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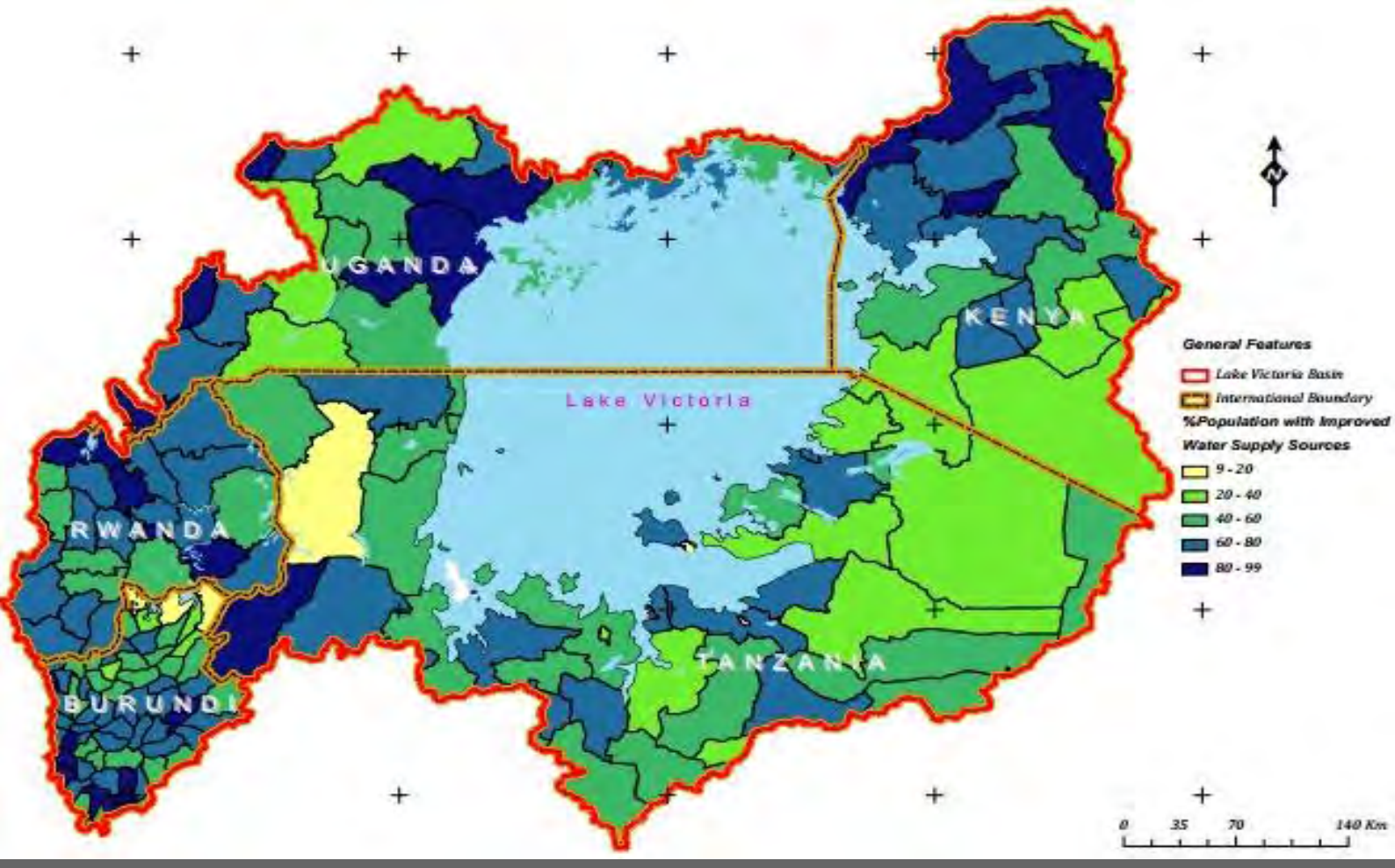
PLANNING FOR RESILIENCE IN EAST AFRICA THROUGH POLICY, ADAPTATION, RESEARCH, AND ECONOMIC DEVELOPMENT (PREPARED)

WASH BASELINE REPORT



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DISCLAIMER

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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ABBREVIATIONS

AfDB	African Development Bank
BOD_5	Biological Oxygen Demand
CBA	Cost Benefit Analysis
CBO	Community-Based Organization
CLTS	Community-Led Total Sanitation
COD	Chemical Oxygen Demand
COWSO	Community-Owned Water Supply Organization
DAWASCO	Dar es Salaam Water and Sewerage Corporation
DGHER	Directorate General of Rural Water and Electricity
DGIHA	Directorate General for Hydraulic Infrastructure and Basic Sanitation
DHS	Demographic Health Survey
DPSHA	Department of Health Promotion and Basic Sanitation
DSNP WSSAs	District, Small Towns and National Project Water Utilities
DWD	Directorate of Water Development
DWSCC	District Water and Sanitation Coordination Committee
DWSS	Department of Water Supply and Sewerage
EA	East Africa
EAC	East African Community
EAS	East African Standard
EDPRS	Economic Development and Poverty Reduction Strategy (Rwanda 2008–2012)
EIA	Environmental Impact Assessment
EICV	Integrated Household Living Conditions Survey ("EICV" by the National Institute of Statistics Rwanda)
EMA	Environmental Management Act
ESH	Environmental Sanitation and Hygiene
EWSA	Energy, Water, and Sanitation Authority
EWURA	Energy and Water Utilities Regulatory Authority
GEUWASA	Geita Urban Water and Sewerage Authority
GIS	Geographic Information System

GoB	Government of Burundi
GoK	Government of Kenya
GoR	Government of Rwanda
GoU	Government of Uganda
ICT	Information and Communications Technology
IGAD	Inter-Governmental Authority on Development
IGEBU	Geographic Institute of Burundi
IMS	Information Management System
IWRM	Integrated Water Resources Management
LGA	Local Government Authority
LVB	Lake Victoria Basin
LVBC	Lake Victoria Basin Commission
LVWATSAN	Lake Victoria Water and Sanitation Initiative
MAUWSA	Magu Urban Water and Sewerage Authority
MDG	Millennium Development Goal
MEM	Ministry of Energy and Mines
MINALOC	Ministry of Local Government, Rwanda
MINECOFIN	Ministry of Finance and Economic Planning
MININFRA	Ministry of Infrastructure
MIS	Management Information System
MoES	Ministry of Education and Sports
MoFPED	Ministry of Finance, Planning, and Economic Development
MoGLSD	Ministry of Gender, Labor, and Social Development
MoH	Ministry of Health
MoHSW	Ministry of Health and Social Welfare
MoLG	Ministry of Local Government, Kenya, Tanzania, and Uganda
MoLHUD	Ministry of Lands, Housing, and Urban Development
MoU	Memorandum of Understanding
MoW	Ministry of Water
MWE	Ministry of Water and Environment
NEMC	National Environment Management Council
NEMA	National Environment Management Authority

NEP	National Environmental Policy
NGO	Non-Governmental Organization
NRW	Non-Revenue Water
NWSC	National Water and Sewerage Corporation
O&M	Operations and Maintenance
ODF	Open Defecation Free
PMO-RALG	Prime Minister's Office Regional Administration and Local Government
PPP	Public-Private Partnership
PREPARED	Planning for Resilience in East Africa through Policy, Adaptation, Research, and Economic Development
RCE	Communal Water Authority
REGIDESO	*Regie de Production et de Distribution d'eau et d'electricite* (Water and Electric Authority)
REMA	Rwanda Environment Management Agency
RGC	Rural Growth Centers
RURA	Rwanda Utilities Regulatory Agency
SCAMPS	Sub-Catchment Management Plans
SEA	Strategic Environmental Assessment
SETEMU	*Services Techniques Municipaux*, Municipal Engineering Services
SMS	Short Message Services
SPA	Service Provision Agreement
SP	Strategic Plan
SWAp	Sector Wide Approach
SWOT	Strengths, Weaknesses, Opportunities, and Threats
UB	Umbrella Organization
UNHABITAT	United Nations Human Settlements Programme
UNICEF	United Nations Children's Fund
UOs	Umbrella Organizations
URT	United Republic of Tanzania
UWSSA	Urban Water Supply and Sanitation Authority
VIP	Ventilated Improved Pit Latrine
WAP	Water Assessment Program
WASH	Water, Sanitation, and Hygiene

WATSAN	Water and Sanitation
WASREB	Water Services Regulatory Board
WC	Water Closet (waterborne sanitation toilet)
WEMA	Water and Environmental Management
WESWG	Water and Environment Sector Working Group
WHO	World Health Organization
WPC	Water Policy Committee
WRMA	Water Resources Management Authority
WRM	Water Resources Management
WRUA	Water Resources Users Association
WSB	Water Services Board
WSDF	Water and Sanitation Development Facility
WSF	Water and Sanitation Fund
WSDP	Water Sector Development Program
WSI	Water Services Institution
WSPs	Water Services Providers
WSS	Water Supply and Sanitation
WSSAs	Water Supply and Sanitation Authorities
WSSB	Water Supply and Sewerage Board
WSTF	Water Services Trust Fund

EXECUTIVE SUMMARY

INTRODUCTION

Planning for Resilience in East Africa through Policy, Adaptation, Research, and Economic Development (PREPARED) is a five-year program with the overall goal of strengthening the resiliency and sustainability of East African economies, transboundary freshwater ecosystems, and communities. It targets three key development challenges of the East African Community region: (1) transboundary freshwater biodiversity conservation; (2) improved access to drinking water supply and sanitation services; and (3) increased resiliency to climate change. In response to these development challenges, PREPARED has three integrated components:

1. Climate change adaptation technical capacity, policy leadership, and action readiness of regional institutions improved
2. Resilient and sustainable management of biologically significant transboundary freshwater ecosystems in the East African Community (EAC) region strengthened
3. Resilient and sustainable water supply, sanitation, and wastewater treatment services in the Lake Victoria Basin enhanced

Water and Environmental Management Consultants (WEMA Consult) Ltd. is a key partner and subcontractor for supporting activities under PREPARED's Component 3: Water Supply, Sanitation and Hygiene (WASH), i.e. strengthening the resiliency and sustainability of water supply, sanitation and wastewater treatment services in the Lake Victoria Basin. This report presents the findings of the first-year initial activities for WEMA. In the first year, WEMA was tasked with the following:

1. Reviewing and summarizing WASH information in East Africa, acquired from secondary literature and selected interviews with representative service providers. Summarizing the extent of water-supply and sanitation coverage for the Lake Victoria Basin, and presenting the findings in both tabular (digital) and geographic information system (GIS) formats appropriate for integration into the Lake Victoria Basin Commission (LVBC) Secretariat WASH information management system (IMS)
2. Reviewing laws, policies, regulations, standards, and frameworks in each of the East African Community Partner States related to the provision of water supply and sanitation services, and determine the respective level of implementation, effectiveness, awareness, and gaps for each key instrument
3. Summarizing institutional frameworks within the Basin and each Partner State relevant to the provision of WASH services, engagement of stakeholders, and effective management of financial and human resources

The following data was therefore collected from each Partner State: (1) data on water supply and sanitation coverage; (2) data on existence and function of laws, policies, regulations, standards, and/or frameworks in each of the East African Community Partner States related to the provision of water supply and sanitation services; and (3) data on existing institutional frameworks within the Basin and each Partner State relevant to the provision of WASH services.

Collected data was analyzed using different methods, including mapping software, in order to establish the water supply/sanitation coverage in the Lake Victoria Basin (LVB). In addition to this, databanks and maps of the Basin depicting water supply and sanitation coverage were developed using ArcGIS software. The key findings for each Partner State, with regard to the studied components, are discussed in the following sections.

BURUNDI

1. WATER SUPPLY AND SANITATION

In Burundi, improved water supply is defined as a percentage of people with access to an improved source of drinking water within 1 kilometer in rural areas and 500 meters in urban areas. This access should be reliable and affordable, and should provide an adequate quantity (minimum 25 liters per person per day) within a reasonable time. Improved water sources are piped water, protected wells, and springs, as well as rainwater collection. Based on this definition, the total urban water supply coverage in Burundi is 77 percent, while water service coverage in rural communities is 63 percent.

With regard to sanitation status, improved sanitation in Burundi is based on the following definition of latrine: Adequate latrines should have a sealing slab with a superstructure comprising a roof and walls, which can ensure the privacy of the user. In urban areas, the existence of a door is also required in order to respect the privacy of the user, as the space of the plot is limited. Adequate facilities include the following:

- Water Closet (WC) connected to either sewer, septic tank, or waterproof pit
- Ventilated improved pit latrine (VIP)
- Improved latrine
- Single latrine
- Composting toilet

The Municipal Engineering Services *Services Techniques Municipaux* (SETEMU) is responsible for sewerage and wastewater treatment services in the country. However, Bujumbura is currently the only serviced city. To date, SETEMU has managed to provide only 40 percent of the required services in Bujumbura. In peri-urban areas, approximately 90 percent of the population is without sanitation facilities. Most wastewater is disposed in storm- and open-drains, then finally channeled (untreated) to water bodies. The literature survey conducted during this study suggests that sanitation coverage in urban and rural areas is estimated at 33 percent and 14 percent, respectively. The overall national coverage stands at 16 percent. In addition, the GIS mapping of water supply and sanitation for districts within the Lake Victoria region in Burundi suggests that sanitation in the area ranges from 4 to 36 percent, which is almost the same as the country-level status. This implies that sanitation issues in Burundi require promotion and innovation in specified areas of Lake Victoria so as to avoid high contamination levels in the water bodies, which are the main sources of water supply within the Basin.

2. LAWS, POLICIES, REGULATIONS, AND STANDARDS

The various policies, laws, regulations and standards governing provision of water supply and sanitation (WSS) services in Burundi were reviewed. The reviewed water-related statutes include the National Water Policy (2009), the Water Code (2012), the Environmental Water Code (2000), and the Public Health Code (1982). The review revealed that the policy and legislative framework towards water management, sanitation, and hygiene is still at its developing stage, and various supporting tools are yet to be established. Thus, this issue needs to be addressed in order to encourage harmony with codes and standards set out at the East African Community level.

3. INSTITUTIONS RESPONSIBLE FOR WATER SUPPLY AND SANITATION MANAGEMENT

In the Republic of Burundi, various institutions are involved to ensure that the provision of water supply and sanitation services are done in an acceptable manner. These include the following:

- The National Commission for Water and Energy, which is the advisor and coordinator on all matters relating to water and energy
- The Ministry of Energy and Mines (MEM), which is responsible for overall policy formulation and administrative functions of the central government related to the water supply and sanitation sector
- The *Regie de Production et de Distribution d'eau et d'electricite* (REGIDESO; Water and Electric Authority), which is an autonomous public utility operating under the supervision of MEM; and 34 Communal Water Authorities (RCEs), which undertake actual service provision; REGIDESO is responsible for catchment management, treatment, and distribution of drinking water in urban areas, while RCEs supply drinking water to rural areas.
- The Geographic Institute of Burundi (IGEBU), which is responsible for water resources data and information collection, processing, and management
- The General Directorate of Hydraulic Resource, which is responsible for water supply and sanitation in rural areas
- The SETEMU, which is responsible for sewerage and wastewater treatment services in the country; however, Bujumbura is currently the only city being serviced.

Key issues affecting WSS service provision include low water and sanitation capacity service; provision capacity; high non-revenue water; inadequate human, physical, and financial resources; tariff structure; and insufficient law and bylaw enforcement.

KENYA

1. WATER SUPPLY AND SANITATION

Improved water supply in Kenya is defined based on "adequate" or "inadequate" access. Further, "adequate" and "inadequate" are defined based on source type and location. Hence, the following criteria are used to define and classify sources and access countrywide:

- Piped water is "adequate" in both urban and rural settings.
- Fifty percent of "spring/well/borehole" water is "adequate" only in rural settings, but "inadequate" in urban settings.
- Ponds, lakes, streams, jabia/rain/harvested, water vendor, and other sources of water are "inadequate" in both urban and rural settings.

According to the literature review undertaken during the course of this study, the "adequate" access to safe water at the urban, rural, and national levels are 53, 37, and 43 percent, respectively.

Improved sanitation in Kenya is defined based on reference to the sanitation options ladder. For example, pour-flush latrines, simple pit latrines, VIPs, and connections to public sewers or to a septic system—as per the United Nations Children's Fund (UNICEF)/World Health Organization (WHO) Joint Monitoring Program guidelines—are considered improvements. Hence, the following access criteria based on type and location have been set as follows:

- Sewer, septic tank, and cesspool are "reasonably adequate" in both urban and rural settings/sublocations.
- All VIP latrines are "reasonably adequate" in rural settings/sublocations.
- Fifty percent of VIPs and 50 percent of pit latrines are reasonably adequate in urban settings/sublocations.
- Fifty percent of pit latrines are "reasonably adequate" in rural settings/sublocations.
- Buckets, bush, and other are "inadequate" in both urban and rural settings/sublocations.

Based on the above definitions, households with "adequate" access to sanitation in urban, rural, and national levels cover 62, 42, and 50 percent, respectively. For districts/counties lying within the Lake Victoria Basin, coverage is much lower, ranging from 4 to 9 percent. This indicates that the lake and other water bodies are likely significantly polluted.

2. LAWS, POLICIES, REGULATIONS, AND STANDARDS

Efficacy analysis on policy and legal frameworks revealed the relevancy of most policies. For instance, the Water Policy (2012) has incorporated global development initiatives such as climate change initiatives, the Millennium Development Goals (MDGs) as well as the East African Community Vision (2012). Legal framework incentive provisions are included to promote innovations as well as change in community behavior. Additionally, the policy highlights the initiation of subsidies to promote new technologies and incentives to water supply investors in order to improve water supply and sanitation services' sector performance.

3. INSTITUTIONS RESPONSIBLE FOR WATER SUPPLY AND SANITATION MANAGEMENT

In Kenya, various institutions are involved to ensure that provision of water supply and sanitation services are done in an acceptable manner. These include:

- the Ministry of Environment, Water, and Natural Resources, which is charged with policy formulation for proper water resource use;
- the Water Services Regulatory Board (WASREB), which regulates water supply and sanitation services;
- Water Service Boards (WSBs), which are licensed by WASREB to provide water services efficiently and economically;
- Water Service Providers (WSPs), which are service provision agents of WSBs as part of a principal-agent agreement; and
- water and sanitation service users (consumers/customers).

Key issues that impact effective service provision include: low capacity for providing water supply and sanitation services; high non-revenue water; inadequate hours of water supply; inadequate metering ratio; revenue collection efficiency; high recovery cost; and water quality testing. However, SWOT analysis (measuring strengths, weaknesses, opportunities and threats) revealed several strengths and opportunities that, if capitalized upon, could improve service provision.

RWANDA

1. WATER SUPPLY AND SANITATION

Improved water supply in Rwanda is defined as "access to safe water supply." Access is further defined as the percentage of people with access to an improved source of drinking water within 500 meters in rural areas and 200 meters in urban areas. This access should be reliable and affordable, and provide an adequate quantity (minimum 20 liters per person per day) within reasonable time. Improved water sources are piped water, protected wells, and springs, as well as collected rainwater. Water quality is assumed to be acceptable for improved water sources, but it shall be tested for compliance with national and WHO standards for potable water. Based on the literature review and above definitions, the water supply in both rural and urban areas was estimated at 71 percent countrywide. The literature further suggests water supply for rural and urban areas to be at 72 and 86 percent, respectively.

Improved sanitation in Rwanda is also defined based on "access to basic sanitation." Access is further defined as the percentage of people with access to a private sanitation facility of one of the following types:

- Flush or pour-flush to piped sewer system
- Septic tank or pit latrine
- VIP latrine
- Pit latrine with slab
- Composting toilet or other ecological sanitation (ecosan) toilet

Open defecation has largely been eradicated, and most Rwandan households have already financed and built their on-site private sanitation facilities, although only about half comply with the international standard definitions of an improved sanitation facility. Very few Rwandan households have installed flush toilets (2 percent), while 98 percent dispose of excreta with a non-water-borne sanitation system (latrines). In the AMCOW county status report of 2011, it was observed that the sanitation subsector also showed sustained progress reaching 45 percent in 2009, but there is no government or other estimate for sanitation coverage following the genocide. Rwanda has its own 2015 targets: an 85 percent coverage rate for water supply and a 65 percent coverage rate for sanitation.

2. LAWS, POLICIES, REGULATIONS, AND STANDARDS

With regard to policy review, it was noted that the Water Resource Management Policy (2011) and the National Policy and Strategy for Water Supply and Sanitation Services (2010) have considered and included global development initiatives, such as climate change initiatives (section 7.9 of the Water Supply and Sanitation Policy and section 1.1 of the Water Resource Management Policy); Millennium Development Goals (section 2.1 of the Water Supply and Sanitation Policy); and the East African Community Vision (2012).

3. INSTITUTIONS RESPONSIBLE FOR WATER SUPPLY AND SANITATION MANAGEMENT

The institutional framework for the water supply and sanitation sector has been characterized by significant organizational and structural reforms. Among the most important reforms include the separation of water supply and sanitation services from water resources management; the transfer of responsibilities for water supply and sanitation service delivery and implementation to districts; and delegation of management to

enhance public-private partnership. The institutions responsible for proper management and provision of water supply and sanitation services are the following:

- The Ministry of Infrastructure (MININFRA), which is responsible for formulation of national policies, guidelines, and strategies for the water sector; enhancing institutional and human resource capacity of districts; and monitoring the implementation of government policies
- The Rwanda Utilities Regulatory Agency (RURA), which regulates water supply and sanitation services; due to delegation management, the agency allows for fair competition and protection of both consumers and operators, and thereby facilitates involvement of the private sector through a Private-Public Partnership (PPP).
- The Ministry of Local Government (MINALOC), which oversees the decentralization process to ensure that local institutions contribute to effective service delivery aimed at community and socioeconomic development
- The Energy, Water, and Sanitation Authority (EWSA), which is responsible for implementing water supply and sanitation policies and strategies, as well as coordinating with sector stakeholders and supporting infrastructure development

Key issues and constraints affecting the provision of water supply and sanitation services in Rwanda include low service coverage; poor data and information management; unsustainable operation and management of water supply infrastructure; land scarcity; water-quality monitoring; non-revenue water; and high-cost recovery.

TANZANIA

1. WATER SUPPLY AND SANITATION

Improved water supply in Tanzania is defined based on water-source type. An improved drinking-water source is defined as one that, by nature of its construction or through active intervention, is protected from outside contamination, in particular from contamination with fecal matter**.** Furthermore, according to the National Water Policy of 2002, it describes access to clean water and water supply services from improved sources as being within 400 meters of walking distance from the farthest homestead. "Improved" sources of drinking water include

- piped water into dwelling;
- piped water to yard/plot;
- public tap or standpipe;
- tube well or borehole;
- protected dug well;
- protected spring; and
- rainwater.

Based on the above definition, the average water supply coverage in rural areas in Tanzania is 57 percent, while urban areas stand at 77 percent.

Improved sanitation in Tanzania is defined as a sanitation/latrine facility that hygienically separates human excreta from human contact, such as latrines with clean washable slabs; vent pipes; shelter with roof; and

doors that provide privacy. According to the Ministry of Health and Social Welfare, "improved" latrines include

- flush toilets;
- piped sewer systems;
- septic tanks; flush/pour flush to pit latrines;
- VIP latrines;
- pit latrines with slab; and
- composting toilets.

To address the sanitation challenges and restore human dignity, Tanzania, under the Water Sector Development Program (WSDP), has implemented a Nationwide Sanitation Campaign with the aim of accelerating a national effort to decrease the number of people lacking access to improved sanitation facilities to half its current number by 2015. In this endeavor, the Regional Secretariat and Local Government Authorities (LGAs) are provided with funds and technical assistance through the Ministry of Health and Social Welfare (MoHSW) to carry out priority activities on sanitation and hygiene, including collection of baseline data; inducing community behavior change through the Community-Led Total Sanitation (CLTS) approach; and training community-owned resource persons on the construction of improved toilets. However, Tanzania still has significant challenges, as the current improved sanitation stands at 32 and 21 percent in urban and rural areas, respectively.

2. LAWS, POLICIES, REGULATIONS, AND STANDARDS

This WASH Baseline Assessment analyzed the United Republic of Tanzania's water-related policies and brought to the fore linkages on social, economic, and environmental aspects along with the sustainability context. From a social point of view, generally, the policies link the water sector with the Poverty Reduction Strategy of 2010, with the recognition that the public largely depends on the environment to meet its basic needs. Additionally, the emphasis on social and environmental impact assessment is clearly addressed within the environmental and water management policies. Furthermore, these policies address the link with other sector policies, such as in industry, agriculture, energy, and fisheries, with the aim of enhancing the country's economy. Importantly, these policies highlight regional integration and cooperation. During this WASH Assessment Phase I exercise, policy effectiveness was not ascertained due to existence of various policy gaps, including weak enforcement of laws and regulation, which lead to high non-revenue water, waterworks vandalism, and pollution of water sources. However, taking into consideration the issue of innovation or long-running improvement of water supply and sanitation services, the water policy does not address incentives for long-term improvements. These incentives may include water-pollution taxes (polluter-pays principle) and relevant water tariffs (consumer-pays principle). Most of the punitive charges—for instance, those aimed at discouraging water-source pollution—are weak and most likely ineffective in changing public behavior.

3. INSTITUTIONS RESPONSIBLE FOR WATER SUPPLY AND SANITATION MANAGEMENT

In Tanzania, the institutions involved in ensuring the acceptable provision of water supply and sanitation services include:

- the Ministry of Water (MoW) and the MoHSW, which are responsible for the formulation of policies, legislation, and strategies for providing water supply and sanitation services;

- the Prime Minister's Office Regional Administration and Local Government (PMO-RALG), which supervises the implementation of providing water supply and sanitation services, and which coordinates the planning and resource mobilization for water supply and sanitation authorities through local government budgets, external support agencies, non-governmental organizations, and the public;
- the Energy and Water Utilities Regulatory Authority (EWURA), which is the regulatory body; and
- Water Utility Authorities, which are involved in the day-to-day activities related to providing water supply and sanitation services and are supervised by a board of directors drawn from the public and government stakeholders.

Key issues and constraints impacting the effective provision of water supply and sanitation services include:

- low service coverage;
- high levels of non-revenue water;
- inadequate average hours of services;
- metering;
- high ratio of staff per 1,000 water and sewerage connections;
- high-cost recovery;
- water-quality monitoring; and
- low overall utilities operation efficiencies.

UGANDA

1. WATER SUPPLY AND SANITATION

Improved water supply in Uganda is defined based on access to improved sources. Access to an improved water source refers to the percentage of the population with reasonable access to an adequate amount of water from an improved source, such as a household connection, public standpipe, borehole, protected well or spring, and rainwater collection. Unimproved sources include vendors, tanker trucks, and unprotected wells and springs. Reasonable access is defined as the availability of at least 20 liters per person per day. Urban access measurement is defined as the percentage of people within 200 meters of an improved water source. Rural access measurement is defined as the percentage of people within 1.5 kilometers of an improved water source. The water-coverage computation excludes non-functional water facilities reported to be unproductive for more than five years.

As of June 30, 2013, Uganda had 187 urban councils that included one city, 22 municipalities, and 164 town councils. These urban councils are grouped into large towns, which represent 30 towns managed by the National Water and Sewerage Corporation (NWSC), and small towns, which constitute the remaining towns and are a responsibility of the Ministry of Water and Environment (MWE). Of the 187 urban councils, 138 have operational piped water supply schemes; only 16 are connected to sewerage services, while 49 still rely on point water sources (boreholes, wells, and springs). Access to improved water supplies in urban areas, based on estimated total population served, in both large and small towns, is 70 percent. Similarly, the national safe-water coverage for rural areas is estimated at 64 percent.

Improved sanitation is defined as access to improved sanitation facilities, which refers to the percentage of the population with at least adequate access to excreta-disposal facilities that can effectively prevent human,

animal, and insect contact with excreta. Improved facilities range from simple but protected pit latrines to flush toilets with a sewerage connection. To be effective, facilities must be correctly constructed and properly maintained.

The current improved sanitation coverage in rural areas is estimated at 71 percent. The coverage in urban areas is estimated at 82 percent, a 1 percent improvement since 2012.

2. LAWS, POLICIES, REGULATIONS, AND STANDARDS

Policy review reveals that Uganda's water policy highlights the importance of regional cooperation for shared water resources, which is in the EAC's vision statement for 2025. Additionally, Uganda's water policy was built on the foundation of various national initiatives. Thus, the national constitution (1995) as supreme law elucidates clean and safe water as one of the social and economic objectives that the state shall endeavor to fulfill as a fundamental right to the public. The constitution highlights the objective of promoting sustainable development and awareness in order to manage water resources in a balanced and sustainable manner for present and future generations. The policy addresses sustainability as it highlights social, economic, and environmental sustainability objectives. However, despite the existence of the policy and legislative mechanisms, implementation instruments are either missing or weak. With regard to innovation and long-term improvements, Uganda's water policy explains the mechanism aimed at promoting long-term water management and consumption.

3. INSTITUTIONS RESPONSIBLE FOR WATER SUPPLY AND SANITATION MANAGEMENT

In Uganda, the MWE is responsible for setting national policies and standards, managing and regulating water resources, and determining priorities for water development. The MWE is also charged with monitoring and evaluating development programs to enhance their performance, efficiency, and effective service delivery. The Water Policy Committee (WPC) advises the MWE on the above functions, initiates revisions to legislation and regulations, and coordinates sector ministries' plans and projects affecting water resources. The WPC also coordinates the formulation of water-quality standards and guidelines.

The NWSC is responsible for providing water supply and sewerage services in large towns. The NWSC facilitates private-operator water-utilities management through management contracts. For towns that are not under NWSC jurisdiction, water supply and sewerage services are coordinated by the Directorate of Water Development (DWD) of the MWE through the Department of Water Supply and Sewerage (DWSS). The DWSS is also responsible for providing water supply and sewerage services for town boards and rural growth centers greater than 500 people. In addition, the DWSS provides support services to local governments and service providers, and is the lead agency that coordinates and regulates the water supply and sanitation sector. The DWD enters into agreement with town water authorities and private water operators' by signing performance contracts that spell out indicators of performance and guide the provision of the required services. For each small town, there is a Water Supply and Sewerage Board (WSSB), which oversees the provision of service in the area of jurisdiction. Key issues and constraints affecting the provision of water supply and sanitation services in Uganda include:

- low water supply and sewerage coverage;
- lack of political will to comply with some provisions in the performance of contracts and tariff policy;
- high non-revenue water;
- water pollution;
- functionality of water and sanitation committees and boards;

- equity;
- low priority on sanitation issues;
- poor urban planning;
- vandalism; and
- inadequate capacity in terms of human, financial, and physical resources.

CONCLUDING REMARKS

It has been observed that all countries have, under the laws and policy guidance, established systems in support of providing equitable services, especially for main urban and small towns at regional/provincial and district/county levels, respectively. Rural communities are still disadvantaged. There are no equally designated services, despite the countries' initiatives. Uganda and Rwanda seem to be ahead of the other countries mentioned in this report. As a result of measuring, testing, and analyzing sanitation data obtained in each of the five Partner States, it is obvious that Rwanda has made significant steps in ensuring that all households are free from open defecation. The total coverage stands at 92 percent, while those with flush latrines is at 1 percent. Improved health and quality of life among residents of Lake Victoria has to start with improved water and sanitation services, as these two factors remain the key performance indicators and measures for well-being and life expectancy. Henceforth, more efforts are required for Partner States to improve, especially for Burundi, Kenya, and Tanzania.

With regard to policy frameworks, all five EAC Partner States at least have relevant water policies in place. Burundi already has the Water Policy (2009) as well as the Water Code (2012) in place. Kenya recently launched the new Water Policy (2012) with the Water Act (2002). Rwanda has in place the new Water Resource Management Policy (2011), as well as the National Policy and Strategy for Water Supply and Sanitation Services (2010). Tanzania has the National Water Policy (2002), as well as the Water Resource Management Act (2009) and the Water Supply and Sanitation Act (2009). Lastly, Uganda has the National Water Policy (1995) and the Water Act (1997). However, effectiveness of these policies is limited due to the absence of further policy implementation tools. Many frameworks are either outdated or only partially updated, and thus fall short of some important water sector features addressed in the EAC Water Vision (2010), as well as in EAC climate change policy and strategy. Updating these policy documents and essential policy implementation tools can address efficacy and harmonization in the EAC framework.

Finally, all EAC Partner States share similar experiences in almost every institutional aspect related to water-resource management, water supply, and sanitation. Thus, the converged institutional endeavor among EAC Partner States can make a difference. Urgently addressing identified weaknesses and threats is the way forward in improving water supply and sanitation services. Notably, concerted actions are highly needed to reduce non-revenue water, increase collection efficiency to boost utility revenues, and build capacity on technical know-how and good governance. Existing opportunities and strengths need to be capitalized upon to enhance service provision. For instance, initiatives undertaken by various groups related to solid-waste management, operation, and maintenance of water schemes are avenues for increasing service provision in the region.

1.0 BACKGROUND

1.1 INTRODUCTION

The PREPARED program is funded by the U.S. Agency for International Development's East Africa Regional Mission (USAID/East Africa). PREPARED is a five-year, multi-organization, comprehensive program aimed at mainstreaming climate-resilient development planning and program implementation into the EAC and its partner states' development agendas.

The overall goal of PREPARED is to strengthen the resiliency and sustainability of East African economies, transboundary freshwater ecosystems, and communities. PREPARED targets three key development challenges of the EAC region: (1) transboundary freshwater biodiversity conservation; (2) improved access to drinking water supply and sanitation services; and (3) increased resiliency to climate change. In response to these development challenges, PREPARED has three integrated components:

1. Climate change adaptation technical capacity, policy leadership, and action readiness of regional institutions improved
2. Resilient and sustainable management of biologically significant transboundary freshwater ecosystems in the EAC region strengthened
3. Resilient and sustainable water supply, sanitation, and wastewater treatment services in the LVB enhanced

PREPARED's key institutional partners include the EAC; the LVBC; the Inter-Governmental Authority on Development (IGAD) Climate Prediction and Applications Center; the Regional Center for Mapping of Resources for Development; and EAC partner states.

Tetra Tech ARD is the prime institutional contractor implementing the PREPARED Project, and is supported by a team comprising: SSG Advisors, a leader in the field of developing public-private partnerships; LTS Africa, with extensive experience in transboundary biodiversity conservation in East Africa; WEMA Consult (T) Ltd., with relevant regional experience in WASH activities in East Africa and the Lake Victoria Basin; Columbia University's Center for International Earth Science Information Network, which specializes in data and information management and state-of-the-art decision support tools; and the Global Climate Adaptation Partnership, a leading climate-change-adaptation consulting firm whose staff includes some of the world's leading climate-adaptation experts and trainers.

This report presents the secondary findings as part of the PREPARED Project WASH Assessment Phase I (EAC WASH Baseline Assessment) carried out by WEMA under Subcontract 1075-TtARD-WEMA-1301. The report discusses the status of access to water supply and sanitation services in the Lake Victoria Basin, as well as the institutional capacity, framework, and policy directions that govern the day-to-day management and operation of water and sanitation services, including the key constraints and issues impacting adequate provision of water supply and sanitation services. In short, the report presents the baseline situation regarding component three of the PREPARED project. The scope for that initial assessment is discussed in the next section.

1.2 WASH SCOPE IN THE PREPARED PROJECT

WEMA Consult (T) Ltd. was included in the PREPARED contract as a key partner and subcontractor to support activities under PREPARED's Component 3: Water Supply, Sanitation, and Hygiene (WASH), to

strengthen the resiliency and sustainability of water supply, sanitation, and wastewater treatment services in the Lake Victoria Basin.

The PREPARED Project WASH Assessment Phase I (EAC WASH Baseline Assessment) was separated into two phases, as presented in the next subsections. This report presents the finding for Phase I activities. The Phase I report and the findings were then presented during the Regional WASH Task Force meeting held in February 2014. In this meeting, members' comments were used to improve the report before launching PREPARED Project WASH Assessment Phase II (WASH Sites Baseline Assessment) activities.

1.3 WASH ASSESSMENT PHASE I ACTIVITIES

The following tasks have been performed for WASH Phase I:

1. Reviewing and summarizing WASH information acquired from secondary literature; data from relevant government ministries, agencies, and departments; municipal or utilities' information systems; documentation from the Lake Victoria Water and Sanitation Initiative (LVWATSAN) and the LVBC Secretariat WASH Information Management System (IMS); and selected interviews with representative service providers
2. Summarizing the extent of water supply and sanitation coverage for the Lake Victoria Basin, and presenting the findings in both tabular (digital) and GIS formats appropriate for integration into the LVBC Secretariat WASH IMS
3. Reviewing laws, policies, regulations, standards, and frameworks in each of the East African Community partner states related to the provision of water and sanitation services, and determining the respective level of implementation, effectiveness, awareness, and gaps for each key instrument
4. Summarizing institutional frameworks within the basin and each partner state relevant to the provision of WASH services, engagement of stakeholders, and effective management of financial and human resources

1.4 APPROACH AND METHODOLOGY

The approach to data collection for this study included both primary and secondary data. Focal points were established in each East African Community Partner State. The focal persons played a significant role in providing both primary and secondary data, as well as in assisting the WEMA team during respective country visitations.

The data collected in each country included: (1) data on water supply and sanitation coverage; (2) data on existence and functioning of laws, policies, regulations, standards, and/or frameworks in each of the EAC partner states related to the provision of water and sanitation services; and (3) data on existing institutional frameworks within the basin and each partner state relevant to the provision of WASH services.

Most of the data above has been collected at either the district, provincial, regional, or county level, depending on the administrative setup of the respective country. Institutional and capacity framework and policy were accessed, collected, and stored through the use of: focal persons and WEMA experts; all country- and subnational-level data from each of the five Partner States; LVWATSAN documentation; and other sources that summarize water supply and sanitation coverage for small- to medium-sized towns within the basin. The data for all districts, provinces, and counties falling within the Lake Victoria Basin have been carefully assessed for water supply and sanitation coverage. Conversely, the laws, policy, and institutional setup have been assessed at both the national and district/province/county level.

In order to establish the water/sanitation coverage extent in the Lake Victoria Basin, collected data was analyzed using mapping software. Thus, the latest water supply and sanitation coverage data for the Lake

Victoria Basin has been compiled and stored in Excel spreadsheets. In addition, maps of the basin showing water supply and sanitation coverage have been developed using ArcGIS software. The database, which includes all shape files and Excel spreadsheets, is now available for future planning and implementation work by the project.

It is worth noting that the results of this assessment suggest differences in development stages between partner states, as this may imply different implementation strategies in different partner states. The result for each partner state's districts/provinces/countries in the LVB is discussed in the following section.

1.5 KEY GUIDING STATEMENT

Water is life. This simple truth is paramount for all living creatures on Earth, including humans. EAC Partner States work with both regional and local authorities and their respective communities to improve access to safe, reliable, and sustainable water supply and sanitation facilities. The 2010 Joint Monitoring Program of the WHO and UNICEF estimates that approximately 884 million people had no access to improved sources of safe water, with 37 percent from the sub-Saharan countries (including those within the LVB), and that 2.6 billion people had no basic sanitation. Lack of clean water and sanitation leads to a wide range of diseases, including cholera, typhoid, malaria, yellow fever, filariasis, river blindness, sleeping sickness, Guinea worm, bilharzia, trachoma, scabies, and more. Most importantly, dirty water is often the cause of ordinary childhood diarrhea, a leading killer of African children.

The aim of the EAC Partner States is to reduce the prevalence of water- and sanitation-related diseases and improve the general hygiene standards among impoverished citizens both in urban and rural settings by providing safe and adequate water and sanitation facilities, hence contributing to meeting Millennium Development Goal (MDG) 7, target 10.

1.6 REPORT CONTENT AND LAYOUT

This report is a baseline report that provides information on water supply and sanitation; laws, policy, regulations, and standards; and institutional setup and framework. These three main components are fully covered for each of the five countries of the EAC. In addition, review of the EAC water policy framework is provided. Analyses of each country's efforts on three subjects are later compared in terms of harmony with the framework at the apex body, which in this case is the EAC framework. In the following sections covering the EAC water policy framework, the five EAC countries are presented in isolated chapters, in no specific order of their achievement in the subjects under study. Thus, in each chapter (country) the three components are present with respect to the current situation. Consultant analysis and opinion based on data collected and the current situation are also presented.

