-Ekiti
Population in the administrative zone of responsibility, millions	3.025
Population coverage	20%
Staff salary rank (Ebonyi = 1)	4.02
Average staff salary per month, US\$	336.38
Staff per 1,000 customers	0.8
Km of mains per 1,000 users	3.68
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	362.96
Last tariff update, year	2013
Current investment project (yes/no)	Yes
Last investment project with value more than US\$10 million (year)	2012
Responsibility for issuing tariffs (yes/no)	Yes
Collection rate	15%
Responsibility for collecting revenue (yes/no)	Yes
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	Yes
Investment subsidy a year, US\$ (average for 2011–13)	n.a.
Operation and maintenance subsidy, US\$	1,846,801
Implicit subsidy to residential customers, US\$	2,250,116
Cross-subsidy ratio	n.a.
Production capacity required to provide all residents with 50 lpcd, m ³ /year	55,579,342
Investment needed to connect all residents, US\$	136,017,100

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	14%	20%	20%
1.2 Coverage with direct supply	14%	13%	14%
1.3 Coverage with standpipes, kiosks, etc.	0%	7%	6%
4.1 Consumption total, lpcd	15.71	10.74	10.56
4.7 Consumption residential, lpcd	13.26	9.12	8.90
4.3 Residential consumption	84%	85%	84%
15.1 Hours of operations per day (average)	8	6	4
6.1 Unaccounted losses	67%	41%	50%
6.2 Unaccounted losses, m ³ /km of the network a day	18	6	7
11.1 Production cost (US\$/m ³)	1.01	1.40	0.99
18.1 Revenue billed (US\$/m ³)	0.37	0.36	0.19
23.2 Collection rate	9%	5%	15%
24.1 Cost-recovery ratio	0.37	0.26	0.19
100.1 Female staff	21%	21%	21%
100.2 Female staff salary vs. average salary	21%	19%	20%

Ogun State

Capital city	Abeokuta
Population in the administrative zone of responsibility, millions	3.203
Population coverage	45%
Staff salary rank (Ebonyi = 1)	4.27
Average staff salary per month, US\$	356.99
Staff per 1,000 customers	0.6
Km of mains per 1,000 users	1.42
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	140.43
Last tariff update, year	2010
Current investment project (yes/no)	No
Last investment project with value more than US\$10 million (year)	2013
Responsibility for issuing tariffs (yes/no)	Yes
Collection rate	37%
Responsibility for collecting revenue (yes/no)	No
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	No
Investment subsidy a year, US\$ (average for 2011–13)	90,808
Operation and maintenance subsidy, US\$	5,197,453
Implicit subsidy to residential customers, US\$	4,328,833
Cross-subsidy ratio	1.00
Production capacity required to provide all residents with 50 lpcd, m ³ /year	58,757,892
Investment needed to connect all residents, US\$	103,632,150

<i>IBNET indicators</i>	2011	2012	2013
1.1 Coverage	40%	45%	45%
1.2 Coverage with direct supply	24%	38%	39%
1.3 Coverage with standpipes, kiosks, etc.	16%	7%	6%
4.1 Consumption total, lpcd	14.32	9.68	7.64
4.7 Consumption residential, lpcd	8.81	8.60	7.07
4.3 Residential consumption	62%	89%	92%
15.1 Hours of operations per day (average)	8	9	8
6.1 Unaccounted losses	58%	72%	76%
6.2 Unaccounted losses, m ³ /km of the network a day	23	26	28
11.1 Production cost (US\$/m ³)	1.20	1.51	1.34
18.1 Revenue billed (US\$/m ³)	0.64	0.60	0.67
23.2 Collection rate	60%	33%	37%
24.1 Cost-recovery ratio	0.53	0.40	0.50
100.1 Female staff	23%	23%	23%
100.2 Female staff salary vs. average salary	20%	28%	27%

Ondo State

Capital city	Akure
Population is the administrative zone of responsibility, millions	3.923
Population coverage	11%
Staff salary rank (Ebonyi = 1)	5.62
Average staff salary per month, US\$	470.24
Staff per 1,000 customers	1.9
Km of mains per 1,000 users	2.08
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	205.35
Last tariff update, year	2014
Current investment project (yes/no)	No
Last investment project with value more than US\$10 million (year)	2000
Responsibility for issuing tariffs (yes/no)	Yes
Collection rate	17%
Responsibility for collecting revenue (yes/no)	Yes
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	Yes
Investment subsidy a year, US\$ (average for 2011–13)	9,563,937
Operation and maintenance subsidy, US\$	4,903,601
Implicit subsidy to residential customers, US\$	4,836,342
Cross-subsidy ratio	1.00
Production capacity required to provide all residents with 50 lpcd, m ³ /year	73,489,984
Investment needed to connect all residents, US\$	188,705,800

<i>IBNET indicators</i>	2011	2012	2013
1.1 Coverage	19%	14%	11%
1.2 Coverage with direct supply	6%	4%	3%
1.3 Coverage with standpipes, kiosks, etc.	13%	10%	8%
4.1 Consumption total, lpcd	9.53	11.02	15.27
4.7 Consumption residential, lpcd	1.86	2.62	3.73
4.3 Residential consumption	20%	24%	24%
15.1 Hours of operations per day (average)	8	8	8
6.1 Unaccounted losses	70%	72%	45%
6.2 Unaccounted losses, m ³ /km of the network a day	17	16	5
11.1 Production cost (US\$/m ³)	2.20	3.17	1.97
18.1 Revenue billed (US\$/m ³)	0.20	0.21	0.20
23.2 Collection rate	67%	72%	17%
24.1 Cost-recovery ratio	0.09	0.07	0.10
100.1 Female staff	21%	22%	21%
100.2 Female staff salary vs. average salary	26%	21%	18%

Osun State

Capital city	Osogbo
Population in the administrative zone of responsibility, millions	3.521
Population coverage	37%
Staff salary rank (Ebonyi = 1)	2.81
Average staff salary per month, US\$	235.13
Staff per 1,000 customers	0.6
Km of mains per 1,000 users	5.56
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	548.68
Last tariff update, year	2006
Current investment project (yes/no)	Yes
Last investment project with value more than US\$10 million (year)	2014
Responsibility for issuing tariffs (yes/no)	Yes
Collection rate	42%
Responsibility for collecting revenue (yes/no)	Yes
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	No
Investment subsidy a year, US\$ (average for 2011–13)	7,483,731
Operation and maintenance subsidy, US\$	2,606,042
Implicit subsidy to residential customers, US\$	4,344,938
Cross-subsidy ratio	4.30
Production capacity required to provide all residents with 50 lpcd, m ³ /year	65,403,130
Investment needed to connect all residents, US\$	125,917,052

<i>IBNET indicators</i>	2011	2012	2013
1.1 Coverage	78%	86%	37%
1.2 Coverage with direct supply	59%	67%	29%
1.3 Coverage with standpipes, kiosks, etc.	19%	19%	8%
4.1 Consumption total, lpcd	9.16	15.23	22.11
4.7 Consumption residential, lpcd	7.69	12.80	19.71
4.3 Residential consumption	84%	84%	89%
15.1 Hours of operations per day (average)	4.57	7.3	10
6.1 Unaccounted losses	38%	37%	32%
6.2 Unaccounted losses, m ³ /km of the network a day	5	8	4
11.1 Production cost (US\$/m ³)	0.70	0.23	0.46
18.1 Revenue billed (US\$/m ³)	0.09	0.06	0.11
23.2 Collection rate	65%	56%	42%
24.1 Cost-recovery ratio	0.13	0.25	0.23
100.1 Female staff	19%	16%	37%
100.2 Female staff salary vs. average salary	9%	17%	40%

Lagos State

Capital city	Ikeja
Population in the administrative zone of responsibility, millions	19.830
Population coverage	40%
Staff salary rank (Ebonyi = 1)	6.32
Average staff salary per month, US\$	528.52
Staff per 1,000 customers	0.1
Km of mains per 1,000 users	1.34
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	132.39
Last tariff update, year	2000
Current investment project (yes/no)	Yes
Last investment project with value more than US\$10 million (year)	2006
Responsibility for issuing tariffs (yes/no)	No
Collection rate	48%
Responsibility for collecting revenue (yes/no)	Yes
Labor cost paid by SWA (yes/no)	Yes
Electricity cost paid by SWA (yes/no)	Yes
Investment subsidy a year, US\$ (average for 2011–13)	17,084,505
Operation and maintenance subsidy, US\$	2,141,750
Implicit subsidy to residential customers, US\$	34,978,206
Cross-subsidy ratio	1.02
Production capacity required to provide all residents with 50 lpcd, m ³ /year	388,730,519
Investment needed to connect all residents, US\$	671,629,250

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	44%	39%	40%
1.2 Coverage with direct supply	31%	30%	31%
1.3 Coverage with standpipes, kiosks, etc.	13%	9%	2%
4.1 Consumption total, lpcd	26.21	23.93	17.89
4.7 Consumption residential, lpcd	13.13	11.70	8.59
4.3 Residential consumption	50%	49%	48%
15.1 Hours of operations per day (average)	18.2	18	18
6.1 Unaccounted losses	47%	45%	58%
6.2 Unaccounted losses, m ³ /km of the network a day	92	67	80
11.1 Production cost (US\$/m ³)	0.32	0.38	0.83
18.1 Revenue billed (US\$/m ³)	0.32	0.32	0.31
23.2 Collection rate	33%	40%	48%
24.1 Cost-recovery ratio	1.00	0.83	0.38
100.1 Female staff	22%	22%	23%
100.2 Female staff salary vs. average salary	21%	2%	22%

Oyo State

Capital city	Ibadan
Population in the administrative zone of responsibility, millions	3.000
Population coverage	54%
Staff salary rank (Ebonyi = 1)	1.83
Average staff salary per month, US\$	152.86
Staff per 1,000 customers	0.6
Km of mains per 1,000 users	1.42
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	139.80
Last tariff update, year	2004
Current investment project (yes/no)	No
Last investment project with value more than US\$10 million (year)	2005
Responsibility for issuing tariffs (yes/no)	Yes
Collection rate	23%
Responsibility for collecting revenue (yes/no)	Yes
Labor cost paid by SWA (yes/no)	Yes
Electricity cost paid by SWA (yes/no)	No
Investment subsidy a year, US\$ (average for 2011–13)	n.a.
Operation and maintenance subsidy, US\$	466,839
Implicit subsidy to residential customers, US\$	1,477,979
Cross-subsidy ratio	1.36
Production capacity required to provide all residents with 50 lpcd, m ³ /year	56,847,730
Investment needed to connect all residents, US\$	84,149,800

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	46%	46%	54%
1.2 Coverage with direct supply	25%	25%	32%
1.3 Coverage with standpipes, kiosks, etc.	21%	21%	22%
4.1 Consumption total, lpcd	6.62	7.82	7.11
4.7 Consumption residential, lpcd	2.80	2.93	3.55
4.3 Residential consumption	42%	37%	50%
15.1 Hours of operations per day (average)	12	12	12
6.1 Unaccounted losses	77%	74%	75%
6.2 Unaccounted losses, m ³ /km of the network a day	37	37	41
11.1 Production cost (US\$/m ³)	0.94	0.66	0.50
18.1 Revenue billed (US\$/m ³)	2.44	2.04	0.65
23.2 Collection rate	12%	12%	23%
24.1 Cost-recovery ratio	2.60	3.10	1.30
100.1 Female staff	21%	21%	15%
100.2 Female staff salary vs. average salary	0%	0%	20%

Akwa Ibom State

Capital city	Uyo
Population in the administrative zone of responsibility, millions	2.276
Population coverage	41%
Staff salary rank (Ebonyi = 1)	9.13
Average staff salary per month, US\$	764.06
Staff per 1,000 customers	0.2
Km of mains per 1,000 users	1.97
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	194.91
Last tariff update, year	n.a.
Current investment project (yes/no)	No
Last investment project with value more than US\$10 million (year)	2005
Responsibility for issuing tariffs (yes/no)	Yes
Collection rate	53%
Responsibility for collecting revenue (yes/no)	Yes
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	Yes
Investment subsidy a year, US\$ (average for 2011–13)	121,331
Operation and maintenance subsidy, US\$	1,890,903
Implicit subsidy to residential customers, US\$	607,503
Cross-subsidy ratio	9.68
Production capacity required to provide all residents with 50 lpcd, m ³ /year	41,574,459
Investment needed to connect all residents, US\$	82,435,200

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	41%	41%	41%
1.2 Coverage with direct supply	24%	24%	24%
1.3 Coverage with standpipes, kiosks, etc.	17%	17%	17%
4.1 Consumption total, lpcd	14.87	6.26	4.75
4.7 Consumption residential, lpcd	13.08	6.13	4.64
4.3 Residential consumption	88%	98%	98%
15.1 Hours of operations per day (average)	8	2	3
6.1 Unaccounted losses	16%	18%	18%
6.2 Unaccounted losses, m ³ /km of the network a day	7	4	1
11.1 Production cost (US\$/m ³)	0.49	1.15	1.42
18.1 Revenue billed (US\$/m ³)	0.80	1.87	1.96
23.2 Collection rate	62%	62%	53%
24.1 Cost-recovery ratio	1.62	1.62	1.38
100.1 Female staff	23%	23%	23%
100.2 Female staff salary vs. average salary	20%	20%	18%

Delta State

Capital city	Asaba
Population in the administrative zone of responsibility, millions	2.443
Population coverage	27%
Staff salary rank (Ebonyi = 1)	3.40
Average staff salary per month, US\$	284.24
Staff per 1,000 customers	1.0
Km of mains per 1,000 users	2.52
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	249.25
Last tariff update, year	2009
Current investment project (yes/no)	Yes
Last investment project with value more than US\$10 million (year)	n.a.
Responsibility for issuing tariffs (yes/no)	Yes
Collection rate	25%
Responsibility for collecting revenue (yes/no)	Yes
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	Yes
Investment subsidy a year, US\$ (average for 2011–13)	7,357,227
Operation and maintenance subsidy, US\$	2,424,919
Implicit subsidy to residential customers, US\$	2,748,868
Cross-subsidy ratio	0.79
Production capacity required to provide all residents with 50 lpcd, m ³ /year	45,629,894
Investment needed to connect all residents, US\$	104,665,850