The organization of the countries, and thus the chapters after this background, is in alphabetical order, starting with Burundi and followed by Kenya, Rwanda, Tanzania, and Uganda. The last chapter provides the conclusion, observations, and recommendations for each country regarding the three main components.

2.0 REVIEW OF THE EAST AFRICAN COMMUNITY WATER VISION, POLICY, AND FRAMEWORK

2.1 THE DRAFT EAST AFRICA WATER VISION (2025)

The EAC Water Vision for 2025 can be regarded as a guideline for the EAC Partner States for managing upstream water resources in order to reduce the negative impact on downstream water supply and sanitation service users. The vision reflects sustainable consumption, protection, development, and ultimately management of water resources. Thus, the vision provides a comprehensive framework for sustainable management of regional water resources. The vision clarifies the roles, responsibilities, and increasing accountability of Partner States in managing water resources. Importantly, the vision aims to reduce conflicts due to water-resource crises among Partner States, and thus, to improve the integrated management of the resource.

The key objectives of the vision are as follows:

- To make sure that people among the Partner States have access to safe, adequate, and affordable water supply, hygiene, and sanitation
- To provide sufficient water to ensure national food security and promote rural development
- To provide sufficient water to sustain economic growth within the context of a knowledge-based economy
- To protect water environments in order to preserve water resources (both surface water and groundwater) and natural flow regimes, biodiversity, and cultural heritage, along with mitigating water-related hazards

Responding to the regional challenges, the EAC Water Vision further elucidates these goals:

- To improve measures for climate-change adaptation and water-related disaster mitigation
- To raise awareness, relevance, and profile of WRM to increase political, social, and economic well-being, and strengthen capacity of EAC citizens to manage water in their particular regions
- To improve policy and institutional coordination at different levels to optimize water-resources development, and to regulate and enforce efficient water utilization and catchment conservation
- To develop and strengthen transboundary water-resources management and cooperation framework for equitable sharing of water, benefits, expertise, and knowledge

The EAC Water Vision requires Partner States to translate the vision into policies and strategies that clearly define the roles and responsibilities of individual Partner States, basin authorities, and corresponding state agencies at every level, private and public.

Overall, the vision stipulates the following vision statements:

- "Sustainable water-resources management and development, ensuring water security, equitable sharing of water and benefits, environmental conservation, socioeconomic welfare, [and] regional integration in East Africa"
- "Sustainable water-resources management for socioeconomic and environmental security, [and] equitable sharing for regional integration and prosperity"

The vision requires Partner States to develop water policies based on considering these vision statements. As such, the vision clarifies that those policy documents should be concise but clear, with statements that will guide any actions and decisions on water-resource management. The vision further specifies that the policy statements should cover such issues as environment, equitable access to water, maintaining gender balance, sharing the benefits of water, transboundary water-resources governance, regional integration, water information, and data management.

2.2 EAST AFRICAN COMMUNITY CLIMATE CHANGE POLICY (2011)

The general objective of the EAC climate change policy is to provide a guide for Partner States and other stakeholders to prepare and implement collective measures addressing climate change in the region while ascertaining sustainable social and economic development. The policy included statements and actions to guide climate-change adaptation and mitigation, thus reducing vulnerability of the region, enhancing adaptive capacity, and establishing socioeconomic resilience.

2.3 LEGISLATIVE FRAMEWORK

2.3.1 PROTOCOL ON ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT (1999)

This protocol can be pointed out as a principle provision for the cooperation in environment and natural-resources management, including water resources. Article 13 of this protocol specifies that, "Partner states shall develop, harmonize, and adopt common national policies, laws, and programs relating to the management and sustainable use of water resources." This article further details that Partner States are required to develop programs for improving domestic sanitation and urban-waste disposal to protect water resources from pollution (Article 13 [7]). Article 14 specifies that Partner States are required to develop, harmonize, and adopt common policies, laws, and strategies for sustainable management and wise use of wetland resources in the community.

2.3.2 CATALOGUE OF EAST AFRICAN STANDARD

The East African Standard (EAS, 12:2000) provides the prescriptions for quality drinking (potable) water requirements. The standard prescriptions address physical, chemical, radiological, bacteriological, and chemical quality criteria of water. The standard applies to water used in the food industry, as well as to water used for domestic and catering purposes.

3.0 WATER SUPPLY AND SANITATION SITUATION IN BURUNDI

3.1 ASSESSMENT OF WATER SUPPLY AND SANITATION COVERAGE

Burundi is a small, landlocked country with relatively abundant water resources. Despite this abundance, the demand for potable water is not met, and sanitation services are even more limited. Burundi has one of the highest population densities in Africa, with about 320 people per square kilometers (UN 2010, IFM 2010) and one of the world's lowest per capita incomes. Burundi has also experienced four wars since 1962, which devastated the economy and caused poverty to nearly double.[1] In addition, Burundi's WSS sector endured years of destruction brought on by sabotage and neglect during the civil war and its aftermath. For example, several kilometers of water pipes and connections and 80 percent of installed meters were destroyed.[2]

As Burundi continues to recover, new challenges are emerging as the WSS sector moves from reconstruction to development. Drinking water and sanitation coverage declined as many of Burundi's urban centers, and particularly peri-urban areas of Bujumbura, experienced rapid growth stemming from the return of exiled and internally displaced peoples. Households have resorted to obtaining untreated water from rivers, lakes, shallow wells, water haulers, and unmanaged standpipes. As a result, there is a persistence of waterborne diseases, leading to high mortality rates. Burundi is close to meeting its MDG target for improved drinking-water access but is not likely to reach the MDG for improved sanitation by 2015. However, the country has made notable progress in sanitation, with 1.2 million people gaining access to improved sanitation since 1990.[3] Development in the WSS sector is expected to continue as donors resume activities that were suspended during the years of instability.

3.1.1 WATER SUPPLY POSITION

In Burundi, improved water supply is defined as a percentage of people with access to an improved source of drinking water within 1 kilometer in rural areas and 500 meters in urban areas. This access should be reliable, affordable, and provide an adequate quantity (minimum 25 liters per person per day) within reasonable time. Improved water sources are piped water, protected wells, and springs, as well as rainwater collection.

In 2000, Burundi adopted a law that both liberalized the sector and created a new regulatory framework. The law defines the conditions for private-sector participation. It also allows for establishment of a regulatory

[1] World Bank. Country Brief – Burundi (2009).

[2] World Bank. Project Appraisal Document: Burundi, Public Works and Urban Management Project (2009).

[3] WHO/UNICEF Joint Monitoring Program for Water Supply and Sanitation. Progress on Sanitation and Drinking Water (2010 Update).

entity for water supply and energy as well as establishment of a sector development fund. It stated that REGIDESO no longer had a monopoly over public drinking water and the electricity supply. The provisions of the law, including establishment of a regulator, have yet to be fully implemented. A national water sector policy-development process has been finalized with a policy in place (Water Policy, 2009), which includes the implementation of the National Water Master Plan. The new policy aims to increase coverage through improved coordination. Specifically, Burundi has defined its current priorities as follows:

1. Rehabilitation of drinking water supply systems, which could considerably increase access to this commodity
2. Construction of new systems in areas with the most significant shortages so as to reduce regional disparities
3. Integrated management of the country's water resources through integrated multipurpose information systems
4. Improved hygiene and sanitation
5. Encouraging the private sector to invest in the sector to ensure its sustainability

The Government of Burundi (GoB) is also working to better manage its watersheds in order to protect water sources and increase available supply for domestic purposes, through the development of an Integrated Water Resources Management (IWRM) plan.

THE URBAN WATER SUBSECTOR

REGIDESO serves Burundi's capital, Bujumbura, through a number of direct water connections to the houses and public standpipes. The demand for new connections is high, but REGIDESO lacks the means to meet this demand. Statistics show that REGIDESO is currently only able to install about 1,500 new connections per year. Service coverage has increased in Bujumbura, though it is still challenged by the rapidly growing urban population in many areas of the city. There are approximately 150,000 inhabitants living in the city's neighborhoods of Musaga, Kanyosha, Buterere, Kinama, Kamenge, and Gihosha, only 4 percent of which have a household connection with water service. By the end of 2012, the overall urban coverage in the country stands at 77 percent.[4]

THE RURAL WATER SUBSECTOR

The GoB has laid out objectives for providing WSS services in the rural sector: provide at least one potable water source within a 500-meter radius of each household; and, for sanitation, to provide one covered indoor latrine in every household and one public latrine in each public establishment. During the civil wars, many of the existing WSS infrastructure and facilities fell into very poor condition. The Directorate General of Rural Water and Electricity (DGHER) hopes to help address drinking water needs in the rural areas through RCEs. District user committees manage the RCEs, while the DGHER provides central government support of the RCEs. As of 2005, only 16 of the country's 34 administrative districts (called "communes" in Burundi) had functioning RCEs. Those 16 RCEs collected household water fees. The others relied on income from fixed sales of water for private connections. Significant amounts of financial, managerial, and technical assistance are needed to scale up the RCEs' ability to manage their systems and promote better hygiene in rural areas. The water-service coverage in rural communities stands at 63 percent.[5] The specific water-supply coverage for districts that are within the LVB is discussed in the next subsection.

THE OVERALL WATER SUPPLY COVERAGE FOR DISTRICTS WITHIN THE LAKE VICTORIA BASIN IN BURUNDI

[4] RAC report (2012).

[5] RAC report (2012).

There are 133 total districts in Burundi; 75 of those are within the Lake Victoria Basin. The Burundi-improved water supply for districts that are within the LVB ranges from 9 to 99 percent. This range suggests significant differences in improved water-supply coverage among the districts. Figure 3-1 is a result of GIS mapping, which used the most recent data on improved water-supply coverage for Burundi districts within the LVB.

Figure 0-1: Improved Water-Supply Coverage in Burundi
Note: Burundi's country target is to ensure that water supply in both urban and rural areas reaches 85 percent by 2015.

3.2 SANITATION POSITION

3.2.1 THE OVERALL SANITATION STATUS IN BURUNDI

Improved sanitation in Burundi is defined based on a status of latrine: Adequate latrines should have a sealing slab with a superstructure comprising a roof and walls, which can ensure the privacy of the user. Specifically for urban areas, the existence of a door is also required in order to respect the privacy of the user, as the space of the plot is limited. Adequate facilities include the following:

- WC connected to the sewer, septic tank, or waterproof pit
- VIP latrine
- Improved latrine
- Single latrine
- Composting toilet

The SETEMU is responsible for sewerage and wastewater treatment services in the country; however, Bujumbura is currently the only city being serviced.[6] To date, SETEMU has managed to provide only 40 percent of the required services in Bujumbura. Other cities and towns do not have sewerage systems, and sanitation facilities in rural areas are very limited. The GoB has been working to reform water sanitation institutions in order to extend service and improve quality and financial sustainability.

In peri-urban areas, approximately 90 percent of the population is without sanitation facilities. Most wastewater is disposed in storm and open drains and finally channeled, untreated, to the water bodies of Lake Tanganyika and Lake Victoria, respectively. Other cities do not have a sewerage system or wastewater treatment facilities. In 2012, a survey of basic sanitation was developed by the MEM in collaboration with the Ministry of Health (MoH); the Burundi Institute of Statistics; and PROSECEAU (*Programme Sectoriel Eau*) a water and sanitation program funded by GIZ (*Deutsche Gesellschaft für Internationale Zusammenarbeit*) and the GoB. The relevant departments of the ministry are:

- the Directorate General of Hydraulic Infrastructure and Basic Sanitation (DGIHA);
- the Burundian Agency for Rural Water Management; and
- the Department of Health Promotion and Basic Sanitation (DPSHA).

This WASH Baseline Assessment revealed that urban sanitation coverage in Burundi is limited to 33 percent, while rural coverage is only 14 percent. Hence, the overall national coverage is 16 percent. The sanitation coverage for the districts and provinces within the Lake Victoria Basin is discussed in the next subsection.

3.2.2 SANITATION STATUS AND COVERAGE FOR DISTRICTS WITHIN LAKE VICTORIA BASIN IN BURUNDI

Almost 57 percent of Burundi's districts fall in the Lake Victoria Basin. This suggests the analysis of sanitation at the country level may not be very different from the LVB level, given the uniformity of

[6] World Bank. Project Appraisal Document: Burundi, Multi-sector Water and Electricity Project (2008).

development in the country. The GIS mapping of water and sanitation for districts within the LVB in Burundi suggests that sanitation in Burundi ranges from 4 to 36 percent, which is almost the same as the country status. Figure 3-2 presents the current sanitation status for Burundi as analyzed during this study.

The figure implies that most of the communities in rural settings are still practicing open defecation, as 86 percent do not have improved, adequate latrines, as defined above. It is critical to promote hygienic practices in order to avoid the high level of contamination in the water bodies, which are the main sources of water supply within the surrounding areas.

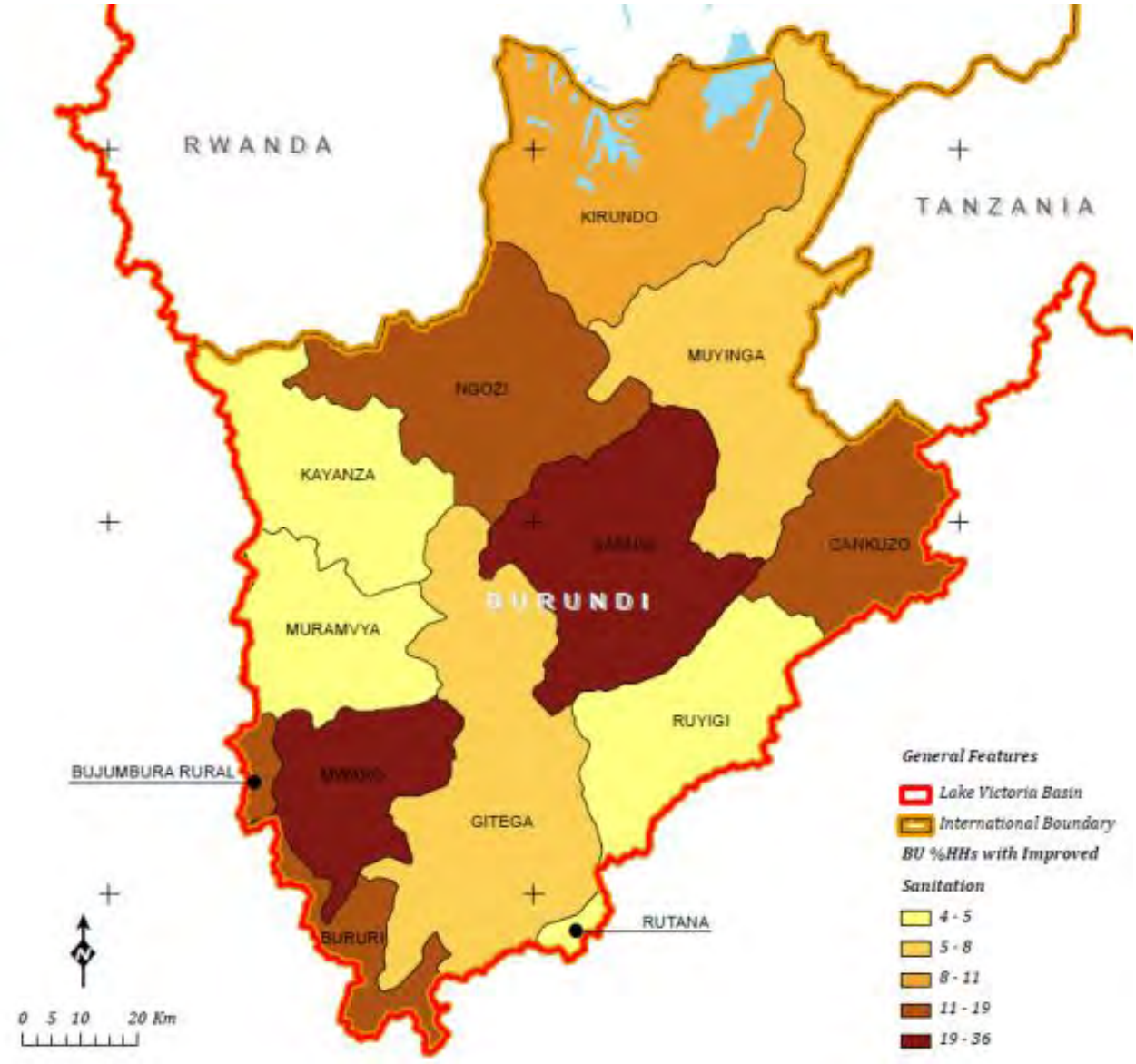


Figure 0-2: Improved Sanitation Coverage in Burundi
Note: Burundi's goal is to achieve 72 percent of improved sanitation in both urban and rural households by 2015.

3.3 LAWS, POLICIES, REGULATIONS, STANDARDS, AND/OR FRAMEWORKS RELATED TO THE PROVISION OF WATER AND SANITATION SERVICES

3.3.1 BURUNDI POLICY FRAMEWORK

NATIONAL WATER POLICY (2009) TOGETHER WITH THE ADDRESSED POLICY INSTRUMENTS

Burundi launched the National Water Policy in 2009. This is the main governing instrument in the water sector. The policy articulates the government's commitment to managing water resources, as well as to ensuring the quality and quantity of water needed to meet the demands of different users. It highlights the institutional and legal framework for water resource management. The policy also addresses the link between other international frameworks dealing with water resource management. In addition to addressing the water resource status in Burundi, the policy highlights the impact of climate change upon these resources. In order to establish a sustainable method of water resource management, the policy highlights the following principles:

- Drinking water is a finite and vulnerable resource, essential to sustainable living, development, and environment.
- The development and management of water must be based on a participatory approach, integrating users, planners, and policy makers at all levels.
- Women play a central part in the provision, management, and safeguarding of water.
- Water has an economic value and must be considered an economic good.

The overall objective of the policy is to ensure sustainable coverage of water needs for all users through sustainable means with the available water resources. This overall objective is directed at all economic sectors.

Particularly for water resources and water supply/sanitation, the policy addresses the following objectives:

- Establish an effective, coherent institutional structure and sustainable management of water resources
- Improve the legislative and regulatory framework for the water sector
- Increase access to safe water and sanitation to achieve the MDGs by 2015
- Ensure that impoverished and other vulnerable groups have access to water and sanitation services
- Improve the infrastructure of basic sanitation
- Improve the behavior of the population in relation to good management of water and sanitation
- Ensure the sustainability of water and sanitation services by improving the financial viability of involved institutions
- Maximize the contribution of water in economic growth
- Control population growth to reduce pressure on natural resources
- Prevent damage and mitigate climate disasters
- Protect water resources against degradation

- Mobilize funding for the development of the water sector
- Establish frameworks for cooperation in regional sustainable management of transboundary waters
- Promote mutually advantageous cooperation programs
- Be qualified for the human capacity management, use, and research of water resources
- Establish a national bank of reliable and sufficient water data for the proper planning of water resource development
- Develop and implement a plan for IWRM
- Support the National Partnership for Water Management

To address these objectives, the policy provides various strategic interventions. One of the strategies is to enable an environment for good water resource governance (Section 6.1.1). As such, this intervention involves the establishment of an institutional structure for water resource management. Linked to this is a strategy for the legal and regulatory instruments of water resource management (Section 6.1 2). The policy points out that there is a serious concern regarding water resource vulnerability. Thus, in order to better manage the water resource sector, there is a need to develop and implement legislation and regulatory framework, as well as management tools, for water resources management. These include, without limitation: the law on water resources, the integrated management plan of water resources, the national sanitation policy, quality standards, the water code for prevention, and disaster management related to the hydro-climatic of origin. Further, the policy requires the government to review all existing laws and regulations—as well as management instruments—related to water resources management. Linked to this, the policy requires the government to review additional technical tools to complement legislation on water management, including reference data and information related to water and basic sanitation.

The policy also calls for information, awareness creation, education, and advocacy of good water resource management practices (Section 6.1.3). It further stipulates that, in addition to laws, regulations, and management of water resources, the policy is also based on data, tools, and techniques required for proper planning for sector development. Thus, the government is advised to do the following:

- Update the national water plan of 1998
- Establish the national water database
- Assess and evaluate ground and surface water quality and quantity
- Enhance public awareness of good water resources and sanitation management practices
- Incorporate environmental education into primary and secondary schools

Regarding water supply and sanitation, the government has stated that every human being should have access to drinking water and sanitation at a reasonable price. Therefore, safe drinking water and basic sanitation is the first priority among all water uses (Section 6.2.3). The policy stipulates these main objectives for water supply and sanitation:

- Increase access to safe drinking water and basic sanitation to achieve the MDGs
- Improve the management of water and sanitation infrastructure
- Improve the population behavior regarding hygiene and sanitation

For urban areas, the policy stipulates the following: Among other initiatives, one is to create an enabling environment through incentives for private-sector engagement in water supply and sanitation (Section 6.3.1). Equally important, the policy requires water supply and sanitation rehabilitation, as well as incentives for the urban public to connect to the water supply and sanitation network system. The policy also requires the government to enhance professional and human-resource development for water supply and sanitation, and to ensure that there is equitable access to water and sanitation so all people can meet their basic needs at a reasonable price. The policy also emphasizes raising public awareness of paying for provided water supply and sanitation services. Linked to this, it notes that it is essential for women to be involved in water supply and sanitation issues. In order to protect human health and the environment, the policy requires the government to regularly monitor drinking water quality, and to improve urban waste management. The policy also stresses the importance of minimizing technical water losses.

For rural locales, among other points similar to the urban provisions, the policy emphasizes that rural residents come together to facilitate the supply of water through mains. The rural locales are advised to choose the appropriate water supply and sanitation technology with respect to the available resources. The policy also addresses harvesting rainwater for domestic use.

Concerning tariff formulation, the policy asserts that the water resource is of economic value and that fees must be paid for the service rendered (Section 6.6.2). Equally, the policy states that water is a finite and vulnerable resource, so promoting the charging system is essential when considering its protection and conservation. Due to this, the policy insists on the following:

- The government shall charge a full rate in urban areas, a rate that allows full recovery of operating costs and infrastructure maintenance, as well as institutional capital. In rural areas, the government shall charge a rate that covers at least the cost of operation and maintenance of infrastructures.
- For wastewater, the government shall charge a rate that puts into consideration the volume of water consumed.

The policy further stipulates the protection of water resources and the environment (Section 6.4.4). Regarding transboundary water resources, the government should continue to enhance constructive negotiations for the mutual benefit of the Nile waters (Section 6.5.1). Additionally, the government shall continue participating in the regional development of management structures and strengthen national capacities for trading on the management of shared water resources to enforce national interests.

NATIONAL SANITATION POLICY (2013)

This policy states that lack of adequate sanitation in Burundi today is a major obstacle for the development and well-being of its inhabitants. Diseases due to precarious hygiene conditions and lack of adequate sanitation undermine economic growth. The policy estimates that roughly one-third of Burundi's population lives daily in unsanitary conditions and a saturated atmosphere containing odors, germs, and other pathogens associated with the absence or non-compliance of health and environmental standards. Consequently, there have been thousands of deaths per year. Besides the direct impact on the Burundian population, lack of hygiene and sanitation is an obstacle to the development of foreign investment and tourism in particular. Due to this situation, the policy outlines the following general objective: provide all the inhabitants of Burundi access to sanitation services that are sustainably managed, efficient, and respectful of the environment, human health, and basic human rights (Section 1.2). Here are the specific objectives:

- Let all the inhabitants of Burundi have the basic knowledge to adopt appropriate behaviors to preserve their health and environment.
- Let all the inhabitants of Burundi enjoy clean air without health hazards and other environmentally harmful, toxic substances.

- Let all the inhabitants of Burundi be free of health and environmental degradation caused by hazardous waste, by providing an adequate collection system and treatment.
- Let all households have access to adequate domestic liquid waste management and sustainable sanitation.
- Let all households have access to an efficient system of collection and processing of their solid waste.
- Let all public places (schools, markets, railway stations, places of worship, hospitals and health centers, prisons, etc.) have adequate sanitary facilities that are maintained and functional.
- Let all urban and rural areas have an adequate system of stormwater management to reduce the risk of flooding and erosion.
- Let all industries, service stations, hotels, and health facilities adequately manage and control their liquid, solid, and gas wastes.
- Let all sanitation stakeholders have human, material, and legal rights to manage the sector effectively.

The policy is organized in eight strategic areas with respect to the achievement of specific and subobjectives identified above. For example, Section 4.1 addresses strengthening legal and institutional framework. As such, this section contains all provisions related to the creation of an enabling environment for good governance in that sector. Section 4.2 highlights professional or capacity development, providing a comprehensive plan for the human-resource development and capacity sanitation sector. Issues regarding hygiene promotion are stipulated in Section 4.3. Section 4.5 focuses on improved stormwater management, with the consideration that very few facilities for adequate stormwater management exist today in Burundi. Section 4.6 highlights improved solid waste management, while Sections 4.7 and 4.8 address hazardous waste management and atmospheric air pollution control, respectively.

WATER CODE (2012)

This is the general law providing the standards and guiding principles for the legal and institutional framework in the water sector. This code succeeds the 1992 Water Code. The main objective of this code is to enable the good governance of potable water services for the Burundian population, and to address sustainable management of water resources in the country. The code states that water is within the public domain, and thus the public has the right to access the water resources for water consumption and other uses. Further, the Water Code provides for the protection of aquatic ecosystems, the supply of drinking water for the population, the protection of water resources from pollution, and the development of water as an economic good. The code also responds to the water needs of all development sectors.

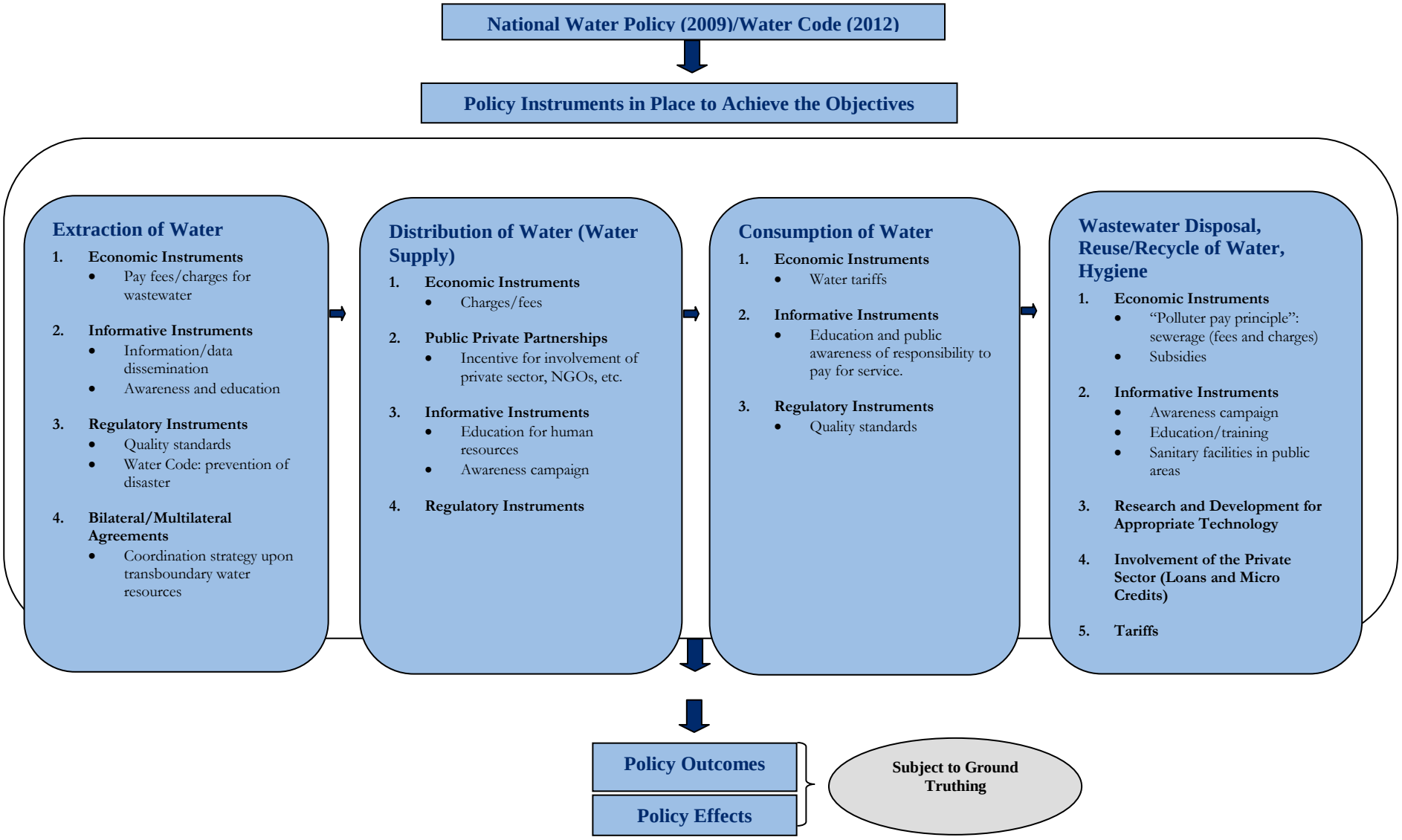
THE ENVIRONMENT WATER CODE (2000)

The Environmental Water Code (2000) provides for water resources management and conservation, as well as the development and protection of watersheds and land.

PUBLIC HEALTH CODE (1982)

The Public Health Code (1982) contains provisions that require all projects relating to water catchment obtain prior authorization from the Ministry of Health (MoH).

Figure 0-3: Summary of the Identified Policy Instruments as Reflected in the Water Abstraction and Consumption Lifecycle



3.3.2 EFFICACY ANALYSIS

CENTRAL VALUE OF THE ADDRESSED POLICY INSTRUMENTS

Figure 3-3 is the water abstraction and consumption lifecycle with the analyzed policy instruments. Below is a detailed analysis of the identified policy instruments.

Water Abstraction

The policy tools engaged at this stage include charges and fees for wastewater discharge. This is an economic instrument aiming to translate or mainstream the "polluter-pay principle." A well-designed charge or fee can discourage (as a negative incentive) the unnecessary discharge of waste into water bodies.

The addressed informative instruments include information and data dissemination, as well as education and awareness campaigns. Enforcing these tools can shape or change community attitudes on progressive water-resource-management programs.

Regulatory instruments highlight water quality standards as well as water codes. Note that the existence of water quality standards establishes a reference or benchmark for water-resource-quality monitoring and management.

Distribution of Water Services

The policy identifies economic instruments in the forms of charges and fees. These charges are linked to water supply connection. Such charges can be noted as administrative costs in order to process customer registration. Additional to this are informative tools involving awareness campaigns and education. Further, the policy framework emphasizes instituting incentives in order to attract the private sector. However, these incentives are unclear, as no policy mechanism or approach has been highlighted.

Water Consumption

For water consumption, the policy addresses implementing education and public awareness regarding the responsibility to pay for service. In addition to requiring the government to set water tariffs, the policy also requires regulating water utilities so they're efficient in providing quality services to protect consumers and satisfy their rights to service. The policy further requires the government to develop water standards for safe drinking water. Each of these provisions is very important for public sustenance and safety.

Waste Management: End of Pipe

Regarding wastewater disposal into the environment, the policy framework provides for utilities to acquire wastewater discharge permits linked to discharge fees. This discharge permit provision is implementing the "polluter-pay principle" by internalizing the external costs related to wastewater pollution abatement.

Private-sector involvement is also addressed. The policy framework declares the subsidy type, which takes the form of tax credits for sanitation operators for either industrial- or domestic-waste management.

Loans and microcredits are also addressed. Subsidized bank loans can be used by households, economic agents, private operators, or public facilities to finance sanitation. Microcredits can encourage households to self-invest, while loans or dedicated funds are used by operators or building owners to inject initial funding into a major expansion project or infrastructure renovation. This type of funding mechanism is often associated with a grant (i.e., subsidized credit or dedicated funds) or tax benefits. The policy provides this specifically to establish an investment fund for industries and to encourage compliance.

Gaps

Burundi policy and legislation framework for water management, sanitation, and hygiene is still at the developing stage. Though the Water Code (2012) is in place, the other supporting tools are not yet developed. Therefore, we have these recommendations:

- Implement the Water Act (2012) and develop regulations and management tools for water resources management. These include an integrated management plan for water resources; the national sanitation policy; water quality standards; a code of prevention; and disaster management.
- Review all existing old laws and regulations, as well as management instruments, related to water resources management. Review and update other technical tools in order to complement water management legislation. This includes reference tools such as data and information related to water resources.
- Disseminate information and conduct awareness and advocacy of water resource management practices.

3.3.3 CONSIDERATION FOR EAC HARMONIZATION

RELEVANCE

Sections of the National Water Policy (2009) and Water Code (2012) reflect existing Burundi water resource and supply challenges. As such, these two policy frameworks address the relevance to the local environment, as well as the EAC framework. However, all existing old laws, regulations, and management instruments relating to water supply, sanitation, and water resources management need to be reviewed and updated. New technical tools may also need to be developed in order to complement the water management legislation. These include reference tools, such as data and information related to water resources.

POLICY INSTRUMENTS

The identified policy instruments are comparable to the instruments later addressed in other EAC countries. However, there is still the need to develop additional instruments for each component in order to establish an adequate mix of policy instruments. It must be noted that a moderate mix of policy instruments can highlight effectiveness. Specifically, it may be appropriate for Burundi to adopt some of the policy instruments from other EAC countries.

COUNTRY & LEGAL INSTRUMENTS	WATER SUPPLY	SANITATION	FUNCTIONING/ENFORCEMENT at NATION LEVEL (YES, NO)	HARMONY AT EAC LEVEL (YES, NO, N/A)
BURUNDI				
Laws	✓	✓		YES
Policy	✓	✓		YES
Regulation				YES
Standards				YES

Table 1: Analysis of Harmony Between Burundi and Other EAC Countries on Laws, Policies, Regulation, Framework, and Standards

3.4 INSTITUTIONAL FRAMEWORKS SETUP RELEVANT TO THE PROVISION OF WASH SERVICES, ENGAGEMENT OF STAKEHOLDERS, AND EFFECTIVE MANAGEMENT OF FINANCIAL AND HUMAN RESOURCES

3.4.1 INSTITUTIONAL FRAMEWORK AND STAKEHOLDERS ENGAGEMENT

The institutional framework in Burundi is established by the Water Code (2012). The National Commission for Water and Energy acts as the advisor and coordinator on all matters related to water and energy in the country. The MEM, through the DGHER, is responsible for the planning, management, and coordination of water resource activities and programs including: preparing and updating the national water master plan; designing a sustainable development strategy for national hydraulic resources; planning various water demands in each basin; establishing national water pricing policy (rural and urban); and supervising new water investments.

The Ministry of Land Management and Tourism, through the Directorate General for Environment, implements water policy using Burundi's environmental code, and it manages water resources, including transboundary water. The IGEBU is responsible for water resources data and information collection, processing, and management. The DGIHA is responsible for water supply and sanitation in rural areas. REGIDESO is responsible for planning, managing, and coordinating programs and activities in the water and energy sectors. REGIDESO is also responsible for water supply and electricity in urban areas.

RCEs are responsible for the provision of drinking water to rural populations. RCEs are also responsible for the operation and maintenance of drinking water supply infrastructure. The Ministry of Good Governance, General State Inspection, and Local Administration, through the DGHER, is responsible for the coordination and management of rural water services (water supply and sanitation). SETEMU is responsible for sewerage and wastewater treatment services in the country; however, Bujumbura is currently the only city being serviced.

3.4.2 MANAGEMENT OF HUMAN AND FINANCIAL RESOURCES

REGIDESO is led by the Administrative Council, which is established through a presidential decree. The council is chaired by the president of the council, and the director general is the secretary. Members are drawn from a wide range of stakeholders including businessmen, consumers, and professionals. Generally, day-to-day activities of REGIDESO are manned by the director general, who is assisted by directors and service managers. REGIDESO is divided into five regions, which are manned by regional managers; regions are divided into towns and managed by town managers. However, decentralization is only on technical matters; financial matters are centralized at the REGIDESO headquarters in Bujumbura.

In order for any organization to execute its mandate smoothly, the management of human and financial resources is very critical. Therefore, the availability and plenitude of qualified human resources is necessary if the organization is to provide its services at an acceptable level. In Burundi, inadequate human resources were reported, both in terms of quality and quantity. Human resource performance and service provision were also negatively affected by inadequate working facilities, including the water quality laboratory, standby generator, vehicles, water meter repair workshops, leak detection equipment, pipe cutters, and lack of spare pumps.

Financial management operates centrally at the REGIDESO headquarters in Burundi. Water utilities are responsible for collecting revenue, and allocation is done at the headquarters. The collection efficiency rate was reported to be higher in all three utilities reviewed by United Nations Human Settlement Programme (United Nations Human Settlements Programme (UNHABITAT), 2012): Kayanza, Muyinga, and Ngozi saw

increases of 143.72 percent, 108.21 percent, and 106.97 percent, respectively. However, the reliability and validity of data was noted to be a problem, as there was no clear system for collection, organization, processing, and availing data at all levels. Additionally, missing data related to revenues from connection charges, water sales, and recurrent operating expenses of the utilities exacerbate the problem of effective financial management. Suffice it to say, there is an issue on data and information management for technical, financial, and human resources at all levels.

3.5 KEY ISSUES AND CONSTRAINTS IMPACTING EFFECTIVE PROVISION OF WATER SUPPLY AND SANITATION SERVICES IN BURUNDI

3.5.1 LOW WATER SUPPLY AND SANITATION COVERAGE

Water supply coverage in Burundi is low, making it a major challenge for the community to access safe drinking water. For instance, water coverage in Gitega, Karusi, Kayanza, Ngozi, and Muyinga was reported to be 73 percent, 73 percent, 67 percent, 54 percent and 46 percent, respectively. In addition, peri-urban areas are not covered due to low capacity of the utilities. Increasing the water supply network is of great importance to enable communities to access clean and safe water. Sewerage and sanitation services, which are not within the mandate of REGIDESO, need to be critically addressed by the relevant authority, as data on this was not available.

3.5.2 NON-REVENUE WATER

Non-revenue water was reported to stand at 41 percent nationally. According to UNHABITAT (2012), the average non-revenue water was reported to be 31 percent in Ngozi and 24 percent in Muyinga towns over a period of three years. It was reported that both towns have data on the unaccounted-for water, but it was not disaggregated into physical and commercial losses. This is another issue that needs investigating.

In addition, a high gap was reported between water production and consumption. In Kayanza and Ngozi, the average daily water consumption was 47 percent and 39 percent, respectively, of daily water production. This could be attributed to the presence of alternative water sources, or it indicates that there is high unaccounted-for water.

3.5.3 HUMAN AND FINANCIAL RESOURCES

According to the management structure of REGIDESO, most human and financial matters are centrally handled at the headquarters, which leaves a large gap in the consistency of information and decision making. Inadequate quality and quantity of staff is another issue of concern with regard to the effective and efficient execution of water utility mandates. Among other things, UNHABITAT (2012) recommended human-resources capacity building to effectively manage town-level billing and revenue collection systems.

3.5.4 TARIFFS STRUCTURE

Two tariffs structures are in use in Burundi: metering and monthly fixed tariffs. Domestic customers and public water points are charged flat rates for water consumption, with the purpose of protecting the impoverished. Despite this goodwill to the poor, there is evidence of possible water abuse, causing water utilities to lose some revenue. The billing systems are applied by the water utilities. However, metering efficiency can be attained if issues of non-revenue water and unaccounted-for water are addressed properly. Currently, these revenue issues are still affecting REGIDESO, as earlier discussed in this report.

3.5.5 DATA AND INFORMATION MANAGEMENT

Availability of reliable and valid data is important for effective decision making. Putting in place mechanisms for proper data and information collection, organizations, processing, storage, and retrieval is critical. According to this review, data and information management is a key issue of concern that needs adequate attention in order to enhance effective decision making and operations at all levels.

3.5.6 OTHER KEY ISSUES

There are other issues that should be looked at when planning for effective, efficient, and smooth operation of water supply and sanitation systems in Burundi. These may include:

1. Old water supply systems that frequently burst and cause leakages
2. Lack of water treatment systems, especially to provincial systems, such as in Muyinga and Gitega
3. Development of rainwater harvesting systems to leverage current water sources, as many people go without water, while there is plenty of rain in Burundi
4. Staff capacity and development to meet the current challenges and technology changes
5. Equipment support at IGEBU, the national institute focusing on data generation, climate change monitoring, and hydrological modeling
6. Strengthening sector coordination for the implementation of a CLTS approach through the Ministry of Health, Hygiene, and Sanitation
7. Enforcement of laws, bylaws, and regulation that aim to prevent water catchment from human activities
8. High population growth as a challenge to providing water supply and sanitation services
9. Community participation, involvement, and willingness to pay for water and sanitation services

3.6 SWOT ANALYSIS FOR PROVISION OF WATER SUPPLY AND SANITATION SERVICES IN BURUNDI

The Burundi water supply and sanitation status can be summarized by conducting a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis. In Table 2 below, the SWOT analysis depicts the current situation in the Burundi water system and its management.

STRENGTHS	WEAKNESSES
• Existence of water policy, water code, strategies, and initiatives for service provision • Existence of legal entities entrusted with the provision of water supply and sanitation services • Existence of committed staff	• Inadequate provision of water supply and sanitation services • Inadequate human, financial, and physical resources, in terms of quality and quantity, to boost service provision • Lack of skills-development program • Inadequate availability of reliable and valid data and information for scientific decision making • Inadequate water treatment systems • Poor solid waste management • Dilapidated water supply networks
OPPORTUNITIES	**THREATS**
• Potential for rainwater harvesting • Existence of capacity building institutions (e.g., IGEBU) • Involvement of various stakeholders in service provision • Rapid economic and population growth to ensure demand of the service • Availability of water resources • Increasing support from the government • Willingness of communities to participate in water and sanitation improvement projects	• High non-revenue water • High cost recovery • Weak enforcement of laws and regulations lead to quality deterioration of water catchment and water resources • High population growth • Vandalism of water supply networks • Lack of technology to exploit groundwater resources • Poor urban planning • Scarcity of land inhibits service expansion and adherence to land management practices • High investment and electricity costs

Table 2: SWOT Analysis for WASH Services Provision in Burundi

4.0 WATER SUPPLY AND SANITATION SITUATION IN KENYA

4.1 ASSESSMENT OF WATER SUPPLY AND SANITATION COVERAGE

4.1.1 WATER SUPPLY POSITION

THE OVERALL WATER SUPPLY STATUS

Improved water supply in Kenya is defined based on "adequate" or "inadequate" access. Further, "adequate" and "inadequate" are defined based on source type and location. The following criteria are used to define and classify sources and access countrywide:

- Piped water is "adequate" in both urban and rural settings.
- Fifty percent of "spring/well/borehole" water is "adequate" only in rural settings, but "inadequate" in urban settings.
- Ponds, lakes, streams, jabia/rain/harvested, water vendor, and other sources of water are "inadequate" in both urban and rural settings.

The 2009 Kenya Population and Housing Census (Tables 3 and 4 below) provide household data based on modes of access and disposal for water and human waste (sanitation), respectively. The census report indicates that access to piped water has declined over the last two decades: from 32 percent in 1989 to 31 percent in 1999 to 30 percent in 2009. Those are the facts, but the reality is that the pace of population growth has superseded the expansion of piped water.

In other words, Kenya has defined "adequate" and "inadequate" water supply based on source type and location. And according to the government of Kenya (GoK) Census Report Volume II (2009), the households' proportion with adequate access to safe water at urban, rural, and national levels is 53 percent, 37 percent, and 43 percent, respectively. Table 3, based on GIS mapping that utilizes the most recent data on water supply, summarizes those figures.

NATURE OF ACCESS	URBAN		RURAL		NATIONAL		
	HOUSEHOLDS	ACCESS %	HOUSEHOLDS	ACCESS %	HOUSEHOLDS	POPULATION	ACCESS %
ADEQUATE	1,789,396	53	1,978,031	37	3,767,427	16,590,039	43
INADEQUATE	1,617,224	47	3,383,304	63	5,000,528	22,020,058	57
TOTALS	3,406,620	100	5,361,334	100	8,767,954	38,610,097	100.0

Source: GoK, 2009 Census Report Vol. II

Table 3: Access to Safe Water as Computed From 2009 Census Data

Similarly, the national piped water system in Kenya has been superseded by population growth. Even the three provinces that are within the LVB suffer the same limited piped water network. The three Kenyan provinces in the LVB are Nyanza, Rift Valley, and Western. Their water types (and those of their respective counties) are presented in Table 4 below.

	WATER SUPPLY SOURCE CATEGORY								
PROVINCE	POND/ DAM	LAKE	STREAM	SPRING	PIPED INTO DWELLING	PIPED	JABIA/RAIN HARVESTED	WATER VENDOR	OTHERS
NYANZA	6	7	30	45	1	7	1	2	0.04
RIFT VALLEY	4	0.4	29	36	5	18	1	5	0.3
WESTERN	0.6	0.6	17	74	1.4	6	0.4	0.8	0.03

Source: GoK, 2009 Census Report Vol. II

Table 4: Percentage of Population With Adequate Access to Water Supply in Kenyan Provinces in the Lake Victoria Basin

THE WATER SUPPLY STATUS AND COVERAGE FOR COUNTIES WITHIN LAKE VICTORIA BASIN IN KENYA

Based on the above statistics and analysis, it is evident that in the three LVB provinces, most people use springs, boreholes, and streams; few have water piped into dwellings. The Nyanza and Rift Valley provinces have the poorest access to improved sources, as the available sources are inadequate in both urban and rural settings. These include ponds, lakes, and springs (likely unprotected).

Note: The detail of the water and sanitation coverage for Kenya has taken into account the 2009 Kenya Population and Housing Census report as opposed to the "Water Services Regulatory Board – WASREB IMPACT Report of 2013, Issue No. 6." Even though there is similarity in the urban water coverage, the WASREB report only analyzes the performance of 102 WSPs—66 of them urban and 36 rural—and eight WSBs, based on nine key performance indicators. It also defines the access to water by a percentage of the total population within the service area of the WSP. Therefore, the report does not cover the entire Kenyan perspective, as it is expected that there will be gaps where WSPs do not exist.

Furthermore, sanitation coverage refers to the number of people with access to improved sanitation facilities as a percentage of the total population within the service area of the WSPs. The report measures performance with regard to the provision of sewerage and on-site sanitation services. Improved facilities include flush or pour-flush to piped sewer systems, septic tanks, VIPs, and traditional pit latrines (with a squatting slab). The report indicates a clear challenge on obtaining sanitation data whereby the WSPs have not had a clear mandate on on-site sanitation, which means that they have not really been responsible for managing on-site sanitation data and have been relying on external data sources, such as the Department of Public Health.

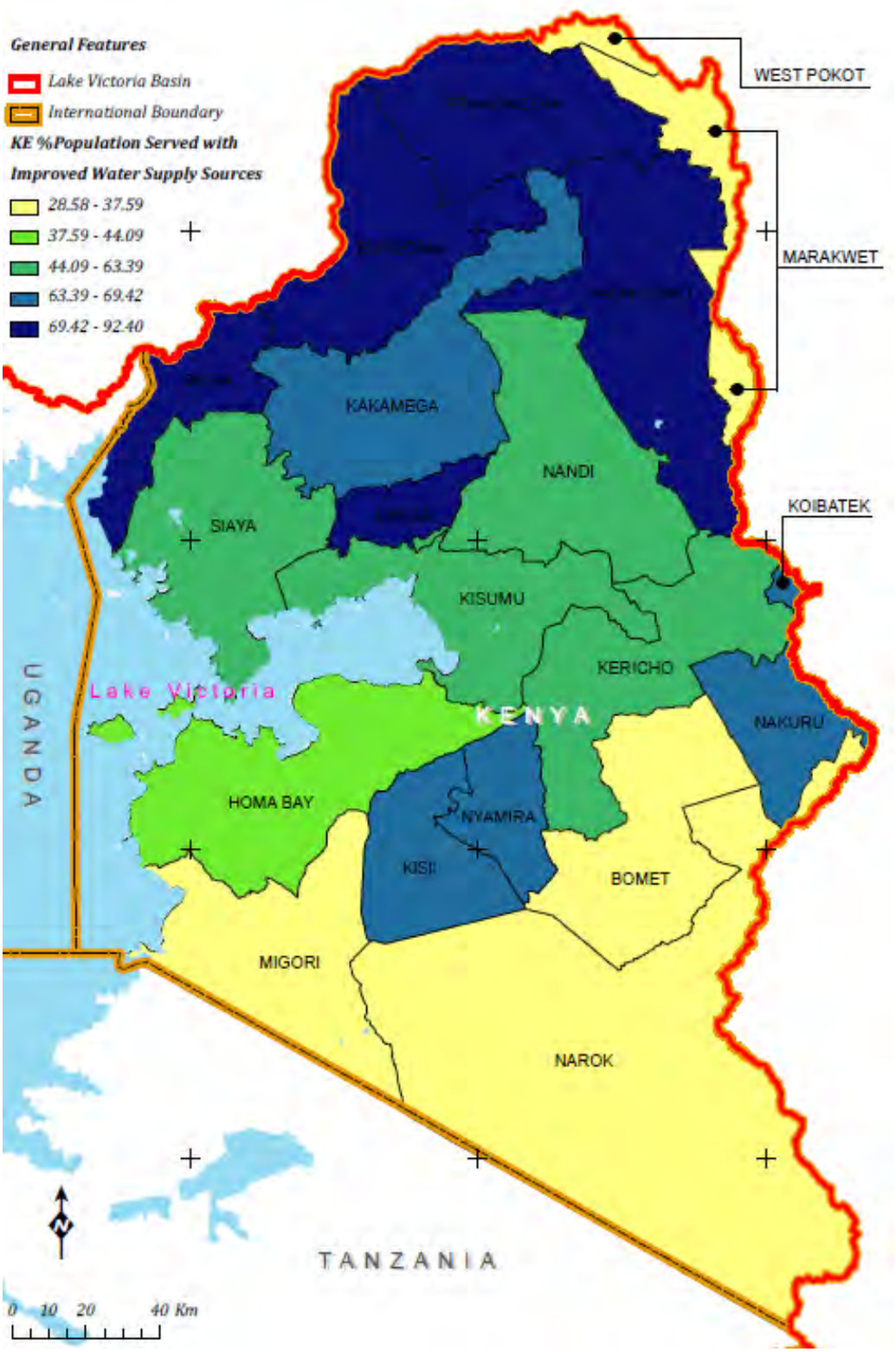


Figure 0-1: Improved Water Supply Coverage in Kenya

4.1.2 SANITATION ACCESS

THE OVERALL SANITATION STATUS IN KENYA

Improved sanitation in Kenya is defined based on reference to the sanitation options ladder, which includes pour-flush latrines, simple pit latrines, VIP latrines, and connections to public sewers or a septic system (as per UNICEF/WHO Joint Monitoring Program guidelines). The following access criteria based on type and location have been set:

- Sewers, septic tanks, and cesspools are "reasonably adequate" in both urban and rural settings/sub locations.
- All VIPs are "reasonably adequate" in rural settings/sublocations.
- Fifty percent of VIPs and 50 percent of pit latrines are "reasonably adequate" in urban settings/sublocations.
- Fifty percent of pit latrines are "reasonably adequate" in rural settings/sublocations.
- Buckets, bushes, and other oprtions are "not adequate" in both urban and rural settings/sublocations.

Sanitation coverage in Kenya is low; the Ministry of Public Health and Sanitation's estimates indicate that more than 45 percent of the rural population does not have access to basic sanitation. The situation in urban areas, and especially in peri-urban areas, is also challenged, although data is inadequate. According to WHO/UNICEF's Joint Monitoring Program for Water Supply and Sanitation Report for 2013, Kenya is not on track in achieving its sanitation MDGs. Between 1990 and 2008, the use of improved sanitation facilities in rural Kenya increased marginally, from 27 to 32 percent.[7] Just 14 percent of primary caregivers consistently wash their hands at critical times, but only 5 percent consistently use soap.[8]

According to the 2009 census, 79.8 percent of rural communities access their drinking water from unimproved sources of water, such as springs, streams, pans/ponds, shallow wells, and lakes. Poor hygiene behaviors, low sanitation coverage, and high reliance on unprotected sources of water often lead to the outbreak of waterborne sanitation diseases. In 2009 alone, more than 3,000 Kenyans suffered from cholera; more than 40 people died from it. The census states that 74 percent of rural households and 62.5 percent of urban households reported the pit latrine as the main mode of human waste disposal. This information creates a new set of challenges, because it was not a physical verification of sanitation facilities but rather what respondents reported using.

Note: It may also be argued that pit latrines in urban areas could be considered "not adequate."

Based on the above definitions, households with adequate access to sanitation in urban, rural, and national levels cover 62 percent, 42 percent and 50 percent, respectively. This is further detailed in Table 5 below.

[7] UNICEF/WHO Joint Monitoring Program, 2010.

[8] Are Your Hands Clean: Study on Hand Washing With Soap in Kenya, Water Sanitation Program (WSP) World Bank 2008.

SANITATION ACCESS	URBAN		RURAL		NATIONAL		
	HOUSEHOLDS	ACCESS %	HOUSEHOLDS	ACCESS %	HOUSEHOLDS	POPULATION	ACCESS %
ADEQUATE	2,128,709	62	2,254,785	42	4,383,494	9,302,922	50
INADEQUATE	1,277,911	38	3,106,549	58	4,384,460	9,307,175	50
TOTALS	3,406,620	100	5,361,334	100	8,767,954	38,610,097	100

Source: GoK, 2009 Census Report Vol. II

Table 5: Access to Basic Sanitation, Determined by Households' Main Modes of Human Waste Disposal

THE SANITATION STATUS AND COVERAGE FOR DISTRICTS WITHIN LAKE VICTORIA BASIN IN KENYA

The general access status of the Rift Valley, Western, and Nyanza provinces, which fall within the Lake Victoria Basin on the Kenya side, are illustrated in Figure 4-2. From this analysis, it is worth noting that Kenya is still challenged by improved sanitation coverage. Four to nine percent of both urban and rural settings use either covered or uncovered pit latrines. This poses high risks of pollution to the water bodies, as Kenyans depend on streams, ponds, and the Lake Victoria Basin.

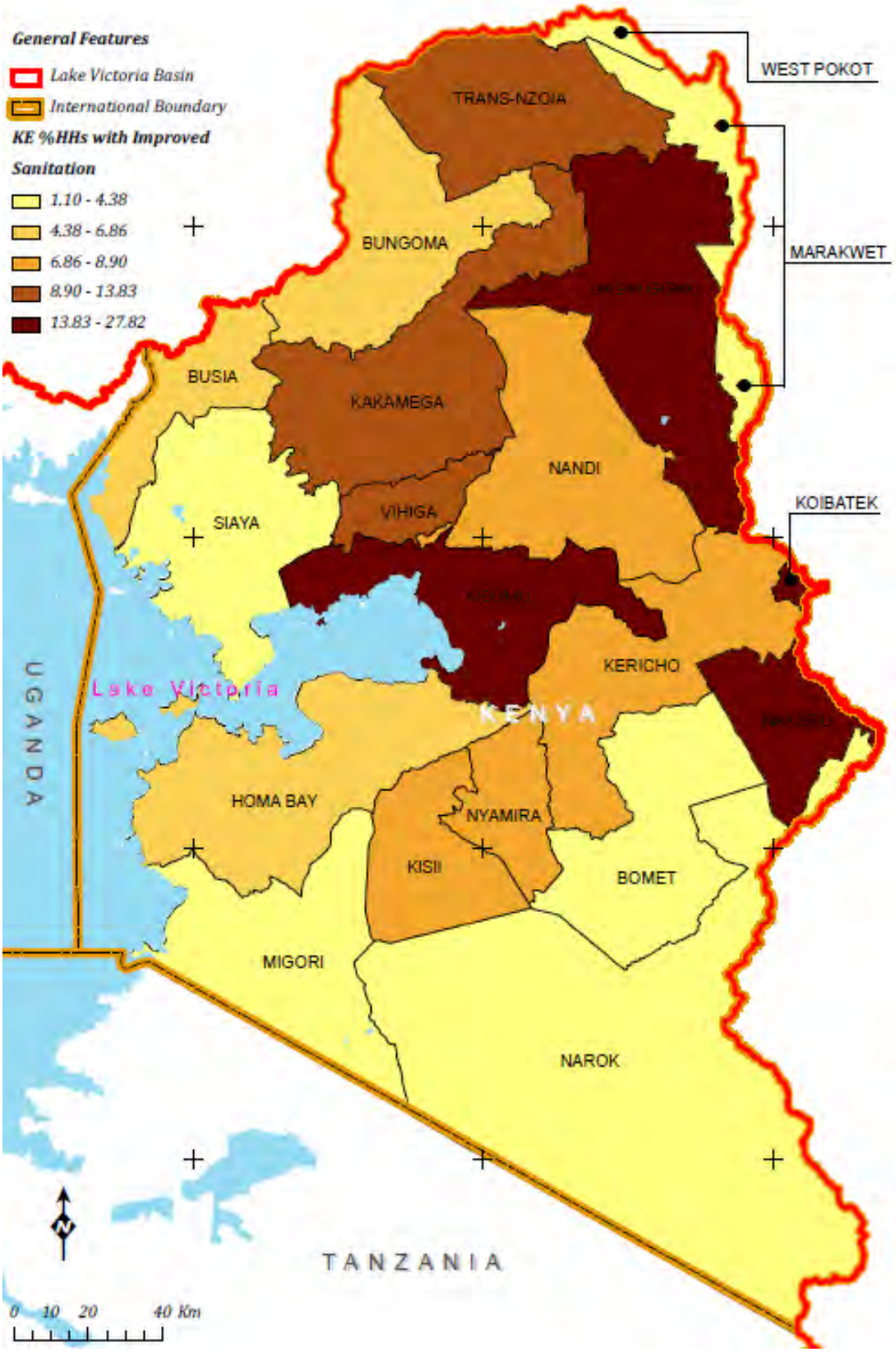


Figure 0-2: Improved Sanitation Coverage in Kenya

4.2 KENYAN LAWS, POLICIES, REGULATIONS, STANDARDS, AND/OR FRAMEWORKS RELATED TO THE PROVISION OF WATER AND SANITATION SERVICES

4.2.1 POLICY FRAMEWORK

NATIONAL POLICY ON WATER RESOURCE MANAGEMENT AND DEVELOPMENT (1999)

This policy was adopted by the parliament as Sessional Paper No. 1 of 1999. It addresses the general challenges of water sector development at the time, such as shortage of funds, weak institutional capacity, and poor choice of technology. The policy further highlights negative environmental impacts linked to human activities within water catchment areas, including the siltation of surface water, imbalance of ground water recharge, and destruction of forest areas, thus threatening available water resources. The policy acknowledges that development disparities among various regions are directly linked to water accessibility. As such, development sectors such as agriculture, livestock, industry, and health would only be sustained if water is easily accessible. The policy implicitly stipulates that access to adequate and reliably clean water is key for economic growth within the society in order to alleviate poverty.

To counteract these challenges, the policy detailed the following objectives:

1. **To preserve, conserve, and protect available water resources and allocate for them in a sustainable, rational, and economic way**

Section 2.1.2 of the policy stipulates that the basic solution is to conserve and preserve water resources in a feasible manner, while applying acceptable national and international standards to benefit the public. It calls for effective river basin management and practices, which recognizes the role forests and soil conservation measures play in the conservation of water resources. As one way of effecting this initiative, Section 2.1.3 of the policy reveals the introduction of water levies and fees where necessary for utilizing water from public watercourses. Such levies and fees are to be used in sustaining water sources and supporting related technology research.

2. **To supply water of good quality and in sufficient quantities to meet various water needs, including poverty alleviation, while ensuring safe disposal of wastewater and environmental protection**

According to Section 3.1.2 of the policy, this has to be done by identifying and developing adequate and appropriate water systems for current and future domestic water demands, both in urban and rural localities. Rainwater harvesting through roof catchment is noted as one of the augmentable water systems to be exploited in order to sustain a community water supply. In addition, this section requires the government to identify and develop adequate and appropriate systems for industrial water demand, with emphasis on promoting water recycling and individual supply systems.

3. **To establish an efficient and effective institutional framework in order to achieve a systematic development and management of the water sector**

In essence, the policy requires framework that aims to establish a culture promoting comprehensive water resources management and development. Linked to this, private sector and community involvement is noted as a prime way to guarantee sustainability in the process. As implied in Section 4.1.4, the government should remain largely a policy and guideline provider for the sector.

4. **To develop a sound and sustainable financing system for effective water resources management, water supply, and sanitation development**

In Section 5.2.3, the policy underscores the fact that water is to be regarded as an economic good. As such, all water consumers should pay for it based upon the user-pay principle. In order to implement this provision, the policy urges relevant water tariffs to be set, aimed at sustainable water consumption and production.

Notably, section 2.2.1 of the policy highlights that in order to determine efficient management of the water resources, there must be an existing system based on surveys and investigations; network monitoring; data management and assessment; source development; water rights issuance; special courts of law to settle water disputes; and an overall institutional linkage. In Section 2.3.3, the policy also supports integrated water resource management, including the integration of land and water resource aspects.

Sessional Paper No. 1 of 1999 also details the legislative framework. It recognizes that the previous enforcement status of the water act had been inadequate due to the lack of resources for monitoring the operations of the water users (Section 2.4.2). Due to this, the policy urges proper monitoring in order to ensure regular review, updates, and enforcement of the legislation and bylaws concerned with proper utilization, protection, and management of water resources (Section 2.4.4).

Regarding transboundary water resources, the policy underlines a need for examining international water resource treaty requirements, and for adopting them accordingly (section 2.4.5).

The policy also details water projects likely to negatively impact the environment, and it highlights the EIA as a prerequisite step in order to address and mitigate the negative impacts and optimize the positive impacts (Section 2.5.2).

The policy further acknowledges that there had been continuous water resource pollution emanating from anthropogenic activities (Section 2.6.1). In order to abate this situation, the policy asserts the need for establishing strict stream effluent discharge standards, as well as water abstraction and disposal permits linked to economic instruments for water pollution control (Section 2.6.2). Similarly, in order to obtain and maintain the water resource quality and quantity information, the policy supports continuous monitoring and database development and updating (Section 2.7.4). The policy also insists on research and technology in order to adopt the appropriate technology for conserving and consuming available water resources (Sections 2.8.1 to 2.8.3).

DRAFT NATIONAL WATER POLICY (2013)

Kenya has recently reviewed the former National Policy on Water Resources Management and Development of 1999, so there is currently a draft of National Water Policy (2013). The draft policy takes into account the requirements of the Constitution of Kenya of 2010, aiming to meet the constitution requirement under the Bill of Rights (Article 43), as well as other national policies and strategies. The policy can be categorized into three areas. The first area is about water resource management having the objective of ensuring a comprehensive framework for promoting optimal, sustainable, and equitable development, as well as use of water resources for public livelihood. The second area concerns the provision of water services; e.g., safe and clean drinking water. Additionally, this category covers sewerage collection, transport, and effluent treatment. The third area concerns promoting sustainable availability of water for economic production in order to attain the national cultural and socioeconomic development goals. The policy was developed based on the following key guiding principles:

- Right to water with a pro-poor orientation
- Separation of WRM and WSS
- IWRM approach
- Sector-wide approach for enhanced development
- Separation of policy from regulation and operation/implementation

- Devolution of functions to the lowest appropriate level
- Gender provisions in the management of water services institutions (WSIs) and safeguarding of water
- Socially responsive commercialization of service delivery
- Professionalizing the sector
- Autonomy of WSIs
- Good governance practices on all levels
- Participatory approach
- Public-Private Partnerships (PPP)
- "User- and polluter-pay principles"

For water resource management, Section 2.3 of the policy addresses the following objective: "To ensure a comprehensive framework for promoting optimal, sustainable, and equitable development and use of water resources for livelihoods of Kenyans." Under this objective, the policy stipulates various statements for effective water resource management. Section 2.3a stipulates that the government has to ensure increased per capita water availability above the international benchmark of 1,000 cubic meters by 2030. Thus, there will be a need to optimize water resource potential by enhancing water storage through designing large-, medium-, and small-scale storage facilities. This initiative entails promoting issues such as rainwater harvesting and storage systems, as well as: re-establishing green water storage areas such as wetlands and forests; water-saving technologies; ground aquifer recharging; recycling-treated effluent water; and restoring and rehabilitating identified storage systems.

Recognizing that water catchments provide environmental security, the policy intends to protect ecological systems and biodiversity in strategic water catchments. As such, Section 2.3b requires the government to establish a progressive mechanism for restoration and protection of these areas. Equally important, the policy emphasizes the management of transboundary water resources. Section 2.3c requires the government to maintain the recognition of and domesticate existing international conventions, protocol, and treaties that promote a basin-wide approach in the development and management of transboundary waters, also referred to as IWRM. The policy also provides for the enhancement of stormwater management and rainwater harvesting (Section 2.3d), where stormwater runoff has to be contained to prevent related disasters such as floods, soil erosion, landslides, and river siltation, while rainwater has to be stored for consumption.

In order to enhance the protection of water bodies, the policy requires the government to enforce the existing regulations by incorporating the "user and polluter pay principles" (Section 2.3f) together with instruments intended to provide synergy for effective water body protection. Additionally, the policy emphasizes research and development in the water sector (Section 2.3g), urging the government to ensure scientific and technological research and development agendas for water affairs.

Chapter 3 of the policy focuses on water services. The objective of the policy is "to progressively achieve universal rights to water supply and sanitation for all by 2030 in the rural and urban areas." This objective ensures that there is access to water and sanitation according to rights of safe, reliable, and affordable water and sanitation for all (Section 3.3a). Linked to this, the policy requires the government to enhance education and public awareness of Kenyans' responsibility for paying for water services, as well as for investing in and protecting infrastructure. For effective execution of this exercise, the policy urges the government to involve the civil society, private sectors, and development partners.

The policy also requires water service providers to establish organizational structures for management of infrastructure in low-income areas. The policy further requires county water structure and water service

providers to report progress on rights for each underserved and low-income area, and to ensure that delegated management approaches do not infringe on rights. For effective consumer protection, the policy requires the government to establish a regulation for the effective achievement of the right (Section 3.3b).

Further, the policy requires improved planning and asset development (Section 3.3c), where the county structure for water and county water service providers are supposed to establish rolling investments and financing plans that can be aggregated at the regional or national level for better use of available funds and improved resource mobilization. The policy requires county government structures for water to ensure improved water service provider performance (Section 3.3d) through management of rural water systems and monitoring of urban water service providers in order to practice good governance.

Regarding sanitation, the policy requires the government to improve management of sewer systems and sludge management (Section 3.3c). The government should ensure the establishment of a comprehensive intersectoral program on urban sewerage and sludge treatment for decentralized sanitation facilities. Linked to this, the policy requires water supply providers to play a vital role in such improvements. Further, the policy requires the government to promote the national concept of effluent collection and treatment originating from decentralized systems, as well as recycling technology. Similarly, the government is urged to increase resource mobilization for sewerage and sanitation systems (Section 3.3i). As such, the water sector is required to endeavor to mobilize funds for extending and building new sewer systems in urban areas. The policy provides for the development of water service regulation (Section 3.3g) as a national concept in which everyone can benefit from the same minimum water service standards. Linked to these regulations are the specifications for building water facilities. Regarding the operation and maintenance of rural piped water systems, the policy urges outsourcing wherever applicable, while for those non-viable medium water supply schemes, they can be subsidized by the county government.

Concerning water for production, the policy aims to promoting sustainable availability of water for production purposes for attainment of national cultural and socioeconomic development aspirations (Section 4.3). In order to improve freshwater supplies for economic and social growth, the policy provides for integrated water resource management focusing on efficient use of water resources and increase of water storage capacities. As such, permitting and water pricing shall provide incentives for effective and efficient water use (Section 4.3a).

The policy also details financing arrangements, in which sector financing is aligned with national objectives to ensure the effectiveness of the fund (Section 6.3). The government is urged to improve national investment and national finance planning with national concepts or standards for investment, planning, and implementation (Section 6.3a). With regard to water services, the policy requires the government to devise special financial subsidies or supporting instruments when it is established that such arrangements are necessary for targeting underserved communities in the interest of progress toward rights or for addressing necessary behavioral changes in society (Section 6.3e). Moreover, the policy urges the government to initiate subsidies to promote new technologies and incentives for water sector institutions to improve performance.

WATER RESOURCE MANAGEMENT AUTHORITY STRATEGIC PLAN (2012–2017)

The Strategic Plan (SP) is an important tool to fully operationalize the water resource sector and the national water act (2002). The current SP (2012–2017) is an update of the former SP (2009–2012). The current SP highlights the existing water resource challenges and opportunities, and focuses on the provisions addressed in the new constitution (2010), which are related to governance concerning the public right to access water resources. The SP has the following general strategic objectives:

- To strengthen monitoring networks in order to enhance data collection and improve information management systems
- To improve the use of water resources management tools for effective water resources planning and allocation

- To strengthen stakeholder collaboration in order to enhance water storage and adaptation to climate change impacts
- To strengthen enforcement mechanisms and collaboration for effective catchment protection and conservation
- To build staff capacity and improve work environment
- To enhance resource mobilization and effective use of finances

Within the highlighted general objectives, the SP identifies six strategic areas/components:

- Catchment protection and conservation
- Data acquisition and information management
- Water allocation and planning; adequate quantity and quality of water resources
- Human resource development and management
- Financial resource mobilization
- Accountability

In order to streamline the situation, the SP underscores relevant strategic objectives to be attained for each area/component linked with various approaches or strategies to be applied. For instance, under the catchment protection and conservation area/component, the strategic objective is to achieve effective catchment protection and conservation. This may involve: strengthening the enforcement mechanism; program development to minimize the rate of catchment degradation; mechanism strengthening for stakeholders' involvement; and strengthening the use of catchment management tools. As an additional example, the data acquisition and information management area/component addresses its strategic objective as strengthening monitoring networks in order to enhance data collection and improve information management systems. Linked to this are three relevant strategies in place: development of collaborative arrangements with stakeholders for improved information management; operationalization of the optimal monitoring network; and improvement of systems for data storage, analysis, and dissemination.

In order to address effectiveness, the SP highlights the implementation framework through a results analysis, as well as a risk and stakeholders analysis. Additionally, the SP details the ongoing process of reviewing the existing staffing establishment in order to address resource efficiency and effectiveness. The SP clarifies related financial arrangements with respect to the addressed strategic objectives. Notably, the financial distribution indicates that the strategic objective linked to catchment management shares the highest budget, implying that the government is making this strategic area/component a high priority.

Further, the SP outlines the roles and functions executed by the Water Resource Management Authority, the institution responsible for managing water resources.

THE NATIONAL WATER HARVESTING AND STORAGE MANAGEMENT POLICY (2010)

The policy elucidates that the existing water endowment status is low, due to the destruction of water towers and the fact that most inland water storage wetlands and running rivers continue to be consumed unsustainably. Equally, the policy links the water endowment status to climate variability and population growth, and it predicts the negative impacts in case no sufficient efforts are harnessed to reverse the trends. Further, the policy states that water storage is declining. To counteract this situation in line with the Kenya Vision 2030, whose objective is to help transform Kenya into a "newly industrializing, middle-income country providing a high quality of life to all its citizens by 2030 in a clean and secure environment," the policy aims to facilitate the expansion of water harvesting, storage, and capacity development to contain floods in order

to contribute to wealth and employment creation, food security, and poverty reduction. The policy addresses the following components:

- Water harvesting and storage capacity
- Rainwater harvesting and storage
- Control of floods and droughts
- Alternative resettlement
- Community participation
- Hydroelectricity generation
- Irrigation development
- Containment of siltation in water storage facilities
- Hygiene and environmental sanitation
- Water quality
- Resource mobilization

Each component enlists relevant strategies to be implemented in order to address the related challenge (Sections 4.1.1 to 4.1.11). Section 5.1 of the policy explains the available linkage with other policy frameworks at the global, regional, and national levels. Sections 5.2 and 5.4 give details on the existing linkage with national legislation and institutional framework. In order to be implementable, the policy stipulates the required policy and legal reforms as follows (Section 5.3):

- Related policy and legal framework to provide general guidance during the implementation of this policy
- The government to develop the following documents:
  - Sessional paper on water harvesting and storage management
  - Water harvesting and storage management strategy
  - Flood control bill
  - Flood control strategy
  - Revised Environmental Management and Co-ordinated Act (1999)
  - Revised forest policy and its subsidiary legislations
  - Revised Timber Act Cap 386 of the laws of Kenya
  - National charcoal policy
  - Revised water quality standards
  - Policy on transboundary water management
  - Policy on ground water protection
  - National policy on mineral resources and mining

- National environmental sanitation and hygiene strategy
- National land use strategy and subsidiary legislations

NATIONAL LAND RECLAMATION POLICY (2013)

To justify its essence, Sections 2.0 to 2.10 of the policy provide a situation analysis disclosing that at least 20 percent of the degraded land is in arid and semiarid lands. Additionally, the policy points out that this situation is aggravated by inappropriate land use practices and the fact that roughly 70 percent of the national livestock herd is found in arid or semiarid lands, kept under traditional nomadic pastoralism. Generally, the policy details the current situation on land degradation and describes the attributing factors, including soil erosion; deforestation; inappropriate surface water management; and loss of biodiversity (Sections 2.5 and 2.6). Consequently, the policy discloses that 3 percent of gross domestic product is annually lost from the national economy due to land degradation (Section 2.7). Among other factors, this loss is linked to decreased crop yields; decreased grazing resources; deforestation; and reduced water resources (Section 2.8).

To abate the situation, the National Land Reclamation Policy envisages sound land reclamation plans for improved productivity, sustainability, and economic value. The goal of the policy is to integrate sectoral interests and stakeholder participation in order to consolidate and coordinate all land reclamation initiatives. Some of the specific objectives outlined in this policy are listed below:

- Ensure uniform application of exploration, development, and reclamation standards
- Ensure prompt reclamation of lands for productive uses consistent with land management policies
- Integrate appropriate disciplines in natural sciences, engineering, and design arts in establishing criteria for reclaiming disturbed lands, reviewing reclamation plans, and monitoring reclamation activities
- Identify information needs that can be met by research, and to encourage research projects to provide such information
- Utilize the best available information in developing and reviewing reclamation plans.

These objectives provide a guide for the strategic restoration context (Section 2.9) that pinpoints main areas for intervention. The context addresses the restoration of degraded marginal land; rehabilitation of degraded lands; reclamation of arid and semiarid lands; and reclamation of wastewater for reuse and recycling. Regarding marginal land, the policy emphasizes, among others, the appropriate and sustainable land reclamation/rehabilitation practices for all users (Section 3.2.1a). Additionally, the policy provides for education and public awareness promotion through participatory approaches in order to mainstream land rehabilitation and management initiatives (Section 3.2.1b). The policy also addresses land tenure systems by ensuring that all public, community, and private lands are inspected and monitored for any signs of degradation, inappropriate use, and illegal encroachment. Linked to this, the policy stipulates providing a framework for marginal land mapping, as well as providing the guidelines for addressing externally induced degradation and conflict resolution mechanisms as a result of implementing land-disturbing activities. The "degrader-pays principle" applies regardless of the land tenure systems.

Concerning degraded land, the policy requires the government to identify and map all degraded land for the reclamation program. This approach has to be integrated with improved indigenous knowledge under an enabling environment for active participation of all stakeholders, including the private sector. Further, the policy requires development of rules and regulations in order to ensure disturbed land is reclaimed (Section 3.2.2b).

The policy calls for resource mobilization in order to reclaim arid and semiarid lands (Section 3.2.3a) along with wastelands, with the emphasis on investing in rainwater harvesting and storage. As a special alternative

mechanism for restoring wastelands, the policy supports the "polluter-pays principle," requiring that those who bear the pollution on the land shall be responsible for cleanup costs (Section 3.2.3b). However, the policy provides for the combination of policy instruments and regulations, as well as economic instruments, for effective practices in the mining sector.

Section 3.2.4 details the policy approach regarding wastewater reclamation. As wastewater is abundant, the policy requires the government to develop legislation, regulations, rules, and guidelines on treatment of wastewater to ensure recycling and reuse of reclaimed water. In addition, the policy requires the government to promote the design and construction of bio-degeneration structures, and any appropriate technologies for household sewage treatment and reclaimed water recycling for any other appropriate use, such as irrigation.

DRAFT NATIONAL WETLANDS CONSERVATION AND MANAGEMENT POLICY (2013)

It is well stipulated in this policy that wetlands contribute to socioeconomic development. However, there are various challenges facing the wetlands. Section 2.1 of this policy lists them as: reclamation and conversion of wetlands for agricultural activities; wetland goods and services overexploitation; pollution; and alien and invasive species. Additional challenges include lack of resources and inadequate institutional arrangements, as well as conservation and management (including ownership and encroachment). This policy addresses these challenges with the following objectives:

- Establish an effective and efficient institutional and legal framework for integrated management and wise use of wetlands
- Improve function of and value obtained from wetlands in order to protect biological diversity
- Encourage communication, education, and public awareness
- Promote scientific information and knowledge of wetland ecosystems
- Reinforce institutional capacity regarding wetlands conservation and management

The stipulated policy statements are provided for each addressed challenge. For example, for wetland reclamation and conversion, the policy stipulates that the government has not allowed reclamation and wetland conversion for agricultural, social, or economic activities (Section 2.1.1). In addition, the policy states that "any alteration of a wetland for public interest is subject to standard procedures including Environmental Impact Assessment (EIA), Strategic Environmental Assessment (SEA), Cost Benefit Analysis (CBA), and wide stakeholder consultations."

Regarding the exploitation of wetland goods and services, the policy requires the government to promote sustainable extraction and utilization of goods and services derived from wetlands (Section 2.1.2). Additionally, it is stipulated that the government shall promote environmentally friendly alternative livelihood activities in line with the wise use principle.

In order to abate wetlands pollution, Section 2.1.3 of the policy requires the government to support and promote enforcement of relevant regulations and laws related to environmental pollution. Equally, the government is required to enhance public awareness on the proper management of waste, and to promote the "three Rs": reduction, reuse, and recycling.

Regarding alien and invasive species, the policy requires the government to develop and implement a national strategy and action plan for mapping and managing alien and invasive species in wetland ecosystems. Moreover, the government is required to undertake research, public education, and awareness campaigns on the dangers of alien species (Section 2.1.4).

To address the wetland challenges of conservation and management, the policy calls for the government to map, delineate, and publicize boundaries for all wetlands within its jurisdiction; to regulate and protect all

wetlands including those within public, private, and community lands in line with the constitution; and to recognize and permit cultural and traditional practices for use of wetland resources subject to existing guidelines, policies, laws, and legislation (Section 2.2).

This policy also requires the government to restore and rehabilitate degraded wetlands (Section 2.2.4). The government is further required to make use of appropriate technology to develop and implement measures to give priority to indigenous vegetation and other biodiversity to allow natural regeneration of degraded wetlands.

The policy addresses transboundary wetlands as well. In addition to clarifying that Kenya is a party to the Treaty Establishing the East African Community and the Protocol on Environment and Natural Resource Management, Section 2.2.6 calls for the government to cooperate bilaterally with neighboring countries within the framework of the East African Community and other regional frameworks in order to develop and implement harmonized policies and strategies for sustainable wetlands management.

The policy also provides for recognizing wetlands of international importance as provided by the Ramsar Convention. The policy states that the government shall identify and inventory wetland sites falling under the Ramsar criteria, and ensure effective management and conservation of all Ramsar sites (Section 2.2.3).

Finally, Section 2.2.2 of the policy provides for the establishment of wetlands conservation areas. It requires the government to continue protecting and identifying other unique wetlands for gazettement as protected areas, and to ensure that deltas are sustainably managed through participatory and integrated planning and co-management.

DRAFT NATIONAL ENVIRONMENT MANAGEMENT POLICY (2012)

Kenya has not yet launched an official Environment Management Policy. Currently, the policy is in a draft format subject to further review. However, there has been an initiative to conserve the environment and protect the natural resources of the country. As such, the government established the National Environment Management Authority (NEMA) through the Environment Management and Coordination Act (1999). NEMA exercises the general supervision and coordination of all issues pertaining to the environment.