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	27%	27%	27%
1.2 Coverage with direct supply	10%	10%	10%
1.3 Coverage with standpipes, kiosks, etc.	17%	17%	17%
4.1 Consumption total, lpcd	8.33	8.35	16.48
4.7 Consumption residential, lpcd	4.82	4.84	12.10
4.3 Residential consumption	58%	58%	73%
15.1 Hours of operations per day (average)	8	8	6
6.1 Unaccounted losses	62%	62%	70%
6.2 Unaccounted losses, m ³ /km of the network a day	22	22	48
11.1 Production cost (US\$/m ³)	1.69	1.67	0.72
18.1 Revenue billed (US\$/m ³)	0.04	0.04	0.06
23.2 Collection rate	43%	41%	25%
24.1 Cost-recovery ratio	0.02	0.02	0.08
100.1 Female staff	13%	13%	12%
100.2 Female staff salary vs. average salary	13%	13%	12%

Edo State

Capital city	Benin City
Population in the administrative zone of responsibility, millions	3.500
Population coverage	64%
Staff salary rank (Ebonyi = 1)	2.40
Average staff salary per month, US\$	200.51
Staff per 1,000 customers	0.2
Km of mains per 1,000 users	0.09
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	9.05
Last tariff update, year	n.a.
Current investment project (yes/no)	No
Last investment project with value more than US\$10 million (year)	1983
Responsibility for issuing tariffs (yes/no)	No
Collection rate	58%
Responsibility for collecting revenue (yes/no)	No
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	No
Investment subsidy a year, US\$ (average for 2011–13)	n.a.
Operation and maintenance subsidy, US\$	1,400,129
Implicit subsidy to residential customers, US\$	1,312,552
Cross-subsidy ratio	0.97
Production capacity required to provide all residents with 50 lpcd, m ³ /year	64,040,803
Investment needed to connect all residents, US\$	77,500,000

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	55%	55%	64%
1.2 Coverage with direct supply	31%	31%	29%
1.3 Coverage with standpipes, kiosks, etc.	24%	25%	34%
4.1 Consumption total, lpcd	1.07	1.01	0.78
4.7 Consumption residential, lpcd	0.81	0.75	0.58
4.3 Residential consumption	76%	74%	74%
15.1 Hours of operations per day (average)	9	7	7
6.1 Unaccounted losses	32%	36%	36%
6.2 Unaccounted losses, m ³ /km of the network a day	58	47	39
11.1 Production cost (US\$/m ³)	2.15	2.45	2.18
18.1 Revenue billed (US\$/m ³)	0.22	0.23	0.23
23.2 Collection rate	58%	58%	58%
24.1 Cost-recovery ratio	0.10	0.10	0.11
100.1 Female staff	39%	39%	43%
100.2 Female staff salary vs. average salary	48%	48%	48%

Rivers State

Capital city	Port Harcourt
Population in the administrative zone of responsibility, million	1.031
Population coverage	5%
Staff salary rank (Ebonyi = 1)	8.06
Average staff salary per month, US\$	673.94
Staff per 1,000 customers	1.6
Km of mains per 1,000 users	0.28
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	27.65
Last tariff update, year	2011
Current investment project (yes/no)	Yes
Last investment project with value more than US\$10 million (year)	n.a.
Responsibility for issuing tariffs (yes/no)	Yes
Collection rate	112%
Responsibility for collecting revenue (yes/no)	Yes
Labor cost paid by SWA (yes/no)	Yes
Electricity cost paid by SWA (yes/no)	Yes
Investment subsidy a year, US\$ (average for 2011–13)	656,599
Operation and maintenance subsidy, US\$	n.a.
Implicit subsidy to residential customers, US\$	486,334
Cross-subsidy ratio	n.a.
Production capacity required to provide all residents with 50 lpcd, m ³ /year	18,816,754
Investment needed to connect all residents, US\$	56,541,600

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	21%	11%	5%
1.2 Coverage with direct supply	13%	7%	3%
1.3 Coverage with standpipes, kiosks, etc.	8%	4%	2%
4.1 Consumption total, lpcd	62.85	55.36	62.50
4.7 Consumption residential, lpcd	62.49	52.16	62.50
4.3 Residential consumption	99%	94%	100%
15.1 Hours of operations per day (average)	12	8	8
6.1 Unaccounted losses	30%	31%	2%
6.2 Unaccounted losses, m ³ /km of the network a day	29	13	0
11.1 Production cost (US\$/m ³)	0.57	1.15	1.56
18.1 Revenue billed (US\$/m ³)	1.37	1.37	1.02
23.2 Collection rate	0%	0%	112%
24.1 Cost-recovery ratio	2.43	1.20	0.65
100.1 Female staff	11%	12%	4%
100.2 Female staff salary vs. average salary	9%	1%	1%

Bayelsa State

Capital city	Yenagoa
Population is the administrative zone of responsibility, thousands	765
Population coverage	99%
Staff salary rank (Ebonyi = 1)	5.81
Average staff salary per month, US\$	485.82
Staff per 1,000 customers	0.1
Km of mains per 1,000 users	1.14
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	112.88
Last tariff update, year	n.a.
Current investment project (yes/no)	Yes
Last investment project with value more than US\$10 million (year)	2006
Responsibility for issuing tariffs (yes/no)	No
Collection rate	n.a.
Responsibility for collecting revenue (yes/no)	No
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	Yes
Investment subsidy a year, US\$ (average for 2011–13)	n.a.
Operation and maintenance subsidy, US\$	607,001
Implicit subsidy to residential customers, US\$	651,783
Cross-subsidy ratio	n.a.
Production capacity required to provide all residents with 50 lpcd, m ³ /year	13,959,443
Investment needed to connect all residents, US\$	244,950

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	84%	98%	99%
1.2 Coverage with direct supply	34%	35%	35%
1.3 Coverage with standpipes, kiosks, etc.	50%	63%	64%
4.1 Consumption total, lpcd	10.44	9.94	9.86
4.7 Consumption residential, lpcd	0.00	9.94	9.86
4.3 Residential consumption	100%	100%	100%
15.1 Hours of operations per day (average)	4	5	5
6.1 Unaccounted losses	20%	30%	43%
6.2 Unaccounted losses, m ³ /km of the network a day	5	9	16
11.1 Production cost (US\$/m ³)	0.59	0.72	0.24
18.1 Revenue billed (US\$/m ³)	n.a.	n.a.	n.a.
23.2 Collection rate	n.a.	n.a.	n.a.
24.1 Cost-recovery ratio	n.a.	n.a.	n.a.
100.1 Female staff	46%	46%	47%
100.2 Female staff salary vs. average salary	45%	39%	62%

Cross Rivers State

Capital city	Calabar
Population in the administrative zone of responsibility, millions	1.660
Population coverage	55%
Staff salary rank (Ebonyi = 1)	4.03
Average staff salary per month, US\$	337.35
Staff per 1,000 customers	0.6
Km of mains per 1,000 users	0.24
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	23.54
Last tariff update, year	2013
Current investment project (yes/no)	Yes
Last investment project with value more than US\$10 million (year)	2005
Responsibility for issuing tariffs (yes/no)	No
Collection rate	31%
Responsibility for collecting revenue (yes/no)	Yes
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	Yes
Investment subsidy a year, US\$ (average for 2011–13)	n.a.
Operation and maintenance subsidy, US\$	2,192,592
Implicit subsidy to residential customers, US\$	669,106
Cross-subsidy ratio	0.67
Production capacity required to provide all residents with 50 lpcd, m ³ /year	32,369,550
Investment needed to connect all residents, US\$	52,046,550

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	20%	21%	55%
1.2 Coverage with direct supply	14%	15%	44%
1.3 Coverage with standpipes, kiosks, etc.	6%	6%	11%
4.1 Consumption total, lpcd	59.11	62.94	24.66
4.7 Consumption residential, lpcd	44.33	47.21	18.49
4.3 Residential consumption	75%	75%	75%
15.1 Hours of operations per day (average)	24	18	24
6.1 Unaccounted losses	8%	9%	8%
6.2 Unaccounted losses, m ³ /km of the network a day	2	3	14
11.1 Production cost (US\$/m ³)	0.73	0.51	0.39
18.1 Revenue billed (US\$/m ³)	0.79	0.78	1.00
23.2 Collection rate	45%	41%	31%
24.1 Cost-recovery ratio	1.08	1.54	2.57
100.1 Female staff	18%	18%	19%
100.2 Female staff salary vs. average salary	15%	17%	17%

Anambra State

Capital city	Awka
Population in the administrative zone of responsibility, thousands	792
Population coverage	49%
Staff salary rank (Ebonyi = 1)	3.30
Average staff salary per month, US\$	276.33
Staff per 1,000 customers	1.1
Km of mains per 1,000 users	0.71
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	70.05
Last tariff update, year	1999
Current investment project (yes/no)	Yes
Last investment project with value more than US\$10 million (year)	n.a.
Responsibility for issuing tariffs (yes/no)	No
Collection rate	41%
Responsibility for collecting revenue (yes/no)	No
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	Yes
Investment subsidy a year, US\$ (average for 2011–13)	n.a.
Operation and maintenance subsidy, US\$	1,570,080
Implicit subsidy to residential customers, US\$	1,339,703
Cross-subsidy ratio	0.36
Production capacity required to provide all residents with 50 lpcd, m ³ /year	15,632,792
Investment needed to connect all residents, US\$	20,091,850

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	22%	39%	49%
1.2 Coverage with direct supply	21%	34%	49%
1.3 Coverage with standpipes, kiosks, etc.	1%	5%	0%
4.1 Consumption total, lpcd	36.53	32.30	25.51
4.7 Consumption residential, lpcd	34.31	24.92	17.20
4.3 Residential consumption	94%	77%	67%
15.1 Hours of operations per day (average)	8	8	9
6.1 Unaccounted losses	35%	35%	27%
6.2 Unaccounted losses, m ³ /km of the network a day	4	6	4
11.1 Production cost (US\$/m ³)	0.83	0.52	0.46
18.1 Revenue billed (US\$/m ³)	0.29	0.19	0.21
23.2 Collection rate	1%	24%	41%
24.1 Cost-recovery ratio	0.35	0.37	0.46
100.1 Female staff	43%	44%	44%
100.2 Female staff salary vs. average salary	43%	44%	43%

Enugu State

Capital city	Enugu
Population in the administrative zone of responsibility, millions	1.713
Population coverage	69%
Staff salary rank (Ebonyi = 1)	3.26
Average staff salary per month, US\$	273.09
Staff per 1,000 customers	0.5
Km of mains per 1,000 users	1.79
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	177.18
Last tariff update, year	2008
Current investment project (yes/no)	Yes
Last investment project with value more than US\$10 million (year)	2013
Responsibility for issuing tariffs (yes/no)	Yes
Collection rate	34%
Responsibility for collecting revenue (yes/no)	Yes
Labor cost paid by SWA (yes/no)	Yes
Electricity cost paid by SWA (yes/no)	Yes
Investment subsidy a year, US\$ (average for 2011–13)	865,042
Operation and maintenance subsidy, US\$	n.a.
Implicit subsidy to residential customers, US\$	1,343,610
Cross-subsidy ratio	2.05
Production capacity required to provide all residents with 50 lpcd, m ³ /year	33,398,879
Investment needed to connect all residents, US\$	41,236,600

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	54%	56%	69%
1.2 Coverage with direct supply	54%	56%	69%
1.3 Coverage with standpipes, kiosks, etc.	0%	0%	0%
4.1 Consumption total, lpcd	12.92	13.81	14.53
4.7 Consumption residential, lpcd	9.57	10.16	9.61
4.3 Residential consumption	74%	74%	66%
15.1 Hours of operations per day (average)	9	10	9
6.1 Unaccounted losses	46%	31%	21%
6.2 Unaccounted losses, m ³ /km of the network a day	24	12	6
11.1 Production cost (US\$/m ³)	0.77	0.55	0.39
18.1 Revenue billed (US\$/m ³)	0.60	0.56	0.52
23.2 Collection rate	95%	32%	34%
24.1 Cost-recovery ratio	0.77	1.01	1.34
100.1 Female staff	18%	19%	16%
100.2 Female staff salary vs. average salary	9%	13%	11%

Imo State

Capital city	Owerri
Population is the administrative zone of responsibility, millions	3.298
Population coverage	3%
Staff salary rank (Ebonyi = 1)	2.31
Average staff salary per month, US\$	193.13
Staff per 1,000 customers	1.8
Km of mains per 1,000 users	0.16
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	15.38
Last tariff update, year	2009
Current investment project (yes/no)	No
Last investment project with value more than US\$10 million (year)	1993
Responsibility for issuing tariffs (yes/no)	Yes
Collection rate	12%
Responsibility for collecting revenue (yes/no)	No
Labor cost paid by SWA (yes/no)	Yes
Electricity cost paid by SWA (yes/no)	Yes
Investment subsidy a year, US\$ (average for 2011–13)	463,076
Operation and maintenance subsidy, US\$	n.a.
Implicit subsidy to residential customers, US\$	403,536
Cross-subsidy ratio	22.49
Production capacity required to provide all residents with 50 lpcd, m ³ /year	71,747,925
Investment needed to connect all residents, US\$	206,278,150

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	21%	6%	3%
1.2 Coverage with direct supply	10%	3%	1%
1.3 Coverage with standpipes, kiosks, etc.	11%	2%	2%
4.1 Consumption total, lpcd	12.78	28.68	18.78
4.7 Consumption residential, lpcd	12.43	27.90	16.90
4.3 Residential consumption	97%	97%	90%
15.1 Hours of operations per day (average)	16	16	6
6.1 Unaccounted losses	37%	37%	40%
6.2 Unaccounted losses, m ³ /km of the network a day	15	15	6
11.1 Production cost (US\$/m ³)	0.27	0.24	0.64
18.1 Revenue billed (US\$/m ³)	0.51	0.54	0.54
23.2 Collection rate	45%	4%	12%
24.1 Cost-recovery ratio	1.90	2.27	0.84
100.1 Female staff	24%	24%	31%
100.2 Female staff salary vs. average salary	34%	34%	41%