Though the policy is still in a draft format, it highlights various environmental challenges, including pollution; climate change; loss of biodiversity; urbanization; waste management; conservation of natural resources; and invasive and alien species. Generally, the policy aims to achieve a better quality of life for present and future generations through sustainable management of the environment and natural resources.

Based on this objective, the policy provides various statements addressing the above environmental challenges. Section 4.0 of this policy provides for management of ecosystems and sustainable use of natural resources such as: forest resources; fresh water; wetland ecosystems; coastal and marine ecosystems; and mountain ecosystems. For instance, Section 4.2.2 requires the government to conserve fresh water and wetlands ecosystems by developing and implementing integrated wetland and water resources management strategies and action plans. It also requires the government to promote and institutionalize payment for environmental services schemes to support catchment protection and conservation and to promote sustainable use of fresh water and wetland resources.

Regarding biodiversity protection and conservation (Section 4.9), the policy requires the government: to revise and implement the national biodiversity action plan; to regulate and encourage sustainable utilization of biological resources in accordance with international law; and to develop and implement a strategy in order to contain, control, and mitigate alien and invasive species. Concerning soil protection (Section 4.7), the policy stipulates that the government: develop and implement a national soil conservation action plan; promote and support organic farming; and ensure protection of wetlands, riverbanks, hilltops, and slopes from non-sustainable practices.

The policy also provides for the protection of the following ecosystems: forest; coastal and marine; mountain; and arid and semiarid lands.

NATIONAL ENVIRONMENTAL SANITATION AND HYGIENE POLICY (2007)

Section 1.2 of the policy stipulates the following policy targets to be reached by the year 2015:

- Make sure that all households be educated and made aware of the importance and need for improved environmental sanitation and hygiene (ESH) practices for improved health, resulting in positive changes in behavior
- Make sure that every school, institution, household, market, and other public place has access to, and makes use of, hygienic, affordable, functional, and sustainable toilets and hand-washing facilities
- Make sure that all premises, dwellings, and their immediate surroundings be clean and free from waste and unpleasant odors, and that they have adequate drainage
- Make sure that the burden of environmental sanitation- and hygiene-related diseases is drastically reduced

Section 3.1 of the policy underscores that in order to attain these objectives, the government has to increase budgetary provisions as well as facilitate vigorous ESH campaigns on various hygienic practices, social and cultural factors, lifestyles, and environmental awareness in order to improve basic knowledge, skills, and human behavior. As such, these campaigns will build on traditional practices to assist acceptability. The policy states that campaigns will target children through early childhood education, recognizing that the promotion of good hygiene in schools can nurture long-term behavioral changes in communities.

The policy further highlights that community participation is an important approach in mainstreaming good sanitation behavior. Therefore, the policy will entrench community participation from the very beginning. It is important that ordinary people be involved in these discussions about improving sanitation (Section 3.2).

OPEN DEFECATION FREE (ODF) RURAL KENYA 2013 ROADMAP

The Open Defecation Free (ODF) campaign was launched in 2013, followed by an actual Rural Kenya Roadmap in 2013.

The roadmap involves working with partnerships and government structures in rural areas to ensure that they are ODF.

At the national level, the roadmap calls for a coordinated approach among stakeholders, including nongovernmental organizations (NGOs) and development partners, to facilitate capacity building in order to support the implementation of the campaign; to strengthen planning, monitoring, and evaluation systems; to undertake research, documentation, and knowledge management; to link communities with affordable sanitation products and solutions; to work with the media to keep the ODF agenda alive and sustain behavioral change; and to engage in advocacy for increased resources.

At county and local levels, the roadmap will entail: mapping; securing commitment from partners and supporting them in developing workplans; and securing resources for the implementation of their plans for attaining ODF at the county level. The roadmap emphasizes the importance of working with the private sector to respond to demand created through the ODF Rural Kenya 2013 campaign.

4.2.2 LEGISLATION FRAMEWORK

CONSTITUTION OF KENYA (2010)

The Constitution of Kenya is the supreme law of the land. The constitution highlights almost all socioeconomic sectors, including those of water resource protection and consumption. The constitution

addresses the government commitment to protecting water resources and the environment in general. Article 186(1) emphasizes that "Protection of the environment and natural resources with a view to establishing a durable and sustainable system of development, including, in particular … water protection, securing sufficient residual water …" falls under the power and functions of the government. In Article 43(d), the constitution further asserts that "Every person has the right to clean and safe water in adequate quantities."

THE WATER ACT (2002)

The Water Act (2002) provides for the management, conservation, use, and control of water resources. Additionally, the act provides for the acquisition and regulation of rights to use water, and for the regulation and management of water supply and sewerage services. Significantly, the act provides a legal framework that guides the creation of institutions to manage water resources and provide water services.

Water resource management

The act provides for the ownership and control of water. Article 3 of the act stipulates that every water resource is vested by the state. As such, the right to use the water resource is vested by the relevant minister (Article 5). Additionally, the act provides for the relevant minister to develop the National Water Resource Management Strategy (Article 11). This strategy prescribes the principles, objectives, procedures, and institutional arrangements for the management, protection, use, development, conservation, and control of water resources. In accordance with the National Water Resource Management Strategy, the act provides for the designation of a defined area, from which rainwater flows to a catchment area (Article 15). Linked to this is the formulation of the Catchment Management Strategy (Article 15). Article 17 provides for protected areas management, while Article 18 provides for the National Water Resource Management Strategy to monitor and develop the information system for water resources. Article 19 of the act defines the state schemes and community projects with respect to water resource consumption. Article 21 stipulates the acquisition of land for the state water scheme, in which the minister responsible for water works may publish in a gazette the designated land for the related development or project. Article 23 provides for the approval procedures for community projects. Requirement of permit acquisition for water resource use is detailed in Article 25, while Article 26 provides for permit exceptions, and Article 29 provides for the procedures for obtaining the water permit. Article 44 provides for groundwater conservation so that the authority—being satisfied that there is a need for conserving such an area for groundwater protection—can issue a declaration.

Addressed Policy Instruments

Though the Water Act itself is a policy implementation tool, it needs additional facilitating instruments (regulations and standards) for implementation purposes. The act points out some instruments in order to facilitate the water resource management. Article 17(1) of the act stipulates the administrative means of management for protected areas, stating that "the Authority (here referred to as Water Resources Management Authority) may impose such requirements, and regulate or prohibit such conduct or activities … regulate or prohibit for the protection of the area and its water resources." However, it is noted that before this administrative tool was in place, the declarative tool is to be applied where the act underscores as follows: "Where the Authority (here referred to as the Water Resources Management Authority) is satisfied that special measures are necessary for the protection of a catchment area or part thereof, it may, with the approval of the Minister, by order published in the Government of Kenya Gazette, declare such an area to be a protected area" (Article 17[2]). The same applies for Article 21, where the act provides for the acquisition of land for state scheme by stating that, "The Minister may, by notice published in the Government of Kenya Gazette, designate the land required for the development of any state scheme." Furthermore, Article 25 underscores the permit requirements for the user of water resources, as well as dischargers of pollutants into water bodies.

Compensation is another policy approach pointed out in this act. This is noted in Article 22(2), which stipulates that on construction of works for state scheme, the government can compensate the landowner on

which construction works are executed (Article 22[2]). Also discussed are the Water (Resource Management) Regulations (2007) developed as per Section 110 of the Water Act (2002). The regulations detail the procedures leading to sustainable water resource consumption. This includes the procedures of acquiring the water use permit or exploitation of groundwater. In addition, the regulations elucidate protection of water-resource-monitoring network integrity and maintenance of water resource data. The regulations further assert for water quality monitoring and effluent discharge, requiring the public to abide by water quality and effluent standards. The regulations also describe the mechanism of declaring a, water course, wetland and dams as public or private. The regulations clarify procedures for allocating water for irrigation and storage.

Informative policy tools are also stipulated. For instance, Article 18 provides that the water management strategy shall provide for the national monitoring and information system. This system shall provide procedures for gathering data and for the analysis and dissemination of water resource information.

Equally emphasized by the act are the economic policy tools. Article 24 stipulates charges (fees) for the beneficial use of the resulting water schemes or projects. Article 31 provides for the permit holder to pay charges (fees) to the authority for use of water in accordance with the permit.

Water supply and sewerage

In addition to establishing the Water Service Regulatory Board (Articles 46 to 48), the act requires the water minister to develop and publish a National Water Service Strategy (Article 49). This strategy clarifies the existing water services, the status of persons without water supply and sewerage services, the plans for further service extension, the time frame, and the investment program. The act further provides for water service providers a task execution, in which the water service board may decentralize either all or any of its powers and functions to water service providers through a license, referred to as a Service Provision Agreement or SPA (Article 55). Article 56 details the license or SPA requirements, setting the allowable limits of service. This is equally clarified under Articles 59 and 61. Article 75 provides for the licensee planning to carry construction works that may affect nearby water bodies in the catchment to seek consent from the Water Resources Management Authority (WRMA).

Addressed Policy Instruments

Various policy instruments are established in this act. The administrative instruments are the standards and licensing tools. These are stipulated under Article 47, in which the regulatory board is empowered to issue licenses for the provision of water services and the regulatory board is empowered to determine standards for the provision of water services to consumers. Rules are additional administrative tools included in this act. Article 72(3), while clarifying the power of the licensee to prohibit or restrict use of water, stipulates that rules made under this act may provide liability for any person who contravenes this provision. In addition to rules, regulations are also included. Article 73 provides power to the licensee to make regulations with respect to the conditions of the provisions of the water services, but these are subject to approval of the regulatory board. These conditions may include water source protection against pollution or degradation. Economic incentive tools are noted in Article 77, where it is stipulated that "a licensee ... in consultation with the regulatory board and with the approval of the minister, fix and impose a sewerage services levy on all water services ...."

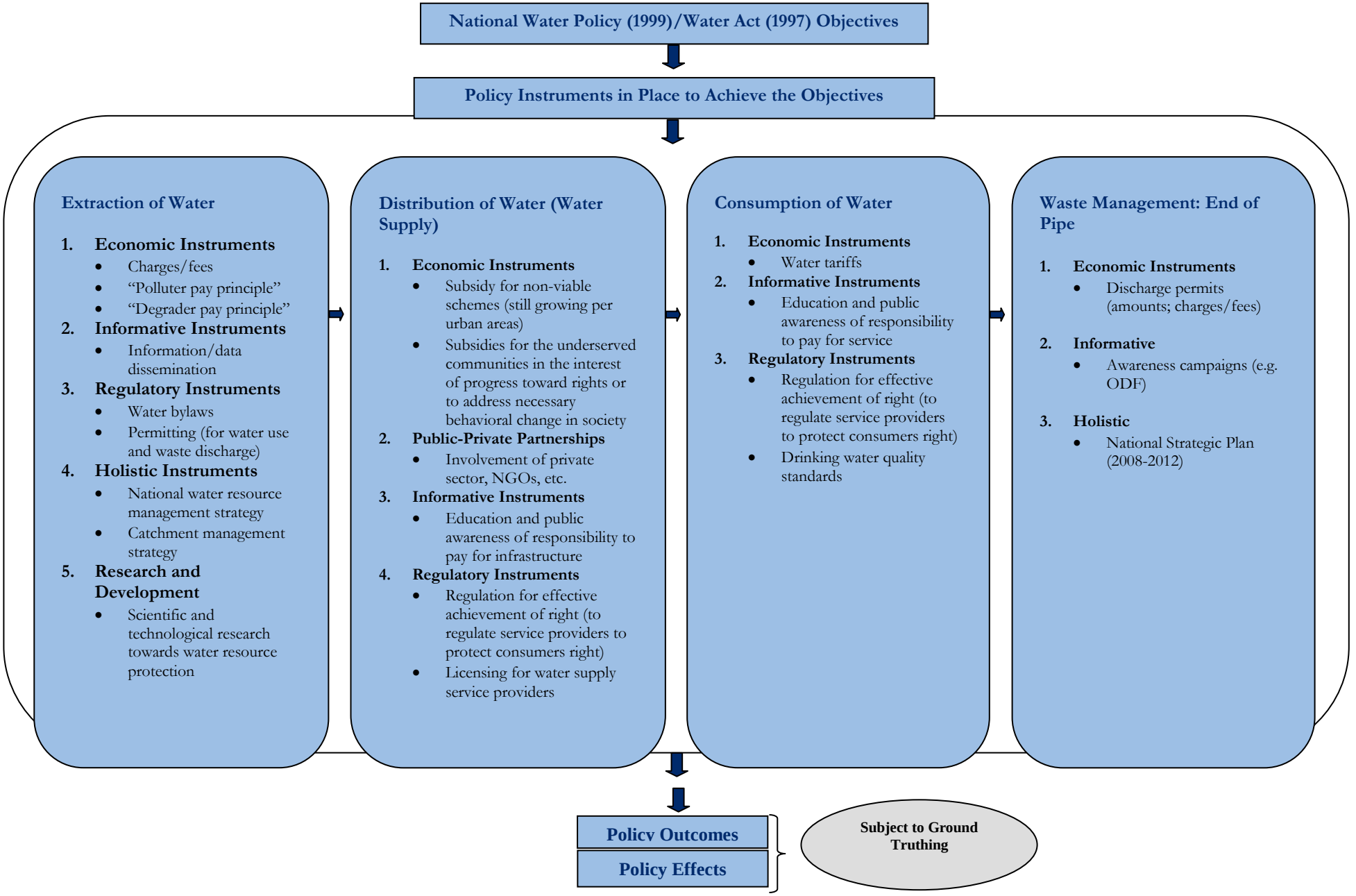
ENVIRONMENTAL MANAGEMENT AND COORDINATION ACT (1999)

The Environmental Management and Coordination Act of 1999 provides for the establishment of an appropriate legal and institutional framework for the management of the environment and other related matters. The act underscores the general principles for sustainable environmental management, such as the right to a clean environment; public participation in policy development; international cooperation; and the "polluter-pay" and precautionary principles, which make the party responsible for producing pollution responsible for paying for the damage done to the natural environment. Among other provisions, the act calls for environmental planning; protection and conservation of the environment; EIAs; environmental audits and monitoring; and environmental quality standards.

ENVIRONMENTAL MANAGEMENT AND COORDINATION (WATER QUALITY) REGULATIONS (2006)

These regulations are in accordance with Section 147 of the Environmental Management and Coordination Act (1999), whereby the Minister for Environment and Natural Resources, in consultation with the other relevant agencies, consented to make these regulations. The regulations have provisions addressing the responsibility of the public to protect water sources, prevent water pollution, and comply with water quality standards. Further, they stipulate requirements for the public to abide by industrial effluent standards before discharging into the environment. The regulations give the procedures for the application of the effluent discharge license. Leading to water resource protection, the regulations provide for the safe abstraction of water for water supply production.

Figure 0-3: Efficacy Analysis: Identified Policy Instruments as Reflected in Water Abstraction and Consumption Lifecycle



4.2.3 EFFICACY ANALYSIS

CENTRAL VALUE OF THE ADDRESSED POLICY INSTRUMENTS

Figure 4-3 is the water abstraction and consumption lifecycle with the analyzed policy instruments. Below is the detailed analysis of the identified policy instruments.

Water Extraction

The analysis for the overall policy and legislation framework is reflected in the water consumption and abstraction lifecycle (Figure 4-3). For water resource management (water abstraction), it has been noticed that there is a combination of various policy instruments. There are the economic instruments, which include water permits and a charges-and-fees system for water extraction and discharging wastes. Similar to this is the provision of the "degrader-pay principle" (land reclamation policy) as well as the "polluter-pay principle" addressed in the Environmental Management and Coordination Act (1999). Basically, these instruments are key incentives for behavioral change as well as triggering innovation. Proper enforcement of these instruments can lead to sustainable water source abstraction and management.

Also provided are informative instruments (i.e., information and data dissemination) regarding water resource management. This approach creates community awareness of water resource status and their environment. The central value of this is facilitating policy enforceability through various programs and projects.

Water bylaws or rules represent the regulatory instruments, and are regarded as command-and-control instruments. Notably, community water bylaws or rules are important as they facilitate the translation of the National Water Resource Management Strategy and legal framework to the grassroots and local environment in order to smooth the progress of enforceability.

The National Water Resource Management Strategy and the Catchment Management Strategy are holistic instruments, combining various types of policy instruments strategically to address a single environmental challenge. This type of policy approach can be effective, because collective initiatives lead to remedying the situation within a short time frame. Equally, this approach addresses various components linked to water resources.

Further, it was noted that research and development for water resource management is another important value detailed in the policy. The research and development tool is important for technology development, as well as innovation enhancement.

Water Distribution

For water distribution systems, the policy asserts important provisions (e.g., subsidies) for growing localities in order to enhance capacity for future stability as well as behavior change to conserve water. For sustainability measures, the policy engages other stakeholders, such as the private sector and other NGOs, in order to enhance the PPPs. Coupled with this is the regulation for effective achievement of consumer rights in order to protect consumers. Public awareness in order to enhance public responsibility of paying for water infrastructure is also provided. These provisions are very relevant, as they consider the right of the public to access water resources, as well as the related sustainability issues.

Water Consumption

For water consumption, the policy provides for education and public awareness of the responsibility of paying for service. In addition to requiring the government to set water pricing (tariffs), the policy also requires regulation of effective achievement of consumer rights in order to protect consumers. The policy

further requires the government to develop standards for safe drinking water. All of these provisions are important for the sustenance and safety of the public.

Waste Management: End of Pipe

Regarding wastewater management at the end of pipe, the framework provides for discharge permits linked to discharge fees. Additionally, national campaigns as part of the informative tools are also provided in order to address community awareness, attitudes, and behavioral change. A good example is the ODF campaign of 2011. A holistic instrument (i.e., the sanitation strategic plan) is an additional instrument comprising combined initiatives addressing the sanitation challenge.

Gaps

It can be pointed out that the policy does not provide enough for public awareness on water resource management, especially at the extraction stage. As an informative tool, it is recommended that public awareness be enhanced. In addition, Section 3.1.2 of the National Policy on Water Resources Management and Development (1999) provides for the promotion of industrial and individual wastewater recycling. The question remaining is what policy mechanism is in place to make that happen. Similarly, Section 2.4.5 of that policy provides for transboundary water resource management to examine and adopt related international treaties. However, this provision does not address any policy tool that can be used in order to make that happen.

4.2.4 CONSIDERATION FOR EAC HARMONIZATION

RELEVANCE

The Water Policy (2012) is revision of the former Water Policy (1999). This policy has taken on global development initiatives such as climate change initiatives, the MDGs, and the East African Community Vision (2012). In addition, the new policy takes into account the requirements of the newly established Constitution of 2010 with a view that water is a public resource. The policy also takes into account the National Vision 2030. Basically, the policy establishes that it is relevant and well linked to local policy context, such as the Land Reclamation Policy (2013); the Wetland Conservation and Management Policy (2013); the Water Resource Management Authority Strategic Plan; and the Environmental Management Policy.

POLICY INSTRUMENTS

The policy instruments addressed for water resource management are principally relevant to sustainability and the East Africa Water Vision (2010). The provisions under the water supply services were noted to be relevant and valuable, though the water consumption component addresses limited instruments. Therefore, it can be concluded that the water policy and legislation framework in Kenya can easily be harmonized to the East African Community water resource management framework.

COUNRY	WATER SUPPLY	SANITATION	FUNCTIONING/ENFORCEMENT AT NATIONAL LEVEL (YES, NO)	HARMONY AT EAC LEVEL (YES, NO, N/A)
KENYA				
Laws	✓	✓		YES
Policy	✓	✓		YES
Regulation	✓	✓		YES
Standards	✓	✓		YES

Table 6: Analysis of Harmony Between Kenya and EAC on Laws, Policies, Regulations, Framework, and Standards

4.3 INSTITUTIONAL FRAMEWORKS RELEVANT TO THE PROVISION OF WASH SERVICES, ENGAGEMENT OF STAKEHOLDERS, AND MANAGEMENT OF FINANCIAL AND HUMAN RESOURCES

4.3.1 INSTITUTIONAL SETUP

According to the Water Act (2002), the Ministry of Environment, Water, and Natural Resources is vested with the powers of managing water resources in the country. The ministry is therefore empowered to promote the investigation, conservation, and proper use of water resources in the country.

Section 45 of the Water Act established the WASREB to regulate the provision of WSS services in Kenya. WASREB licenses the WSB to provide water services in an efficient and economical manner in what is effectively a water basin area of jurisdiction. Section 55 of the act mandates that WSBs arrange for the exercise and performance of all or any of their powers and functions by one or more agents, such as WSPs. WSBs are governed by a board of directors, which is appointed by the minister, and the board signs an SPA with the WSPs for provision of the services. The WSPs are owned by the county governments and are registered under the Companies Act. WSPs are also governed by a board of directors. Members of the WSP board are drawn from the private sector. This process is facilitated and concluded by the WSBs.

The WASREB sets standards and regulations that each WSB (through its agents, such as WSPs) has to meet every year. At the end of each calendar year, WASREB issues an annual water Sector performance impact report (as per the law), which ranks the best-managed board and the best water company that met its standards and regulations. Figure 4-4 below presents the schematic institutional arrangement for water and sanitation in Kenya.

Water Resources Users Associations (WRUAs) are established according to Rule 10 of the Water Resources Management Rules (2007). WRUAs are registered by WRMA and are required to have a constitution that is conducive to collaborative management of the water resources of a particular resource and that promotes public participation, conflict mitigation, gender mainstreaming, and environmental sustainability. WRUAs are

composed of WSPs, farmers, fishermen, pastoralists, etc. WRUAS are the groups that draw up and implement Sub-Catchment Management Plans (SCAMPS).

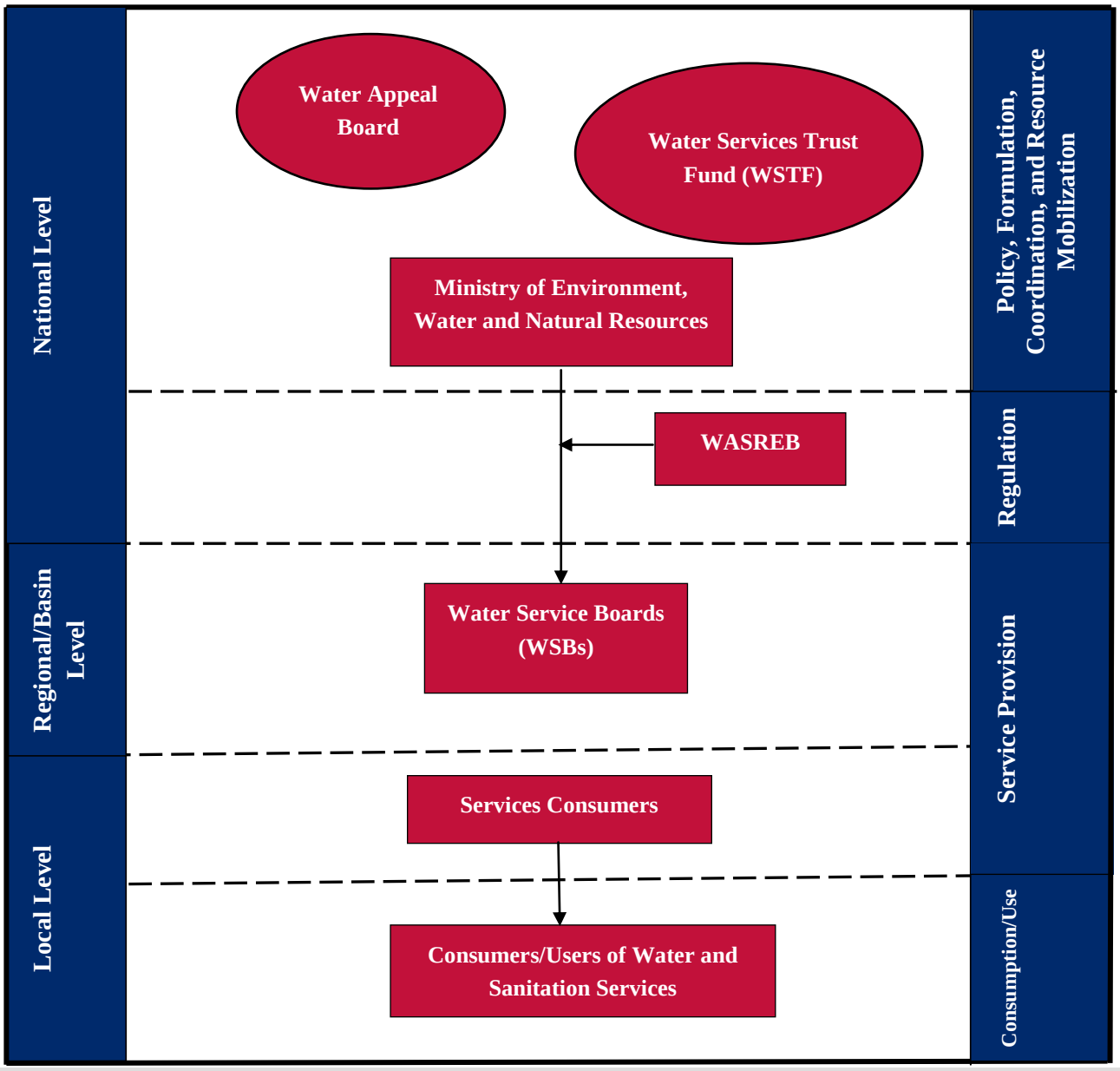


Figure 4-4: Institutional Arrangement for Water and Sanitation Service Provision in Kenya

4.3.2 ENGAGEMENT OF STAKEHOLDERS

In 2002, Kenya enacted the Water Act, which devolved management of water resources to the lower levels with the purpose of ensuring transparency, effectiveness, and efficiency. The changes were aimed at building strong and well-focused institutions capable of effectively managing water resources and delivery of water services. Sections 15(3)(e) and (5) of the Water Act stipulate that the Catchment Management Strategy shall provide for mechanisms and facilitate the enabling of communities for participation in managing water resources within each catchment, and encourage and facilitate establishment and operation of WRUAs. In that respect, the Catchment Area Advisory Committee is composed of members from different sectors.

Based on this fact, and as stipulated within the institutional framework, various stakeholders are now involved to ensure that the provision of water supply and sanitation services is done in an acceptable manner. These stakeholders include the Ministry of Environment, Water, and Natural Resources, WASREB, WSBs, WSPs, and water and sanitation service users. Table 7 below presents the roles and responsibilities of stakeholders.

Table 7: Stakeholders' Roles and Responsibilities of Water and Sanitation Service Provision in Kenya.

STAKEHOLDER	ROLES AND RESPONSIBILITIES
Ministry of Environment, Water, and Natural resources	• Present national policy and strategy to the government • Ensure policy formulation and coordination of implementation • Appoint chairperson of the various authorities and boards • Develop a mechanism for handling appeals in the sector • Employ staff to carry out its functions and activities as directed by the Public Service Commission
Water Resource Management Authority	• Develop principles, guidelines, and procedures for the allocation of water resources • Monitor, and occasionally reassess, the National Water Resources Management Strategy • Receive and determine applications for water use permits • Monitor and enforce conditions attached to permits for water use • Regulate and protect water resources quality from adverse impacts • Manage and protect water catchments • Gather and maintain information on water resources, and occasionally publish forecasts, projections, and information on water resources • Liaise with other bodies for improved regulation and management of water resources • With the consent of the attorney general, prosecute any offense arising under the Water Act
Water Service Regulatory Board	• Issue licenses for the provision of water • Determine standards for the provision of water services to consumers • Establish procedures for handling complaints made by consumers against licensees • Monitor compliance with established standards for the design, construction, operation, and maintenance of facilities for water services • Monitor regulation of licensees and enforce license conditions • Develop guidelines for fixing tariffs for the provision of water services • Develop model performance agreements for use between licensees and water service providers
Catchment Area Advisory Committee	• Advise on water resources conservation, use, and apportionment • Advise on the grant, adjustment, cancellation, or variation of any permit • Advise on any other matters pertinent to the proper management of water resources
Water Service Boards	• Efficient and economical provision of water services authorized by license • Contract with Water Services Providers

STAKEHOLDER	ROLES AND RESPONSIBILITIES
Water Services Providers	• Provide water and/or sanitation services in specified areas • Prepare and implement business plan
Water Appeal Board	• Resolve conflicts resulting from a decision or order from the authority, minister, or regulatory board over a permit or a license
Water and Sanitation Service Users Associations	• Provide a forum for conflict resolution and cooperative management of water resources in their designated areas

Generally, it has been noted that involvement of stakeholders has accelerated the provision of quality services and the commitment of the community in the management and associated services of water resources. Indeed, the entry of self-help groups and community-based organizations into water service delivery has improved access to many communities that could not be served from publicly run water-supply schemes. However, the operation of these organizations has been frustrated by poor coordination, lack of financial resources, and lack of capacity. To rectify the situation, the government (through WSBs, WSPs, and civil societies) embarked on the empowerment of communities in order to successfully manage provision of water services.

4.3.3 MANAGEMENT OF HUMAN AND FINANCIAL RESOURCES

To ensure effective management of resources, the Water Act stipulates the governance system be in place to ensure accountability. The WRMA performs its duties under the governing council, which is composed of a chairman who is appointed by the president and 10 other members who are appointed by the minister. The day-to-day activities are manned by the chief executive officer, who is also the secretary of the council. At the regional/basin level, WSBs execute their duties under a board of directors. The day-to-day activities of the board are undertaken by the managing director, who is also the secretary of the board. Members of the board are appointed by the minister. WSPs are governed by the board of directors, and its members are drawn from the private sector. That process is facilitated and concluded by the WSB. The WSBs are the licensees of the WRMA and WASREB, and are mandated to ensure the provision of sustainable, efficient, and affordable water services in their areas of jurisdiction. They are responsible for asset development in order to progressively increase water and sanitation coverage. The WSPs are contracted by WSBs, and are responsible for the operation and maintenance of assets and the provision of water supply and sanitation services through a service provision agreement with WSBs. As licensees, WSBs are required to monitor the performance of WSPs and report regularly their performance to the regulatory body (WASREB).

To enhance smooth governance, the daily activities of the WSPs are manned by the managing director, who is assisted by several managers such as a technical manager, commercial manager, and finance/administration manager. The technical manager is responsible for water production and distribution, and is assisted by the scheme managers. The commercial manager is in charge of commercial operations; preparation of business plans and business planning improvement; billing and revenue collection; and customer care. The finance manager is in charge of financial management, human resource management, and procurement units.

With regard to financial matters, service providers have to ensure that they raise revenues to support their operations so as to provide good services. The ability of a service provider to secure more funds from its sources would enable it to meet its operations and maintenance (O&M). Therefore, the viability of WSPs can be measured by the percentage of O&M coverage. A WSP with the ability to provide 100 percent O&M, for example, is considered to be more viable and hence financially sustainable.

According to WASREB Water Sector Performance Report of 2013, very large WSPs were more likely to be more viable than WSPs with fewer connections. To determine financial sustainability of WSPs, indicators

related to non-revenue water, revenue collection efficiency, metering ratio, billing ratio, and O&M cost recovery are used. For instance, bill payment through mobile phones has facilitated the payment process and hence revenue collection. Since 2009, Kenya's largest mobile phone company has extended its mobile phone bank transaction payment system (M-Pesa) for use in paying water utility bills. As of 2012, more than 12 million Kenyans and 85 percent of the urban population use mobile phones for bank transactions. When water utilities allowed payment through the M-Pesa, it was noted that within two months, half of their customers switched to the mobile phone payment system.

Suffice it to say, in order for service providers to be viable, the commercialization of their services is inevitable. However, when service providers charge all customers at their cost-reflective tariffs, affordability of the services to pro-poor households could be a challenge. To ensure access for the pro-poor, the regulatory body sets tariffs using block systems, which categorize consumers into their level of consumption. In addition, funding for measures aimed at improving access to water and sanitation in areas underserved (especially areas inhabited by the poor) is provided by the Water Services Trust Fund (WSTF) as a subsidy to the service provider. The WSTF receives funds from the GoK and from donor agencies, and directs them to the poorest locations throughout the country (identified in collaboration with WSBs). These measures mainstream the Dublin Principle No. 3, which recognizes water as an economic and social good. However, the main constraint to this arrangement is the availability and timely release of funds to execute the planned activities.

4.4 KEY ISSUES AND CONSTRAINTS IMPACTING EFFECTIVE PROVISION OF WATER SUPPLY & SANITATION SERVICES

4.4.1 LOW CAPACITY TO PROVIDE WATER SUPPLY & SANITATION SERVICES

Adequate provision of water supply and sanitation services to the target population is very critical in boosting various economic developments of community, hence reducing poverty. Despite the efforts of the WSPs, the services have yet to be accessed by the majority, and so far the coverage is still too low to meet the demand. According to WASREB Water Sector Performance Report of 2013, only 53 percent of urban areas, 50 percent of rural areas, and 51 percent of all households in the country have access to safe water. With regard to sanitation services, low coverage is also evident where access to adequate sanitation is 69 percent. This implies that the expansion of water supply and sanitation coverage is of great importance. Increasing coverage would enable communities to access the services at the optimal level. In addition, this would economically stabilize the water utilities, as it is clear that increased service coverage would boost collection revenue and enable the utility to meet its operations and maintenance costs, as well as to engage on capital investment.

4.4.2 HIGH NON-REVENUE WATER/UNACCOUNTED-FOR WATER

Non-revenue water (NRW) is water that has been produced and is "lost" before it reaches the customer. Losses can be real losses (through leaks, sometimes also referred to as physical losses) or apparent losses (for example, theft or metering inaccuracies). NRW is a major challenge facing most of the WSPs in Kenya. In its Water Sector Performance Report of 2013, WASREB noted that the average NRW in urban areas was 44 percent in 2011–2012, and 45 percent in the previous two years. In rural areas, the average NRW was estimated at a rate of 57 percent in 2011–2012, 53 percent in 2010–2011, and 61 percent in 2009–2010. In Kenya, the acceptable level of NRW is between 20 and 25 percent, while NRW above 25 percent is not acceptable. This indicates that the majority of WSPs in Kenya operate within the unacceptable level of NRW. Table 8 below indicates NRW for some urban WSPs within the Lake Victoria Basin for the past three years.

Table 8: NRW Level for Some WSPs in Kenya's Lake Victoria Basin from 2009–2010 to 2011–2012

WSP	2009–2010 (%)	2010–2011 (%)	2011–2012 (%)
Nzoia	61	52	46
Eldoret	25	27	29
Kericho	46	36	35
Kisumu	50	49	50
Sibo	64	60	56
Kapsabet Nandi	63	63	51
Mikutra	60	55	38
South Nyanza	39	46	45
Nyanas	66	59	54

Source: WASREB, 2011, 2012, and 2013

WASREB (2013) reported that 97 percent of all WSPs had an unacceptably high level of water loss, and that roughly 25 percent of all these WSPs lose water due to commercial and physical losses that they actually can recover, and expand their systems and sell to more customers. It is clear from this data that NRW leads to high loss of revenues for WSPs. For instance, WASREB (2013) estimated that at a total billing of 600 million Kenyan shillings for rural WSPs and 12.6 million for urban WSPs and average NRW levels of 57 percent and 44 percent, respectively, the total amount lost in 2011–2012 can be estimated at 10.6 billion shillings—which is slightly more than one-third of the development budget of the water service sector. In addition to the NRW recorded, 40 percent is a result of commercial losses. It is therefore important for WSPs to strategize so as to attain the set economic NRW (i.e., the acceptable level of 20 to 25 percent) by putting in place systems at the production, distribution, and consumer levels. This would enable WSPs not only to increase their revenues so as to be more financially viable, but also to increase service coverage.

4.4.3 HOURS OF SUPPLY

This refers to the average number of hours per day that a utility provides water to its customers. It is a measure of customer satisfaction and willingness to pay. The hours of supply have a direct bearing on the financial sustainability of the WSPs, as the higher the hours of supply, the higher the consumption and higher the revenue earned by the utility. In Kenya, the hours of supply for urban WSPs in 2010–2011 and 2011–2012 stood at 15 and 13 hours, respectively. In rural areas, the hours of supply in 2010–2011 and 2011–2012 was recorded as 12 and 16 hours, respectively.

In Kenya, WSPs are said to perform better if they can supply their services within the range of 21 to 24 hours for large and very large WSPs, and 17 to 24 hours for medium and small WSPs. However, the acceptable level is 16 to 20 hours for very large and large utilities, and 12 to 16 hours for medium and small WSPs. This implies that the hours of supply at the national level are not encouraging. For WSPs within the Lake Victoria Basin, there are some WSPs performing better in terms of hours of supply (e.g., Kisumu, Nzoia, and

Kericho), while others (such as Eldoret, South Nyanza, Mikutra, and Kapsabet Nandi) need to seriously address this issue in order to increase the hours of supply to at least the acceptable level to satisfy customer demand and increase revenues. Table 9 indicates the hours of supply for some WSPs within the Lake Victoria Basin.

Table 9: Hours of Supply of Water Services for Some WSPs in the Lake Victoria Basin for the Past Three Years

WSP	2009–2010	2010–2011	2011–2012
Nzoia	21	22	22
Eldoret	20	16	16
Kericho	23	23	23
Kisumu	24	24	23
Sibo	11	11	16
Kapsabet Nandi	6	6	6
Mikutra	3	1	7
South Nyanza	19	9	11
Nyanas	5	5	not determined (n.d.)

Source: WASREB, 2011, 2012, and 2013

4.4.4 METERING RATIO

Metering ratio refers to the number of connections with operational meters expressed as percentage of the total number of active water connections. Metering generally allows WSPs to charge consumers according to exactly what they have consumed and not otherwise. By charging the customers exactly what they have consumed, WSPs are avoiding NRW resulting from commercial losses. The use of a metering system is therefore considered a management tool, as it assists management in knowing exactly the amount of water sold to a customer, compared with what was produced, and hence the amount of revenue earned.

The average metering ratio in urban WSPs improved from 82 percent in 2009–2010 to 87 percent in 2010–2011, while in 2011–2012 the ratio dropped to 79 percent. For rural WSPs, the metering ratio improved from 58 percent in 2009–2010 to 72 percent in 2010–2011, then dropped to 68 percent in 2011–2012. The sector benchmark for this is 100 percent. This implies that the metering ratio is still a national challenge, as only 28 percent of WSPs were within the acceptable level of 95 to 99 percent. WSPs within the Lake Victoria Basin (Eldoret, Kericho, and Kisumu) attained the sector benchmark of 100 percent (see Table 10 below).

Table 10: Percentage of Metering Ratio for Some WSPs in the Lake Victoria Basin from 2009–2010 to 2011–2012

WSP	2009–2010 (%)	2010–2011 (%)	2011–2012 (%)
Nzoia	64	72	81
Eldoret	100	100	100
Kericho	100	100	100
Kisumu	100	100	n.c.d.
Sibo	0	82	81
Kapsabet Nandi	26	26	43
Mikutra	52	52	63
South Nyanza	75	71	73
Nyanas	75	53	68

Source: WASREB, 2011, 2012, and 2013

It is clear from the above data that metering systems need to be improved to attain the sector benchmark and to allow WSPs to control NRW resulting from both apparent and real losses. WSPs should also consider the use of bulk meters to measure the water balance at the production, distribution, and consumer points. The importance of intensifying this metering system is to allow proper calculation of NRW instead of just using estimates from the pump capacity at the production plant. In addition, meter reading efficiency is also important in achieving accurate data, which would assist WSPs in making appropriate decisions and thus taking appropriate measures.

4.4.5 REVENUE COLLECTION EFFICIENCY

Revenue collection efficiency is defined as the total amount collected by a WSP compared with the total amount billed in a given period. High efficiency in revenue collection explains how the WSP is effective in revenue management and in ensuring availability of financial resources for various utility activities. High collection efficiency also indicates proper billing and customers' willingness to pay, which is an indicator of customer satisfaction.

The average revenue collection efficiency for urban WSPs improved from 82 percent in 2009–2010 to 84 percent in 2010–2011. In 2011–2012, the ratio was 89 percent, which is within the acceptable range of 85 to 90 percent. For rural WSPs, revenue collection efficiency improved from 82 percent in 2009–2010 to 87 percent in 2010–2011, before dropping to the unacceptable level of 84 percent in 2011–2012. From a selection of WSPs within the Lake Victoria Basin, the majority of WSPs are performing better (the ratio is greater than 90 percent). However, some WSPs are still within the unacceptable level, including Sibo (in 2011–2012) and Kapsabet Nandi (see Table 11 below).