Ebonyi State

Capital city	Abakaliki
Population in the administrative zone of responsibility, millions	2.174
Population coverage	12%
Staff salary rank (Ebonyi = 1)	1
Average staff salary per month, US\$	83.65
Staff per 1,000 customers	0.6
Km of mains per 1,000 users	0.01
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	1.00
Last tariff update, year	n.a.
Current investment project (yes/no)	n.a.
Last investment project with value more than US\$10 million (year)	n.a.
Responsibility for issuing tariffs (yes/no)	No
Collection rate	459%
Responsibility for collecting revenue (yes/no)	No
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	No
Investment subsidy a year, US\$ (average for 2011–13)	n.a.
Operation and maintenance subsidy, US\$	268,725
Implicit subsidy to residential customers, US\$	n.a.
Cross-subsidy ratio	1.00
Production capacity required to provide all residents with 50 lpcd, m ³ /year	40,375,450
Investment needed to connect all residents, US\$	102,675,050

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	13%	13%	12%
1.2 Coverage with direct supply	1%	1%	1%
1.3 Coverage with standpipes, kiosks, etc.	12%	12%	11%
4.1 Consumption total, lpcd	91.45	91.45	60.91
4.7 Consumption residential, lpcd	68.59	68.59	53.71
4.3 Residential consumption	75%	75%	88%
15.1 Hours of operations per day (average)	5	5	18
6.1 Unaccounted losses	36%	36%	40%
6.2 Unaccounted losses, m ³ /km of the network a day	171	171	137
11.1 Production cost (US\$/m ³)	0.10	0.10	0.04
18.1 Revenue billed (US\$/m ³)	0.01	0.01	0.01
23.2 Collection rate	490%	490%	459%
24.1 Cost-recovery ratio	0.07	0.07	0.26
100.1 Female staff	13%	13%	14%
100.2 Female staff salary vs. average salary	13%	13%	13%

Abia State

Capital city	Umuahia
Population in the administrative zone of responsibility, thousands	882
Population coverage	60%
Staff salary rank (Ebonyi = 1)	3.57
Average staff salary per month, US\$	298.46
Staff per 1,000 customers	0.5
Km of mains per 1,000 users	0.16
Length of mains rank (km of the network per 1,000 customers, Ebonyi = 1)	15.57
Last tariff update, year	n.a.
Current investment project (yes/no)	Yes
Last investment project with value more than US\$10 million (year)	1990
Responsibility for issuing tariffs (yes/no)	No
Collection rate	80%
Responsibility for collecting revenue (yes/no)	No
Labor cost paid by SWA (yes/no)	No
Electricity cost paid by SWA (yes/no)	No
Investment subsidy a year, US\$ (average for 2011–13)	n.a.
Operation and maintenance subsidy, US\$	163,638,062
Implicit subsidy to residential customers, US\$	154,146,170
Cross-subsidy ratio	1.34
Production capacity required to provide all residents with 50 lpcd, m ³ /year	17,725,934
Investment needed to connect all residents, US\$	17,640,000

<i>IBNET indicators</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
1.1 Coverage	60%	60%	60%
1.2 Coverage with direct supply	17%	17%	17%
1.3 Coverage with standpipes, kiosks, etc.	43%	43%	43%
4.1 Consumption total, lpcd	75.19	76.46	22.03
4.7 Consumption residential, lpcd	44.04	50.19	13.59
4.3 Residential consumption	59%	66%	62%
15.1 Hours of operations per day (average)	18	18	5
6.1 Unaccounted losses	61%	58%	54%
6.2 Unaccounted losses, m ³ /km of the network a day	222	208	54
11.1 Production cost (US\$/m ³)	0.07	0.07	0.24
18.1 Revenue billed (US\$/m ³)	0.00	0.01	0.02
23.2 Collection rate	358%	135%	80%
24.1 Cost-recovery, ratio	0.07	0.18	0.07
100.1 Female staff	33%	31%	37%
100.2 Female staff salary vs. average salary	37%	37%	31%

How SWAs and Other Institutions Interact in Nigeria

While most state water agencies (SWAs) were set up to provide potable water to all, sustainability and affordability do not appear in any of their visions and missions. The stated primary purpose of most of the SWAs is to provide potable (22 SWAs out of 31) and safe (16 SWAs) drinking water. Providing water for all is also a goal in half of the SWA visions. Providing water affordably appears in the vision statements of 7 of 31 SWAs—mostly in the South—and sustainability appears in a third of the vision statements (table C.1).

Surprisingly, given how little autonomy most of the SWAs have in decision making related to human and financial resource management and planning, 11 out of 31 stated clearly being a leader or providing water service at international and world-class levels in their visions or missions. That may indicate the will to improve service delivery and SWA functioning, and an openness to have external support to do so.

All SWAs reported primarily serving urban and semi-urban areas, but 14 also deliver services in rural areas (table C.2), 9 of them in the North.

The difference reported between areas an SWA is responsible for and areas it actually covers vary significantly, showing the diversity of environments and the ambition or realism in the mandate (table C.3). The North Central (NC) and South West (SW) regions are responsible for the highest numbers of cities and towns, NC with 1,162 and SW with 1,116. However, the SWAs serving the most cities and towns are in NC and North East (NE).

In general, most SWAs serve no more than about 100 cities and towns, except the Federal Capital Territory (Abuja), which serves 859, and Kano, 574. There is also a clear gap between the areas SWAs are responsible for—the intention—and areas actually served—the reality. In the North West (NW) region, 98 percent of the cities and towns its SWAs are responsible for are served at the other extreme, 31 percent are served in South East (SE) and 32 percent in SW.

A few outliers have really low actual compared to intended coverage (5–15 percent). However, this is more an indication of too few resources provided for water-related investments over time compared to the original commitment when

Table C.1 Primary Obligation of SWAs as Stated in Vision or Mission

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Total</i>
Safe/potable water	3	3	5	3	3	5	22
Service coverage	2	1	5	2	2	4	16
Sustainability	1	0	4	2	2	2	11
Being a leader/ world-class provider	2	3	2	0	2	2	11
Affordability	1	0	0	2	1	3	7

Note: SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Table C.2 SWAs Also Serving Rural Areas

<i>Regions</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Total</i>
No	2	3	5	2	6	2	20
Yes	4	3	2	2	—	3	14
Total	6	6	7	4	6	5	34

Note: SWA = state water agency; — = not available. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Table C.3 Towns within SWA Area of Service and Number Effectively Served

<i>Regions</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Total</i>
Towns responsible for	1,162	106	745	107	169	1,116	3,405
Towns served	1,031	76	732	33	124	353	2,349
Percentage	89	72	98	31	73	32	69

Note: N = 34. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

the SWA was created—and possibly a lack of state government (SG) political will or realism—than problems with actual delivery of services (value for money).

Three SWAs were created in the last decade—Rivers (2012), Ogun (2006), and Lagos (2004)—which may explain their institutional differences from the others. For example, Lagos is the only SWA with any private capital, and Ogun SWA reportedly has the intention to follow that path. Two-thirds of the SWAs responding to the survey were created more than a decade ago and half of those more than 20 years ago. Nearly a third of those responding were unable to give precise dates for their creation. A reasonable assumption is that documentation of their official creation is dated more than 10 years ago and there has not been any review in terms of potential modification of status. This does not mean that improving water provision is not on SG agendas, but it does suggest that a change of status has not yet been considered an option (table C.4).

In terms of legal status, nearly all SWAs are fully within the SG administrative apparatus. Only 5 of 32 SWAs offer shares, but these could really be considered state-owned enterprises: the SG owns 100 percent of the shares of four of them,

Table C.4 When SWAs Were Created

	NC	NE	NW	SE	SS	SW	Total
In the last decade	—	1	—	—	1	1	3 (9%)
10–20 years ago	1	1	2	3	3	—	10 (31%)
More than 20 years ago	3	—	4	1	—	2	10 (31%)
No answer	2	2	1	—	2	2	9 (28%)

Note: $N = 32$. SWA = state water agency; — = not available. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Table C.5 Legal Provision for SWA Board Creation

Regions	NC	NE	NW	SE	SS	SW	Total
No	2	0	4	1	1	2	10
Yes	4	5	3	3	5	4	24
Total	6	5	7	4	6	6	34

Note: SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

and 90 percent of the fifth, which has 10 percent private participation. In most cases neither federal nor local governments are shareholders in SWAs. Similarly, in most cases, SGs, not the SWA, are reported as owners of SWA assets. The exceptions are the Federal Capital Territory (Abuja), whose special status makes the federal government the owner, and four SWAs that reported being legally the owners of their assets. It should be noted there is no correlation between SWAs issuing shares and owning their assets.

When SWAs do have a board, it tends to be dominated by the SG; only a few boards have members from the private sector or representing consumers. Except for Borno State, for all respondents there is legal provision for an SWA board, but only 24 actually have one. Ten have either never had a board or had one and dropped it; this is surprising given that most Nigerian SWAs were created more than 10 years ago (table C.5).

On average an SWA board has 9 members, though Katsina has 15 and Yobe, 20. Consumers are represented on only three boards and private businesses on eight. However, the reporting on the number of board members is inconsistent, which suggests that SWA technical and managerial staff have little knowledge of and interaction with board members. This hypothesis is substantiated by the fact that in only 14 SWAs was the general manager a board member, and most SWAs reported to the SG, not the board.

In all cases, the SG reportedly makes the decisions about nomination and termination of board members. To a question about the profile of the SWA board chairman, two-thirds (19) provided no answer. Of those that answered, half reported that the chairman was either an engineer or a politician.

SGs, not SWA boards, appoint and dismiss the general manager for most of the SWAs. The state water board (SWB) proposes candidates for eight SWAs but makes the final decision in only two. Only in two cases does the SWB have the

power to dismiss a general manager, and in one the decision must be made in agreement with the SG.

SWA manager turnover is high—3.3 on average over the last decade—probably because nomination is based on seniority rather than management competence and vision (not surprising since so many SWA employees are actually or virtually civil servants). For more than 40 percent of the latest round of changes (13 out of 29), and with other departures related to such management events as contracts ending or outgoing managers being promoted, human resource (HR) reasons probably account for two-thirds of the turnover.

Executive decisions of the SG related to nominating SWA managers provides an opportunity for the SG to exercise genuine political will to respond to citizen demand for better service. In fact 25 percent of the time the change in the general manager was motivated by demand-side factors: pressure from consumers (popular pressure), a constituency and political party (political reshuffling), or the justice system (embezzlement). It appears that demand for better service can actually push SGs to change the SWA manager.

Overall, SWAs mostly report to SGs, or in a very few cases to the State House, the federal government, or an international financial institution. Reporting in the very few cases where it is not through the SG is mostly to SWBs (ultimately the same as SGs for all SWAs) or the State House. In addition to state government, some SWAs also report to other entities, but this is rare. A few report to SWBs (2–6 depending on the topic) and donors (1–2), but only about operations, finance, and strategy; or to the State House (1–3 depending on the topic) but only about operations, finance, and annual planning. Reporting to the federal government was rarely mentioned: 3 SWAs report to both state and federal government on operations, and 1 reports to the National Environment Agency.

Reporting is mostly limited to operations, planning, and finance, and most reports are internally generated except that for 8 SWAs external auditors issue reports on finance. Nearly all SWAs declared reporting on operations or day-to-day activities (nearly two-thirds report monthly or quarterly), finance (nearly half report monthly or quarterly if not annually), and annual planning. Only a third of the SWAs call on external auditing expertise for financial reporting, and most of those rely on SG auditors. Two-thirds also report on labor and strategy, but less than half report to other institutions on technical issues, environment, land, and human resources: since the SWAs have little ownership of and autonomy over investments and HR management, their reporting on those areas is also low (table C.6).

However, most of the reports SWAs make are not disclosed to the public, even though information on spending, cost recovery, service delivery, and planning should be public by default in a democracy like Nigeria. On the openness of SWAs to public scrutiny, the average reporting they provide to other institutions, public or not, is about 38 percent. Finance and annual planning score the highest with 47 percent making finance reports public and 59 percent publishing annual planning reports; most report publicly on at most 30–40 percent of their

Table C.6 Reporting Accountability by Domain

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Total</i>
Environment (<i>N</i> = 22)	3	1	3	1	4	4	16 (73%)
Land (<i>N</i> = 15)	—	1	4	1	3	4	13 (87%)
Labor (<i>N</i> = 19)	3	2	4	3	3	4	19 (100%)
Operations (<i>N</i> = 29)	4	5	6	3	5	6	29 (100%)
Finance (<i>N</i> = 30)	6	4	6	3	6	5	30 (100%)
Annual planning (<i>N</i> = 28)	4	4	6	4	4	5	27 (96%)
Strategy (<i>N</i> = 25)	3	1	4	3	5	5	21 (84%)
Tariff (<i>N</i> = 16)	3	2	4	1	3	3	16 (100%)
Technical (<i>N</i> = 16)	3	2	5	—	3	3	16 (100%)
Human resources (<i>N</i> = 10)	—	3	1	1	2	1	8 (80%)
Local government authority (<i>N</i> = 14)	1	—	1	1	2	2	7 (50%)
Customer service (<i>N</i> = 14)	2	1	2	2	2	2	11 (79%)
House (<i>N</i> = 4)	—	—	—	1	—	—	1 (100%)
Water quality (<i>N</i> = 1)	—	—	1	—	—	—	1 (100%)

Note: — = not available. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

activities, including operations. While this is not surprising for HR-related reporting, since for many SWAs that information is absorbed into civil servant management, it could be expected that data related to operations, finance, and annual planning would be fully disclosed given the de jure supervision of SWAs by State Houses and SGs.

How Do SWAs Survive in Nigeria?

Budgeting

Nigerian state water agencies (SWAs) have limited financing and spending capabilities; most of the funds for daily operational expenses, such as salaries and electricity, come from the state government (SG), which pays them directly.

None of the SWAs have customer tariffs and fees as the sole source of income (table D.1). Even those that do collect from customers still depend on SG transfers to cover such operational expenses. However, 28 SWAs claim that customer tariffs and fees are one of their sources of income, even though those funds are not directly available to most of them. Hence, tariffs and fees are like a tax, motivated by political SG decisions, rather than recovery of the costs of water distribution. In any case, not enough tariffs and fees are collected to cover the operational costs of most SWAs and that is why all SWAs need government funds in the form of subsidies and payment of operational expenses.