Table 11: Revenue Collection Efficiency for Some WSPs in Lake Victoria Basin from 2009–2010 to 2011–2012

WSP	2009–2010 (%)	2010–2011 (%)	2011–2012 (%)
Nzoia	87	100	97
Eldoret	91	102	97
Kericho	95	96	95
Kisumu	94	94	96
Sibo	98	89	81
Kapsabet Nandi	68	68	68
Mikutra	77	85	89
South Nyanza	77	96	95
Nyanas	77	84	95

Source: WASREB, 2011, 2012, and 2013

However, it was noted by the WASREB Water Sector Performance Report of 2013 that WSPs are facing a problem of not being able to separate between payments for current billing and arrears collected. Due to this problem, some WSPs reported revenue collection efficiency of more than 100 percent. In addition, collection efficiency is highly subjective to the billing system used. Proper billing systems have a high influence on the amount to be collected. It is therefore important for WSPs to put in place effective and efficient billing systems that would not only clearly identify the arrears, but also eliminate billing errors.

4.4.6 OPERATION AND MAINTENANCE (O&M) COST COVERAGE

Operation and maintenance cost coverage measures the extent to which the WSPs' total operating revenues cover its O&M costs. It therefore refers to total operating revenues expressed as a percentage of total operation and maintenance. This implies that WSPs will be considered financially viable if they are able to meet their O&M costs (i.e., if the cost coverage is equal or greater than 150 percent). However, according to WASREB (2011, 2012, and 2013), the acceptable level of O&M cost coverage ranges between 100 and 149 percent, while the unacceptable level is when the cost coverage is less than 100 percent.

The average O&M cost coverage declined from 133 percent in 2009–2010 to 131 percent in 2010–2011 to 109 percent in 2011–2012. During the first two years, the proportion of WSPs' ability to cover their O&M cost coverage increased from 40 percent in 2009–2010 to 57 percent in 2010–2011, but decreased to less than 40 percent in 2011–2012. For some WSPs within the Lake Victoria Basin (Nzoia, Eldoret, Kericho, and Kisumu), the O&M cost coverage has been within the acceptable level, while the rest are within the unacceptable level and thus jeopardize their financial sustainability (see Table 12). However, the WASREB Water Sector Performance report of 2013 noted that most WSPs that have unacceptable levels of O&M cost

coverage are operating with tariffs that are not cost-reflective. The situation is more serious for medium and small WSPs, which rely on unpredictable and unsustainable subsidies to finance their operations. It is therefore important for WSPs to ensure that they operate with cost-reflective tariffs; otherwise, their sustainability will continue to be a dilemma. In addition, poor performance of WSPs on O&M costs calls for strict control of the costs and boosted revenues by increasing production and sales (i.e. under-reduced NRW). With these efforts in place, it is obvious that WSPs could break even and meet their O&M costs, and also achieve good financial position for assets development that can increase service coverage.

Table 12: Operation and Maintenance Cost Coverage for Some WSPs in the Lake Victoria Basin from 2009–2010 to 2011–2012

WSP	2009–2010 (%)	2010–2011 (%)	2011–2012 (%)
Nzoia	104	109	123
Eldoret	102	111	107
Kericho	129	132	104
Kisumu	121	130	103
Sibo	69	70	80
Kapsabet Nandi	38	69	103
Mikutra	17	13	9
South Nyanza	54	51	46
Nyanas	36	42	36

Source: WASREB, 2011, 2012 and 2013

4.4.7 STAFF PRODUCTIVITY (STAFF PER 1000 CONNECTIONS)

This refers to the number of staff a utility (WSP) utilizes for every 1,000 connections. It implies that high efficiency in staff utilization is attained when the ratio is low, and this is the desirable practice. The acceptable staff productivity as per the WASREB Water Sector Performance report of 2013 is 8 to 5 per 1,000 connections for very large and large WSPs; 11 to 7 per 1,000 connections for medium and small WSPs with fewer than three towns; and 14 to 9 per 1,000 connections for medium and small WSPs with more than three towns. Staff productivity is affected in part by connection practices (single or shared); skills mix; outsourcing of staff functions; and the number of water supply schemes. It also depends on whether a utility provides both water and sewerage services.

The average staff productivity for urban WSPs slightly improved from 8 in 2009–2010 to 7 in 2010–2011 and 2011–2012. For rural WSPs, the average staff productivity continued to improve marginally from 11 in 2009–2010 to 10 in 2010–2011 and 9 in 2011–2012. For WSPs within the Lake Victoria North and South Water Services Boards. Eldoret (which is categorized as very large utility) has for a period of three years maintained staff productivity of 4, which is classified as the best level. Nzoia and Kisumu have managed to have staff productivity between 5 and 8, which is an acceptable level (see Table 13).

Table 13: Staff Productivity per 1,000 Connections for Some WSPs in Lake Victoria Basin from 2009–2010 to 2011–2012

WSP	2009–2010	2010–2011	2011–2012
Nzoia	8	7	8
Eldoret	4	4	4
Kericho	13	11	10
Kisumu	8	7	6
Sibo	17	22	18
Kapsabet Nandi	23	23	9
Mikutra	30	44	17
South Nyanza	8	8	12
Nyanas	20	20	8

Source: WASREB, 2011, 2012, and 2013

It is clear from the above data that staff productivity remains a challenge to some WSPs. The factors contributing to this include inadequate skills, equipment, and facilities for available staff to execute their duties. It is therefore important for WSPs to put in place effective systems to enhance high staff productivity as well as better performance of the utility and customer satisfaction.

4.4.8 DATA RELIABILITY

With the proliferation of information and communication technology in the world, the collection, processing, archiving, and dissemination of data and information has become more efficient than ever before. It is now expected that WSPs will put more emphasis on the reliability and validity of data to enhance scientific-oriented decision making. Despite the fact that WSPs have invested in this, some discrepancies were noted during review, and they seem to be among the concerns affecting the utilities. For instance, despite the steady increase of the annual data submission requirement from (from 87 percent in 2009–2010 to 99 percent in 2011–2012), data reliability and validity remained a major challenge to most WSPs (WASREB, 2013). For instance, WASREB (2013) questioned the reliability and validity of data on sanitation coverage, as most WSPs have no reliable data on access to on-site sanitation facilities. The reliability of data submitted on metering and hours of supply was also questionable. This situation calls for concerted efforts to improve data reliability and validity to enhance scientific decision making for effective and efficient provision of water supply and sanitation services.

4.4.9 TESTING OF WATER QUALITY

One of the key performance indicators for WSPs is water quality, in terms of chlorine residuals and bacteriological water quality tests. According to WASREB (2013), bacteriological water quality in urban areas was 72 percent in 2011–2012 and 81 percent in 2010–2011. In rural areas, bacteriological water quality tests were 60 percent in 2011–2012 and 80 percent in 2010–2011. The set sector benchmark for good water quality in terms of chlorine and bacteriological tests is greater than 95 percent, while the acceptable level is between

90 and 95 percent. The current situation therefore indicates inadequate water quality in WSPs, which puts the health of their consumers at risk. Provision of water quality testing facilities is very critical, and regulatory bodies should ensure that WSPs have functioning water quality laboratories to protect the health of consumers.

4.4.10 INADEQUACY OF RESOURCES (FINANCIAL, HUMAN, PHYSICAL)

Inadequate funds to recruit and retain professionals is a challenge facing many WSPs and WSBs in providing adequate WSS services. Inadequate financial resources result in the inadequacy of facilities and other physical resources needed to enable smooth implementation of planned activities. Without adequate financial resources, the provision of required services is impaired. Strategizing how to obtain adequate resources is of great importance for the provision of services.

4.4.11 POLLUTION

Pollution is considered a key challenge to WSPs, due to various human activities that pollute water bodies and water catchment areas. Effective pollution control measures are urgently needed in order to enhance the water quality.

4.4.12 RAPID POPULATION GROWTH

Another significant challenge to WSPs is the high demand of water supply services. This situation results from a high population growth rate, which currently stands at 2.7 percent per annum. Another factor accelerating the problem is rapid urbanization. Rapid population growth and urbanization significantly affect the attainment of targets set for providing water services. The target of 80 percent for urban water supply coverage by 2015 seems infeasible when looking at the current trend. Concerted efforts are required from all stakeholders to ensure that even if the 2015 targets are not attained, the gap should not be very significant.

4.4.13 OTHER KEY ISSUES

Other issues that can be considered as limiting factors to effective and efficient provision of water supply and sanitation service include:

1. Poor enforcement of laws, bylaws, and regulations by WSPs, WSBs, and regulators (WASREB). For instance, the WASREB Water Sector Performance Report of 2013 reported that less than 50 percent of WSPs were operating with unapproved tariffs. It was also reported that even when tariff adjustments have been approved, non-application of the tariff and non-compliance with tariff conditions exist.
2. Inadequate use of metering as a tool not only for ensuring that customers are charged according to the amount of water consumed, but also to aid in management.

4.5 SWOT ANALYSIS FOR WASH SERVICE PROVISION IN KENYA

To summarize the status of water resources management in Kenya, a SWOT analysis is provided in Table 14. Strengths and opportunities that can be utilized for improvement of the service are identified; conversely, the weaknesses and threats to address are also given.

Table 14: SWOT Analysis for WASH Service Provision in Kenya

STRENGTHS	WEAKNESSES
• Existence of water service providers with committed staff • Existence of water user groups, committees, and associations, which can assist in managing water systems • Existence of legal entities for provision of water and sanitation services • Presence of policies, laws, rules, and regulations responsible for WASH services	• Low level of WASH service provision • Inadequate system for data and information management • Weak monitoring and evaluation system • Inadequate human, financial, and physical resources for adequate service provision • Weak enforcement of laws, regulations, and bylaws • Inability of WSPs to meet minimum services as stipulated in service provision agreements • Inadequate facility for water quality testing • Weak community management systems
OPPORTUNITIES	**THREATS**
• Growing number of interested development partners in WASH • Growing support from the government of Kenya • Presence of various techniques for rainwater harvesting • Decentralized government systems	• High cost recovery • High non-revenue water/unaccounted-for water • Inadequate water quality measures • Pollution of water bodies • Unclear policies on pro-poor approach to water and sanitation services • Weak governance in WSPs, WSBs, and WASREB • Low viability of WSBs due to tariff structure that do not cover O&M • Vandalism • Poor urban planning

5.0 WATER SUPPLY AND SANITATION SITUATION IN RWANDA

5.1 ASSESSMENT OF WATER SUPPLY AND SANITATION COVERAGE

WSS affects broad areas of human life. The provision of adequate WSS services plays a crucial role in preventive health care, and is more generally a prerequisite and indicator for socioeconomic development. Access to drinking water is also a basic amenity, ranked among the highest priority public services by Rwanda's population. Closely interlinked with other development sectors, the provision of adequate WSS services is therefore a core element of development strategies and indicators, including Rwanda's Vision 2020 and Economic Development and Poverty Reduction Strategy (EDPRS), as well as the international Millennium Development Goals (MDGs). It is well known that several MDGs, not just the targets directly related to WSS, are linked to the improvement of water supply and sanitary conditions. Providing access to at least basic water supply and sanitation services is in the public interest and should be affordable for the entire population. While the primary responsibility for WSS service provision rests with districts/local governments and the EWSA, central government also has an obligation and interest to make sure that these institutions can comply with these responsibilities. Rwanda also has to confront the growing regional population and increasing pressures on shared water resources. Closer ties with neighboring countries are developing, with more agreements and commitments on the management of water sources.

Rwanda has committed itself to reaching very ambitious targets in water supply and sanitation, with the vision to attain 100 percent service coverage by 2020. The importance of adequate water supply and sanitation services as drivers of social and economic development, poverty reduction, and public health is fully acknowledged in Rwanda's flagship policy documents and political goals.

5.1.1 WATER SUPPLY POSITION

THE OVERALL WATER SUPPLY STATUS

Improved water supply in Rwanda is defined as *"access to safe water supply."* Access is further defined as the percentage of people with access to an improved source of drinking water within 500 meters in rural areas and 200 meters in urban areas. This access should be reliable and affordable, and provide an adequate quantity (minimum of 20 liters per person per day) within reasonable time. Improved water sources are piped water, protected wells, and springs, as well as rainwater collection. Water quality is assumed to be acceptable for improved water sources, but shall be tested for compliance with national and WHO standards for potable water.

In 2010–2011, data on access to improved sources of drinking water from the third Integrated Household Living Conditions Survey (EICV 3) and the Demographic and Health Survey (DHS 2010) suggest figures of 74.2 percent countrywide, 72.1 percent rural, and 86.4 percent urban. This represents a 4.2 percent increase from the national average of 70 percent (EICV 2 2010–2011 report). Based on a physical inventory

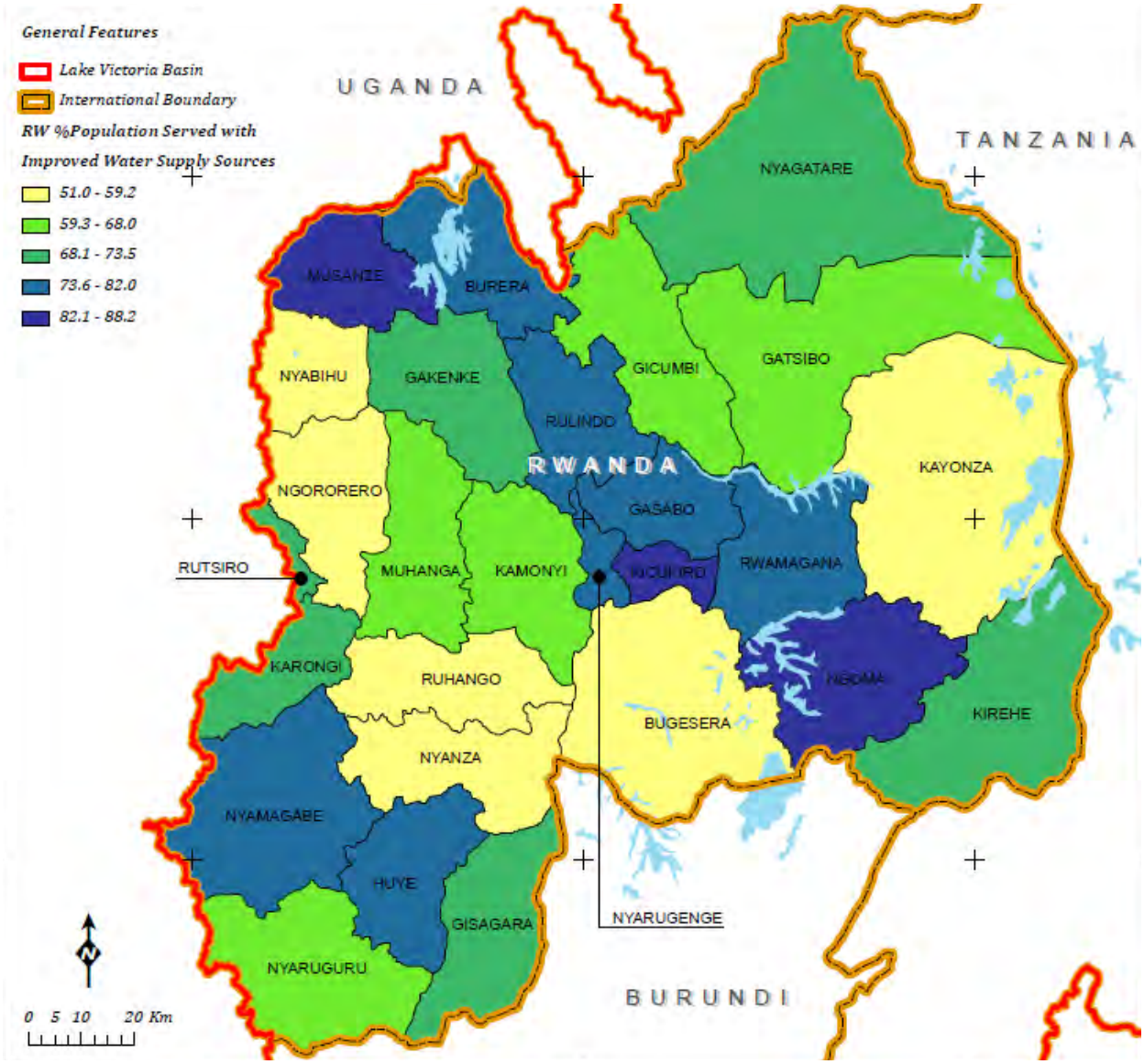
assessment of water supply in both rural and urban areas conducted in May 2012, the sector's management information system (MIS) indicated that access (likely with continued functionality) was at 71 percent in the country. While this definition of access is in line with the usual definitions used for MDG monitoring, it should be noted that these access figures do not necessarily imply regular functionality and compliance with water quality standards.

Based on the results of the EICV 3, roughly 25.7 percent of Rwandans use piped water, but only 5.9 percent have access to it within their house or plot (27.8 percent in urban settings; 2.1 percent in rural settings). On average, household members in Rwanda (women and children) spend 17.4 minutes traveling to a main water source (18.1 minutes in rural settings; 13.3 minutes in urban settings), including both improved and unimproved sources. Daily per capita consumption is 13 liters per day, a figure far lower than the envisaged standard consumption of 20 liters. According to EICV 3, 69.7 percent of the Rwandan population uses protected springs; 38.1 percent use public standpipes; 25.7 percent use water piped into a dwelling compound; and 5.9 percent use some combination of the above.

THE WATER SUPPLY STATUS AND COVERAGE FOR COUNTIES WITHIN LAKE VICTORIA BASIN IN RWANDA

About 96 percent of the total number of districts in Rwanda are within the LVB. Generally, Rwanda has relatively better water supply coverage than most East African countries. The detailed water coverage situations for all of the Rwandan districts in the LVB are presented in Figure 5.

Figure 0-1: Improved Water Supply Coverage in Rwanda



5.1.2 SANITATION POSITION

THE OVERALL WATER SANITATION STATUS

Improved sanitation in Rwanda is also defined based on "access to basic sanitation." Access is further defined as the percentage of people with access to a private sanitation facility of one of the following types: flush or pour-flush to piped sewer system; septic tank or pit latrine; VIP latrine; pit latrine with slab; composting toilet; or other ecological sanitation (ecosan) toilets.

According to the 1997 Kampala Declaration on Sanitation, sanitation encompasses "the isolation/management of excreta from the environment; maintenance of personal, domestic, and food hygiene; [and] safe disposal of solid and liquid wastes; maintaining a safe drinking-water chain and vector

control." Sanitation as part of WSS services is understood as the collection, transport, treatment, and disposal or reuse of human excreta and domestic and industrial waste, both liquid and solid, as well as stormwater.

Open defecation has practically been eradicated, and most Rwandan households have already financed and built on-site private sanitation premises, though only about half comply with the international standard definitions of an improved sanitation facility. However, based on Rwandan definition, the country's improved sanitation stands at 75 percent (see Figure 5-2). Nevertheless, very few Rwandan households have installed flush toilets (just 1.7 percent). The prevailing practice remains that water is used for cooking and washing (gray water, discharged mostly on surface), while the excreta are disposed with waterless latrines (92.2 percent). This is a rational solution considering the scarcity of the average water supply.

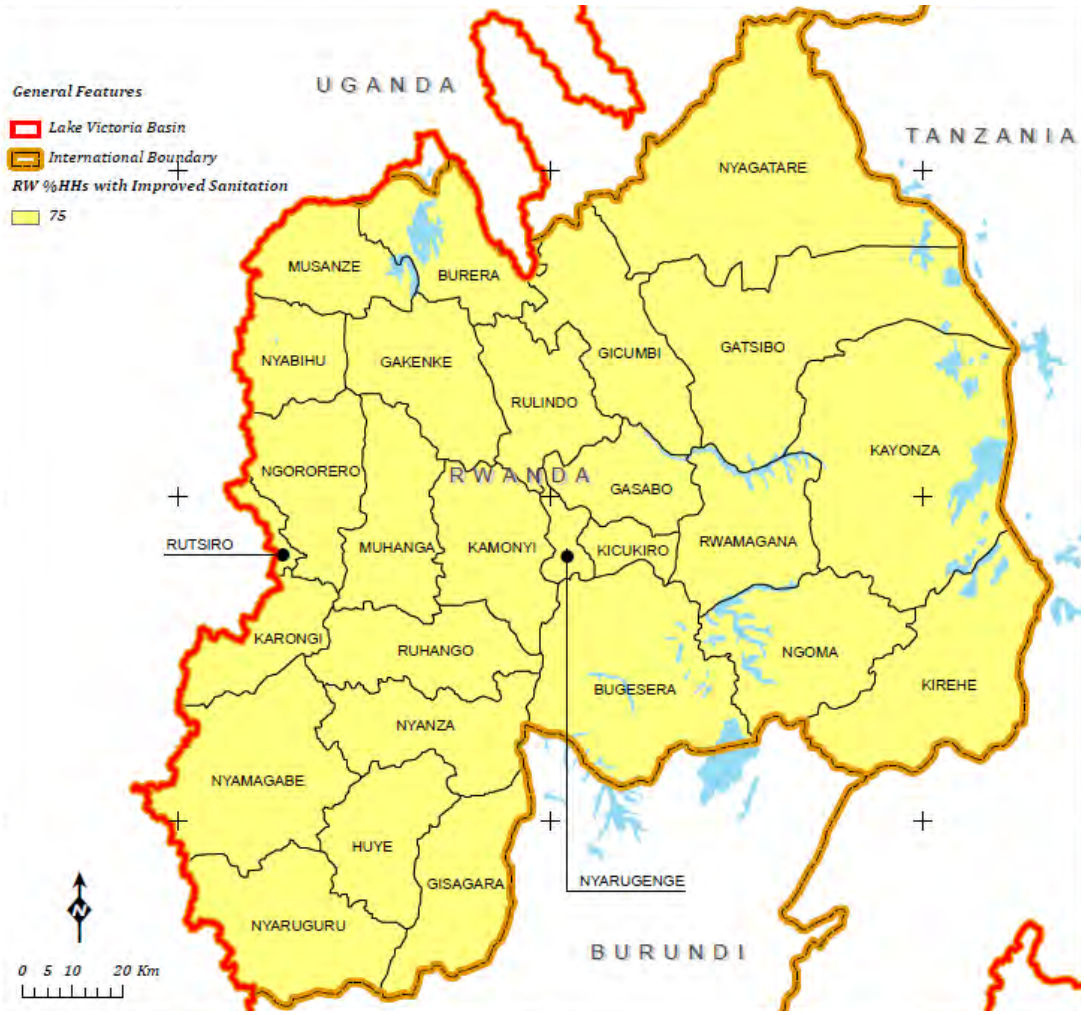


Figure 0-2: Improved Sanitation Coverage in Rwanda

Rwanda has not yet invested sufficiently in collective (waterborne) sanitation systems for densely populated urban areas, except in three small sewerage systems in Kigali that provide for about 700 households. Major hotels, hospitals, and some industries have installed their own (pre-) treatment systems. A conventional sewerage and treatment system for Kigali's center is in the planning process.

Rwanda's schools have benefited since 2000 from the Hygiène et Assainissement en Milieu Scolaire (School Sanitation) program, which focuses on behavioral changes in hygiene practice, including the consideration of menstrual hygiene needs of girls and women. (Based on the 2010 Water and Sanitation Policy document).

THE SANITATION STATUS AND COVERAGE FOR DISTRICTS WITHIN LAKE VICTORIA BASIN IN RWANDA

According to the 2013 EICV household survey conducted by the National Institute of Statistics, the overall access to basic sanitation in Rwanda is 75 percent. The information obtained from the National Institute of Statistics highlights the efforts made by the Government of Rwanda to stop open defecation, which places it at a different level compared with other East Africa countries.

Note: There was no detailed data available at the district level to illustrate the uniformity of improved sanitation.

5.2 LAWS, POLICIES, REGULATIONS, STANDARDS, AND/OR FRAMEWORKS RELATED TO THE PROVISION OF WATER AND SANITATION SERVICES

5.2.1 POLICY FRAMEWORK

NATIONAL POLICY AND STRATEGY FOR WATER SUPPLY AND SANITATION SERVICES (2010)

Rwanda had a Water and Sanitation Policy of 2004. The overall objective for this sector policy was to enhance the living conditions of the public through optimal use of water resources and access to all to water and sanitation services. As significant institutional reforms changed the sector context, this policy document has been updated; in 2010, a new policy version was launched, the National Policy and Strategy for Water Supply and Sanitation Services. This policy only focuses on water and sanitation services, not water resources. The current policy defines sanitation in a wider context by including solid waste and stormwater management. Some of the objectives addressed in this policy are discussed as follows:

- **Raise rural water supply coverage to 85 percent by 2012 and 100 percent by 2020**

Here the policy aims to raise rural water supply coverage by assisting the districts in planning, designing, financing, and implementing infrastructure projects (Section 4.1). To achieve this objective, the policy requires the implementation of an ambitious, decentralized rural water supply and sanitation program based on harmonized procedures (Section 4.1.1). The districts take a lead in planning and implementation, as well as in collecting and transmitting data needed for progress monitoring. The transfer of implementation to districts (decentralized implementation) is supported by strengthening decentralized implementation capacities through technical support and capacity building (Section 4.1.4). The policy also requires the establishment of harmonizing financial mechanisms in which the water and sanitation fund (WSF) is to be established for pooled funding for district implementation (Section 4.1.2). As such, the WSF channels most water supply and sanitation financing from different sources. The WSF has a close link to implementation with the appropriate mechanism for project appraisal, technical support, and compliance monitoring. Districts, as the project owners, are expected to use their regular planning, procurement, contract management, financial, and reporting procedures for implementation and monitoring. The choice of affordable and appropriate technology for rural areas is a prerequisite in order to address sustainability (Section 4.1.6). For instance, the use of solar-powered instead of diesel-powered pumping has to be piloted in collaboration with the private sector. Equally, rainwater harvesting can be considered a solution for areas that could only be serviced through high-cost pumping. Additionally, the policy promotes rainwater catchment systems as complementary sources of water for both households and public buildings.

The policy promotes household connections in order to improve service levels and increase water consumption while improving the financial viability of water supply schemes (Section 4.1.7). This is because

there are currently few household connections, a situation that leads to the tolerance of poor hygiene conditions, as well as a low revenue base. Construction of private connections is to be encouraged through one-time subsidies in order to make the connection costs affordable. The policy also provides for private-sector investment in new water supply and sanitation infrastructure (Section 4.1.8). As such, the water and sanitation sector has to provide low-interest loans through output-based aid or co-financing.

- **Raise household sanitation coverage to 65 percent by 2012 and 100 percent by 2020, and promote hygiene and behavioral change**

The policy priority is to create demand and leverage private investments for affordable and sustainable household sanitation. The policy clarifies that individual on-site sanitation systems have to sustain the majority. Thus, modern individual sanitation systems have to be designed, implemented, and operated with the intention of providing affordable and stable services. The policy calls for establishing a cooperative framework for comprehensive inter-sectoral programs in order to promote household sanitation and behavioral change (Section 4.4.1). Noting that sanitary ownership and behavioral change are critical steps for sanitation and hygiene sustainability, the policy requires the government to play a promotional and facilitative role while individual households remain the main investor. The policy mechanism tools (promotion and facilitation) for the government to address sanitation and hygiene sustainability are listed below:

1. Awareness campaigns related to visible and non-visible health impacts of poor sanitation in order to effect behavioral change
2. Marketing the sanitation offer, thus targeting people's expectations and preferences, such as comfort, status, health benefits, value, or safety
3. Education and training in schools and universities
4. Provision of limited-material incentives or subsidies in order to accelerate the improvement, construction, or replacement of sanitary facilities
5. Using the provision of water supply services as an incentive and opportunity to improve sanitation facilities.

The policy also underlines private-sector capacity development (Section 4.4.3) as a counterpart and contributor for program sustainability. Research and development for affordable technology in hygiene and sanitation is also emphasized (Section 4.4.4).

In addition to the above objectives, the policy details the following regarding sanitation and hygiene:

- **Implement improved sanitation for schools, health facilities, and other public institutions and locations**

On one hand, public places and institutions are always at risk of spreading communicable diseases, especially those linked to poor sanitation and hygiene. But on the other hand, public places can demonstrate exemplary sanitation and hygiene function in order to point the public in a positive direction. Based on this fact, the policy aims to implement improved sanitation for schools, health facilities, and other public institutions and locations (Section 4.5). Well-built public toilets in public areas will help promote public health and lower disease risk.

- **Develop safe, well-regulated, and affordable off-site sanitation services (sewerage and sludge collection, treatment, and reuse/disposal) for densely populated areas**

To fulfill this requirement, the government is further supposed to create a viable environment by establishing effective regulatory and institutional framework for collective sewerage and sludge management (Section 4.6.1). Thus, review and harmonization of the existing laws, standards, and regulations is paramount. Equally, the policy supports promoting viable, low-cost approaches for collective sewerage schemes (Section 4.6.2). Linked to this are the piloting and replicating of innovative technologies for wastewater management, including wastewater reuse for irrigation as well as byproducts recycling, such as the application of sludge in agriculture. Based on the "user-pay principle," the policy provides for the operating- and service-cost recovery of wastewater management (Section 4.6.3). Notably, it is obvious that the volume of waste generation from industries is high compared with households. Equally, industries are financially at a higher scale than households. Due to this, the policy intends to implement the "polluter-pay principle" with the consideration of the nature and volume of waste generated. Thus, the tariffs set have to take this into account.

- **Implement integrated solid-waste management in ways that protect human health and the environment**

Based on the available concepts and technologies, solid-waste management is to be implemented within the integrated framework (Section 4.8). This will involve all stakeholders, including the public, NGOs, the private sector, and the government. The policy priority is on waste minimization, but with the consideration of waste differentiation between recyclable and reusable wastes (Section 4.8.1). As one of the mechanisms to diffuse this approach, the policy highlights awareness initiatives.

POLICY INSTRUMENTS FOR WATER SUPPLY AND SANITATION

Referring again to the National Policy and Strategy for Water Supply and Sanitation (2010), the following are the noted policy implementation tools:

1. Informative: Technical Facilitation Policy Instruments

Section 4.6.1 highlights developing the range of affordable water supply technology for rural areas. As a tool for facilitating information diffusion on related water supply technology, the policy requires the government to develop a technical implementation manual guide. This guide is an important tool, as it facilitates diffusion of technology to the community and contains planning tools, design, and quality standards for the range of technologies, to mention a few. Another technical facilitation instrument is the guidelines on required minimum service level for the Water Service Provision of 2009. These guidelines set standards on the provision of water services, and provide conditions and procedures. At a minimum required service level, the guidelines set the basis on which the quality of service provided to customers can be assessed. Thus, the guidelines provide the indicators of good quality as well as the incentive for the water service to improve its performance. Generally, the main objectives of these guidelines are as follows:

- Ensure that water supplied is always of good quality for human consumption, and that supply pressure to customers is adequate
- Improve reliability through minimizing and managing unnecessary supply interruptions
- Ensure that water bills are accurate and are received in a timely manner
- Protect consumers against any misconduct from water service providers and continually promote their interests

The Portable Water Specification Standards of 2011 are a regulatory and technical policy instrument to facilitate the diffusion of water supply and sanitation schemes. The standards prescribe the quality requirements and method of sampling and testing potable water used at a domestic level and for containerized purposes. These standards apply to water distributed in the food industry for domestic and catering purposes, as well as potable water. They also address standards on physical, chemical, microbiological, and radioactive requirement characteristics. These standards provide the requirements to be met for safe consumption.

2. Economic Instruments

Though not clearly elaborated, Section 4.1.7 of the policy addresses the promotion of rural household water connections in order to improve service level. The policy supports encouraging construction of private connections at an affordable cost by introducing one-time subsidies. Similarly, Section 4.3.3 reveals that household connections can be encouraged through targeted subsidy schemes, such as social connections programs. Further, Section 4.1.8 highlights encouraging private operators to invest in new water supply infrastructure. The policy opts to leverage private-sector investments by providing low-interest loans through output-based aid. In a similar manner, Section 4.4.2 of the policy, targeting raising sanitation coverage by enhancing the demand for sanitation, introduces the issue of subsidies as a means to accelerate improvement on construction or replacement of sanitary material. In a similar provision, the policy calls for using water supply services as an incentive and opportunity to improve sanitation facilities.

3. Informative Instruments

Section 4.4.2 provides for raising sanitation coverage by enhancing the demand for sanitation. Among the measures provided are awareness campaigns related to the visible and non-visible health impacts of poor sanitation with the general goal of behavioral change. Equally, another approach is education and training in schools and universities.

4. Regulatory Instruments

The aim of the Regulations on Minimum Required Service Levels for Water Service Provisions (2013) is to determine the minimum required service level for water service provision as per the main guideline objectives above.

The regulation articulates various provisions aimed at water supply service provisions. First are the criteria for determining the quality services (Article 4). The list of criteria includes coverage of the service area; continuity of service; water quality; water pressure; coverage of service zone; service hours; metering; and billing; as well as the degree of responsiveness of service providers to customers. Article 5 provides for the performance of water service providers in relation to these regulations. Therefore, a service provider is supposed to operate within the provided regulations.

To safeguard the quality of water provided to the consumer, the regulations state that water service providers shall ensure that the water supplied to the consumer is of good quality and fit for human consumption. To afford this, water service providers have to conduct regular water quality monitoring through sampling, testing, and analyzing (Articles 6 to 9). Equally, the regulations require service providers to ensure that the customer is satisfied by verifying that the minimum daily quantity of water supplied is not less than 40 to 20 liters per capita per day (Article 11). Article 12 provides for the water supply service coverage, which states that a service provider shall provide water service to the whole service area. Additionally, the regulations require the water service provider to increase the percentage of people accessing adequate drinking water service through individual connections to the network, public stand posts, and kiosks. The regulation also stipulates that the standard distance to access water points shall not exceed 200 meters and 500 meters for urban and rural areas, respectively. To ensure water supply reliability, the regulations require water service providers to ensure that water supply is reliable throughout the year (Article 14). Article 20 requires that water service providers have to install a water meter to every connected customer. To address enforcement, the

regulations require the regulatory authority to monitor compliance (Article 35), while Article 36 requires water service providers to comply with the regulations.

5. Directives on Minimum Requirements for Liquid-Waste Disposal and Treatment

The directives outline the modalities of providing good quality of services while managing liquid wastes. Notably, the directives do not cover hazardous liquid wastes. The directive objectives are as follows:

- Provide guidance in the disposal of liquid wastes
- Set up fundamental principles related to the provision of good services in liquid-waste management (in particular, treatment and disposal)
- Guarantee sustainable development by promoting fair competition
- Set up strategies for protecting and reducing negative effects on the environment, which are caused by poor services in liquid-waste handling

6. Regulations on Cleaning Services Provision (2012)

The Cleaning Regulations (2012) provide a framework that ensures an effective and efficient cleaning service to public premises, in order to establish a licensing framework for the provision of cleaning services. The regulations are applicable to any private company/cooperative or individuals providing cleaning services to public premises. The overall objective of these regulations is to ensure that the development of cleaning services is provided through standards on quality, reliability, affordability, sustainability, and accessibility.

7. Regulations on Decentralized Wastewater Treatment Systems (2012)

The Regulations on Decentralized Wastewater Treatment Systems aim to provide a regulatory framework for designing, installing, operating, and maintaining decentralized sewage treatment systems in order to ensure compliance with environmental laws, rules, and regulations, as well as ensuring reliability, accessibility, and affordability of service in fair competition. These regulations apply to all activities related to design, installation, operation, and maintenance of decentralized wastewater treatment systems, including wastewater treatment plants and other wastewater treatment facilities that discharge into the environment as means of effluent disposal.

8. Regulations on Water Services Licensing

The main objective of the Regulations on Water Services Licensing is to govern the licensing process and provide a direction for the provision of the licenses within the water sector. The regulations apply to:

- all types of licenses that are issued by the regulatory authority in the water sector for the purpose of production, transport, and distribution of water;
- license application procedures;
- licenses and their content; and
- procedures for granting licenses.

NATIONAL WATER RESOURCE MANAGEMENT POLICY (2011)

The National Water Resource Management Policy addresses the development in strengthening the water resources management subsector. This policy replaces the 2004 policy, and this update was needed to address the provisions stipulated in the Water Act of 2008. Note that the Water Act of 2008 addresses the most current and essential principles linked to sustainable water resources management. The government also

made various reforms in the water sector, resulting in significant change in the context of water resources management. As highlighted in the Water Resource Management Policy (2011), the policy addresses three main objectives:

- Protect, conserve, manage, and develop Rwanda's water resources in an integrated and sustainable manner
- Ensure that water resources are available in adequate quantity and quality for the socioeconomic and ecological needs of present and future generations
- Ensure that decisions affecting water resources management are made in a coordinated manner and with the participation of all stakeholders at local, national, and transboundary levels

Linked to the policy objectives are the policy statements and strategic actions. Regarding integrated water resource management, the policy requires the government to establish and operate a comprehensive water resource management institutional framework that incorporates the principle of integrated but decentralized management of water resources (Section 5.2.1). In order to implement this objective, the policy provides relevant strategic interventions that include rationalizing the establishment of a natural resources management institution; establishing and operationalizing a water inter-ministerial coordination committee; supporting and promoting the establishment and operation of water resource users associations; and decentralizing water resource management functions to districts and other appropriate local-level institutions. The policy further provides for conservation and protection of water resources, watersheds, and water quality in order to secure and enhance availability for the benefit of present and future generations (Section 5.2.2). Some of the strategic interventions needed in order to address the effectiveness of this provision are outlined below:

- Monitor and assess water resources in order to identify their spatial and temporal occurrence and distribution, with a special focus on areas vulnerable to water-related disasters, including droughts and floods
- Formulate a National Water Resources Management and Protection Master Plan
- Establish a classification system for water resources in terms of quality and quantity, strategic importance, and vulnerability to degradation
- Formulate water quality standards and legal limits for discharge of effluent into natural water courses
- Formulate a compliance and enforcement strategy for enforcing the provisions of the water law
- Formulate a strategy in order to promote water conservation techniques and technologies, including rainwater harvesting, recycling, and other appropriate technologies

The policy objectives are equally focused on water allocation (Section 5.2.3), where water resources are to be allocated based on comprehensive and integrated plans, as well as on optimum allocation principles. Linked to this is the allocation mechanism that engages efficiency of use, equity of access, and sustainability principles. In order to implement this provision, the policy requires the government to

- implement the right to water, and ensure that every household has access to adequate water resources of acceptable quality;
- formulate principles for the allocation of water resources and a strategy for each catchment;
- establish systems for enhancing water security by developing water storage and reservoir facilities;
- institute a system of permits and authorizations for water use, including abstractions and wastewater discharges; and

- develop a strategy and a time-bound plan for implementing the provisions of the water law that require water users to pay a charge for the use of raw water.

The policy extends further provisions for transboundary water resources management, in which the government intends to foster cooperation with other related Partner States in order to address equitable utilization, as well as sustainable water resource management (Section 5.2.4), within the region. This will involve the following strategic government actions:

- Formulate a shared water resources management and utilization strategy
- Establish an institutional framework that will be mandated to facilitate cooperation in the management of shared water resources; this institutional setup will be the focal point for interaction with other riparian states and regional water cooperation entities on matters pertaining to shared water resources.
- Promote direct cooperation in the use of water resources among community groups from either side of a border through multilateral or bilateral agreement mechanisms

WATER RESOURCE MANAGEMENT: SUBSECTOR STRATEGIC PLAN (2011–2015)

The Water Resource Management: Subsector Strategic Plan has been designed to translate Water Resource Management Policy objectives into desired results. The strategy provides a framework for participatory water resources governance, in which all stakeholders (including private sector, civil society, and local user communities) will play an active role.

NATIONAL ENVIRONMENTAL POLICY (2011)

The policy establishes overall and specific objectives together with fundamental principles aimed at improving the environment, both at the central and local level, in accordance with the country's current policy of decentralization and good governance. The policy sets out institutional and legal frameworks for environmental management across various sectors. It establishes the environmental management authority, as well as provincial and district or town committees, responsible for environmental management. The National Environmental Policy addresses policy statements and strategic options with respect to population and land-use management; management and utilization of natural resources; and other socioeconomic sectors, along with other necessary arrangements for policy implementation.