Twenty-six SWAs (74%) get the funds from the SG or the state water board (SWB) based on annual budget planning, mainly for recurring expenses, submitted before the end of the fiscal year. Twenty-three also get funds based on requests they submit to the SG by providing justification of the need, such as an invoice or a financial statement.

The time SWAs need for budget planning (table D.2) can take from less than three months to more than six. For all but five, the annual budget is approved by the State House of Assembly and signed by the governor.

Billing and Collection

Considering that water is an economic good, customers are usually charged for provision of service, and in general providers issue bills to all customers and collect the payments. In Nigeria, however, not all SWAs follow this procedure. Only 18 of 35 SWAs reported that they issued bills to customers, of which 16 also collect the payments. Two SWAs, both in the South South region, do not issue bills but do collect payments. For seven SWAs, four of which are located in the North West region, the SG both issues bills and collects the payments (table D.3).

Table D.1 SWA Sources of Income by Region

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Total</i>
Customer fees only	0	0	0	0	0	0	0 (0%)
Government funds only ^a	1	3	2	0	2	0	8 (23%)
Customer fees and government funds ^a	5	3	5	4	4	6	27 (77%)

Note: *N* = 35. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

a. All funds are provided by the government.

Table D.2 Time Needed for Budget Preparation

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Total</i>
Less than 3 months	3	4	2	2	2	3	16 (46%)
3–6 months	3	2	4	1	2	3	15 (43%)
More than 6 months	0	0	0	1	1	0	2 (6%)
SWAs that prepare annual budget	6	6	5	4	6	6	33 (94%)

Note: *N* = 35. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Table D.3 SWA Billing and Collection Procedures

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Total</i>
SWAs issue bills	2	5	2	1	2	6	18 (51%)
SWAs collect payments	2	4	2	1	2	5	16 (46%)
SWAs neither issue bills nor collect payments	4	1	5	3	4	0	17 (49%)

Note: *N* = 35. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Of the 18 SWAs that issue bills, 10 reported that not all customers get invoices; those that do not are mainly fire departments, schools, hospitals, and public buildings and offices. However, only 5 of the 10 stated that they receive compensation for water service provided to these customers from the SG. The fact that many public institutions do not pay for water consumption might be one reason that the SGs provide funds whenever necessary to ensure that the SWAs continue to provide water.

Tariff Setting

Utilities do not have the authority to regularly review tariffs; and it is not clear to SWAs whose responsibility it is to do so. Although 30 of the 35 SWAs had reviewed their tariffs in the previous 4–15 years, tariffs are not reviewed regularly, except for Akwa Ibom, which revises tariffs every four years, and Ogun,

every six years (table D.4). Although 13 of the 35 SWAs reviewed the tariff in the past 4 to 10 years, 6 have not done so for more than 10 years.

In general, the tariff revision process starts with the SWA or SWB proposing new tariffs to the House of Assembly; if it approves, the governor signs the new rates. Seventeen SWAs reported that they prepared tariff proposals, 8 prepared them jointly with the SWB, and in the remaining 9 SWAs, tariff schedules were prepared solely by the SG. Only one SWA reported not being consulted about tariff revisions.

When tariffs are reviewed, customers' ability to pay is to be taken into consideration. The entity responsible for setting tariffs also takes into consideration the needs of the poor. However, in Nigeria, only 18 SWAs reported consulting other entities, such as business associations or local communities, 6 reported that they do not consult, and 11 did not answer the question.

In general, there is no clear policy or guidelines from either the Federal Ministry of Water Resources (FMWR) or the SGs on how tariffs for the poor should be set. Therefore, only about 50 percent of SWAs take into consideration poor consumers: 20 SWAs reported having pro-poor tariffs, and generally the poor are provided with public standpipes or lower tariffs. Most SWAs that provide standpipes for the poor reported providing water on these connections for free. Some reported that water tariffs are already low enough for all consumers and others stated that they provide the first 6 cubic meters free for poor customers. Because they are given relatively little consideration, many poor customers end up paying much more for water from either informal providers or unsafe sources.

Human Resources

From the data gathered, most SWAs staff members are civil servants, not only because they are paid by the SG (which has the authority to hire staff on behalf of the SWA) but also because those SWAs have no authority to hire or dismiss staff; nor are they consulted when staff are hired, even when the SWA requests the additional personnel (table D.5).

In fact, all but one SWA reported that all their staff members are civil servants, and 23 have no authority to hire their staff; they can only inform the SG of the need, which then decides who to hire and when; 20 of the 23 stated they are not

Table D.4 Last SWA Tariff Review

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Total</i>
Less than 4 years	3	0	2	0	2	2	9 (26%)
From 4 to 10 years	3	2	2	2	1	3	13 (37%)
More than 10 years	0	2	2	1	0	1	6 (17%)
No response	0	2	1	1	3	0	7 (20%)

Note: *N* = 35. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

even consulted during the hiring process. Of 12 SWAs that do their own hiring, 9 can do so on a competitive basis, writing job descriptions and selecting staff.

In terms of staff wages, 26 SWAs said that staff are paid directly by the SG and 9 pay staff directly; of the nine, five report that wages are paid with funds collected from customers (table D.6).

Operational Spending

Fifty percent of SWAs do not have the authority to decide where to spend the money they are allocated or collect; eight report decisions are made jointly with the SG; and only nine report being able to decide how to spend money in their accounts. Two major operational expenses, electricity and chemicals, are generally paid by the SG. In fact, only 10 SWAs out of 35 pay both electricity and chemicals and 2 reportedly pay for electricity, chemicals, spare parts, and other disposables. Five SWAs do not pay any expenses. For all SWAs, though, in case of deficit, the SG covers all additional expenses and funding is transferred after SWAs provide financial statements or letters requesting additional funding (table D.7).

Table D.5 SWA Involvement on HR Matters

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Total</i>
SWAs with staff that are civil servants	6	6	6	2	3	4	27 (77%)
SWAs with no autonomy to hire staff	6	6	2	2	5	2	23 (66%)
SWAs consulted when hiring new staff ^a	2	3	4	3	5	2	19 (54%)

Note: *N* = 35. HR = human resource; SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

a. *N* = 28.

Table D.6 How SWA Staff Are Paid

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Total</i>
SWAs that pay staff salaries directly	1	0	3	2	1	2	9 (26%)
SWAs that pay salaries from billing collection	0	0	2	1	0	2	5 (14%)

Note: *N* = 35. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Table D.7 Operational Expenses

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Total</i>
SWAs that have spending autonomy	0	1	1	1	2	4	9 (26%)
SWAs that pay for electricity	0	1	3	3	5	3	15 (43%)
SWAs that pay for chemicals	1	1	2	3	4	2	13 (37%)
SWAs that pay all operational expenses ^a	0	1	1	2	4	1	9 (26%)

Note: *N* = 35. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

a. *N* = 34.

Investment

In recent decades, some governments have tried to improve their water utilities, but most have had only limited success. Often, the shortcomings can be traced back to poor execution of investment projects that could have been overcome through better management. Despite the best intentions, however, systems have often been overbuilt, without reflecting the true needs of consumers and what they could and would be willing to pay for. The inherent inefficiency illustrated by an oversized or unaffordable system has often initiated a downward cycle, forcing poor performance from the outset. At this point, there is little that can be done to put the state water agencies (SWAs) back on track for better performance without a major and politically painful restructuring (Baietti, Kingdom, and Van Ginneken 2006).¹ Inherently, in discussing ways to improve service delivery, this puts investments at the center.

In Nigeria, however, water investment practice varies by state, mainly because of the socioeconomic structure and the diversity of needs. The common thread across all SWAs in Nigeria, however, is that they do not have the authority to borrow on their own from capital markets, approach donors, or securitize future payments as collateral for the investment borrowing.

This gridlock perhaps explains why all SWAs without exception are in dire need of financial investment for new projects: Investment funds are needed to expand water intakes (20 of 35, 57 percent) and to expand and rehabilitate distribution networks (21 of 35, 60 percent).

On average, based on the responses of 29 of 35 SWAs (83 percent) an SWA has not had an investment project valued at about US\$10 million for 11 years. Geographically the situation is even more dismal, where the North East has not had such a project for 18 years, the South East for 16, and the South South for 14 (table E.1). Worse, six of the SWAs (17 percent) had had no investment projects since 1991 administrative reform.

Only 22 of the 35 SWAs (63 percent) currently have projects under way, but none were developed by the utilities themselves. Also, no projects, current or past, had investment of more than US\$25 per customer. Yet 25 SWAs (71 percent) have an investment plan. Even though access to resources to

Table E.1 Length of Time since Last Major Investment Project

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Total</i>
Average years since completion of US10+ million investment project	7.3	18.3	7.2	16.3	14.3	7.2	11.0
10 or fewer years	4	1	4	1	3	4	17 (59%)
11–20 years	2	0	1	1	0	2	6 (21%)
More than 20 years	0	3	0	2	1	0	6 (21%)
Total value of completed projects (US\$ million), as of August 2014	287	194	110	49.5	120	79	n.a.

Note: *N* = 29. n.a. = not applicable. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Table E.2 Current SWA Investment Projects

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Total</i>
No	3	2	2	1	2	3	13 (37%)
Yes	3	4	5	3	4	3	22 (63%)

Note: *N* = 35. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Table E.3 Investment Readiness of SWAs

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Total</i>
Do you have a shovel-ready project that you cannot finance?	4	4	7	4	4	6	29 (83%)
Do you have a feasibility study or design document for such a project?	3	3	7	4	4	6	27 (77%)
Do you have an engineering /detailed design for this project?	3	3	7	4	3	5	25 (71%)

Note: *N* = 35. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

undertake or fulfill investment needs may be a little farfetched, in terms of planning the SWAs are forward-looking (table E.2).

This does not stop utilities from developing the investment programs; at least 25 of the 35 SWAs (71 percent) have an engineering/detailed design for a project ready for execution, and 29 (83 percent) stated that they have a shovel-ready project that they cannot finance. In addition, almost 27 SWAs (77 percent) also already had a feasibility study or design document ready for such a project. It is very encouraging that such a large number of SWAs have expended time to prepare projects ready to go as soon as financing is made available (table E.3).

It is clear that in Nigeria the state dominates in each phase of the SWA development process: who finances or guarantees capital investments, who approves the investment program, who gives the permissions needed to proceed, who approves and gives final word on design, who gives final approval for financial plans, and who leads the bidding process. The state also predominantly leads in supervising projects under way (more than 60% of SWAs); it commissions the investment and then transfers the asset onto the utility balance sheet.

Table E.4 Sources of SWA Capital Financing

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Total</i>
Federal	3	0	1	1	1	3	9 (26%)
State	5	5	7	4	6	6	33 (97%)
Donors	0	1	2	0	2	5	10 (29%)
SWA self-financing	0	0	0	0	0	1	1 (3%)
Multiple	2	1	2	1	2	5	13 (38%)

Note: *N* = 34. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Table E.5 Permission and Safeguards

	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Total</i>
Allocation of land	1	1	1	1	2	4	10 (31%)
Social safeguards	2	2	3	2	1	4	14 (44%)
Resettlement	3	2	3	1	2	4	15 (47%)
Affordability	1	2	0	1	1	1	6 (19%)
Other	3	2	5	3	3	2	18 (56%)
Multiple	2	3	3	2	3	5	18 (56%)

Note: *N* = 32. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

The role of the SWA is usually limited to consultation in the decision process; fewer than 20 percent review bids. No water utility has ever financed any investment and conducted its own investment program (table E.4).

In the few cases where financing comes from the federal level, these are usually national projects financed by international financial institutions (IFIs), such as the World Bank, the French Development Agency, the African Development Bank, and the Islamic Development Bank. However, in most cases, the financing goes not to the utility but to the state government, which finances the work and then transfers the assets to the SWA balance sheet.

Getting permissions and assuring safeguards is necessary due diligence for any investment project (see table E.5). About 32 SWAs (91%) confirmed having assessed safeguards for investment projects, such as resettlement, social safeguards, land allocation, and affordability. Other due diligence efforts reported were willingness to pay, sustainability, and right of way assessment. About 18 SWAs undertook multiple safeguards or permission to prepare a project.

Prepared projects are submitted to state water boards, which give final approval for financing them; for 20 of 22 SWAs (91%), the state government managed the process of securing necessary permission for the SWA to undertake investment projects. After approval is given, they must follow certain procedures, such as allocation of the land and such social safeguards as assessment of the need for resettlement and affordability. Most such assessments are conducted with state financial assistance.

Table E.6 Projects Targeted to Improving Services for the Poor

	NC	NE	NW	SE	SS	SW	Total
No	5	2	3	2	4	2	18 (51%)
Yes	1	4	4	2	2	4	17 (49%)

Note: N = 35. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

The state takes a lead in preparing the design for the investment project approved (30 SWAs, 86 percent) and is the agency that provides final approval of the design (31 SWAs, 91 percent). Finally, the state government (SG) also has final approval of the financial plan (31 SWAs, 89 percent). The state then often conducts the bidding processes for SWA investments (24 SWAs, 69 percent), although 11 SWAs (31 percent) are managing the bidding process in-house.

Once a project was being carried out, the SG and the SWAs were almost equal in supervising the construction contracts: 22 projects (63 percent) were managed by the state and 20 (57 percent) by the SWA (some projects are co-managed). However, when it comes to testing asset performance, the situation is reversed, with the SWAs having the responsibility in 22 cases (63 percent) and the SG in 20 (57 percent). The state was also largely responsible for the commissioning process after the new asset had been tested and accepted (28 SWAs or 80 percent). Finally the SG then usually transfers the assets to the SWA balance sheet (26 SWAs, 74 percent).

Only 17 SWAs, 49 percent, had any project that specifically targeted provided service for the poor and low-income population groups or were otherwise pro-poor investments. The more pro-poor SWAs were in the North East, North West, and South West; while most North Central SWAs had no pro-poor investment projects (table E.6). However, none of the more pro-poor SWAs were compensated for the new services or allowed to raise tariffs to cover their cost.

Note

1. The study was an extensive review of 11 water utilities in a variety of settings.

Reference

- Baietti, Aldo, William Kingdom, and Meike Van Ginneken. 2006. *Characteristics of Well-performing Public Water Utilities*. Washington, DC: World Bank.

Customer Orientation

The customer orientation portion of the study was designed to help establish how and to what extent a state water agency (SWA) takes into account customer views, behavior, and needs in establishing connections, billing, collection, payment information, and disconnection. It covered the institutional framework the SWA had in place for customer service or customer management, what services SWAs offered to customers, and how customer feedback is looped back into improving service quality.

Institutional

Almost 74 percent (26) of the SWAs have departments focused on customer relations and on average these have been in existence for at least 17 years, but with some as old as 32 years and others as new as 1 year. Although nine SWAs said they did not have a separate department, eight of these said they did have in-house staff dedicated to customer relations. So all but one of the 35 SWAs (97 percent) either had an independent department or staff tasked with customer relations and response. One SWA in the North West region reported having outsourced the customer relations function (table F.1).

In 2014 Nigeria emerged as one of the fastest growing countries in access to global information technology, moving ahead of the United Kingdom in the ratings.¹ Yet only eight SWAs (23 percent) reported having a publicly accessible website. SWAs seem to be lagging in this area, although other factors may be affecting SWA online presence.

As for information available on the website, seven had the mission statement and customer relations contact information; six also had information related to tariffs and bill payment location, and five explained their billing and had information related to major projects (planned, in the pipeline, and current). Though so few SWAs had websites, the amount of information they are disclosing is encouraging. Tables F.2 to F.4 provide data on number of utilities that have websites and how customers and SWAs use this tool.

Table F.1 SWAs Customer Care Departments

	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Average</i>
No, percent	50	33	14	0	33	17	26
Yes, percent	50	67	86	100	67	83	74
Average age of SWAs customer care department, years ^a	15	17	23	17	14	12	17

Note: *N* = 35. SWA = state water agency. Regions: *NC* = North Central; *NE* = North East; *NW* = North West; *SE* = South East; *SS* = South South; *SW* = South West.

a. *N* = 25.

Table F.2 SWAs with Websites

percent

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Average</i>
No	83	67	86	100	83	50	77
Yes	17	33	14	0	17	50	23

Note: *N* = 35. SWA = state water agency. Regions: *NC* = North Central; *NE* = North East; *NW* = North West; *SE* = South East; *SS* = South South; *SW* = South West.

Table F.3 Information Available through the Seven SWA Websites

percent

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Average</i>
Mission statement	100	50	100	0	100	100	88
Major projects	100	0	100	0	100	67	63
Tariffs	100	50	100	0	100	67	75
Information explaining bill	100	0	100	0	100	67	63
Bill payment location	100	0	100	0	100	100	75
Customer relations contact information	100	50	100	0	100	100	88
Other	0	50	100	0	0	33	38
Multiple responses to information	100	50	100	0	100	100	88

Note: *N* = 8. SWA = state water agency. Regions: *NC* = North Central; *NE* = North East; *NW* = North West; *SE* = South East; *SS* = South South; *SW* = South West.

Table F.4 Information Available through the Eight SWA Websites

percent

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Average</i>
Request a new connection	100	0	100	0	100	33	50
Billing	100	0	100	0	100	33	50
Payments	0	0	100	0	100	33	38
Dispute/grievance	0	0	100	0	100	67	50
Other	100	100	0	0	0	67	63
Multiple response to services	100	0	100	0	100	100	75

Note: *N* = 8. SWA = state water agency. Regions: *NC* = North Central; *NE* = North East; *NW* = North West; *SE* = South East; *SS* = South South; *SW* = South West.

Table F.5 Customer Databases Maintained
percent

Region	NC	NE	NW	SE	SS	SW	Average
Yes, paper-based	67	50	43	75	33	17	46
Yes, computerized	33	50	43	25	67	67	49
Yes, paper-based and computerized	0	0	14	0	0	17	6

Note: N = 35. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

On services available through the website, on half of them, customers were able to use it to request a new connection, pay their water bills online, and report disputes and grievances to the appropriate personnel, although on only three websites was it possible to view bills online. About five SWAs noted that they are in the process of populating the website with more services and that the online portal also allowed for submission of general complaints.

Services

All 35 of the SWAs had customer databases; what varied was whether the database was paper-based, computerized, or both. This split is fairly even, with a very slight 3 percent edge toward automation (see table F.5). Geographically North Central and South East databases were largely paper-based, South South and South West more computerized, and North East and North West had an even split. It would be possible to think of many reasons why so many SWAs continue to operate on the old paper-based management model rather than transitioning to modern management practices. Some may not have access or technology or may have capacity problems, but it may well be for purely local reasons, or related to each SWA's operating style.

According to the 2014 World Bank *Nigeria Economic Report*, Nigeria has one of the world's highest rates of economic growth, averaging 7.4 percent (Oladokun 2014). Yet although the official national poverty line has now been lowered to 33.1 percent, a large share of the rest of the population is still vulnerable at not far above the poverty line. Since the geographic variance of poverty may be significant, it seemed reasonable to delve into how SWAs were targeting the poor. Overall, almost half of the SWA sample could not identify the poor in the database, with the problem by far worst in North Central (table F.6). Certainly the first step in putting in place a pro-poor strategy or a targeting mechanism for water service delivery is to be able to identify who the poor are.

From the reports of 24 SWAs (69 percent), about two-thirds used location to identify poor households, followed by demographics, then tariffs and affordability, and lastly by audit. About a third used several definitions to identify poor households.

Among the 34 SWAs who responded to the question about having a separate tariff for the poor (table F.8), there was a 50/50 split that tracks the responses to

Table F.6 Can SWA Identify Vulnerable Customers in the Database?*percent*

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Average</i>
No	83	50	43	25	50	33	49
Yes	17	50	57	75	50	67	51

Note: N = 35. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Table F.7 How "Poor" Is Tracked in the Database

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Total</i>
Location	4	13	4	13	13	17	64
Audit	4	0	0	4	0	0	8
Tariffs	0	8	4	0	0	4	16
Affordability	0	4	8	0	4	0	16
Demographics	4	4	8	8	4	4	32
Multiple definitions applied	4	8	4	8	4	4	32

Note: N = 24. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Table F.8 Separate Tariff for Customers Defined as Poor*percent*

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Average</i>
No	67	50	29	75	40	50	50
Yes	33	50	71	25	60	50	50

Note: N = 34. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

the question about how SWAs can identify the poor (table F.7) in the database. The North West was most inclined to have a separate tariff for the poor; North Central and South East were far behind.

SWAs deployed the customer database effectively for billing, collection, disconnection due to nonpayment, service expansion, targeting the poor, and other purposes (table F.9). Moreover, 97 percent of them use the database for multiple purposes; it is utilized to the maximum. Those SWAs that did not use the database for identifying the poor also lagged when it came targeting them. However, the SWAs were sensitive to customer needs and used the database diligently when it came to service expansion (table F.10).

The predominant way SWAs issue bills for water supply and sanitation services and ensure delivery to individual households was through their own messengers (69 percent); next came paper copy via mail (31 percent). Interestingly the pattern was to use only one means rather than multiple platforms. Also, only one SWA in the South South region did not issue bills. More modern methods, such as e-mail, online, or cell phone, were not common (table F.11).

Table F.9 How SWAs Use the Customer Database*percent*

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Average</i>
Billing	100	100	100	100	83	100	97
Collection	83	83	100	100	83	100	91
Disconnection due to nonpayment	100	83	100	100	67	100	91
Targeting the poor	17	33	43	25	50	50	37
Service expansion	67	50	57	100	83	67	69
Other	0	0	14	0	33	50	17
Multiple uses	100	83	100	100	100	100	97

Note: *N* = 35. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Table F.10 Service Expansion Based on Knowledge of Customer Needs*percent*

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Average</i>
No	17	0	0	0	0	33	9
Yes	83	100	100	100	100	67	91

Note: *N* = 32. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Table F.11 How SWAs Issue Bills*percent*

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Average</i>
Paper copy by mail	33	17	43	75	33	0	31
E-mail	0	0	0	0	17	0	3
Online	0	0	0	0	17	0	3
Cell phone	0	0	0	0	17	0	3
No billing	0	0	0	0	17	0	3
Paper bill physically distributed to HHs through bill distributors	67	83	57	50	50	100	69
Other	0	0	0	0	17	0	3
Multiple modes to issue bills	0	0	0	25	17	0	6

Note: Responses do not equal 100 percent as the category also allows multiple responses. *N* = 35. HH = household; SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Once bills are issued, the next question is what options for payment do SWAs offer customers. Once again traditional methods prevailed, mainly direct payment at the SWA office or to the SWA account in a bank (table F.12). Online, cell phone, and stand-alone payment centers were not common. Unlike issuing bills, more than half the SWAs offered multiple modes for making payments.

Finally, it is not unusual for mistakes to be made during billing and the question was the means to rectify billing errors that SWAs made available to consumers. Almost 88 percent of SWAs reported having a process in place for

contesting bills/charges, so consumer rights were duly recognized by the majority of SWAs (table F.13).

In addition to providing services to customers directly, SWAs also sold water to alternative vendors for resale, and 54 percent of SWAs did so, using a variety of contractual arrangements (table F.14). The practice was most prevalent in the North Central and South West regions where about 83 percent of SWAs acted as water wholesalers. The practice was least common in the North East and North West.

Water service providers may use consumer surveys to assess the quality of service in order to improve it. Based on the data collected, 79 percent regularly

Table F.12 How SWA Bills Can Be Paid

percent

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Average</i>
SWA central office	83	100	100	75	50	100	86
Independent stand-alone payment centers	17	17	14	0	17	17	14
Bank	67	33	57	50	67	83	60
Online	0	0	14	0	17	17	9
Cell phone	0	0	0	0	17	0	3
Other	0	17	29	0	33	0	14
Multiple modes available for bill payment	50	33	57	75	33	83	54

Note: Responses do not total 100% as the categories allow for multiple responses. *N* = 35. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Table F.13 SWAs That Offer a Process to Contest Bills

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Total</i>
No	0	3	3	0	6	0	12
Yes	17	14	17	12	11	17	88

Note: *N* = 34. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Table F.14 SWAs That Sell to Water Vendors

percent

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Average</i>
No	17	67	71	50	50	17	46
Yes	83	33	29	50	50	83	54

Note: *N* = 35. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Table F.15 SWAs That Do Consumer Surveys
percent

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Average</i>
No ^a	40	17	14	25	17	17	21
Yes ^a	60	83	86	75	83	83	79
Monthly ^b	33	0	75	0	0	0	25
Quarterly ^b	33	100	0	50	75	50	44
Bi-Annually ^b	0	0	0	50	0	0	6
Annually ^b	0	0	0	0	25	0	6
Not regular ^b	33	0	25	0	0	50	19

*Note:*The response does not equal 100% as the category allows for multiple responses. SWA = state water agency. Regions: NC = North Central, NE = North East, NW = North West, SE = South East, SS = South South, SW = South West.

a. *N* = 34.

b. *N* = 16.

Table F.16 SWAs with Means to Engage Consumers in Planning and Follow-through
percent

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Average</i>
No	83	67	29	50	50	33	51
Yes	17	33	71	50	50	67	49

Note: *N* = 35. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

did so (table F.15). Many SWAs did quarterly surveys (44 percent), but 25 percent did monthly surveys, and almost 19 percent did not do regular surveys. The reason that most SWAs conducted consumer surveys was to gauge performance and improve the quality of service.

The last question in the questionnaire services section very well captured the situation with regard to mechanisms for engaging consumers in the planning and conduct of service improvement initiatives, with a split of almost 50/50 (table F.16). The geographic divide suggested that North Central and North East were severely lagging or that organizationally planning was very centralized. The North West and South West were far more advanced.

Feedback on Complaints and Grievances

All but 1 of the 35 SWAs had some form of customer complaint system in place (table F.17), so that customers had a channel through which to voice their complaints or grievances and provide feedback. Most had telephone-based systems as their primary, secondary, tertiary, or quaternary source of reporting, followed by surveys and other means, such as radio complaints or neighborhood meetings, then computer/Internet based reporting, and filing a complaint at the SWA Offices. About three-quarters gave customers multiple options for registering problems.

Once complaints were received, more than two-thirds of the SWAs registered them only in a handwritten register, although many of them used this in combination with electronic or some other system (table F.18). Among the other means listed by 15 percent were phone text, radio complaint call-in programs, direct phone calls, or direct outreach to a designated department or person. Only 29 percent offered multiple platforms to register and report complaints. As was clear earlier, SWAs are not extensively automated.

To complete the complaint loop, most of the SWAs analyzed complaints received in order to improve service delivery (table F.19). In the North East region, 33 percent did not take any action; in the South South and South East regions, all complaints were analyzed. Almost all the SWAs did this type of analysis monthly.

The last link is whether once the complaint has been rectified, the SWA gets feedback from the customer on the effectiveness of the response and uses the feedback to improve its responses (table F.20). Most SWAs did receive feedback

Table F.17 SWA Customer Complaint Options

percent

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Average</i>
No	0	17	0	0	0	0	3
Yes	100	83	00	100	100	100	97
Telephone-based	50	83	71	75	67	83	71
Computer/Internet based	17	0	14	0	33	50	20
Survey	33	33	43	50	50	67	46
SWA office	33	17	0	25	33	17	20
Other	33	50	57	50	33	50	46
Multiple means for registering complaints	50	100	71	75	67	83	74

Note: The totals do not equal 100% because of multiple responses. *N* = 35. SWA = state water agency.

Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Table F.18 How SWAs Track Complaint Reports

percent

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Average</i>
Handwritten register	100	100	100	100	83	100	97
Internet based	0	0	14	0	17	33	12
Electronic system/ computer based	17	0	29	0	33	50	24
Other means	17	0	29	0	33	0	15
Multiple means used to report complaints	33	0	43	0	33	50	29

Note: The totals do not equal 100% because of multiple responses. *N* = 34. SWA = state water agency.

Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

Table F.19 SWAs That Analyze Complaints to Improve Service
percent

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Average</i>
No	17	33	14	0	0	17	14
Yes	83	67	86	100	100	83	86
Monthly frequency (<i>N</i> = 27) ^a	100	33	100	75	80	100	85

Note: *N* = 35. SWA = state water agency. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

a. One SWA responded with a combination of reporting monthly and annually.

Table F.20 Feedback from Customers on Complaint Resolution
percent

<i>Region</i>	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Average</i>
No	17	0	0	0	0	17	6
Yes	67	100	100	100	83	83	89
Other	17	0	0	0	17	17	9
Yes, filed and used to improve quality of service (<i>N</i> = 19) ^a	33	33	71	50	33	33	43

Note: *N* = 35. Regions: NC = North Central; NE = North East; NW = North West; SE = South East; SS = South South; SW = South West.

a. One SWA responded both "Yes" and "Other"; the sum is not 100 percent.

from customers, although this was somewhat less likely for North Central SWAs. However, fewer than half of the SWAs actually used the feedback to improve quality and incorporating feedback into operational practices and improving their own response and quality of service was much less likely geographically in the North Central, North East, South South, and South West regions.

Disclosure by water utilities demonstrates accountability to customers. It is also a mechanism to engage an SWA's constituency, be transparent about institutional growth and development plans, and treat customers as partners. The SWAs were therefore asked four questions:

1. Do you publish tariff revisions in the local media?
2. Do you conduct public hearings on investment and major rehabilitation projects?
3. Are water quality results disclosed to customers?
4. Do you respond to service complaints reported in local media?

As table F.21 suggests, only 40 percent of the SWAs responding to the first three questions do the necessary reporting. Tariff disclosure did not seem to be a common practice geographically, except for North Central, where more than two-thirds of the SWAs reported tariff changes. Public hearings for investment and major rehabilitation projects were conducted mainly in the North West, South South, and South West; no public hearing was conducted by any North Central

Table F.21 Positive Responsiveness and Disclosure to Customers*percent*

	<i>NC</i>	<i>NE</i>	<i>NW</i>	<i>SE</i>	<i>SS</i>	<i>SW</i>	<i>Average</i>
Do you publish your tariff revisions in local media (Internet, newspapers) for public disclosure?	67	50	29	25	50	17	40
Do you conduct public hearings on investment/major rehabilitation projects?	0	17	57	25	67	67	40
Are water quality monitoring results disclosed to the customers?	50	33	33	0	83	17	39
Do you respond to service complaints reported in local media (newspapers, Internet blogs, and government officials)?	100	100	100	100	100	100	100

Note: *N* = 33–35. Regions: *NC* = North Central; *NE* = North East; *NW* = North West; *SE* = South East; *SS* = South South; *SW* = South West.

SWAs, and very few in North East and South East. Reporting on water quality monitoring was highest in the South South SWAs and very low if any in the South East region. Finally, the highest level of responsiveness by SWAs was to service complaints reported in the local media where all SWAs unanimously reported “yes.” There is no clear regional pattern in terms of which regions are lagging on responsiveness and disclosure to customers, but there appear to not be mandatory systems for reporting of tariffs, investment projects, or water quality monitoring.

Note

1. <http://www.thisdaylive.com/articles/nigeria-now-ahead-of-uk-in-internet-access/174390/>.

Reference

World Bank. 2014. *Nigeria Economic Report*. Washington, DC: World Bank.

Water Supply Tariff Setting and Structure and the Effects on the Poor

The World Bank's Water and Sanitation Program (WSP), through the International Benchmarking Network for Water and Sanitation Utilities (IBNET), is supporting the Third National Urban Water Sector Reform Project that the World Bank board approved in April 2014. IBNET has collected performance indicators for the 35 SWAs and is supporting the Federal Ministry of Water Resources (FMWR) in establishing a monitoring system for water utilities. This system will help the FMWR to track the performance of water utilities and help the government make decisions about sector reforms, investments needed, and capacity issues. IBNET involvement also comprises technical assistance (TA) on the economic aspects of the urban water sector; one of the expected products is a study on urban water tariff setting and structures.

Water tariffs in Nigeria are currently below cost-recovery levels, and the sector suffers from a lack of institutional capacity, incentives, and regulation to promote financial sustainability. Water tariff policies are intertwined with inadequate governance of the water supply and sanitation sector; successful reforms will require political decisions on sector policies, their instrumentation through matching investments, laws, and regulation, and consistent strong political support for carrying all these out.

Overarching policy is the responsibility of the FMWR but detailed policy, instrumentation, and implementation remain the responsibility of the states and in the case of urban water supply the 37 state water agencies (SWAs). Rural water tariffs and user charges, which are managed by local government authorities (LGAs), are beyond the scope of this report. Similarly, sanitation tariffs, although important, are not addressed here because public sanitation systems, including sewerage, hardly exist at all in Nigeria except for limited systems in Abuja and Lagos, and the sewerage treatment plan in Port Harcourt that started up only in 2013.

Current Urban Water Tariff Policies

Current urban water supply tariffs are defined by the national policies that guide them; the institutional and legal instruments that make tariff policies operational; and the ways in which the policies are actually implemented.

Currently there is no explicit tariff policy governing Nigeria's urban water supply. Each state has its own rules, laws, and regulations for tariff setting. However, the *National Water Supply and Sanitation Policy*, promulgated by the FMWR in 2000, contains oblique reference to tariff policies, when it states that the objective is "the provision of sufficient water and adequate sanitation to all Nigerians in an affordable and sustainable way through participatory investment by the three tiers of government, the private sector and the beneficiary."¹ The policy expands on this by stating an objective of improving the public health and economic well-being of the urban populace by providing adequate, safe, and sustainable water for domestic, commercial, and industrial purposes in a planned and coordinated manner, at reasonable cost, to enable operators to break even.²

It follows that water supply services should presumably be affordable for consumers and enable operators to break even, presumably by raising enough to pay for cash operating costs. However, the document does not mention any return on capital.

How SWAs Apply Water Supply Tariff Policies

Since the Nigerian constitution gives states considerable latitude in applying federal policies, it is not surprising to find that state water tariffs vary significantly. Borno and Bayelsa even provide water free to residential customers. Only Abuja, Oyo, Cross Rivers, and parts of Lagos meter consumption and bill based on that. In most of the other states tariffs are set differently for different customer groups, often up to 20. This makes tariffs quite arbitrary and disconnected from costs. Instead, these tariffs are often set as a form of tax for specific industries. The result is the absence of clarity and consistent and effective application of policies, resulting in poor performance and failure to meet the legitimate basic needs of the population.

Performance indicators (see chapters 3 and 4) show the calamitous state of urban water supply. Nigeria is expected to fail to meet the 2015 Millennium Development Goals for access to water and sanitation; it provides only the basic requirements for water and then only intermittently, is grossly inefficient as indicated by an exceedingly high rate of inoperative systems and of nonrevenue water, is financially and operationally unsustainable, and is inequitable, since the poor must pay water vendors 10 to 20 times as much as do those who are connected to public water systems.

Urban Water Sector Policies

Inadequate governance, including an absence of autonomy and incentives for operators, insufficient investments, and unclear or misdirected tariff policies explain the sector's poor performance. This appendix analyzes sector tariff

policies and how they are applied while recognizing that better performance will only result if the entire governance of the sector is reformed.

As noted elsewhere, the urban water supply sector lacks an explicit tariff policy and tariff regime, either federal or state and local. For instance, the first *National Water Supply and Sanitation Policy* in 2000 stated that services should be “affordable” without defining what it meant by affordable. Effective tariff policies should state whether “affordable” tariffs that satisfy operators’ financial requirements are optional or mandated. In practice in Nigeria they are optional; a few states have chosen not to charge at all for water services. Failure to charge for such a costly service is the ultimate disincentive for operators to provide equitable, safe, and sustainable service not to mention encouraging excessive dependence on state budgets that can be both insufficient and unreliable and unrelated to the top sector priorities.

The vagueness of what is required in terms of tariffs is compounded by the absence of a clear arbiter for what constitutes “correct” tariffs, who should be responsible for initiating tariff changes, and who approves them. In practice, it seems that the SWA initiates the processing of a tariff increase but it is also clear that approval is entirely dependent on the political will of the state government (SG) to allow a tariff increase. With this degree of uncertainty it is therefore not surprising to find tariffs of widely divergent ages (see table 2.7, chapter 2).

Infrequent tariff increases damage the financial situation of the operators. Certainly inflation that has averaged close to 9 percent annually rapidly erodes the value of aging tariffs. Infrequent tariff increases demonstrate the lack of tariff regulation and of any articulated will from operators to increase tariffs enough to maintain their purchase value.

Tariff structures should be as simple as possible and related to a level of consumption that in turn is proof of economic benefits. With few exceptions, such as Cross Rivers State, current tariff structures are excessively complex. For instance, the tariff structure in Akwa Ibom State has more than 80 subcategories, Nasarawa State’s has more than 40 subcategories, and so on. The complexity is bewildering for consumers and creates a moral hazard in terms of the assignment and enforcement of tariff categories.

Tariffs Unrelated to Service Provision

Most seriously, without reliable commercial systems with statistically monitored meter readings, billings, and collection systems, current tariffs are unrelated to proof that service is actually provided. The IBNET data indicate that only about 15 percent of SWA water sales is metered. In fact, the share of sales related to reliably metered consumption may be lower since only a few cities and states meter. The fact that the share of sales that is metered dropped from 27 percent in 2011 to 15 percent in 2012 would seem to indicate that metering data are unreliable. Yet the only tangible proof that economic benefits have been provided is accurately metered water consumption. The fact that IBNET data reports residential consumption levels below 30 liters per capita per day (lpcd) is proof that today’s water systems barely meet basic services of their populations. Similarly,

the fact that urban connection rates are only about 40 percent leads to the assumption that the 60 percent of the population that is not connected is provided with less than 30 lpcd, usually from private water vendors, at much higher effective tariffs than the SWAs charge.

Lack of Incentives for Applying Tariffs

SGs are the sole owners of the state water boards. The SWBs are in charge of development, management, and operating of the water systems in given LGA cities. The SGs establish tariffs and set water services regulation for their water boards. Also SGs finance major development programs within SWBs. However, only Lagos and Abuja have created corporate utilities that have an incentive to apply tariffs accurately and bill and collect efficiently. This crucial aspect of governance may go well beyond tariff policies, but effective application of tariff policies will only improve once governance of the entire sector has been reformed and utilities have been created with autonomy from the state administrations of which they are usually a part.

Summary Assessment of Nigeria's Current Tariff Policies

Current tariff policies as designed and applied do not support the development objectives of the water sector. In particular:

- Failure to recover the costs of operations and sustainable maintenance deprives operators of the revenue they need to pay for the running costs of the systems and keep the systems operationally sustainable.³
- The pervasive absence of effective and reliable metering encourages wastage of water and, since those wasting water pay no more than those trying to consume frugally, is grossly inequitable.
- The lack of metering encourages inefficient investment and operations since there are no reliable data on water production and consumption, which are fundamental for planning, designing, and investing economically.
- Excessively complex tariff structures confuse consumers and risk encouraging corruption in assigning consumers to low-tariff categories.
- The lack of price regulation has slowed adjustment of tariffs to maintain their purchase power value.

Tariff Policies in Other African Countries

The conclusion that current tariff policies work against any effort to improve the provision of water supply and sanitation services becomes all the more stark when Nigeria is compared with other African countries. The African Infrastructure Country Diagnostic (AICD) offers a ready means of tariff comparisons.⁴ A survey of 45 utilities in 23 countries showed that current Nigerian tariff policies are a statistical outlier in Africa, and not in a good way. The AICD found that 60 percent of the surveyed utilities recover their full operations and maintenance (O&M) costs even though the O&M costs average a relatively

high US\$0.60 per cubic meter. Nine of the utilities surveyed by AICD had instituted 100 percent metering of consumption, and another 35 on average metered 75 percent of their consumers. Only Nigeria and Sudan has practically no metering.

The comparison with the sample AICD utilities prompts another conclusion: it is likely that available water supply sector data in Nigeria are not only fragmentary but at times deceptive. IBNET data suggest that average O&M costs in Nigeria are US\$0.28 per cubic meter in 2012, whereas the AICD reports US\$0.60 per cubic meter, which attests to the relatively high cost of water service in Africa. Although metering is practically absent, the IBNET estimate of nonrevenue water in Nigeria in 2012 was 37 percent. Apparently data on the Nigerian water sector are unreliable—possibly because many operators do not enjoy the administrative and financial autonomy that would force them to collect and analyze key operating data.

Tariff Policy Reforms

Any tariff policy reform would have to be part of reforms of the entire governance of urban water supply in Nigeria. The current inadequate system has left Nigeria a laggard in water service coverage, quality, efficiency, equity, and sustainability in Africa; piecemeal tariff reforms would come to nothing if the entire incentive system and legal and administrative autonomy of water supply operators were left unchanged.

Assuming there will be broad governance reforms in Nigeria, the analysis of current tariffs has identified five tariff reforms that could build the foundation for a more equitable, efficient, and sustainable urban water sector:

- Adopt federal guidelines for water supply and sanitation tariffs, and establish a methodology to set up average cost-recovery tariffs and mechanisms for their automatic indexation.
- Put in place a streamlined program to collect and analyze urban water supply data as preparation for statewide regulation and a basis for a regulatory information system (for example, accounting, operations)
- Mandate a national water metering program.
- Streamline water tariff structures through study and assessment of long-run marginal water supply costs and establish formal tariff objectives.
- Streamline subsidies to finance connections to increase coverage.

Adopt Federal Guidelines for Water Supply and Sanitation Tariffs

The current federal objectives lack a specific national water supply and sanitation policy that could serve as guidelines for the states. A federal tariff policy should build on the present federal objectives “to improve the public health and economic well-being of the urban populace through provision of adequate, safe and sustainable water for domestic, commercial and industrial purposes in a planned and coordinated manner, at reasonable cost to enable operators to break even.”