5.2.2 LEGISLATIVE FRAMEWORK

WATER RESOURCE LAW (2008)

The Water Resource Law defines the applicable rules for use, conservation, protection, and management of water resources. It establishes the institutional framework for roles relating to water resource management. The law establishes full responsibility for the government to develop the national policy on protection, planning, use, and management of the water resource, including the aquatic ecology. The law stipulates the guiding general principle that water resources are a public property as it states, "Water is a good belonging to the state public domain."

The law also promotes protection and conservation of water resources. Article 4 of this act stipulates that protecting and appropriately using water resources within the natural balance is of general interest and an imperative duty for all. Article 14 states that no economic activity is to be done within the water resource vicinity without declaration, prior authorization, or concession by conditions fixed by this act. Notably, the law puts a high value on allocating the water resource towards water supply to the public, with the supply of water to animals and other development functions as the second priority (Article 7). In order to acquire a water resource database, the act requires the government (ministerial order) to determine the general and permanent organization of collection, management, treatment, and exploitation networks of water resources

data (Articles 26 and 27). The data focuses on quantitative and qualitative aspects of both surface and ground water.

The act clarifies that activities predicted to modify the water resource and the surrounding environment shall not be conducted without a permit from the competent authority (Article 32). As an incentive for water resource protection, the act provides a bonus for those permit holders applying devices that minimize water pollution and consumption (Article 45). Conversely, the act stipulates for compensation or full responsibility (cost) of environmental repair for persons who become liable for water resource damage or pollution (Article 55 and 56). The act provides that domestic, animal, and industrial wastewaters must first be routed to individual treatment devices before they are discharged (Article 58). The policy also requires that any construction work and other economic activities be carried out in accordance with the Organic Law (2005) of Rwanda.

The act also details public works related to water supply and sanitation (Article 71). As the government has already decided to integrate the private sector, Article 73 provides for conferring water public service to private operators. Included in these provisions is the mechanism to recover cost emanating from production and distribution of water. Article 76 displays modes of the cost recovery of water public services. To guarantee water cleanliness and safety, Article 77 asserts drinking water standards so that any person issuing water by sale or free of charge shall ensure the respect of standards.

For transboundary water resources, the act insists upon cooperation of management and exploitation of shared water with neighboring countries (Article 80). As such, this cooperation allows for information exchange, as well as implementation of joint projects through bilateral and multilateral mechanisms.

IDENTIFIED POLICY INSTRUMENTS

In order to promote the conservation and protection of water resources, the Water Resource Law (2008) engages the following instruments:

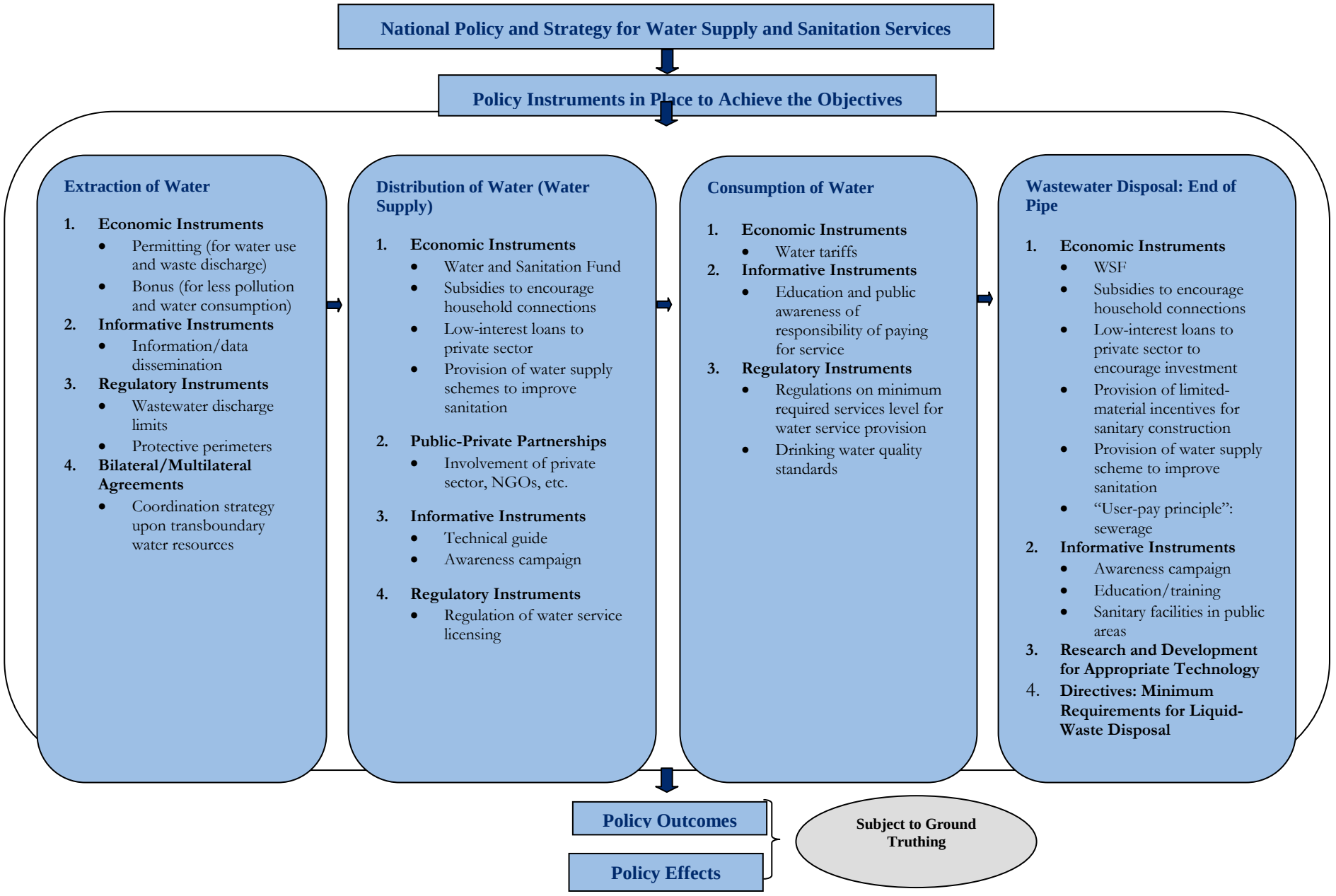
- The authorization certificate or permit provision: Article 32 provides that any activity relating to water resource consumption with some sort of water resource modifications will require authorization. Notably, this authorization is linked to EIA as a determinant tool (Articles 35 to 37).

- The bonus provision: Article 45 highlights bonus provision as a positive economic incentive aimed at water resource protection. Permit holders with operating devices allowing for less water consumption as well as pollution prevention receive such a bonus. However, for the occasion of water resource degradation or destruction, the act imposes a negative incentive (disincentive) mechanism. Article 55 states that "any person responsible for an accident to a water resource shall immediately repair the damage." Article 56 highlights compensation as a result of a damage caused as per Article 55. Similarly, liability fines and penalties are provided in Articles 82 to 89.

- Creation of protective perimeters of water: Another policy approach for water resource protection is the creation of protective water perimeters. This is highlighted by Articles 62, 63, and 64, which clarify that protective perimeters intend to protect the water resource environment for direct human consumption.

- Establishment of the National Water Fund and Water Supply Standards: Linked with the National Policy and Strategy for Water Supply and Sanitation Services (2010), the act also provides for public water works related to water supply and sanitation (Article 71). The act highlights the establishment of the National Water Fund as the financial resource in order to support water supply and sanitation works (Article 72). Article 76 affirms similar reasons. The act also establishes Water Supply Standards (Article 77).

Figure 0-3: Summary of the Identified Policy Instruments as Reflected in the Water Abstraction and Consumption Lifecycle



5.2.3 EFFICACY ANALYSIS

CENTRAL VALUE OF THE ADDRESSED POLICY INSTRUMENTS

Figure 5-3 is the water abstraction and consumption lifecycle with the analyzed policy instruments. Below is the detailed analysis of the identified policy instruments.

Extraction of Water Resource

The water resource extraction component highlights various policy instruments aimed at water resource protection. Provided economic instruments include water abstraction and discharge permits. Embedded with prescribed fees or charges, a well-designed water abstraction permit integrates the "user-pays principle." Enforcement of these instruments can lead to consumer behavioral change by providing a negative incentive for consuming the water resource sustainably. Similarly, imposing a well-designed instrument in order to implement the "polluter-pay principle" under the wastewater discharge permits can discourage pollution of water resources. The policy provides a positive incentive through a "bonus setup" for those voluntarily preventing water resources pollution or practicing sustainable water consumption. It can be pointed out that this approach encourages further measures or innovations toward sustainable water resource management.

Other additional instruments include information and data dissemination, which can be regarded as the informative instruments essential for mainstreaming awareness. Linked to this are regulatory instruments necessitating the wastewater discharge limits in order to safeguard or protect water resource quality.

The coordination strategy for transboundary water resources addresses collective initiatives with collective policy instruments to initiate international water resources. A well-designed and enforced strategy may lead to effective transboundary water resource management.

Water Distribution Services

Various economic instruments are provided, including subsidies to encourage household water connections. Added to this is the loan (with a lower interest rate) for private-sector engagement. Most likely, this approach may enhance or attract more private operators to invest in water supply services. This is a situation that can enhance extended water supply connections. A similar outcome is expected from the provided water supply schemes. An overall linkage of these economic instruments guarantees effective water supply services and sanitation. Additionally, the water distribution services component institutes an awareness campaign as well as technical guidelines. The central value of this approach is linked to increased awareness on a situation that may facilitate community participation in various water supply service programs and projects.

Water Consumption

In order to enhance the "user-pays principle" responsibility, the policy framework addresses water consumption tariffs. Linked to this, the policy highlights informative instruments regarding education and public awareness of the responsibility of paying for services. Combined with the economic and informative instruments are the regulations on the minimum service level required for water service provision, as well as drinking water quality standards. Both instruments have the potential to ensure the right of access to water, as well as safety aspects.

Wastewater Disposal: End of Pipe

As one of the measures of raising sanitation coverage, the policy framework declares the provision of limited-material incentives or subsidies. This can be regarded as an economic instrument, and it aims to accelerate the improvement, construction, or replacement of sanitary facilities. Such an incentive may encourage the

community to opt for improved sanitation infrastructure. Other instruments linked to water supply service enhancement have a direct link to wastewater management.

5.2.4 FOR EAC HARMONIZATION

RELEVANCE

As pointed out earlier, Rwanda developed two separate polices: the Water Resource Management Policy (2011) and the National Policy and Strategy for Water Supply and Sanitation Services (2010). The current policy reforms define water resources, supply, and sanitation in a wider context. These policies have taken on global development initiatives, such as climate-change initiatives (Section 7.9 of the Water Supply and Sanitation Policy and Section 1.1 of the Water Resource Management Policy); the MDGs (Section 2.1 of the Water Supply and Sanitation Policy); and the East African Community Vision (2012). The policies are well linked with other local policy initiatives, such as the Water Resource Management: Subsector Strategic Plan (2011–2015) and the Environmental Management Policy (2011). Similarly, the policies are in clear context with the current legislation framework.

POLICY INSTRUMENTS

It can be pointed out that the framework for water resource management, as well as water supply and sanitation policies, is well-packed with relevant policy instruments. As such, the combination of instruments for each component in the water abstraction and consumption lifecycle can be considered relevant, predictable for effectiveness, and a motivator of innovation. It can be concluded that the policy package can easily be harmonized within the EAC framework (see Table 15 below).

Table 15: Analysis of Harmony Between Rwanda and EAC on Laws, Policies, Regulations, Framework, and Standards

COUNTRY	WATER SUPPLY	SANITATION	FUNCTIONING/ ENFORCEMENT AT NATION LEVEL (YES, NO)	HARMONY AT EAC LEVEL (YES, NO, N/A)
RWANDA				YES
Laws	✓	✓		YES
Policy	✓	✓		YES
Regulation	✓	✓		YES
Standards	✓	✓		YES

5.3 INSTITUTIONAL FRAMEWORKS RELEVANT TO THE PROVISION OF WASH SERVICES, ENGAGEMENT OF STAKEHOLDERS, AND EFFECTIVE MANAGEMENT OF FINANCIAL AND HUMAN RESOURCES

5.3.1 INSTITUTIONAL SETUP

The institutional framework for management of water resources in Rwanda is as stipulated by Water Law No. 62 of 2008: "putting in place the use, conservation, protection, and management of water resources regulations." This law provides institutional arrangements, structures, and systems of management of water resources at national, regional/basin, and district levels.

The Ministry of Lands, Environment, Forests, Water and Mines is responsible for developing national policy on protection, planning, use, and management of water resources, including aquatic ecology. Other functions include representing the government in intergovernmental organizations with international and regional characters specialized in matters related to water; promoting international and regional cooperation; and establishing a national master plan and management of water resources after gaining the opinion of the Water Inter-Ministerial Committees and the National Water Consultative Commission.

The National Water Consultative Commission is composed of the minister responsible for water, who is the chairperson, and members, drawn from the government and from public and private water users. The EWSA is responsible for implementing water supply and sanitation policies and strategies; operational sector planning; monitoring and evaluation; and coordination of stakeholders.

The Water Inter-Ministerial Committee is composed of ministerial department representatives concerned with water in their domain. This committee is responsible for proposing master plans and management of the basin waters, as well as for ensuring proper use of water resources in the basin.

District Committees for hydrographic basins are established in accordance with Article 20. A District Committee is composed of administrations' representatives concerned with water; elected representatives of the local, decentralized communities; and representatives of different water user categories. The organization and functions of the committees are determined by ministerial order.

A Basin Committee is charged with the responsibility of overseeing management of water resources within the basin. Articles 22 and 23 provide for the establishment of a Basin Committee at the sector level for the management of small basins or aquifers. Where deemed necessary, a Sub-Basin or Hydrographic Basin Committee is established at the sector level. The structure and function of this committee are the same as that of the Basin Committee at the district level.

Local Water Associations are established in accordance with Article 24. They legal entities comprised of water users, and are responsible for managing the water resource, enhancing water production, protecting the water resources and fighting against flooding. The management is composed of representatives who have a role in the exploitation of rivers, streams, and lakes. Local Water Associations are the lowest level as far as the management of water is concerned in Rwanda. The RURA regulates water supply and sanitation services in the country. Due to delegation management, the agency allows for fair competition and protection of both consumers and operators, thus facilitating involvement of the private sector through PPP. Figure 5-4 presents the schematic institutional arrangement for water and sanitation in the country.

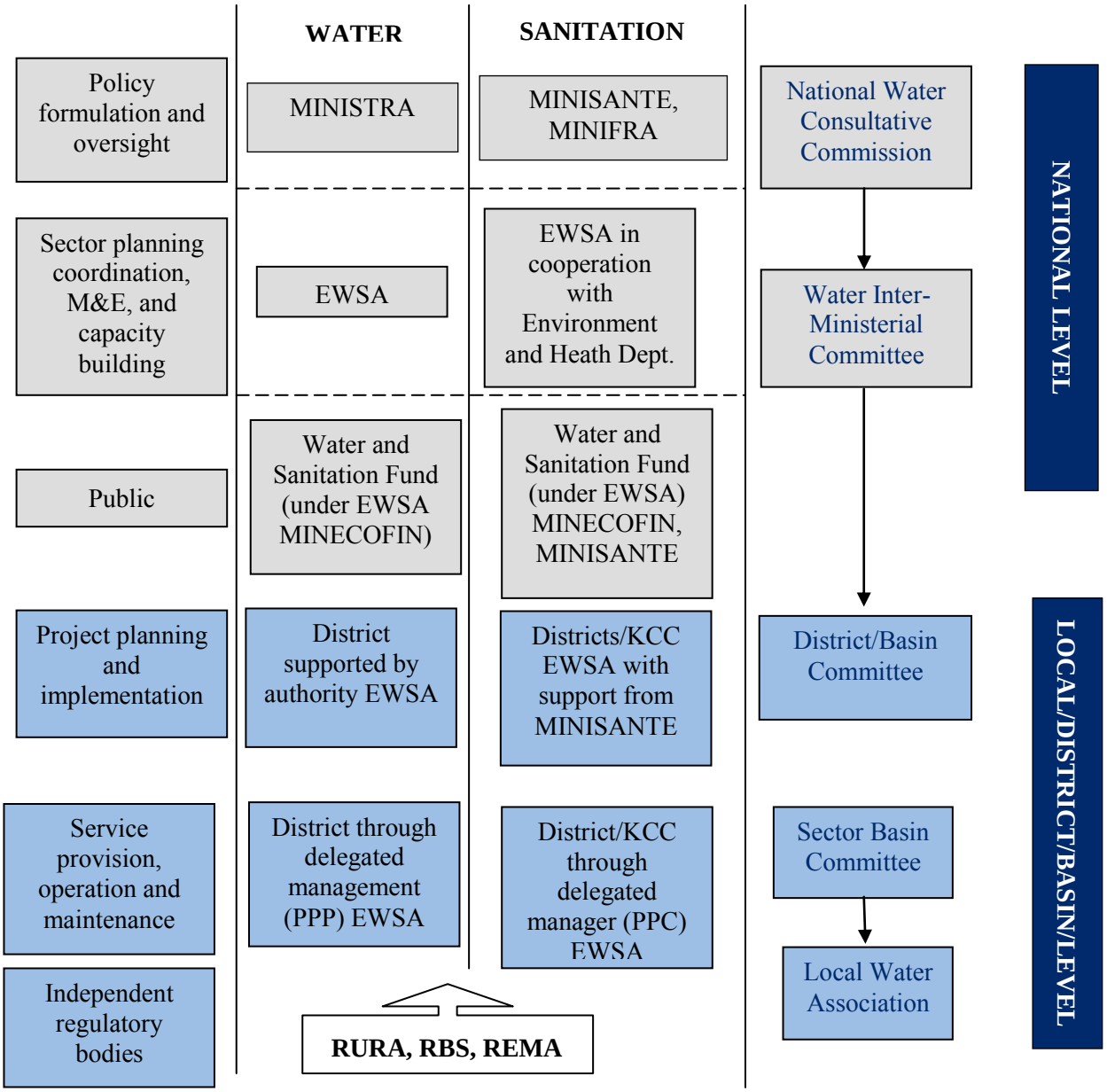


Figure 5-4: Institutional Framework for WASH Service Provision in Rwanda

Remarks: Despite the fact that the law established the aforesaid institutional arrangements, some of the institutions' functions and powers are not clearly stated. For instance, for the National Water Consultative Commission, the law does not define the structure, functions, and composition of the commission; instead, it provides that the structure, functions, and composition shall be fixed by the order of the prime minister. The organization and functions of the District Committees for hydrographic basins are determined by ministerial order. The functions of the Water Inter-Ministerial Committee are also not clearly stated; the law says the committee shall be consulted on all legislative drafts/bills regarding planning in the water domain at the national level, as well as on matters at the national, regional, or international level. Clarifying functions and powers could enhance efficiency, as concerned institutions would be aware of their roles and responsibilities in advance.

5.3.2 ENGAGEMENT OF STAKEHOLDERS

In Rwanda, the engagement of stakeholders in water resource management, as well as the provision of water supply and sanitation services, is a mandatory undertaking. Article 5 of Water Law No. 62 of 2008 for Conservation, Protection, and Management of Water Resources provides for the management of water resources in accordance with the principles of users' association for the administrative management of water. It also states that users of public distribution services for drinking water and sanitation should play a major role in these services provided to them, according to the contributory capacity of users.

Therefore, the Government of Rwanda (GoR) embarked on major reform of its operations to enhance transparency and accountability. According to MININFRA (2010), among the most important reforms are

- the separation of water supply and sanitation services from water resources management;
- transfer of responsibilities for water supply and sanitation service delivery to the districts; and
- delegation of management to enhance PPP.

MININFRA is therefore responsible for formulating national policies, guidelines, and strategies for the water sector; enhancing institutional and human resource capacity of districts; and monitoring the implementation of government policies. The RURA regulates water supply and sanitation services. Due to delegation management, the agency allows for fair competition and protection of both consumers and operators, and thus facilitates involvement of the private sector through PPPs. The MINALOC oversees the decentralization process to ensure that local institutions contribute to effective service delivery aimed at community and socioeconomic development. The EWSA is responsible for implementing water supply and sanitation policies and strategies, as well as for coordinating sector stakeholders and supporting infrastructure development. Details on roles and responsibilities of various stakeholders and institutions are detailed in Table 16.

Rwanda National Policy and Strategy for Water Supply and Sanitation Services emphasized the necessity of involving stakeholders in the provision of the envisaged services. It is clearly explained that if stakeholders are involved from the time of project identification, the possibility of the projects attaining their objectives is more certain. To realize the aforesaid goal, the GoR decided to devolve management of water schemes to a lower level by introducing delegated management. These arrangements emphasize PPPs, involving a variety of private operators such as private companies, individuals, cooperatives, associations, and religious communities. The PPP arrangement demarcates the responsibilities of various partners. For instance, the districts/local level enter into contracts of two to five years with the service operators, and the contracts stipulate the responsibilities of the operators, which include day-to-day operation and maintenance, as well as fee collections. Engaging private sectors in the operations and maintenance of the water schemes ensures availability of the services, as private-sector parties run their businesses on a commercial basis in order to attain the set targets within their respective contracts. This arrangement has shown signs of success, and thus improves service provisions to the target groups.

Table 16: Roles and Responsibilities of Stakeholders Involved in Provision of Water Supply and Sanitation Services in Rwanda

INSTITUTION/STAKEHOLDER	ROLES AND RESPONSIBILITIES IN PROVISION OF WATER SUPPLY AND SANITATION SERVICES
Ministry of Infrastructure (MININFRA)	Policy and strategy formulation; sector oversight; budgeting and resource mobilization; overall sector performance monitoring
National Water Consultative Commission	Advise on water matters, formulation of plans for water management, and water conflict resolution
Basin Committee	Propose the delimitation, if necessary, of groundwater basins and the designation of the aquifer for which an integrated management of the water resource must be done; formulate orientations and proposals concerning the planning and management of the groundwater or aquifer; formulate propositions of arbitration or resolution in case of conflict of water uses; formulate opinions on all technical or financial questions submitted by the administration; and value the relevance and the feasibility of basin organizations, to prepare their setup in the event that it would be judged necessary
Sector Basin Committee	Management of small basins or aquifers at the level of the administrative decentralized authority of the district to which it is connected
Energy Water and Sanitation Authority (EWSA)	Implementation of water supply and sanitation policies and strategies; operational sector planning, monitoring, and evaluation; coordination of sector stakeholders and support districts in terms of infrastructure development and PPP; management of the harmonized financing mechanism; preparation of guidelines and standards; capacity building; applied research; and knowledge management
Rwanda Utilities Regulatory Agency (RURA)	Independent regulation of the water supply and sanitation sector, particularly of delegated management (PPP) arrangements related to tariffs, and regulation aspects including technical, economic, legal, and consumer protection
Ministry of Finance and Economic Planning (MINECOFIN)	Coordinates the national budgeting, planning, and financing framework, with a strong role in related aspects of the water supply and sanitation services sector
Rwanda Environment Management Agency	Water resources management (allocation, protection, and use), including discharge regulations and environmental impact

INSTITUTION/STAKEHOLDER	ROLES AND RESPONSIBILITIES IN PROVISION OF WATER SUPPLY AND SANITATION SERVICES
(REMA)	assessment of water supply and sanitation projects; enforcing environmental regulations; awareness promotion campaigns on solid waste management
Ministry of Health (MoH)	Provides preventive curative and rehabilitative services; supports MININFRA in promoting hygiene and monitoring water quality
Ministry of Education and Sports	Development of relevant curricula for and implementing hygiene and sanitation programs
Ministry of Local Government (MoLG)	Responsible for decentralization and matters related to local government finance and administration
District Local Government	Provision of access to basic services including water, sanitation, and solid waste management; owns water infrastructures; implements water supply and sanitation projects; contracts private operators for infrastructure O&M; prepares and implements consolidated district development plan
Local User Associations	Formed by users at local levels; can form own rules or rules delegated to them by government. Their purpose is to enhance the management and protection of water resources.
Private Sector	Participates in the execution of projects as well as infrastructure operation and maintenance (private operators, through delegated management, contracted by districts)
Civil Society/Nongovernmental Organizations (NGOs)	Implementation of water supply and sanitation projects; participation in the Sector Wide Approach (SWAp) and in coordination mechanisms at the district and national level; play a major role in solid waste management

5.3.3 HUMAN AND FINANCIAL RESOURCE MANAGEMENT

The National Policy and Strategy for Water Supply and Sanitation Services emphasizes the importance of the decentralization process. The process is intended to develop the capacity of lower levels (i.e., district's service delivery), as well as significant staff reductions in central government. Because of decentralization, the management of human and financial resources is expected to take place at lower levels in order to enhance accountability. The need for devolving management functions is also accelerated by the fact that Rwanda currently uses delegated management in the provision of water supply and sanitation services. According to RURA (2013), there are 83 private operators managing 261 water systems through PPP.

However, districts are facing shortages of financial resources and skilled staff to enhance water supply and sanitation services. The utilities are also facing shortages of equipment and facilities to enable provision of adequate services. With regard to financial management, service operators are required to pay district

authorities as agreed to by contract. Use of delegated management, which is vested in the spirit of PPP, seems to enhance sustainability of service provisions. This is because success of the PPPs ensures financial viability by setting appropriate tariffs. However, high production costs; management of water points that involve the private sector; poor water quality; and high non-revenue water are issues that limit service sustainability. In addition, the lack of well-structured in-service training for the water and sanitation sector and insufficient budgetary provision and expertise for operation and maintenance of water and sanitation infrastructure are issues that affect water and sanitation sector performance.

Generally, service providers are aware that water is an economic good and would like to charge appropriately in order to meet operation and maintenance costs and hence ensure sustainability. However, the Water Law states clearly that water is a right of everyone and that it needs to be accessed without discrimination. To ensure that the poor access water, RURA sets water tariffs with consideration of the population's purchasing power. The households with lower income are paying less, while high-income earners pay more in order to balance the loss incurred by the low-income earners. This strategy takes into consideration the Dublin Principles, in which water is considered an economic and social good. In addition, in order to stimulate provision of water services in vulnerable areas, such as rural areas, the GoR established the Water Trust Fund to support service operators in providing services in underserved areas. This is due to the fact that affordability of water service in rural and underserved areas is high and thus less attractive to private investors.

5.4 KEY ISSUES AND CONSTRAINTS AFFECTING PROVISION OF WATER SUPPLY AND SANITATION

5.4.1 LOW CAPACITY TO PROVIDE WATER SUPPLY & SANITATION SERVICES

Coverage of water supply and sanitation services is still low. People have been denied their right to access water, and water is life. Low coverage is attributed, among other reasons, to low expansion of the networks.

5.4.2 DATA AND INFORMATION MANAGEMENT

Appropriate management of data and information was cited to be among of the issues hindering effective scientific decision making on provision of water supply and sanitation services. Despite the proliferation of Information Communication Technologies (ICT) to aid proper information management (including record keeping), the discrepancy of data and information from various internal and external departments was reported to be a major problem. This situation creates concern of whether to trust the given data. Suffice it to say, strategizing on how best to enhance reliability and validity of data and information for appropriate decision making is of great importance.

5.4.3 SUSTAINABLE OPERATION AND MANAGEMENT OF WATER SUPPLY INFRASTRUCTURE

Management of water supply infrastructures is of critical importance if sustainability of the infrastructures is to be secured. Lack of proper and timely operation and maintenance mechanisms seems to affect most of the existing infrastructures. Water supply and sanitation facilities implemented in rural areas are left unattended, limiting their service life. The EDPRS emphasizes the need to put sufficient efforts, resources, capacity, and planning toward O&M of the water supply and sanitation infrastructure. This is very critical, due to the fact that implementation of a well-structured and managed O&M system is key to continued performance and delivery of quality services.

5.4.4 SCARCITY OF LAND

Rwanda is one of the countries with high population density in the region. This implies that rapid population growth, coupled with urbanization and industrialization, poses a major concern of the available land to meet demand. Due to scarcity of land, the network expansion of water supply and sanitation services is in jeopardy.

5.4.5 QUANTITY AND QUALITY OF HUMAN RESOURCES

This was noted as a serious issue affecting appropriate provision of water supply and sanitation services. Inadequate quantity of staff, coupled with inadequate staff knowledge and skills, significantly affects the provision of quality service. Skills-development programs need to be implemented to systematically alleviate the situation.

5.4.6 WATER QUALITY

Water quality control remains an unmatched challenge in rural areas. While the quality of water resources is generally good, the risks are mainly related to local contamination, including unsafe household handling and storage, inadequate protection of reservoirs, and broken pipes. Surveillance arrangements to systematically detect these contaminations and initiate action have not yet been developed.

5.4.7 OTHER KEY ISSUES AND CONSTRAINTS

1. High NRW, which currently stands at 42 percent
2. Unhygienic sanitary facilities for excreta disposal, poor management of solid and liquid wastes, and inadequate hygienic practices are responsible for a large portion of Rwanda's disease burden.
3. Delegated management through private operators is seen as the main strategy for enhancing the sustainability of rural water supply infrastructure. However, the regulatory oversight of PPP arrangements—selection criteria, contract management, compliance monitoring, accounting practices, and tariffs—is still insufficient.
4. The success of the PPPs is to ensure financial viability by setting appropriate tariffs and regulating the amount and usage of fees collected by the districts. Viable water tariffs in rural areas tend to be relatively high, particularly where pumping is involved. This poses a challenge for rural households, and encourages the use of alternative, unsafe water supply sources.
5. High cost recovery
6. Poor urban planning
7. Limited private-sector investments: Short-term contracts of private operators fail to initiate private investments in extensions or service-level upgrades.

5.5 SWOT ANALYSIS FOR PROVISION OF WATER SUPPLY AND SANITATION SERVICES

Putting the Rwanda water supply and sanitation management and/or institution into perspective, it is worth noting that there are many opportunities, strengths, weaknesses, and threats, as shown in Table 17.

Table 17: SWOT Analysis for WASH Services Provision in Rwanda

STRENGTHS	WEAKNESSES
• Availability of water resources • Existence of policy, laws, and regulations • Human resource commitment in service provision • Delegated management and performance contracts • Strategies to improve water supply and sanitation services in place	• Inadequate provision of water supply and sanitation services • Inadequate human resources, in terms of quality and quantity • Inadequate management of water supply schemes • Inappropriate solid-waste management • Insufficient individual and public sanitation facilities • Lack of well-structured in-service training for staff skill development • Insufficient Water and Sanitation (WATSAN) Budget • Inadequate data and information management system • Low reliability and validity of data • Lack of proper and timely O&M mechanisms • Poor management of solid and liquid wastes • Inadequate hygiene practices • Weak enforcement of laws, regulations, and bylaws
OPPORTUNITIES	**THREATS**
• Development partners interested in WATSAN sector • Existence of institution for provision of capacity building in WATSAN sector • Existence of private water operators • Continuous support from the government • PPP arrangement • Mechanisms for improved water quality and pollution control	• High non-revenue water • Water pollution • Effluents discharged into water bodies • High recovery cost • Land scarcity • High population growth • Water quality deterioration due to degradation of water catchment areas • Vandalism of water supply networks • Poor urban planning

6.0 WATER SUPPLY AND SANITATION SITUATION IN TANZANIA

6.1 WATER SUPPLY POSITION

6.1.1 THE OVERALL WATER SUPPLY STATUS

Improved water supply in Tanzania is defined based on water source type. *An improved drinking-water source is defined as one that, by nature of its construction or through active intervention, is protected from outside contamination, in particular from contamination of fecal matter.* Further, access to clean water and water supply services from improved sources has to be within 400 meters of walking distance from the farthest homestead (Tanzanian National Water Policy of 2002). "Improved" sources of drinking water include: piped water into dwelling; piped water to yard/plot; public tap or standpipe; tube well or borehole; protected dug well;

The Tanzanian National Water Policy of 2002 recognizes that "access to clean and safe water is a basic need and right for all human beings" and emphasizes that "water for basic human needs in adequate quality and acceptable quantity will receive the highest priority."[9] In addition, the Water Resources Management Act of 2009 recognizes that "safe drinking water is a basic human right." For water to be safe, it needs to be free from contamination and acceptable in terms of color, odor, and taste. Accessibility of water can be measured by the time it takes an individual to reach safe drinking water. Water is considered inaccessible if it requires travel of more than 1 kilometer or 30 minutes round-trip.[10] With regard to quantity, the government recognizes that people need sufficient water for drinking, personal sanitation, hygiene, washing clothes, and food preparation. The average water use in Tanzania is about 10 to 25 liters per person per day, and 20 to 40 liters are needed to meet drinking and sanitation needs alone.[11] The rural water supply coverage is at 57 percent (MoW, 2012), while urban coverage is at 77 percent.

[9] The National Water Policy of 2002, Ministry of Water and Livestock Development (Dar es Salaam, United Republic of Tanzania).

[10] World Health Organization (2003).

[11] Basic Water Requirements for Human Activities: Meeting Basic Needs, Dr. Peter Gleick, Pacific Institute (1996).

6.1.2 COVERAGE IN CITIES, REGIONS, AND DISTRICT TOWNS

Rapid population growth and urbanization in Tanzania exerts enormous pressure on the delivery of water supply and sanitation services. Because Tanzania is not in a position to meet the costs of maintaining and improving water supply and sanitation services from public revenues, it has introduced a commercial approach to providing these services, which must be paid for rather than offered as a free service to consumers. In cities, regions, and district towns, the maintenance and development of water and sewerage infrastructures are carried out by Urban Water Supply and Sanitation Authorities (UWSSAs). The UWSSAs are autonomous entities that are meant to operate on the basis of commercial principles. They have been established in all major cities and towns in accordance with the Water Works Act of 1997, and restated in the new Water Supply and Sanitation Act of 2009.

The UWSSAs are classified in three categories, from A to C, in declining order of the cost recovery. This system has been designed as an incentive for the utilities to improve their performances.

The categories are:

- Category A: Authorities that are able to cover all O&M costs, including staff wages, energy costs, and contributions to capital investments
- Category B: Authorities that are able to meet O&M costs, share energy costs with the government, and pay full salaries to permanent employees
- Category C: Authorities that require government support to meet their energy costs and to pay out salaries to permanent employees

6.1.3 COVERAGE AT RURAL DISTRICT VILLAGES

In rural areas, water supply and sanitation services are provided by Community-Owned Water Supply Organizations (COWSOs). These have been established through the local government framework of village councils, following the adoption of the Water Sector Development Strategy. Out of 10,639 villages, 8,394 had a Water Committee dealing with issues in the water and sanitation sector as of 2007.[12] The role of COWSOs is to operate and maintain the water supply systems on behalf of the community. They are expected to meet all of the O&M costs of their water supply systems through charges levied on water consumers, and to contribute to the capital cost of their systems. The main sources of capital investment are block grants to local government authorities, disbursed by the Regional Secretariat. There are two main types of COWSOs: Water Consumer Associations (Vikundi vya Huduma ya Maji), which are responsible for drinking water supply, and Water User Associations (Vikundi vya Watumiia Maji), which are responsible for water resources and for solving conflicts among water users.

6.1.4 THE WATER SUPPLY STATUS AND COVERAGE FOR DISTRICTS WITHIN LAKE VICTORIA BASIN IN TANZANIA

Tanzania has one city (Mwanza) and three municipalities (Musoma, Shinyanga, and Bukoba) located within the LVB. According to the Tanzania EWURA, Mwanza, Shinyanga, and Musoma fall into Category A, while Bukoba is ranked as Category B. However, it should be noted that in all Category A towns, the proportion of people being served directly is relatively low compared with the population living in the area with water networks, as they are not guaranteed services. The current mapping of improved water supply coverage is shown in Figure 6-1.

[12] Ministry of Water and Irrigation: Draft Water Sector Performance Report for the Year (2007-2008).

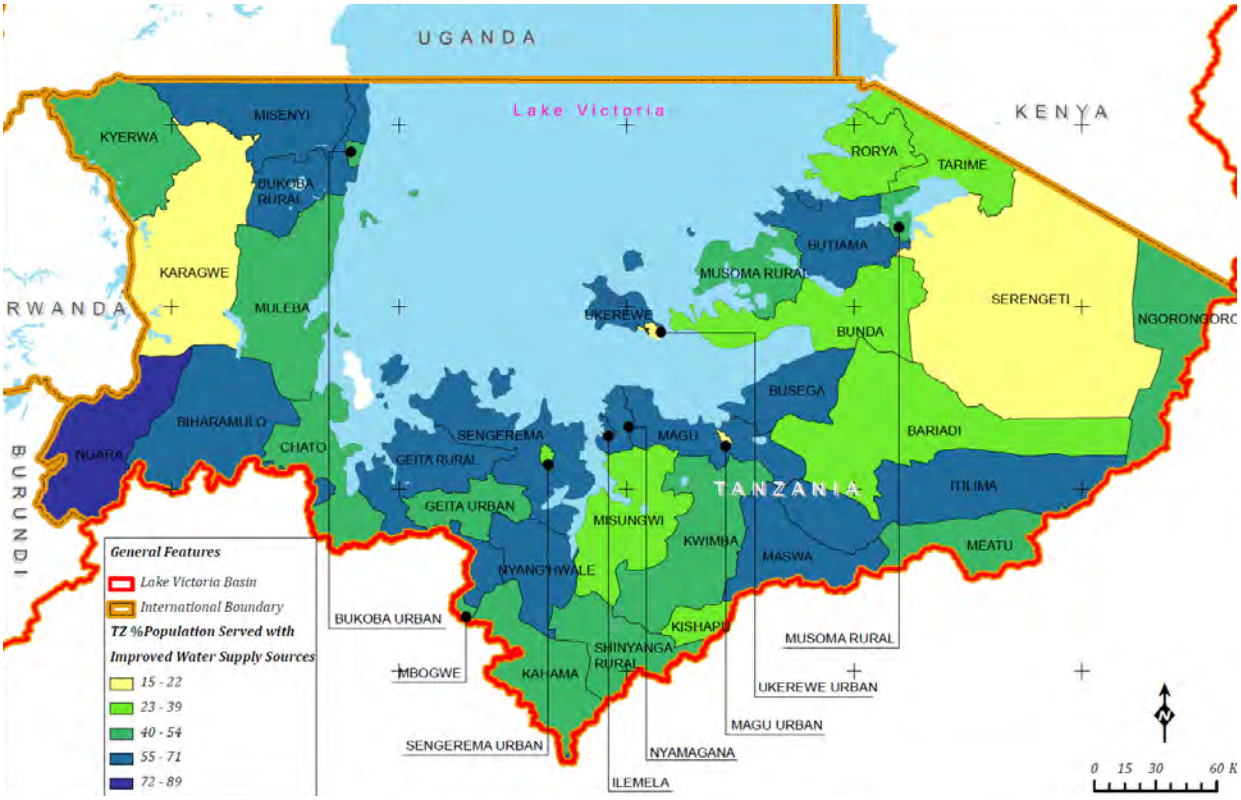


Figure 0-1: Improved Water Supply Coverage in Tanzania

6.2 SANITATION POSITION

6.2.1 THE OVERALL SANITATION STATUS

Improved sanitation in Tanzania is defined as a sanitation/latrine facility that hygienically separates human excreta from human contact, such as latrines with clean, washable slab; a vent pipe; shelter with roof; and a door that provides privacy. Improved latrines include flush toilets; piped sewer systems; septic tanks; flush/pour flush to pit latrines; VIP latrines; pit latrines with slab; and composting toilets (MOHSW, 2012).

As a rule of thumb, poor sanitation services intensify poverty by increasing rates for contraction of diseases. In the long term, this deprives workforces, and it forces people to use their meager resources for curative purposes. Poor sanitation has proven to have negative effects on individual families' economic growth, health, education, and dignity. Increasing people's access to sanitation will therefore positively contribute to: reducing contraction of diseases (particularly diarrhea); reducing the heavy workloads of women and girls caring for sick children; and to giving them dignity. High water table areas are prone to disease-breeding habitats, making them a health problem for people living within the vicinity and making them an active route of disease transmission. Furthermore, poverty, diseases, and poor education are intertwined with poor

environmental sanitation in communities throughout the world. That is why diseases such as cholera, worms, and trachoma are known as "diseases for the poor" (Mmbando, 2008).

To address the sanitation challenges and restore human dignity, Tanzania, under the Water Sector Development Program (WSDP), implements a Nationwide Sanitation Campaign with the aim of accelerating the national effort of halving the number of people without access to improved sanitation facilities by 2015. In this endeavor, the Regional Secretariat and LGAs are provided with funds and technical assistance through the MoHSW to carry out priority activities on sanitation and hygiene. These include collecting baseline data; inducing community behavioral change through the CLTS approach; and training community resource people on the construction of improved toilets.

6.2.2 THE SANITATION STATUS AND COVERAGE FOR DISTRICTS WITHIN LAKE VICTORIA BASIN IN TANZANIA

This report summarizes the secondary data analysis being collected from the regional offices and LGAs within the LVB. Figure 6-2 shows the extent of improved sanitation for the districts within the LVB.

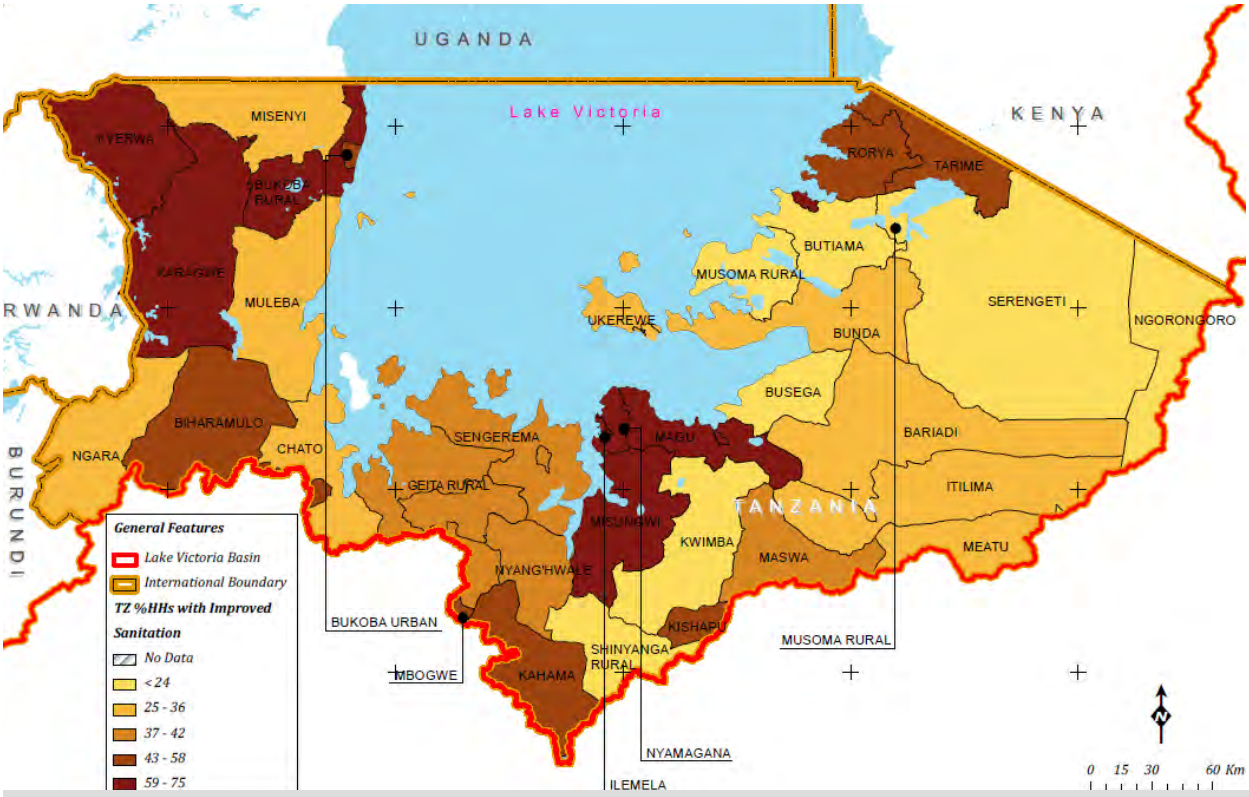


Figure 0-2: Improved Sanitation Coverage in the Lake Victoria Basin of Tanzania

6.3 LAWS, POLICIES, REGULATIONS, STANDARDS, AND/OR FRAMEWORKS RELATED TO THE PROVISION OF WATER AND SANITATION SERVICES

6.3.1 POLICY FRAMEWORK

NATIONAL WATER POLICY (2002)

The major governing policy for the water sector in Tanzania is the National Water Policy (2002). The main objective of this policy is to develop a comprehensive framework for sustainable development and management of the nation's water resources, in which an effective legal and institutional framework for its implementation will be put in place. In order to facilitate the implementation of this policy, the National Water Sector Development Strategy (2006–2015) was developed. This strategy clarifies various interventions that address the water sector challenges in order to achieve the indicated targets.

The National Water Policy (2002), through the National Water Sector Development Strategy, states that the protection and sustainable use of water resources in Tanzania is a main objective. It clarifies the direction of water resource management practices. The policy focuses on preventing the negative environmental impacts of human activity, ensuring that water is used beneficially and efficiently, and that water-related activities cause the least-detrimental effect on the environment.

Water Resource Management

The objective of the policy for Water Resources Management is to develop a comprehensive framework for promoting the optimal, sustainable, and equitable development and use of water resources for the benefit of all Tanzanians, based on a clear set of guiding principles. The objective is to have in place fair and equal procedures regarding access to and allocation of water resources, so that all social and economic activities are able to maximize their capacities.

To achieve these, the government is required to put in place laws and regulations; thus, all water resources in the country are vested to the United Republic of Tanzania, and all citizens gain equal right to access it (Section 4.1.1). An additional objective is to develop criteria for the prioritization of water allocations in order to ensure that socioeconomic activities and the environment receive their adequate share of the water resources (Section 4.1.2). The policy states that all water abstractions and effluent discharges into water bodies shall be subject to a water-use permit or discharge permit. Another objective concerns water resource conservation (Section 4.2); the policy requires the government to put in place appropriate principles and procedures for managing the quality and conservation of water resources, as well as for improving and protecting the ecological systems and wetlands. The policy also provides for water quality and management control (Section 4.2.2) in order to have water resources of acceptable quality. Therefore, the government is required to assure water quality monitoring; to implement the "polluter-pay principle"; and to enhance public awareness. Another water and environmental objective is to have in place a water management system that protects the environment, ecological system, and biodiversity (Section 4.3). Research and technological development issues are addressed under Section 4.6 of the policy, in which the government is required to increase knowledge, information, and communication between the community and resource users. Linked to this is the provision to enhance human resources development so that an adequate number of staff are trained for the implementation of water resource activities (Section 4.7).

Water Supply and Sanitation

The policy emphasizes community participation through legal registration of water-user entities; clarification of roles, responsibilities, rights, and limits of water-user entity authority; and facilitation of communities in acquiring technical and management skills (Section 4.1). Equally, the policy requires the government to enable mechanisms for communities to make appropriate choices in technology. Similarly, the community has to be involved in the planning, design, and construction, as well as in the operation and maintenance. These skills

could be acquired through design manuals as well as through community training. The policy further supports private-sector participation in order to improve service delivery. Section 4.7 highlights education on water supply, sanitation, and hygiene integration in order to improve health conditions in rural localities.

Section 4.1 provides for improved infrastructure for sustainable and efficient water supply and sanitation in urban areas. The government is required to facilitate the acquisition of necessary financing for rehabilitation and expansion of the water supply and sewerage system. Equally important, the government is required to put in place a mechanism for protecting water sources from land encroachment. Additionally, the policy calls for strong institutional setup in order to ensure adherence to standards and guidelines related to construction and services. Regarding the financing of water supply and sewerage services, the government is called upon to have a tariff-setting mechanism that ensures that water users pay for full-cost recovery. Finally, Section 4.5 insists on the requirement of wastewater treatment systems that are friendly to the environment.

National Environmental Policy (1997)

The National Environmental Policy (NEP) of 1997 is the core framework policy for environmental planning and management in Tanzania. As such, specific subsidiary and sectoral policies of everyday governance on environmental issues fall within this framework. The overall objectives of NEP are:

1. Ensure sustainability, security, and equitable use of resources for meeting the basic needs of present and future generations without degrading the environment or risking health or safety
2. Prevent and control degradation of land, water, vegetation, and air, which constitute our life support system

Sections 28 and 29 refer to the promotion of sound environmental technology, while Section 48 covers water and sanitation. Additionally, Section 50, while addressing the importance of the health sector, emphasizes the meeting of community needs for environmental infrastructure, such as safe and efficient water supplies, sewage treatment, and waste-disposal services. Additionally, it has been indicated that the promotion of health-related programs (such as food hygiene, separation of toxic/hazardous wastes, and pollution control at the household level) are an important focus.

Health Policy (2007)

The overall objective of the Health Policy is to improve the health and well-being of all Tanzanians, with a focus on those most at risk, and to encourage the health system to be more responsive to the needs of the people. Some of the policy objectives are listed below:

- Reducing morbidity and mortality, in order to increase the life expectancy of all citizens, by providing quality health care
- Meeting the needs of vulnerable groups, especially infants and those under the age of 5; school-age children; youth; people with disabilities; women who are of reproductive age; and the elderly
- Ensuring that health services are available and engage local communities
- Raising public awareness about a disease that can be prevented, so that the public can be able to recognize and find ways of controlling it
- Building partnerships among the public sector, the private sector, civil society, and communities in providing health care

Human Settlement Development Policy (2000)

To achieve sustainability, the Human Settlement Development Policy underscores the following:

- Ensure that human settlements are kept clean and that the pollution effects of solid and liquid wastes do not endanger the health of residents
- Set environmental quality standards for gaseous emissions from industries, vehicles, etc., and institute a mechanism for monitoring air-pollution levels
- Encourage the use of alternative, affordable, and appropriate sources of energy
- Encourage and promote afforestation to match harvesting from woodlands
- Prohibit quarrying in urban-area river valleys

6.3.2 LEGISLATIVE FRAMEWORK

THE WATER RESOURCE MANAGEMENT ACT (2009)

This is the legislation that provides the institutional and legal framework for sustainable water resource management in Tanzania. It outlines the participation of stakeholders and the general public in implementing the National Water Policy, as well as the principles and measures addressing water conservation, protection, pollution prevention, and control. Moreover, this act stipulates various provisions aimed at sustainable water resource abstraction and consumption. It requires the water users and effluent dischargers to acquire permits stipulated with sustainability conditions. The act establishes the protected water zones and restrictions for where this resource is found to be vulnerable.

REGULATORY AND ECONOMIC INSTRUMENTS

In order to facilitate the implementation of the National Water Policy (2002), the Water Resource Management Act (2009) addresses various policy tools, mainly relating to regulatory and economic instruments. The regulatory package includes water-user permits and quality standards. Sections 43 to 50 of the act clarify the type of use and conditions for the water permit. Specifically, Section 43 addresses uses that are subject to water permits, while Section 44 stipulates offenses for using water in excess of the one specified in the permit. This act also requires the minister of water works to develop various regulations. Regarding the economic instrument package, the act mainly addresses water abstraction/user charges (Section 96).

ENVIRONMENTAL MANAGEMENT (WATER QUALITY STANDARDS) REGULATION (2007)

The Environmental Management (Water Quality Standards) Regulation (2007) sets the minimum quality standards for water use. Additionally, it requires the applicants for water permits to assess and report to the National Environment Management Council (NEMC) the likely environment impacts predicted after the permit is granted. Moreover, these regulations play a protective role for water sources, as they give authority to various responsible actors to serve protection orders in the incidence that the water source is at risk due to activities with a negative effect. Section 26 of this regulation requires the council, basin water officer, city, municipality, district, and town environmental officer to serve protection orders in the case that any activity is likely to result in an adverse effect on the water or body of water.

THE WATER SUPPLY AND SANITATION ACT (2009)

This act establishes the framework for managing the water supply and sanitation services in accordance with the National Water Policy (2002). It provides for the establishment of water supply and sanitation authorities, as well as COWSOs and, ultimately, the service providers. It is a framework law that sets the institutional responsibilities for various actors, and that directs the management of water supply and sanitation functions. Among other issues, this act addresses the obligation for water supply and sanitation authorities to be licensed in order to operate or execute their duties (Section 14). Connected to this, the act further explicates that water authority performance and functions are regulated by the EWURA. The act also establishes the functions for water supply and sanitation authorities (Section 20), as well as their powers and duties (Section 21). The act

establishes the Water Investment Fund (Section 44) to support and facilitate the provision of water services, and it empowers the minister responsible for water works to make regulations prescribing procedures for the performance and use of that fund (Section 44).

SPECIFIC POLICY INSTRUMENTS

The Water Supply and Sanitation Act (2009) establishes various regulatory tools aimed at the efficiency and effectiveness of water supply and sanitation works. These include the regulations, licensing systems, quality standards, codes, and bylaws. Regulations and codes of conduct are subject to the minister responsible for water works, while the bylaws are made by the relevant local authorities. The economic tools addressed in the act include levies, fees, service charges, and punitive charges. Though limited, provisions for informative tools are also stipulated in this act.

REGULATORY, ECONOMIC, AND INFORMATIVE INSTRUMENTS

This analysis starts with the regulatory tool framework. Section 38 of the Water Supply and Sanitation Act (2009) empowers the minister for water works to develop regulations for COWSOs, while Section 43 allows the minister to establish the licensing board or boards for the purpose of licensing engineers, technicians, or craftsmen to carry out water supply, sanitation, construction, and maintenance. The licensing tool is subject to water supply and sanitation authorities, as they are not supposed to operate without being licensed by EWURA. Similarly, Section 44 authorizes the minister to make regulations in order to manage the Water Investment Fund. Section 57 allows the minster to make regulations prescribing anything that may be prescribed under this act. The minister is also required to prescribe codes of workmanship with respect to construction, operation, and maintenance on any water supply and sanitation services provided by the authority, community-owned organizations, and private water supply and sanitation systems (Section 42). Section 8 of the act allows local government authorities to make bylaws with respect to effective and efficient water supply and sanitation services provided by the authorities or the community-based organizations. The Environmental Management (Water Quality Standards) Regulation (2007) also governs the Water Supply and Sanitation Act (2009) as per Section 20 of these regulations: "As the water supply and sanitation authorities, community-based organizations or service providers are supposed to abide by water and effluent quality standards."

This act establishes some economic tools to be combined with the regulatory tools. Section 20 requires the water supply sanitation authority to collect fees and levies for water supply and sanitation services provided to consumers. This section also allows the water supply and sanitation authority to propose water supply and sanitation tariffs. The act also establishes the punitive measures or penalties that are levied to individuals or groups of people who cause environmental harms. Section 47 requires one to pay the fine, as well as the cost of compensating the caused damage or interference with water works. Section 48 requires one to pay the fine due to water misuse. Section 49 similarly requires one who did the fraudulent act (like tampering or altering the permit legal contents) to pay the fine, as well as the compensation cost.

Some provisions of this act address informative tools such as information dissemination and awareness campaigns. For instance, Section 20 allows water supply and sanitation authorities to educate and provide information to the public on public health aspects linked to water supply, water conservation, and sanitation.

THE ENVIRONMENTAL MANAGEMENT ACT (2004)

The Environmental Management Act (EMA) of 2004 is the core legislation for all environmental issues in the country. It is a framework law that sets the institutional responsibilities of various actors and directs the management of the environment. Laws from various sectors, such as the water sector, were reviewed to take into account the provisions of the EMA. For instance, Section 60 of the EMA requires every applicant for water-use permits that were issued under the Water Resource Management Act (2009) to make a statement on the likely environmental impacts resulting from the use of water requested. This provision is linked directly to Section 48 of the Water Resource Management Act (2009), in which environmental assessment is one of the important conditions stipulated in the water permit. Similarly, Sections 8 and 9 of the Water

Resource Management Act (2009) require the developer of any water-related development or project to conduct an SEA or EIA as stipulated in the Environmental Management Act (2004). The act establishes environmental coordinators at all levels, as well as their functions. It requires the relevant sectoral ministry or other organizations to provide annual reports on the related environmental issue.

URBAN AUTHORITIES ACT NO. 8 (1982) AND LOCAL GOVERNMENT DISTRICT AUTHORITIES ACT NO. 7 (1982)

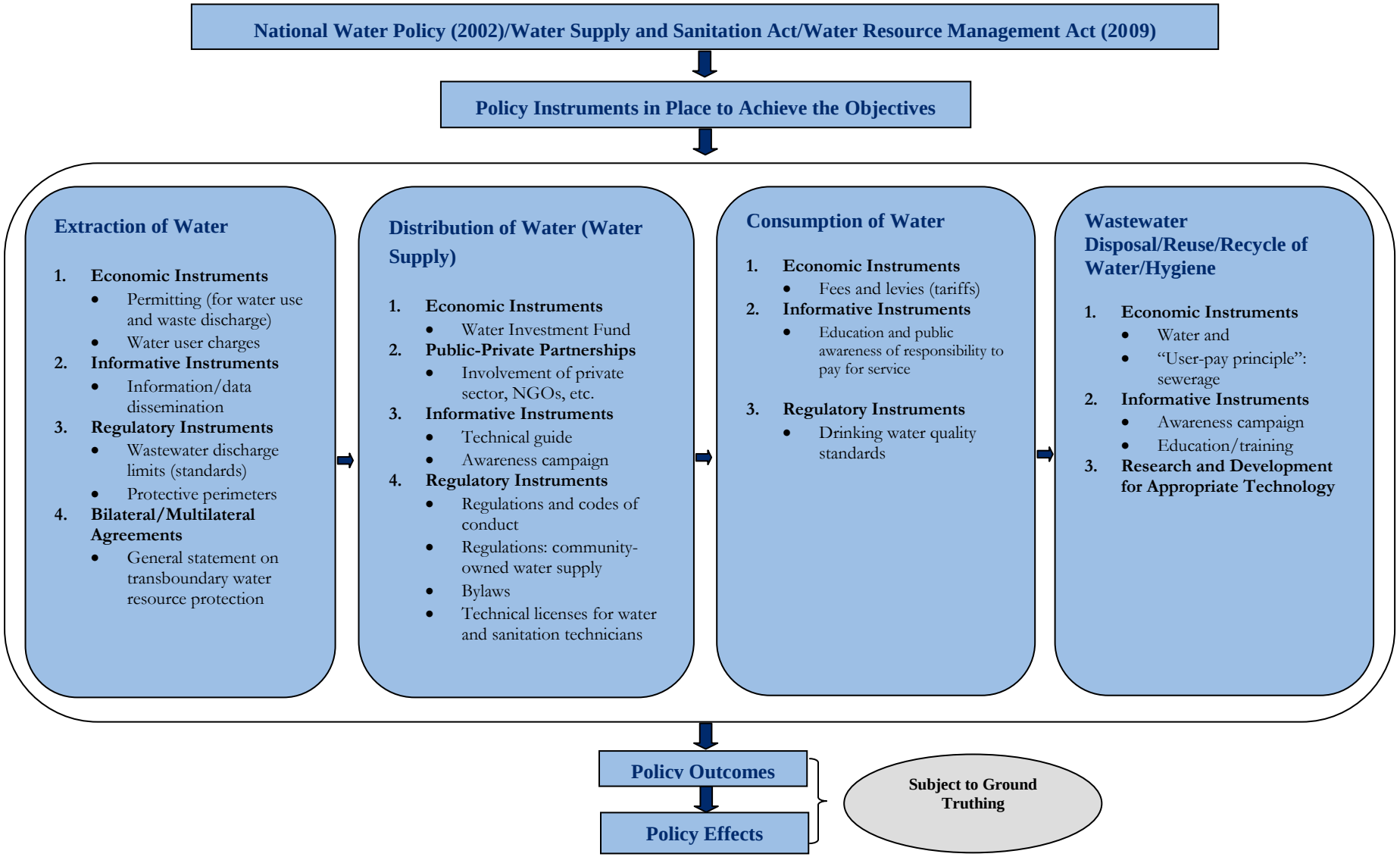
The act provides measures to curb land degradation caused by human activities such as overgrazing, development of human settlements, and use of fuelwood. It also addresses issues regarding sanitation and, indirectly, waste management. (There is no specific reference to waste management.) Section 55 of the Local Government (Urban Authorities) Act (1982) states that, subject to this act, these points shall be the duty of every urban authority within its area of jurisdiction:

- Keep and maintain in good order and repair all public latrines, urinals, cesspits, dustbins, and other receptacles for the temporary deposit and collection of rubbish; keep and maintain in good order and repair all public bathing and washing places; provide for the removal of all refuse and filth from any public or private place; and provide for the removal of night soil and the disposal of sewage from all premises and houses in its area, so as to prevent injury to health
- Establish, maintain, operate, and control drainage and sewerage works
- Establish, maintain, and carry out services for removal and destruction of otherwise dealing with night soil and all other kinds of refuse

PUBLIC HEALTH ACT, 2009

The act provides for the promotion, preservation, and maintenance of public health with the goal of ensuring the provisions of comprehensive, functional, and sustainable public health services to the general public. In addition, the act details the institutional framework and roles for public health management. Among other provisions, the act provides for notification procedures for infections of communicable or noncommunicable diseases (Articles 9 to 10). The act further provides for the control of epidemic, pandemic, and endemic diseases (Article 24). The act also requires the public to control breeding sites of mosquitoes and other disease vectors, vermin, and other disease-causative agents (Article 30).

Figure 0-3: Summary of Identified Policy Instruments as Reflected in Water Abstraction and Consumption Lifecycle



6.3.2 EFFICACY ANALYSIS

CENTRAL VALUE OF THE ADDRESSED POLICY INSTRUMENTS

Figure 6-3 is the water abstraction and consumption lifecycle with the analyzed policy instruments. Below is the detailed analysis of the identified policy instruments.

Water Abstraction

Just like in Rwanda and Kenya, the Tanzania policy and legislation framework stipulates the permit use system (economic instrument) as one of the water resource managing mechanisms. Linked to this are the wastewater discharge limits or standards aimed at protecting water resource quality. It was further noted that dissemination of data (informative instrument) and related information is also included. The policy framework further indicates the essence of protecting transboundary water resources, though it does not detail the mechanism or policy instrument to enhance this provision.

Water Distribution Services

In order to facilitate water supply investment, the policy framework requires the government to establish the Water Investment Fund. This can be regarded as an economic policy tool. It's clear that successful establishment of this fund will enable successful water policy implementation. The policy framework also highlights private sector involvement. However, the policy does not elucidate the type of mechanism to be engaged in order to attract the private sector. The regulatory instruments package includes the code of conduct for water works, as well as the technical license for water supply and sanitation technicians. Both instruments are essential for protecting the waterworks industry. Others include community-owned water supply regulations and water bylaws.

Water Consumption

The water consumption component engages water-user fees and levies. Just as pointed out for Kenya and Uganda, well-designed water tariffs (economic tools) can provide incentives for sustainable water consumption. Linked to this are drinking water quality standards essential for water safety. Notably, the awareness policy package is not addressed.

Wastewater Disposal: End of Pipe

The "user-pay principle" (for sewerage users) is one of the economic tools stipulated. This implies that wastewater discharge tariffs for sewerage system users exist. It can be pointed out that a combination of tariff structure with a good regulatory system, linked to appropriate wastewater quality and quantity monitoring, can be environmentally effective in terms of water resource pollution prevention. Additionally, there are awareness campaigns (informative tools), as well as research and development.

Gaps

In a normal situation where the policy framework is noted to be effective, policy objectives are expected to be partly or fully achieved. This implies that public behavior and practices related to water abstraction and consumption are expected to be sustainable. However, the existing public behavior and practices cannot be credited in that way. This is evidenced by the presence of a high percentage of NRW, water works vandalism, water payment reluctances, and water source pollution due to socioeconomic activities. Looking at these from a policy point of view, it can be generalized that some policy gaps exist. This includes the absence of water abstraction and consumption bylaws. Additionally, awareness programs and relevant government regulations are not yet in place, though stipulated within the main water policies.

Therefore, it is recommended that the authorities better establish the bylaws and conduct public awareness programs. It is suggested that the bylaws emphasize important alternative water sources such as rainwater harvesting and wastewater recycling. In addition, the government must establish relevant regulations.

6.3.4 FOR EAC HARMONIZATION

RELEVANCE

In general, the policy focuses on the linkage of social, economic, and environmental aspects that can be regarded as the sustainability context. From a social point of view, the policy links the water sector with the Poverty Reduction Strategy (2010), recognizing that the public depends on the environment (soil, water, etc.) to meet basic needs. Additionally, the emphasis on social and environmental impact assessment is addressed. Further, the policy addresses the link among other sectoral policies, such as industry, agriculture, energy, fisheries, and others, with the aim of enhancing the economy. Importantly, the policy highlights regional integration and cooperation.

However, it must be noted that the National Water Policy was launched in 2002, now 12 years ago. The elapsed period of time has allowed new aspects to arise that were not engaged in the policy. Notably, Tanzania is already a victim of the impacts of climate change, particularly in the water sector (URT, 2012). The policy does not address issues related to climate-change adaptation or mitigation measures. Similarly, the Water Resource Management Act (2009) and the Water Supply and Sanitation Act (2009), as the main policy-implementing tools, do not address climate change. This situation inhibits the possibility of exploiting new innovation opportunities within the water sector, both at the regional and global setting. Therefore, it is recommended that the National Water Policy be reviewed and updated in order to address the East African Vision and climate-change policy.

POLICY INSTRUMENTS

The policy framework addresses instruments of water resources management, as well as water distribution components. However, the framework does not provide enough detail on water consumption. Equally, the policy framework does not provide enough policy mechanisms for rainwater harvesting, wastewater recycling, and reuse. In addition, the framework does not address policy instruments for transboundary water resource management. It can be concluded that it is possible for the Tanzania water policy framework to be in harmony with EAC framework, but there is a need to develop or adopt other instruments already in place from other EAC countries.

Table 18: Analysis of Harmony Between Tanzania and EAC on Laws, Policies, Regulations, Framework, and Standards

COUNTRY	WATER SUPPLY	SANITATION	FUNCTIONING/ENFORCEMENT AT NATION LEVEL (YES, NO)	HARMONY AT EAC LEVEL (YES, NO, N/A)
TANZANIA				YES
Laws	✓	✓		YES
Policy	✓	✓		YES
Regulation	✓	✓		YES

Standards	✓	✓		YES

6.4 INSTITUTIONAL FRAMEWORKS RELEVANT TO THE PROVISION OF WASH SERVICES, ENGAGEMENT OF STAKEHOLDERS, AND EFFECTIVE MANAGEMENT OF FINANCIAL AND HUMAN RESOURCES

6.4.1 INSTITUTIONAL SETUP

In Tanzania, the Minister for Water is charged with the mandate of policy and strategy formulation and legislative aspects of integrated water resources management, as well as coordination and supervision of water service provision, by water authorities and COWSOs in the country. The Minister of Local Government is mandated to ensure the execution by LGAs of functions connected with the implementation of the Water Supply and Sanitation Act (2009).

The Regional Secretariat, established under Section 7, is responsible for the provision of expert advice and guidance to LGAs on water supply and sanitation matters, as well as monitoring and evaluating projects of LGAs and providing technical backstops. LGAs are responsible for coordinating the budgetary requirements of water authorities with local budget authorities, as well as providing water supply and sanitation services in areas not served by water authorities and COWSOs. Water supply and sanitation authorities (WSSAs), established under Section 9, are responsible for the provision of water and sanitation services in their areas of jurisdiction. COWSOs are established by the majority of members in the community, and are vested with powers to manage, operate, and maintain public taps and or waterworks; provide adequate and safe supply of water to consumers; and install water meters with the purpose of measuring the amount of water supplied to a public tap or consumer. Under Section 28, the act establishes the EWURA to regulate provision of water supply and sewerage services in the country by issuing service provision licenses, setting standards and tariffs, and monitoring and evaluating service providers. Figure 6-4 below presents the schematic institutional arrangement for water and sanitation in Tanzania.

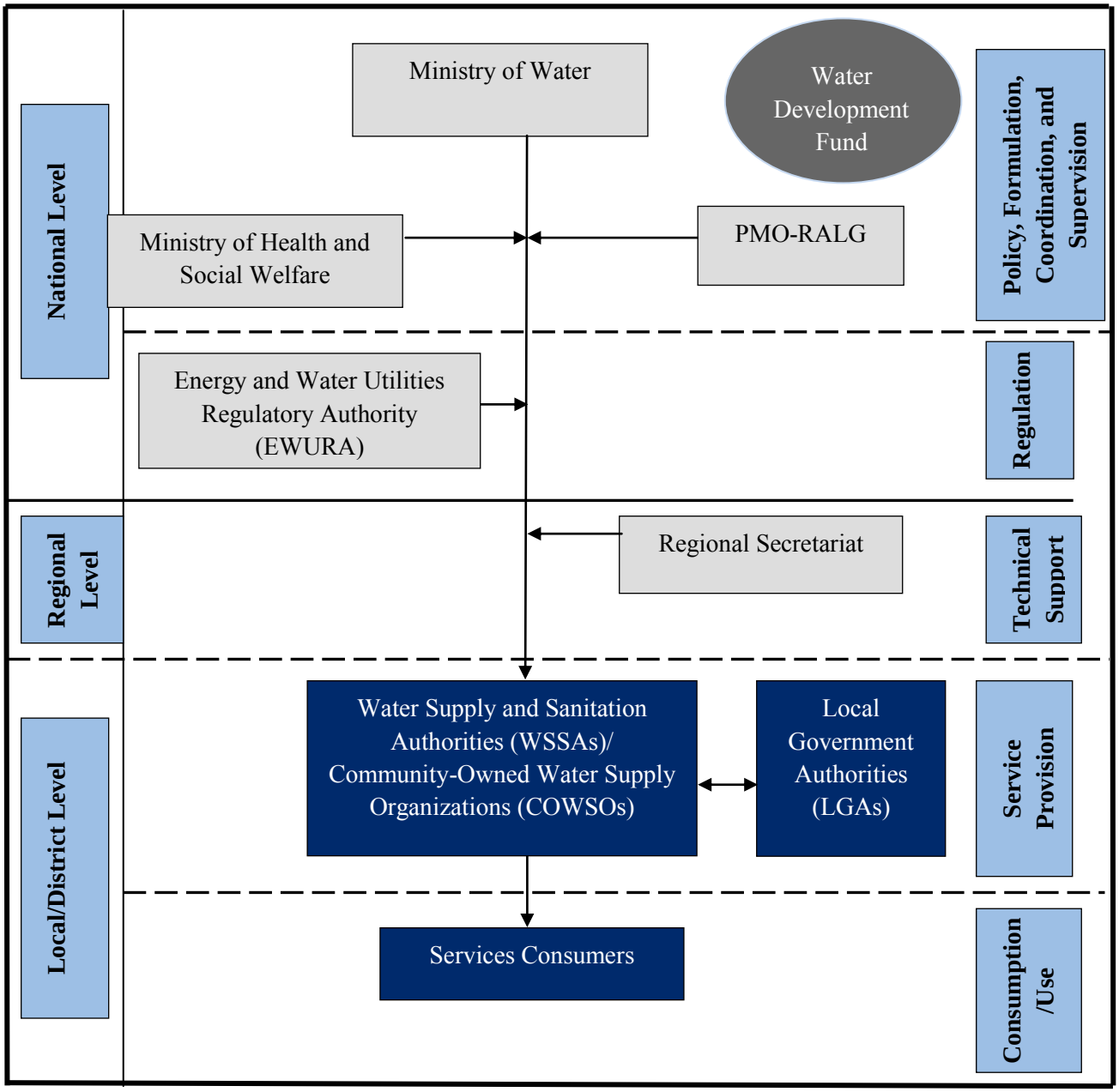


Figure 6-4: Institutional Framework for WASH service provision in Tanzania

6.4.2 ENGAGEMENT OF STAKEHOLDERS

The engagement of stakeholders in the provision of water supply and sanitation services in Tanzania tops the agenda in the formulation and implementation of water supply and sanitation interventions. The necessity for stakeholder engagement is based upon the fact that it creates a sense of ownership, responsibility, and accountability to ensure that services are provided to users accordingly. Additionally, the involvement of

stakeholders (especially those who are also beneficiaries) helps encourage them to own the service-delivery process. This takes care of sustainability issues and enhances the continuity of services provision.

According to the Water Supply and Sanitation Act of 2009 (URT, 2009), provision of water supply and sanitation is vested upon various stakeholders with various roles and responsibilities. Among the stakeholders involved are the Ministry of Water; the PMO-RALG; the Regional Secretariat; and the Energy and Water Utility Regulatory Authority (EWURA). Other key stakeholders in the provision of water supply and sanitation services include WSSAs and COWSOs. Table 19 below details the roles and responsibilities of the various stakeholders involved in water supply and sanitation services provision.

With regard to the decision-making process, WSSAs have a framework for how to involve stakeholders. For instance, each utility has established water-user groups or water committees, which involve service recipients. Involvement of water-user groups or water committees helps authorities manage the services at the local level. Therefore, decision making (for instance, in formation of bylaws) involves water-user groups; water committees; and other individual customers, such as public and private institutions, before the management presents the issues to the board and/or the Ward Development Committee, then forwarded to higher authorities, such as the Regional Secretariat and the Ministry of Water. All of these are efforts ensure that stakeholders have a permanent position in ensuring that quality water supply and sanitation services are provided.

Table 19: Roles and Responsibilities of Various Stakeholders in the Provision of Water Supply and Sanitation Services

S/NO.	STAKEHOLDER	ROLES AND RESPONSIBILITIES
1	Ministry of Water and Ministry of Health and Social Welfare (MoHSW)	• Formulate policies, legislations, and strategies for provision of water supply and sanitation services • Provide guidance to sanitation implementation strategies • Coordinate and monitor water authority strategies and plans • Overall sector investment planning and resource mobilization • Monitor performance and regulate COWSOs • Provide technical support and monitoring for major capital works • Advise EWURA on formulation of technical guidelines/standards
2	Prime Minister's Office Regional Administration and Local Government (PMO-RALG)	• Supervise implementation of the provision of water supply and sanitation services • Coordinate planning and resource mobilization for WSSAs through local government budgets, external support agencies, nongovernmental organizations (NGOs), and the public • Facilitate provision of low-cost, appropriate technologies for water supply and sanitation services to communities
3	Regional Secretariat	• Provide expert advice and guidance to local government authorities (LGAs) on water supply and sanitation matters • Monitor and evaluate LGA projects and provide technical backstops • Oversee and compile LGAs' plans and reports, and forward them to the minister
4	Energy and Water Utilities Regulatory Authority (EWURA)	• Exercise licensing and regulatory functions regarding water supply and sanitation services • Establish standards relating to equipment attached to the water and sanitation system • Establish guidelines for tariffs chargeable for the provisions of water supply and sanitation services • Approve tariffs chargeable for the provision of water supply and sanitation services • Monitor water quality standards of performance for the provision of water supply and sanitation services • Establish or approve standards and codes of conduct with respect to licenses, consumers, and public safety
5	The Ministry of Finance, Planning and Economic Development	• Responsible for the overall planning and budgeting related to the budget process and the medium-term expenditure framework

S/NO.	STAKEHOLDER	ROLES AND RESPONSIBILITIES
6	Local Government Authorities (LGAs)	• Representation on WSSA boards • Coordinate WSSA budgets within council budgets • Disburse block grant funds to WSSAs • Coordinate physical planning with WSSAs • Delegate performance monitoring and regulation of COWSOs • Provide and/or promote on-site sanitation • Formulate bylaws concerning water supply and sanitation • Provide technical support for quality water services
7	Water Supply and Sanitation Authorities (WSSAs)	• Provide efficient and economical water services • Rehabilitate and replace infrastructure • Apply regulations on water services and tariffs • Procure and lease water and sewerage facilities • Contract and manage Water Service Providers (WSPs) • Protect and maintain water sources • Prepare business plans to provide water supply and sewerage services, including capital investment plans • Provide services not contracted out • Formulate bylaws for service provision
8	Water Service Providers (WSPs)	• Provide water and sanitation services • Provide regular maintenance of the schemes
9	Community-Owned Water Supply Organizations (COWSOs)	• Manage, operate, and maintain public taps and/or waterworks, and provide an adequate and safe supply of water to consumers • Install water meters for the purpose of measuring the amount of water supplied to a public tap or a consumer.
10	Private Sector	• Actively participate with LGAs and basin water offices to provide various services, including supply of equipment, technical consultancies, and the construction of works

6.4.3 MANAGEMENT OF HUMAN AND FINANCIAL RESOURCES

According to the Water Supply and Sanitation Act of 2009 (URT, 2009), governance of the WSSAs is vested to the board of directors. The board is responsible for carrying out the functions and management of the business and affairs of the water authority. The board is appointed by the Minister responsible for water, in consultation with the Regional Secretariat or relevant local authority. Board members are drawn from various stakeholders, such as local authorities, business communities, consumers, and civil societies involved in the provision of water and sanitation services. The board is headed by the chairperson. The managing director of the water authority is the secretary of the board. According to the act, the board may delegate its functions, powers, and authority to any committee or person, except those related to

- approval of plans and budget;
- approval of annual reports or audited accounts; and
- borrowing the sum of money, as may be necessary for the water authority.

The day-to-day activities of the utility are undertaken by the managing director, who is assisted by several managers, such as the technical manager, commercial manager, finance manager, and administration and human resource manager. Of course, some variations exist depending on the staffing capacity of the authorities. For instance, Magu Urban Water and Sanitation Authority (MAUWSA) and Geita Urban Water and Sewerage Authority (GEUWASA), which are located in the Lake Victoria Basin, have only a technical manager and finance/administration manager.

According to the literature review and brief visits to some authorities, it was noted that the water utility authorities are governed according to the established framework, although some weaknesses do exist. According to EWURA (2013b), by November 2013, 13 water utilities had not established a board of directors; 51 were operational with active boards of directors; and in 41 (equivalent to 39 percent) of the utilities, the tenure of the board of directors had expired. This is a serious issue that needs to be addressed in order to observe the principle of good governance. For instance, Nansio Urban Water and Sewerage Authority is not a full-fledged authority in terms of organizational setup, as it operates as a unit of the Ukerewe district council. In Magu, the top leadership is not substantive; the managing director is just acting for a period of three years, and the board of directors has not been in place for three years now.

In order for water authorities to provide quality services, they need to have a reliable source of funds. Section 23 of the Water Supply and Sanitation Act provides funds for their operations. These include: sums that may be appropriated by Parliament for the purposes of a water authority; sums that a water authority may receive as fees, rates, or charges for water supplied or services rendered; and sums that may be received from LGAs in their areas of responsibility.

Therefore, water authorities are required by law to charge their customers for the water supplied or services rendered in order to meet their O&M costs and attain financial sustainability. Based on the categories of urban water utility authorities, most of the water utility authorities in towns around Lake Victoria are classified as Category C. (The exceptions are Mwanza's WSSA in Category A, and Musoma's and Bukoba's WSSAs in Category B.) Generally, authorities under Category C are facing serious financial issues in meeting their obligations. The major constraint is low revenue collection to meet high O&M expenses. Electricity bills are among the items that consume most of the collected revenues. Despite the fact that electricity bills are supposed to be covered by the government, in most cases the disbursement of the subsidy is not done on time, and Tanzania Electricity Supply Company Limited operates in such a way that failure to pay electricity bills within a given time frame results in disconnected service. This problem was reported in Magu, Geita, Bunda, and Musoma. High electricity bills do not only affect authorities in Category C, but also those in Categories A and B, as roughly 30 percent of their revenues are spent on electricity bills. Financial management is a sensitive issue that needs the appropriate knowledge and skills in order to operate in a proper manner. Because most of the authorities are under-staffed, record keeping was noted to be an issue of concern, and this requires serious intervention.

The regulatory body sets block tariffs, where large water consumers pay more and thus subsidize consumers of less water. This is in line with Dublin Principle number 4, which ensures that vulnerable groups or underserved areas are cushioned by the high recovery rate by WSSAs. . Furthermore, to support investment in underserved areas, Section 44 of the Water Supply and Sanitation Act (2009) establishes the National Water Investment Fund with the objective of providing investment support for water service provision, and the management of catchment areas serving water supply abstractions, in areas of mainland Tanzania that are without adequate water services. This arrangement should be commended, as it ensures that all citizens have access to water.