Federal guidelines might then specify that tariffs should

- satisfy the needs of both consumers and service providers, since favoring one at the expense of the other would result in worse and unsustainable service to the detriment of both.
- recover in the shortest possible time the complete O&M costs for existing systems. This implies that annual maintenance costs must be estimated and leveraged to promote financially and operationally sound services. Sustainable levels of maintenance are likely to require annually increases of about 3 percent of the replacement value of system assets.
- also recover in the medium term the capital costs of providing water supply and sanitation services.
- be based on demonstrated service provided to consumers. The only way to do this would be to charge on the basis of metered water consumption, which implies that failure to reliably meter consumption deprives a service provider of the right to charge a consumer. This requirement should provide the strongest possible incentive for service providers to meter water consumed accurately.
- have simple structures to send a clear signal to consumers of what their consumption costs are. Preferably the tariff should be a fixed monthly charge for life-line consumption (say 5 cubic meters per month and connection) and then a unit rate for metered consumption above the lifeline allowance.
- maintain the purchase value of tariffs during the entire period for which they have been authorized. Tariffs would therefore have to be updated monthly by the percent changes in the consumer price index;
- comprise sanitation sewerage services, calculated as a percent surcharge of the charge for urban water supply since the two are directly tied one to another. Complete costs for sewerage are often at least as large as those for urban water supply implying that the sewerage surcharge should be 100% of the cost of water supply.

The transformative power of federal tariff guidelines could be high if the levels and recipients of federal investment financing were tied to the adoption and application of statewide tariffs that reflect the federal guidelines.

Streamline Collection and Analysis of Sector Performance Indicators

Nigeria has already made a credible start with the collection, analysis, and publication of performance data under IBNET auspices. This effort must continue and be internalized in preparation of state tariff regulation. It is important not to overload operators with demands for data that they can only produce with more institutional capacity and effective metering. By concentrating on data that are musts to know rather than data that are good to have, in the short term, it may be pragmatic to link published sector performance indicators with the federal objectives for the sector. It would then be possible to track progress toward meeting sector objectives with the six performance indicators shown in table G.1.

Table G.1 FMWR Sector Objectives and Suggested Performance Indicators

<i>FMWR objective</i>	<i>Suggested indicator</i>
To improve the <i>public health and economic well-being</i> of the urban population ...	(1) Percentage of the urban population connected to a piped water supply (2) Percentage of the urban population connected to a public sewerage system (3) Percentage of the urban population that has continuous, 24/7 water service
... through provision of adequate, <i>safe</i> ...	(4) Percentage of water samples that meet federal water quality standards
... and sustainable water for domestic, commercial, and industrial purposes in a planned and coordinated manner <i>at reasonable cost</i> ...	(5) Percentage of low-income household income spent on water consumption
... to enable water operators to <i>break even</i> .	(6) Ratio between operators' operating and maintenance costs (without depreciation) and cash revenue collected (financial sustainability)

Note: FMWR = Federal Ministry of Water Resources.

If federal or state-specific urban water supply sector development objectives are changed, the performance indicators should also evolve. For instance, it is common to find that countries make efficiency of service an objective, in which case an additional three performance indicators are suggested:

1. Percentage of water connections with meters in good operating order
2. Percentage of nonrevenue water (share of water supplied to the system that does not produce any financial return for the operator)
3. Number of operator personnel per 1,000 water connections

Mandate a National Water Metering Program

The single most important reform for the sector would be a program to measure the supply of water at the city level, and the corresponding consumption within the SWA's service area. A successful National Water Metering Program offers the promise of an efficient, equitable, and sustainable sector; unless there is progress in this area, the sector is likely to continue offering inequitable, inefficient, and unsustainable service.

Achieving a successful National Water Metering Program will take a long period of time, and the pace of adoption is likely to vary considerably by state. Success is predicated on strong and sustained political support, coupled with a consistent effort to educate and motivate decision makers. Sustained success will in any case never be guaranteed, but operators will be required to be vigilant of any backsliding of will and ability to meter accurately, and to bill and collect on the basis of the quantity of water consumed.

The benefits from a successful national metering program will be more than commensurate with the effort demanded. It has been found that metered households only consume about 40 percent of what unmetered households consume; financial sustainability is greatly facilitated by metering; subsidies can

be better targeted by the use of water metering data; and service will be more equitable since it will be possible to determine who receives water and who does not.⁵

A national metering program will require investments in both data collection and analysis: in software for the meter reading, billing, and collection systems, and in hardware to install meters, protect them against manipulation, theft, and vandalism, and maintain them to assure they are accurate and in good operating order; and in training staff at all levels in the utility to support the effort and derive the benefits from metering data.

A national water metering program will entail the following sequential steps:

1. A connection census to match existing buildings to the SWA's client database so as to determine the number, location, and type of current connections, both registered and unregistered (for example, illegal connections)
2. A plan for phased installation of production, district, and individual connection meters, giving due consideration to continuity of service throughout
3. Procurement of meters balancing quality and price
4. Training of staff to install, maintain, read, and repair meters
5. Development of systems and training of management staff to bill and collect on the basis of metered consumption
6. Carrying out the meter installation, meter reading, billings, and collections systems as planned

Streamline Water Tariff Structures

When different client categories can reach as many as 80, current tariffs are undoubtedly too complex. The associated cost in the form of arbitrary or corrupt assignment of consumers to categories has been mentioned, and tariffs of such complexity are difficult for the consumer to grasp.

Accordingly, it is recommended that the suggested federal guidelines for the setting of tariffs contain guidance on how to simplify the bewildering tariff structures. One option for a tariff structure guideline might be:

- Tariffs can comprise two parts, one monthly fixed charge entitling the consumer to consumption of 6 cubic meters, and a constant unit rate for each cubic meter consumed above 6.
- Structures should not be of the increasing block rate tariff (IBT) structure alone, where progressively higher unit rates are charged for increasingly higher consumption. Though the IBT structure is common in many parts of the world, its effect is regressive in Africa, where connected households often sell water to their unconnected neighbors. In that case, IBT structures would force the unconnected households to pay higher than average unit rates, since the combined consumption of a number of jointly supplied households would bump the tariff up to higher unit rate tiers.
- The unit rate should preferably be set so that it would cover both O&M and investment costs. There is no reason to sell water quantities above the lifeline

allowance at subsidized rates, since higher consumption is more likely to be for higher-income consumers.

- Tariffs should be the same for domestic, commercial, industrial, and government clients in order to reduce administrative complexities that could become arbitrary and risk corruption in assignment of consumers to categories.

Streamline Subsidies to Finance Connection Costs

Currently subsidies are untargeted and wasteful. Without an explicit policy for targeting and monitoring subsidies, their magnitude and recipients are unknown because of the low standards of metering, billing, and collections. Nevertheless, an educated guess is that the 42 percent of the urban population that were connected in 2012 were beneficiaries of subsidies, since they did at least receive some kind of water service, even though water quality might be unsafe and service delivery intermittent. It follows that the 58 percent that were not connected did not benefit from subsidies. Instead, those people were forced to procure and pay for water from private vendors, who do not extend subsidies.

The upshot of the topsy-turvy “subsidy policy by default” is that higher-income urban residents receive whatever subsidies are extended while lower-income residents receive none. This unsatisfactory situation arises because those being connected first are higher-income, more influential households whereas those households that are not connected are lower-income and politically less articulate.

It is suggested instead that utilities discontinue charging for connections and instead allocate subsidies to financing the entire cost of connections. The priority in urban water systems is to increase connection coverage to 100 percent as quickly as possible, since incorporation of previously unconnected households can be expected to produce large public health benefits as well as better targeting subsidies to those of lower income. The added demand from raising urban connection coverage from the current 42 percent to near 100 percent will be marginal in terms of added production volumes, since lower-income households consume much less per capita than already connected higher-income residential, commercial, industrial, and government clients. A number of studies of other urban areas with metered distribution report that the incremental consumption from raising Nigeria’s connection coverage to 100 percent will only be about 25 percent.⁶

Notes

1. The *National Water Supply and Sanitation Policy*, Federal Ministry of Water Resources, First Edition, January 2000.
2. “World Bank Project Appraisal Document for the Third Urban Water Sector Reform Project,” March 26, 2014, World Bank, page 3, paragraph 10.
3. See for instance “Nigeria – National Water Rehabilitation, First Multi-State Water Supply, and Small Towns Water Supply and Sanitation Projects,” Project Performance

Assessment Report 36443, World Bank, June 13, 2006, that shows the high degree of inoperative water supply systems that have received World Bank financing.

4. See the African Infrastructure Country Diagnostic (AICD) Working Paper 7, "Cost Recovery, Equity, and Efficiency of Water Tariffs: Evidence from African Utilities," World Bank et al., May 2008.
5. See for instance "Water Demand Forecasting," audiovisual module by the Economic Development Institute of the World Bank, 1985.
6. Projection according to "Water Demand Forecasting," 1985.

Economic Assessment of Subsidies to Nigeria State Water Providers

Because of the ubiquity of subsidies to the Nigerian water sector, the relationship of subsidies to utility efficiency is of interest. For example, determining whether subsidies promote or inhibit utility efficiency, or neither, can be helpful in evaluating their role in the water sector. This relationship can be comprehensively illuminated by characterizing both the efficiency of each utility and the level of subsidization and relating them.

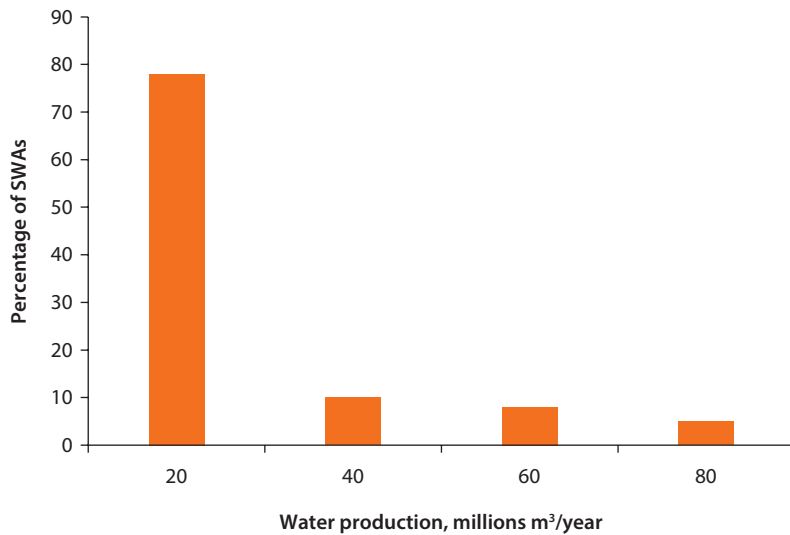
Efficiency is characterized by data envelopment analysis (DEA). DEA is a nonparametric approach to measuring the relative efficiency of firms (often referred to in the DEA literature as decision-making units) within an industry. Relative efficiency refers to how well a utility performs relative to other utilities in the industry. The approach originated in Charnes, Cooper, and Rhodes (1978) and has been applied in many studies. For DEA, a utility is regarded as relatively efficient if its observed inputs can be scaled to yield output that equals or exceeds any combination or scaling of what other producers' observed inputs can yield. Extensions of the basic DEA approach to accommodate alternatives to its assumptions have been presented in the decades since the seminal paper was published.

An important advantage of DEA relative to alternative statistical techniques for estimating relative efficiency is that it does not require specification of a functional form that relates outputs and inputs as parametric statistical techniques do. Similarly, it avoids specification of distributions for stochastic model components, which other approaches need. A serious limitation of DEA, however, is its sensitivity to errors in sample observations. The potential of stochastic influences in production is ignored by DEA, which is deterministic in nature (Charnes, Cooper, and Rhodes 1978).

The most recent annual observations available for each of 35 water utilities in Nigeria were used in the DEA. All of the data were taken from the International Benchmarking Network for Water and Sanitation Utilities (IBNET) online database for 2013.

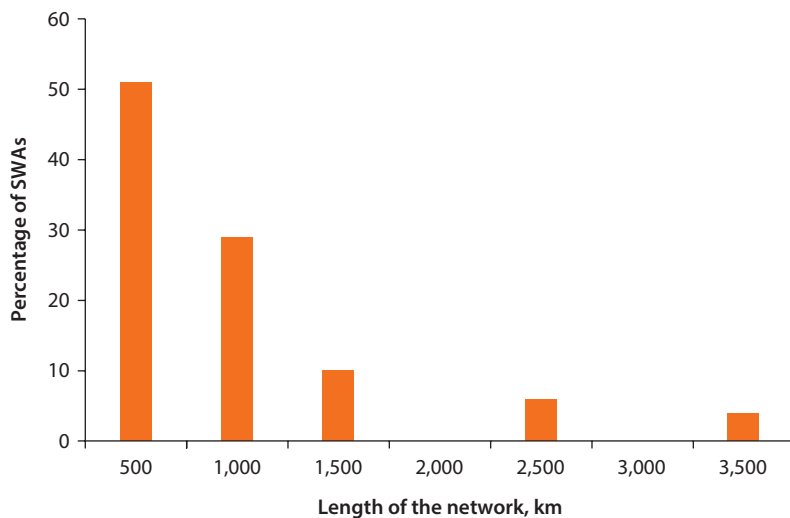
Output is measured by the volume of water sold (millions of cubic meters). Capital inputs are measured as the length of water distribution network (kilometers) and labor inputs by the total number of staff (number). Since data for all utilities participating in IBNET were available for these variables, the efficiency of all utilities could be evaluated. Figures H.1, H.2, and H.3 show basic characteristics of the data via histograms of the output and input data, with the fraction of the sample shown in each case on the y axis.

Figure H.1 Histogram of Water Output



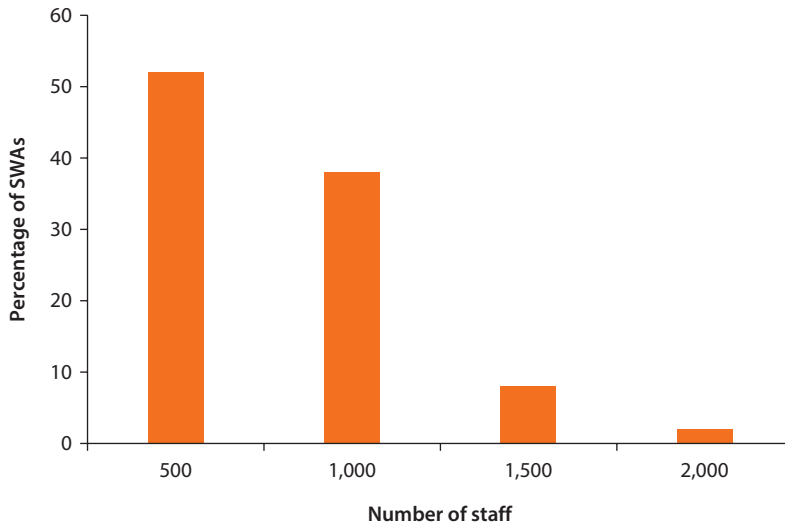
Note: SWA = state water agency.

Figure H.2 Histogram of Capital Input



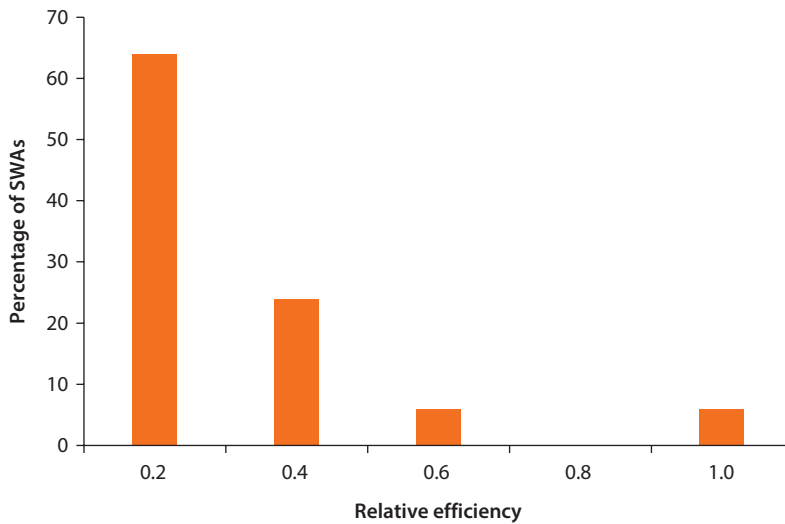
Note: SWA = state water agency.

Figure H.3 Histogram of Labor Input



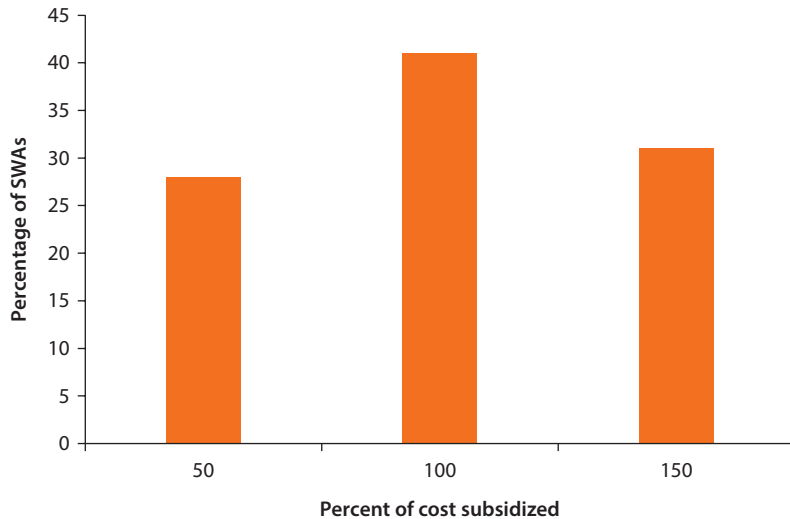
Note: SWA = state water agency.

Figure H.4 Histogram of Relative Efficiency



Note: SWA = state water agency.

With the IBNET data described in figures H.1, H.2, and H.3, solution of a mathematical programming problem for each of the 35 utilities in the sample provided a DEA-based measure of their relative efficiency. The optimal value of the objective function for each of the mathematical programming problems yields a number in the $[0, 1]$ interval with a 1 signifying a relatively efficient utility. Figure H.4 shows the basic characteristics of the relative efficiency measure using a histogram with the fraction of the sample shown on the vertical axis.

Figure H.5 Histogram of Percent of Cost Subsidized

Note: SWA = state water agency.

The level of subsidization of each utility is characterized by the IBNET variable percent of cost subsidized. Note that subsidization can exceed 100 percent. Figure H.5 shows the basic characteristics of the variable using a histogram with the fraction of the sample shown on the vertical axis.

The relationship between efficiency and percent of cost subsidized is evaluated by correlation. Correlation of efficiency and percent of cost subsidized is only about 0.18 which seems to suggest little relationship between subsidy and utility efficiency. This low correlation suggests that efficiency would not be advanced by further subsidies. Expectations that subsidies could serve the dual purpose of supporting short-run operations while promoting efficiency gains for the future do not receive much support here.

Reference

Charnes A., W. Cooper, and E. Rhodes. 1978. "Measuring the Efficiency of Decision Making Units." *European Journal of Operational Research* 2 (6): 429–44.

Assessment of Investment Needs

Total Financial Needs

As of year end 2013, almost 60 million Nigerian people were not connected to the water supply system and were relying on alternative or informal water services. To connect these people today would mean spending US\$2.9 billion. If this is to be done by 2030, the investment required would be about US\$5.8 billion because urban population will grow from 104 million in 2014 to 162 million in 2030, at urbanization rates of 3 percent from 2015 to 2020, and 2 percent from 2020 to 2030. To meet the target of 100 percent coverage, Nigeria would thus need to invest US\$600–700 million a year from 2015 to 2030.

Covering the Capacity Shortage

To achieve 24/7 water supply, reduction of losses to below 20 percent, and other reforms, the new system should provide at least 50 liters a day to every user connected to the network. The current shortage of that capacity is assessed at 5.3 million cubic meters a day, which amounts to 27 water treatment plants each with a capacity of 150,000 cubic meters a day. Investment will be required in 22 states. The cost of these facilities is assessed at about US\$2.3 billion, with an average of US\$90 million per water treatment plant.

Covering the Network Shortage

Connecting people while maintaining the same average density (people per kilometer of main) will require construction of another 100,000 kilometers of new mains. This will require an investment of US\$3 billion, about US\$30,000 per kilometer, with installation and connection to the distribution system. The remaining funds will be needed for connecting households to the main.

Maintenance Required

Once constructed, for proper maintenance, the system will need financing of about 2.5–3.0 percent of the asset value annually.

International Experience in Financing Water and Infrastructure Projects

It is common for governments to support development of life-supporting infrastructure such as water, wastewater district heating, and roads. These models used elsewhere in the world may be used as financing options for the case of Nigeria.

European Union Structural Funds

Definition. Structural funds have helped European Union (EU) member states to reduce economic and social disparities and stabilize their economies since 1994. The European Regional Development Fund (ERDF) finances up to 85 percent of eligible spending on major projects involving the environment and transport infrastructure, including water and wastewater. The 2007–13 budget was €70 billion, of which about half was allocated to water and wastewater infrastructure in 13 countries.

Rate of subsidy. Total EU assistance depends on the type of operation to be carried out but cannot exceed 85 percent of public or equivalent spending. For projects that generate revenue, the calculation for support takes into account forecasted revenue. The polluter-pays principle (the entity that causes pollution should pay for it) has an impact on the amount of support granted. For projects to be carried out over a period of less than two years or where EC (European Commission) assistance is less than €50 million, an initial commitment of 80 percent of assistance may be made when the commission adopts the decision to grant assistance. The combined assistance of the ERDF and other EU aid for a project may not exceed 90 percent of the total cost of the project, except that the EU may finance 100 percent of the total cost of preliminary studies and technical support measures (in view of the limited budget available for such support, this is restricted to EU-wide technical assistance).

United States Clean Water State Revolving Fund

The Clean Water State Revolving Fund (CWSRF) program was authorized by the 1987 Water Quality Act. In the CWSRF, U.S. federal funds are provided to the states and Puerto Rico to capitalize their own revolving funds, which are used to provide loans or grants to local governments for wastewater treatment, non-point source pollution control, and estuary protection.

The fund provides loans to municipalities at lower-than-market rates. As of 2007 the average rate was 2.1 percent nationwide, compared to an average market rate of 4.3 percent. In 2006, CWSRF assistance totaling \$5 billion was provided to 1,858 local projects.

U.S. Move from Grants to Loans

With the passage of the Clean Water Act of 1987 and the Safe Drinking Water Act in 1996, the approach to water financing in the United States changed. By the early 1990s the federal government had expended over \$50 billion to support construction of municipal wastewater treatment facilities. However, during the 1980s the political climate had changed. A “pay as you go” approach developed to replace what had been a federal grant approach. In the water sector, federal participation changed from a program of grants to the municipality to a capitalization program that granted money to the states to make loans to municipalities. One of the features of this new program was that states had to manage capitalization grants in such a way that the program would be self-sustaining in perpetuity.

The Revolving Loan Fund Concept

Several U.S. states decided to create a legal structure to leverage federal capitalization grants. They created State Revolving Funds (or SRFs) using the federal grant to capitalize the fund (this is why the federal grant is often called a capitalization grant). These SRFs have permitted the states to leverage the capitalization grants, eventually making several times the amount of the original grant available for water supply and pollution control needs. This approach has proved to be very effective. They each use federal capitalization money and a state contribution to act as security for borrowing from the fund. The fund makes loans to private or public entities that are constructing or rehabilitating qualifying facilities to meet water quality standards. Borrowers are required to repay their loans on a fixed schedule. Each borrower is expected to secure its repayment obligations; that may be through a commitment of the municipal government to repay as evidenced by a private sale of a debt obligation, a pledge of tax revenues, a pledge of otherwise available user fees, private guarantees, or other mechanisms.

Because of this credit support mechanism, SRFs have been able to borrow at very favorable rates, subsidize the interest rate for individual water projects, make interest-free loans to those deemed worthy of such support, and create a sustainable fund for new projects in the future (Martin S. Baker, *An Alternative Model for Financing Water Projects*, 2002).

Brazil

The federally owned Caixa Economica Federal and the Brazilian Development Bank (BNDES) administer large public pension funds that invest in, among other areas, water and sanitation. However, their loans are not made available directly to utilities but to the states, which pass on the funds to utilities as a nonreimbursable contribution to their capital. Loans to state governments from international financial institutions, such as the World Bank and the Inter-American Development Bank, are also passed on to utilities as a nonreimbursable contribution to capital.

In January 2007, the federal government announced a new Program for the Acceleration of Growth (PAC) that includes major investments, in particular water and sewage to benefit poor Brazilians. The program called for a total of R\$504 billion (US\$235 billion) through 2010, of which about US\$205 billion would be provided by state-owned companies and the private sector and the rest by the federal government.

The World Bank is also supporting a program that finances purchase of the properly treated wastewater that provides financing for wastewater expansion and improvement of the treatment quality.

Bolivia

The National Fund for Regional Development is the government's instrument for targeting loans for water and sanitation investments. The association of the 14 largest utilities, Empresas Prestadores de Servicios de Agua Potable y Alcantarillado (EPSA), obtains credits and transfers to participating utilities in a national Plan for Institutional Modernization and has established an Integral Development Plan. Resources are assigned to each utility with priority—and less burdensome loan conditions and higher investment subsidies—given to those located where poverty levels are higher and levels of coverage lower, according to a special formula. The Foundation for the Support to Sustainable Basic Sanitation provides technical assistance to water companies to promote their sustainability.

Turkey

The Ille Bank of Turkey gets 5 percent of the tax revenue from each municipality in the country through the tax authorities and redistributes these funds to infrastructure projects. The bank's annual investment portfolio is about \$1.6 billion.

Environmental Benefits Statement

The World Bank Group is committed to reducing its environmental footprint. In support of this commitment, the Publishing and Knowledge Division leverages electronic publishing options and print-on-demand technology, which is located in regional hubs worldwide. Together, these initiatives enable print runs to be lowered and shipping distances decreased, resulting in reduced paper consumption, chemical use, greenhouse gas emissions, and waste.

The Publishing and Knowledge Division follows the recommended standards for paper use set by the Green Press Initiative. Whenever possible, books are printed on 50 percent to 100 percent postconsumer recycled paper, and at least 50 percent of the fiber in our book paper is either unbleached or bleached using Totally Chlorine Free (TCF), Processed Chlorine Free (PCF), or Enhanced Elemental Chlorine Free (EECF) processes.

More information about the Bank's environmental philosophy can be found at <http://crinfo.worldbank.org/wbcrinfo/node/4>.



Investments on the order of \$US6 billion are estimated to be needed in the water sector in Nigeria in the next 10 years if the country is to achieve universal water supply coverage. This is the main finding of *State Water Agencies in Nigeria: A Performance Assessment*. The report focuses on water provision services from the state water authorities (SWAs), or water boards, as they are the major and only regulated agencies that provide water to the urban population. Sanitation provision is not addressed because the majority of SWAs do not provide this service to their customers.

This report highlights the issues related to the performance of SWAs, tariff levels and structures, financing mechanisms, and concerns with governance within the SWAs and state governments. For example, as a result of accelerated urbanization and migration of the population to the large cities, the average coverage by SWAs is about 40 percent, and the average domestic water consumption was 26 liters per capita per day in 2013, well below the recommended average. The remaining majority of the population relies on alternative service providers.

To the extent possible, the report also shows how institutional weaknesses affect customer costs, subsidies to the sector, and the financing required to scale up investment. It showcases how the related operational and maintenance expenditures of the SWAs can actually be covered from the various financing sources. Coping costs of the population getting water from alternative water providers is assessed at US\$700 million a year, and this number is growing. In addition, utilities get about US\$100 million in operational subsidies that cover labor, electricity, and other operational costs.

State Water Agencies in Nigeria: A Performance Assessment provides the government of Nigeria with a structured and coherent quantitative snapshot of the state of its urban water sector. Ultimately, this report is a first step toward performance benchmarking in Nigeria's water and sanitation sector. The findings summarized in this publication should eventually serve as a tool for utilities and their authorities and stakeholders, as well as for bilateral and multilateral donors, in their efforts to monitor the performance and progress of each water provider and the sector as a whole.