6.5 KEY ISSUES AND CONSTRAINTS IMPACTING EFFECTIVE PROVISION OF WATER SUPPLY & SANITATION SERVICES

6.5.1 LOW CAPACITY TO MEET THE DEMAND OF WATER SUPPLY AND SANITATION SERVICES

Although issues pertaining to water coverage have been given high priority for quite some time in the regional and district authorities, the coverage is still low. This is true for unplanned and unserviced areas in the urban, peri-urban, and emerging small-town areas, as well as in most rural settings surrounding the basin in Tanzania. It is therefore true that low water supply and sanitation coverage is an issue of concern, as it denies the rights of the people to have clean and safe water. The major causes of low water coverage include:

1. Old water supply networks. Most water supply schemes have exceeded their design capacity and are outdated. Old water supply networks lead to leakages and low water-supply capacity.
2. Rapid economic and population growth. An increase in population and economic development has led to an increase in the demand for water beyond the production capacity. This increases the gap between water demand and its corresponding supply. For instance, in the MAUWSA in Magu, the demand is 7,183 cubic meters per day, while production is only 1,221 cubic meters per day. In the Bunda Urban Water Supply Authority, demand is 5,000 cubic meters per day, but production is 1,260 cubic meters per day. In GEUWASA in Geita, demand is 6,120 cubic meters per day, while production is 243.28 cubic meters per day.
3. High electricity bills, which jeopardize a chance of infrastructure expansion. This is a major constraint facing most water authorities. Sometimes all revenues collected are used to pay electricity bills. This situation was noted in Magu, Bunda, and Musoma.
4. Vandalism and mismanagement of the water supply system. This is due to inadequate knowledge and awareness of the proper usage and maintenance of the system developed.
5. Low capital for water supply and sanitation infrastructure development. This inhibits authorities from expanding their service networks.

6.5.2 HIGH NON-REVENUE WATER

This is one of the biggest challenges affecting most WSSAs in the country. NRW is assessed as the amount of water lost in percentage of water production. The Memorandum of Understanding (MoU) between the Ministry of Water and regional and District, Small Towns and National Project Water Utilities (DSNP WSSAs) requires regional WSSAs to achieve NRW of 20 percent or less, and DSNP WSSAs to achieve NRW of 36 percent or less. From 2010–2011 to 2012–2013, none of the regional WSSAs was able to achieve the set target of 20 percent. For the past three years, NRW has shown a fluctuating trend, increasing from 34.2 percent in 2010–2011 to 36.3 percent in 2011–2012 to 35.6 percent in 2012–2013. In 2012–2013, Shinyanga WSSA recorded the lowest NRW level of 22 percent; the lowest in 2011–2012 was 25 percent, recorded by Tabora WSSA. However, Tabora WSSA in 2012–2013 saw an increase of NRW from 25 to 32.7 percent. The increase in NRW percentages in Tabora could be attributed to improvement in measuring the actual billed water volume after installing meters to all active household and industrial water connections. Before universal metering, volumes of water consumed by customers was estimated (EWURA, 2013).

With regard to regional WSSAs sitting in the Lake Victoria Basin, Musoma WSSA recorded the highest levels of NRW in 2010–2011 and 2011–2012: 47 and 47.20 percent, respectively. In 2012–2013, the highest was 53.4 percent, recorded by Bukoba WSSA. For DSNP WSSAs, the overall average NRW improved from 43 percent in 2010–2011 to 41 percent in 2012–2013. The greatest change in NRW level for WSSAs sitting in

the Lake Victoria Basin was observed in Nansio, where NRW decreased from 45.7 percent in 2010–2011 to 27.5 percent in 2011–2012, before increasing to 42.7 percent in 2012–2013.

From the above figures (detailed below in Table 20), it is clear that high levels of NRW are detrimental to the financial viability of water utilities, as well to the quality of water itself. It is obvious that WSSAs need to work seriously on efforts to reduce the level of NRW to at least attain the targets set in the MoU.

Table 20: Percentage of NRW Levels for WSSAs Sitting in the Lake Victoria Basin from 2010–2011 to 2012–2013

WSSAS	CATEGORY	2010–2011 (%)	2011–2012 (%)	2012–2013 (%)
Musoma	A	47.00	47.20	45.30
Mwanza	A	46.40	42.80	40.70
Shinyanga	A	22.60	30.70	22.00
Bukoba	B	47.10	47.10	53.40
Bariadi	C	34.6	24.50	25.00
Geita	C	31.00	31.00	24.00
Biharamulo	C	37.90	33.21	38.84
Bunda	C	43.70	57.68	48.26
Kahama	C	14.27	11.84	14.23
Karagwe	C	34.00	22.63	not determined
Magu	C	20.00	57.72	47.16
Misungwi	C	34.00	30.29	38.39
Muleba	C	49.20	33.20	21.44
Nansio	C	45.70	27.55	42.86
Ngara	C	44.60	40.58	66.03
Ngudu	C	25.00	20.00	30.00
Nzega	C	29.26	27.61	29.94
Sengerama	C	53.00	35.50	40.00
Tarime	C	64.00	69.23	70.36
Ushirombo	C	18.47	13.97	13.84
Isaka	C	16.00	34.91	35.00

Source: EWURA 2013(a) and (b)

6.5.3 AVERAGE SERVICE HOURS

Average service hours provide information on the average daily water supply available at the customer's connection. Generally, utilities are required to supply water service for 24 hours. In 2012–2013, average service hours decreased to 14.9 hours from 16 hours reported in 2011–2012. Also in 2012–2013, only 24.3 percent of the population in regional WSSAs received water supply services for 24 hours, down from 41.5 percent in 2011–2012. For DSNP WSSAs, the overall average service hours decreased from 10 hours per day in 2010–2011 to 9 hours per day in 2011–2012, and thereafter increased to 10 hours per day in 2012–2013. WSSAs are said to perform better if they are able to provide services for more than 15 hours per day. As for WSSAs located in the Lake Victoria Basin, Kahama reported 24 hours of service, while Biharamulo reported an average of between 1 and 3 hours per day. WSSAs need to strategize to ensure that the average hours of service increase to the recommended hours of service, so that customers are satisfied and thus willing to pay for services rendered.

6.5.4 METERING RATIO

Metering ration is defined as the percentage of customers with meters. In 2012–2013, regional WSSAs attained a metering ratio of 96.6 percent, up from 83.2 percent in 2011–2012. For the Dar es Salaam Water and Sewerage Corporation (DAWASCO), the ratio was 93.6 percent in 2012–2013 and 81.9 percent in 2011–2012. For DSNP WSSAs, the overall metering ratio made a steady increase from 51 percent in 2010–2011 to 55 percent in 2011–2012, and thereafter to 59 percent in 2012–2013. Increase of the metering ratio is very critical to enabling the understanding of the actual amount of water produced and sold to customers. Unmetered customers pay a flat rate based on estimated monthly consumption. This practice results in inaccurate billing, leading to either commercial losses or overcharging of customers.

In addition, high metering ratio could be considered a management tool for dealing with NRW, as available data indicate that the use of metering systems assists in the estimation of reliable NRW figures. For instance, when Tabora WSSAs were not metered in 2011–2012, they recorded NRW of 25 percent. After metering all active connections in 2012–2013, NRW rose to 32.7 percent. This implies that when Tabora WSSAs were not metered, all their active connections resulted in the overestimation of the volume of water consumed by its unmetered consumers (EWURA, 2013a). It is therefore important that WSSAs ensure a 100 percent metering ratio as a means of controlling both real and apparent NRW losses, and thus increasing utilities' revenues and financial sustainability.

6.5.5 STAFF PER 1,000 WATER AND SEWERAGE CONNECTIONS

This measures the number of staff that WSSAs can utilize for every 1,000 connections. For regional WSSAs, the recommended staff per 1,000 connections is less than or equal to 5; for DSNP WSSAs, that number is 7. In 2011–2012 and 2012–2013, the average staff per 1,000 connections for regional WSSAs stood constant at 7. The average staff per 1,000 connections for DSNP WSSAs decreased from 29 in 2010–2011 to 27 in 2011–2012 and thereafter to 25 in 2012–2013.

However, despite this overall improvement in staff productivity per 1,000 connections, some DSNP WSSAs have a ratio of staff per 1,000 connections of more than 100—for instance, Namanyere, Isaka, and Orkesumet. Both utilities under regional and DSNP WSSAs need to improve the ratio of staff per 1,000 connections to at least attain the recommended ratio of fewer than seven (7). In addition, EWURA (2013b) noted that the higher ratio of staff per 1,000 connections for most DSNP WSSAs is due to low customer base, which in many cases is less than 1,000 connections. This situation calls for WSSAs to deliberately work to increase their customer bases by expanding service coverage.

6.5.6 COST RECOVERY

Cost recovery is assessed through the use of working and operating ratios. These ratios measure the ability of the utility to recover operational costs from its annual revenues. According to EWURA (2013a), the working ratio is calculated by taking the utility's total annual expenses (excluding depreciation and debt-related expenses) and dividing it by its annual revenue. The recommended ratio should not be less than 0.67. On the other hand, the operating ratio is an indicator used to measure a utility's ability to recover operating costs (including depreciation) from its annual revenue. The recommended ratio should be less than 1.

On average, the working ratio for regional WSSAs increased from 1.00 in 2011–2012 to 1.08 in 2012–2013, and no utility managed to meet the recommended ratio of 0.67. Moreover, in 2012–2013, the average operating ratio increased to 1.5 from 1.2 in 2011–2012. In 2012–2013, Bariadi WSSAs recorded the highest operating ratio of 5.57, while Arusha WSSAs recorded the lowest operating ratio of 0.85. The data further indicates that Mwanza, Shinyanga, and Musoma WSSAs managed to reduce their operating ratios from the levels attained during 2011–2012.

In order for the WSSAs to recover their costs (i.e., in order for utilities to be able to cover operations and maintenance costs), efforts are required to ensure that their working ratio and operating costs are within the recommended levels. Otherwise, their financial sustainability will continue to be in jeopardy.

6.5.7 INFORMATION MANAGEMENT SYSTEM

The presence of an appropriate information management system was noted to be an issue for most water utility authorities. Sharing information among various actors within and outside the authority was also noted to be a problem, as inconsistency of information was observed, raising questions about the reliability and validity of the given data. If this is not addressed seriously, it will continue to be a challenge and affect decision making.

6.5.8 WATER QUALITY MONITORING

Water utilities are required to carry out regular water quality tests to ensure that water supplied to customers complies with the set standards for potable water in the country. The most common tests required to be done by the WSSAs are for *E. coli*, turbidity, residual chlorine, and pH. The recommended average compliance for the four parameters should be at least 98 percent.

The overall compliance with these drinking water standards decreased from 90 percent in 2011–2012 to 86 percent in 2012–2013. For DAWASCO, the average compliance declined from 99 percent in 2011–2012 to 94 percent in 2012–2013. In the WSSAs located in the Lake Victoria Basin, increased compliance was recorded by Shinyanga WSSAs, and a decrease was recorded by Musoma and Bukoba. Generally, a decrease on compliance to water quality tests implies not only that customers are supplied with water of uncertain quality, but also that water consumers are at high risk for waterborne diseases and other health-related problems. This situation is unacceptable and calls for WSSAs to seriously address this issue to ensure that consumers are supplied with water that meets the set standards.

6.5.9 WASTEWATER QUALITY MONITORING

WSSAs are obliged to treat their wastewater effluent discharge to meet the standards set by the Tanzania Bureau of Standards. With the exception of Tanga WSSAs, all other utilities with sewerage systems treat their wastewater with the use of waste stabilization ponds. In order to monitor wastewater quality, two parameters are considered: five days Biological Oxygen Demand (BOD5) and Chemical Oxygen Demand (COD). The overall average compliance with both BOD5 and COD was 76.6 percent in 2012–2013. In 2011–2012, compliance was 70.6 percent for BOD5 and 73 percent for COD. Mwanza WSSAs achieved 100 percent compliance in 2012–2013. However, slight differences were evident between the figures reported by WSSAs and those by EWURA. Except for Songea, where the figures were the same (100 percent), and Lindi and Bukoba, where WSSAs' figures were lower than those of EWURA, the rest of WSSAs' figures were higher than those recorded by EWURA. This poses a serious issue of testing efficiency and data reliability. As it is, the compliance levels recorded during 2011–2012 and 2012–2013 were below the recommended level and remain a challenge to WSSAs.

6.5.10 REVENUE COLLECTION EFFICIENCY

This measures the ability of WSSAs to collect the billed amount from water supply and sewerage services during a year. Recommended revenue collection efficiency is 95 percent. Therefore, higher revenue collection efficiency enables WSSAs to have adequate financial resources for the utility's operation, hence ensuring the sustainability of the utility. Revenue collection efficiency improved from 70.3 percent in 2010–2011 to 77.2 percent in 2011–2012 to 89.2 percent in 2012–2013. Of WSSAs located within the Lake Victoria Basin, Mwanza, Shinyanga, and Musoma attained collection efficiencies of more than 98.1 percent in 2012–2013.

For DAWASCO, collection efficiency increased from 77.4 percent in 2010–2011 to 78.3 percent in 2011–2012 before decreasing to 76.9 percent in 2012–2013. Based on the above data, WSSAs need to increase revenue collection efficiency in order to have more available resources for utilities to provide quality service. However, according to EWURA (2013a), the increase of revenue collection efficiency in Mwanza, Shinyanga, and Musoma was due to the use of billing software that could not separate arrears from current year's collection, leading to relatively high records of collection efficiencies. While improving their billing system efforts, it is important for WSSAs to also disaggregate data from the arrears.

6.5.11 LOW OVERALL EFFICIENCY

Overall efficiency measures the actual revenue collection, expressed as a percentage of the value of total water production. In other words, overall efficiency equals collection efficiency multiplied by billed water as a percentage of water production volume (EWURA, 2013a). Overall efficiency is driven by collection efficiency and the level of NRW. The benchmark for this is 76 percent. The overall average of overall efficiency improved from 47.6 percent in 2010–2011 to 50.5 percent in 2011–2012 to 57 percent in 2012–2013. For DAWASCO, there was a slight increase of overall efficiency, from 38.8 percent in 2010–2011 to 39.4 percent in 2011–2012, before a decline to 34.2 percent in 2012–2013. For the WSSAs based in the Lake Victoria Basin, in 2012–2013 Shinyanga WSSA registered the highest overall efficiency of 78 percent, Bukoba was the poorest with an overall efficiency of 36.7 percent. Contributing to their status as best and poorest performers were Shinyanga and Bukoba's 2012–2013 NRW levels: 22 percent and 53 percent, respectively. For WSSAs to attain recommended overall efficiency, they are required to attain an NRW level of 20 percent and revenue collection efficiency of 95 percent. Based on Sections 6.5.2 and 6.5.10, WSSAs have a long way to go to increase their overall efficiencies, unless they put in place effective strategies to reduce the level of NRW to 20 percent or less and increase revenue collection efficiency to at least 95 percent.

6.5.12 COMPLIANCE WITH REGULATORY DIRECTIVES & REQUIREMENTS

According to the Water Supply and Sanitation Act, WSSAs have the obligation to comply with regulatory directives and requirements. Among the major regulatory obligations with which WSSAs need to comply are tariff conditions, reporting requirements, and the performance targets stipulated in the MoU between the WSSAs and the Ministry of Water.

The average overall compliance with tariff conditions was 59.4 percent, compared with 71 percent in 2011–2012. Compliance to the MoU performance targets declined from 65.2 percent in 2011–2012 to 61 percent in 2012–2013. On the sewerage indicators, the 10 regional WSSAs rendering sewerage services attained an overall compliance of 58 percent in 2012–2013, compared with 54 percent in 2011–2012. Based on these figures, it is clear that the level of compliance to set regulatory directives and requirements poses a serious challenge, not only to WSSAs but also to regulatory and supervisory bodies.

It is therefore important that WSSAs comply fully with the given directives and requirements. Regulatory bodies such as EWURA and supervisory bodies such as the Ministry of Water, the PMO-RALG, and the MoHSW need to ensure that WSSAs fully implement the given directives and recommendation in order to ensure quality service provision as indicated in Table 21 below.

PARAMETER	RECOMMENDED VALUE (%)
Water Supply Coverage	100
Revenue Collection	100
Metering	100
Water Quality testing (bacterialogical)	80
Water Quality Testing (Physico-chcmical)	90

Table 21: Parameters and Their Recommended Standards as Prescribed by the Regulatory Authority

6.5.13 POLLUTION CONTROL

Pollution is one of the critical issues affecting quality service provision in most WSSAs. Sources of pollution causing problems to the WSSAs include human activities in catchment areas (such as agriculture and illegal fishing) and poor collection, transportation, and disposal of both solid and liquid wastes. In Geita, for example, pollution resulted from artisanal mining in the catchment of Nyakanga Dam. This has made it difficult securing funds from the LVWATSAN program to construct a water distribution system after an investment of about $5.2 million on water supply works by Geita Gold Mine Ltd. It was learned that African Development Bank (AfDB), the financer of the LVWATSAN program under LVBC, had set a condition of mitigating pollution risks in the catchment of Nyakanga Dam before it releases funds for the construction of a water distribution network. It is obvious that if effective controlling measures are not taken to control pollution, water quality will continue to be impaired and thus increase operational costs for water treatment.

6.5.14 SOLID WASTE MANAGEMENT

Solid waste management is given low priority in most WSSAs. This makes it hard to manage, as they do not have enough equipment and they lack necessary staff protective gear and appropriate disposal sites. Despite these limitations, some efforts were noted in which authorities are engaging communities in collection, transportation, and disposal of solid wastes. This was observed in Bunda township authority. This initiative is commended, and encouraged to be scaled up to other authorities, as it accelerates the spirit of public-private partnership and community participation in the country's development initiatives.

6.5.15 SWOT ANALYSIS FOR PROVISION OF WATER AND SANITATION SERVICES IN TANZANIA

In summary, the water supply and sanitation institution setup in Tanzania is similar in nature and operation to the other countries in East Africa. Therefore, they have similar opportunities and strengths, and they suffer the same weaknesses and threats. The SWOT analysis is provided in Table 22.

Table 22: SWOT Analysis for WASH Services Provision in Tanzania

STRENGTHS	WEAKNESSES
• Presence of legal entities involved in the service provision • Committed management and staff • Compliance with the Public Procurement Act and its regulations • Adequate participatory decision-making process • Good teamwork	• Inadequate capacity to meet demand of water supply and sanitation services • Inadequate human, financial, and physical resources, in terms of quality and quantity • Inadequate information management systems • Delays in attending and responding to customer complaints • Old water supply system • Rigidity to change • Low billing efficiency • Inadequate compliance to maintenance schedule • Low capital for water supply and sanitation infrastructure development • Minimal replacement of pipes
OPPORTUNITIES	**THREATS**
• Growing support from the government • Existence of potential institutions and stakeholders for collaboration • Expanding needs for water supply and sanitation services • Existence of policies, laws, regulations, strategies, and initiatives for provision of water supply and sanitation services • Existence of potential funding organizations • Presence of committed private water operators • Existence of local institutions such as water-user associations, water-user committees, etc. • Availability of relevant ICT technology to enhance effectiveness and efficiency for service provision	• Poor urban planning • Pollution of water resources as a result of encroachment to water sources, discharge of effluents, and solid and liquid wastes • Weak enforcement of laws, regulations, and bylaws • Illegal connection • High demand of services due to high economic growth and population • High recovery cost • Vandalism of water supply system • High electricity tariffs • High non-revenue water

7.0 WATER SUPPLY AND SANITATION SITUATION IN UGANDA

7.1 ASSESSMENT OF WATER SUPPLY AND SANITATION COVERAGE

Like other East African countries, Uganda is largely a rural country with ample water resources. However, much of the population still lives without access to safe water or adequate sanitation. Uganda has had significant success in reforming its WSS sector in recent years, with a steady improvement in WSS coverage.

The NWSC is a commercialized, publicly owned utility established in 1972, providing water supply and sewerage services to a total of 30 large towns (cities, towns, and other municipalities). NWSC currently owns and manages the WSS assets of many of the largest municipalities in Uganda. Other large towns are managed by NWSC under a performance contract arrangement with the government.

In small towns, WSS control is decentralized, and rural facilities are typically managed by private operators accountable to local water authorities. There are 108 small towns with operational piped water supply and, of these, the majority are legally established as water supply areas under local water authorities. Many of these also operate under performance contracts with the MWE, thus enabling MWE to monitor their performance.

Uganda does not have an autonomous WSS regulator, but it is creating a transparent regulatory system through legal contracts, including a performance contract between NWSC, MWE, and the Ministry of Finance, Planning, and Economic Development (MoFPED). The Water Act of 1995 puts the DWD in charge of technical regulation in the sector, and it oversees these contracts through a performance contract review committee. In turn, NWSC and water authorities oversee and report on progress and achievements according to their own contracts with local operators.

7.1.1 WATER SUPPLY POSITION

THE OVERALL WATER SUPPLY STATUS

Improved water supply in Uganda is defined based on access to improved sources. Access to an improved water source refers to the percentage of the population with reasonable access to an adequate amount of water from an improved source, such as a household connection, public standpipe, borehole, protected well or spring, and rainwater collection. Unimproved sources include vendors, tanker trucks, and unprotected wells and springs. Reasonable access is defined as the availability of at least 20 liters per person per day. In urban settings, it also refers to the percentage of people within 200 meters of an improved water source, while in rural settings it is the percentage of people within 1.5 kilometers of an improved water source.

Urban Water Supply

The sector performance report uses the current Uganda Bureau of Statistics definition for the term "urban," in which "urban" refers to all gazetted cities, municipalities, and town councils. As of June 30, 2013, Uganda had 187 urban councils comprising one city, 22 municipalities, and 164 town councils. The urban councils are grouped into large towns, which are 30 towns managed by NWSC. Small towns constitute the rest of the towns and are a responsibility of the MWE, through the Urban Water and Sewerage Department of the DWD. Of the 187 urban councils, 138 have operational piped water supply schemes; only 16 are connected to sewerage services; and 49 still rely on point water sources (boreholes, wells, and springs), as shown in Table 23 below.

CATEGORY	URBAN COUNCILS	NUMBER	WITH WATER SUPPLY	WITHOUT WATER SUPPLY	WITH SEWERAGE SERVICES
Large Towns (Under NWSC)[13]	City	1	1	0	1
	Municipalities	18	18	0	14
	Towns Councils	11	10	1	0
Small Towns (Under DWD)	Municipalities	4	4	0	0
	Town Councils	152	104	48	1
	Kakira[14]	1	1	0	0
TOTAL		187	138	49	16

Table 2023: Water Supply and Sewerage Situation in Uganda's Urban Councils

The urban population in the 187 Ugandan towns is estimated at 6.45 million. These towns comprise 29 towns served by piped water by NWSC (population 3.84 million), and 158 small towns (109 of which are served

[13] Namely: **City:** Kampala, **Municipalities**: Arua, Bushenyi/Ishaka, Entebbe, Fort Portal, Gulu, Hoima, Iganga, Jinja, Kabale, Kasese, Lira, Masaka, Masindi, Mbale, Mbarara, Mukono, Soroti, Tororo; **Town Councils:** Amuria, Bugembe, Kaberamaido, Kaberebere, Lugazi, Malaba, Mubende, Nakaloke, Nansana, Njeru and Kakira.

[14] Kakira Town Council water supply system is owned by a private sugar factory.

with piped water), with a population of about 2.61 million. Access to improved water supplies in urban areas, based on estimated total population served, in both large and small towns, is 70 percent.

Rural Water Supply

Rural water supply provision covers communities or villages with scattered population settlements up to 1,500, and Rural Growth Centers (RGCs) with populations of between 1,500 and 5,000. These rural water supply systems are supervised by Local Council 1 (LC1). The major programs, projects, and initiatives under the rural water supply subsector are through the District Water and Sanitation Development Conditional Grant, disbursed to local governments and programs implemented by the MWE.

The main technology options used for water supply improvements in rural areas include: spring protection; shallow wells; deep boreholes; piped water schemes (gravity-fed); piped water schemes (pumped); valley tanks; and rainwater tanks. Boreholes are the most widespread technology, whereas valley tanks are the least implemented. Because low-cost water supply technology options have, to a good extent, been exhausted, and because climate change has resulted in lower yields from traditional water sources, new rural water supply installations will therefore have a large proportion of expensive technologies, such as deep borehole drilling and piped water systems based on surface-water sources.

In Uganda, access/coverage refers to the percentage of people who collect water from an improved water source. The golden indicator for access to rural water supplies is defined as the percentage of people within 1.5 kilometers of an improved water source. Based on this criteria, as of June 2013, the national safe water coverage for rural areas was estimated at 64 percent, similar to the national water coverage in June 2012.

THE WATER SUPPLY STATUS AND COVERAGE FOR DISTRICTS WITHIN LAKE VICTORIA BASIN IN UGANDA

During the course of this project, a detailed mapping has been made to assess the improved water supply, in accordance to Uganda definition, for districts that are within the Lake Victoria Basin. The GIS map in Figure 7-1 presents the results of water supply coverage for those districts within the basin on the Ugandan side.

Figure 7-1: Improved Water Supply Coverage in Uganda

7.1.2 SANITATION POSITION

THE OVERALL SANITATION STATUS

Improved sanitation is defined as access to improved sanitation facilities, which refer to the percentage of the population with at least adequate access to excreta disposal facilities that can effectively prevent human, animal, and insect contact with excreta. Improved facilities range from simple but protected pit latrines to flush toilets with a sewerage connection. To be effective, facilities must be correctly constructed and properly maintained.

Improved sanitation and hygiene is vital for the country's health, education, economic, and social development sectors, as well as for environmental protection. A study carried out by MoFPED[15] showed that poor sanitation is one of the main causes of infant mortality. The study further pointed out that children are affected by the environmental sanitation around them; even if children live in a home with a toilet, if there is open defecation in the neighborhood, they will be exposed to germs in the environment from other people's open defecation. In the recent past, there have been studies[16] that show that poor sanitation (open defecation) is a factor in child malnutrition, causing stunted and poor cognitive development of children less than 2 years of age, which later affects their economic performance. Proper sanitation is therefore a concern for health and human capital. Although the sector has tried to address the lack of proper sanitation in Uganda, it still remains a big challenge. Most people consider household sanitation a responsibility of the households, although it can have far-reaching consequences in a community. In a bid to encourage households to improve their sanitation, the sector has put in place different strategies. These include a strong policy framework and methodologies to increase knowledge of and demand for improved sanitation, as well as to address the challenges of accessing supply of adequate services.

The MWE carried out hygiene and sanitation improvement campaigns to raise household sanitation coverage in urban areas. Activities included sanitation and hygiene community training using the CLTS approach; use of short messaging services (SMS), drama shows, radio talk shows, and advertisements to convey messages for improved sanitation; and construction of household demonstration toilets. The MWE has registered success in improving sanitation in towns where the above interventions are being implemented. At the district level, districts implemented activities aimed at creating demand for sanitation and hygiene, strengthening the supply chain for sanitation services, and creating an enabling environment. Districts continued with vigorous campaigns using different participatory approaches, including CLTS, to mobilize communities to establish, use, and maintain latrine facilities.

According to the WHO and UNICEF Joint Monitoring Program, which tracks MDG progress, an improved sanitation facility is one that separates human excreta from human contact.[17] The latrine coverage in rural areas is estimated at 71 percent. Although in fiscal year 2010, Uganda seemed on track to meet the national target of 77 percent coverage for rural areas by 2015, the progress has since slowed down. Based on the trend of the last three years, Uganda may not meet the national target for rural areas by 2015. Only 47 percent of the districts have met the national target of 77 percent coverage; based on the current district trends, only 53 districts are likely to meet the national target by 2015. Currently, sanitation coverage in urban areas in Uganda is estimated at 82 percent, an improvement of 1 percentage point when compared with 81 percent in 2012.

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15 Infant and Maternal Mortality in Uganda: Causes, Interventions, and Strategy (2004).

16 How Much International Variation in Child Height Can Sanitation Explain?, Dean Spears (February 2013).

17 www.wssinfo.org/definitions-methods

And as for the districts within the Lake Victoria Basin, the current status is illustrated in Figure 7-2.

Figure 0-2: Improved Sanitation Coverage in Uganda

7.2 LAWS, POLICIES, REGULATIONS, STANDARDS, AND/OR FRAMEWORKS RELATED TO THE PROVISION OF WATER AND SANITATION SERVICES

7.2.1 POLICY FRAMEWORK

NATIONAL WATER POLICY (1999)

The National Water Policy of 1999 is the main governing tool in the water sector. It highlights an integrated approach for sustainable water resource management based on the recognition of the social and economic value of water. This implies that water allocation and related investments are geared toward the maximum benefit to Uganda for the present and future.

This policy was developed based on the Water Action Plan of 1995. The plan is the result of the water resource management review, and it became the foundation for subsequent water policy. This policy addresses water resource management in two categories. Category one is about water resource management, covering policy objectives, principles, and strategies, as well as other approaches aimed at sustainable water resource management. Category two is about water development and use, also covering policy objectives, principles, and strategies for water development and consumption, especially for domestic water supply, agricultural production, and other water uses such as industry, hydropower, recreation, and ecosystem. Based on these categories, the policy elaborates the following objectives and relevant policy instruments:

1. **"To manage and develop the water resources of Uganda in an integrated and sustainable manner, in order to secure and provide water of adequate quantity and quality for all social and economic needs of the present and future generations with the full participation of all stakeholders."**

The focus here is to protect, conserve, and manage existing water resources. The policy avails various strategic approaches based on the Water Assessment Program (WAP). As such, one of the strategies requires the government to provide an enabling environment by developing legislation, regulatory control, economic incentives, and an action plan to facilitate water resource protection (Section 4.3.1). Linked to this is the issue of institutional development through cross-sectoral coordination mechanisms; integrated approaches to project development; private sector involvement; and participation of women. Additional strategic intervention puts domestic water demand as the main priority in the planning process (Section 4.3.3), while other demands such as agriculture, industry, and hydropower follow.

Generally, the planning considers the following environmental values: the "polluter-pay principle"; a combination of economic incentives and regulatory instruments; an environmental impact assessment; water quality; and land use, among others. Data collection and data dissemination are other strategic values considered in this policy (Section 4.3.4). As such, the policy requires the government to promote public information and awareness by establishing and sustaining a monitoring and assessment system. Equally, the government is required to establish the water resource information management system, as well as dissemination of relevant information for planning, development, and use of water resources.

The policy provides for water resource management functions. Among these provisions is the availability of the coordination strategy of international water resources or transboundary water resources (Section 4.4i). Equally important, the policy requires the government to put in place other relevant policies, regulations, and standards for drinking water quality (Section 4.4ii). Additionally, it requires the government to develop district local priorities, such as bylaws and annual action plans regarding water resources consumption. The policy emphasizes that water resource consumption (abstraction) is to be regulated through administration permits (Section 4.4iii). As such, these permits specify the types of uses required, as well as abstraction fees to be charged. Similarly, the policy provides that the wastewater discharge is to be managed through a permit system (Section 4.4iv). In additional, penalties for waste discharges and effluent into open water bodies and river courses are addressed.

2. **"To achieve sustainable provision of safe water within easy reach and hygienic sanitation facilities, based on management responsibility and ownership by the users, to 77 percent of the population in rural areas and 100 percent of the urban population by the year 2015, with an 80 to 90 percent effective use and functionality of facilities."**

In addition to providing for the guiding principles, the policy highlights strategies for implementation, provision, and management of water supply, sanitation, and sewerage services. The initial strategy addresses technology and service provision (Section 5.4.1). Besides clarifying water service criteria, the policy elaborates on the relevant water supply technologies. These are appropriate, low-cost technologies offering the opportunity of community participation in decision making, physical implementation, and operation and maintenance. For sanitation systems, the policy urges community involvement in choosing the sanitation technology with the emphasis of cultural and financial acceptability (Section 5.4.1v). Principally, preference is given to low-cost on-site methods (such as improved household latrines). However, in rural towns and peri urban areas, piped sewerage systems can be considered only if on-site sanitation is environmentally damaging or a piped sewerage system is an inherent result of the chosen service level of water supply. As such, the end-of-pipe wastewater treatment system is the waste stabilization ponds method. Furthermore, the policy addresses solid-waste and stormwater management. In this regard, the focus is on densely populated areas such as growth centers and peri-urban (slum) areas. Regarding health and hygiene, the policy addresses information dissemination, mainly on the correlation between safe drinking water and a decrease in water-related diseases (Section 5.4.1v).

The policy also draws attention to the water supply financing, subsidies, and tariffs system (Section 5.4.2). The policy prioritizes investment and development efforts in the water supply and sanitation sector following an equitable share principle. However, the policy clarifies that selection of areas for sector improvement is to be based on need-related criteria. Thus, areas tending to neglect water supply system maintenance will be given low priority on new installation financing.

Regarding subsidies, the policy requires the government to continue offering subsidies to the majority of water supplies until adequate financial and management capacity are well developed at the districts and urban councils.

OTHER RELATED POLICIES

National Environment Management Policy

As the major governing tool for environmental management, the policy stipulates the overall goal as "sustainable social and economic development which maintains or enhances environmental quality and resource productivity on a long-term basis that meets the needs of the present generations without compromising the ability of the future generations to meet their own needs." This overall objective is further categorized into key policy objectives focusing on the links between public health and environment, and between socioeconomic activities and environment. Further, the policy objectives highlight ecosystem maintenance, sustainable resource consumption, public awareness, and community participation in environmental management. Chapter III of this policy addresses cross-sectoral policy objectives, principles, and strategies. Section 3.5 emphasizes water-resource conservation and management, as well as adequate and safe water supply.

The National Policy for the Conservation and Management of Wetland Resources (1995)

The general aim is to promote wetlands conservation in order to sustain relevant ecological and socioeconomic functions for present and future generations. Linked to this, the policy directs the government to establish principles that address sustainable wetland consumption as well as compliance toward wetlands conservation. The policy stipulates key principles and strategies in order to attain these objectives.

National Health Policy (2009)

The general goal is to "attain a good standard of health for all people in order to promote a healthy and productive life." As a guide for implementation, the policy outlines various social values. Among these values is the "right to achieve highest attainable level of health," which focuses on health and safe environment. This includes "access to safe and adequate water supply and sanitation." Additionally, the policy outlines strategies to achieve the aforesaid goal, which include assurance of the availability of safe water and environmental sanitation.

7.2.2 LEGISLATIVE FRAMEWORK

CONSTITUTION OF THE REPUBLIC OF UGANDA (1995)

This is the overarching law in which the whole country's legislation is embedded. Public access to clean and safe water is one of the addressed socioeconomic objectives. The Constitution emphasizes that "the state shall take all practical measures to promote a good water management system at all levels" (Article XXI). Additionally, Chapter XXVII highlights the country's natural resources, including water resources. The Constitution insists that "the utilization of natural resources of Uganda shall be managed in such a way as to meet the development and environmental needs of the present and future generations ... [and] shall take all possible measures to prevent or minimize damage ... resulting from pollution." Chapter 15, Article 245, of the Constitution also addresses environmental protection and preservation. Based on these provisions, the Constitution establishes a foundation for the environmental and water resource legal framework.

THE WATER ACT (1997)

This act addresses various provisions for the use, protection, and management of water resources. Connected to this, the act provides for the mandate of water and sewerage authorities, as well as facilitation for the devolution of water supply and sewerage responsibilities. The act is a framework law that sets institutional

responsibilities for various actors and directs the management of water resource, supply, and sewerage services. As a core instrument for implementing the National Water Policy (1995), the act aims to promote rational water use and management through appropriate standards and techniques for investigation, use, control, protection, management, and administration of water resources. Further, it is the objective of this act to coordinate all public and private activities that may impact the water resource. Additionally, the act aims to control pollution and promote safe storage, treatment, discharge, and disposal of wastes that may pollute water and thus harm the environment. Principally, the act can be categorized into two categories. Category One covers water resource management provisions and Category Two covers provisions for water supply and sewerage services management.

Under the water resource category, the act vests the rights of water investigation, control, protection, and management to the government (Article 5). Article 7 of the act provides rights for occupiers of any residential land having natural water resources to use that water for domestic consumption, firefighting, or irrigating a subsistence garden. Equally, but with approval from the relevant authority, the occupier of land has a right to consume ground water under the land occupied (Article 7ii). However, these provided rights to the land occupier do not authorize the person to run construction works (Article 7iii).

In order to protect or prevent degradation of the water resource, the minister for water and environment can prescribe places where water may be extracted, and regulate, restrict, or prohibit the application of water permits, waste discharge permits, or any other related permit or license (Article 8iii). Additionally, the minister can declare any part of the country to be a controlled area and thus establish a comprehensive and integrated plan for managing land and water.

As the basis of water resource management, the act further stipulates that no person shall acquire or have the right to consume, use, or construct works for water resource without authorization or acquiring a permit (Articles 6 and 18). Thus, in order to run construction works or take and use water, one has to apply for a permit (Article 18ii). A permit holder is obliged to do the following: prevent pollution; prevent damage of the water source; and take precautions for any hazardous substances that may intervene with the water source (Article 20).

Equally, a person wishing to discharge waste into the water source has to apply for the discharge permit (Article 29i). As such, a permit holder is responsible for pollution control or waste treatment before discharging the waste (Article 29.7 c and d).

The act provides also for charge and fees (Article 32). The minister may fix charges and fees for service provided by the authorities (the minister, director, etc.). Equally, the minister may fix charges and fees for taking and using water prescribed under the water permit (Article 32.1b), as well as discharging waste under a waste discharge permit (Article 32.1c).

ADDITIONAL INSTRUMENTS

Water Resources Regulations (1998)

This is in accordance with the Water Act (1995), Section 107, in which the minister responsible for water is required to develop water resources regulations. Among other issues, the regulations provide for water, drilling, and construction permits application, conditions, and procedures. Further, the regulations stipulate provisions guiding the water policy committee.

The Water (Waste Discharge) Regulations (1998)

These regulations are also in accordance with the Water Act (1995), Section 107. Principally, this instrument intends to regulate or protect the water resource against any kind of waste, particularly wastewater discharge (effluent) pollution. It requires the public to note the established waste and effluent standards. Thus, Section 4(1) of the regulations states that "no person shall discharge effluent or waste on land or into the aquatic environment contrary to the standards … unless he or she has a permit." Importantly, the regulations

emphasize having a permit to allow waste discharge. The permit addresses all the required procedures and conditions, with the intention of meeting established discharge standards.

National Environment (Standards for Discharge of Effluent into Water or on Land) Regulations (1999)

These regulations are in accordance with to the National Environment Act (1995), Section 26s and 107. The regulations establish the standards for effluent discharge into water or on land. They require every establishment to engage, at its premise, the wastewater treatment system before discharging to the existing water bodies. Further, they stipulate the mechanisms for dealing with offenses. The regulations complement the aforesaid Water (Waste Discharge) Regulations (1998).

The National Environment (Waste Management) Regulations (1999)

These regulations are in accordance with the National Environment Act (1995), Sections 53(2) and 107. They apply to all categories of waste (solid, liquid, hazardous, and non-hazardous). The objective of this instrument is to regulate the management system for each category of waste in an efficient and effective manner. Among others, it provides for the protection of the water resources. For instance, Article 14(3a) of the regulations stipulate the procedures and conditions for the license to own and operate a waste treatment plant or disposal site. Thus, a person licensed is required to make sure that the waste treatment plant or disposal site is located so as not to pollute or degrade the water source (i.e., at a radius of at least 1,000 meters from the water source).

OTHER RELATED ACTS

The Environment Act (1995)

Descending from the main Constitution (1995), the Environmental Act is the core legislation framework for all environmental management matters. The act stipulates various provisions and sets the institutional framework for sustainable environmental management. Concurrently, the act provides for the establishment of an authority or a body that coordinates and has a supervisory role in all matters relating to environmental management. In addition to outlining principles for environmental management, the act stipulates provisions for environmental planning and regulation, as well as the establishment of environmental standards where water quality standards for various use are emphasized.

The National Water and Sewerage Corporation Act (1995)

This act provides for oversight and revision of the objectives, powers, and structure of the NWSC. In essence, the act provides for the existence of the NWSC and executes its responsibilities. The act establishes a favorable environment for NWSC to run water supply and sewerage activities in an accountable and effective way. Thus, it provides for NWSC functions and power. The act also details NWSC internal governing organs and personnel.

The Local Government Act (1997)

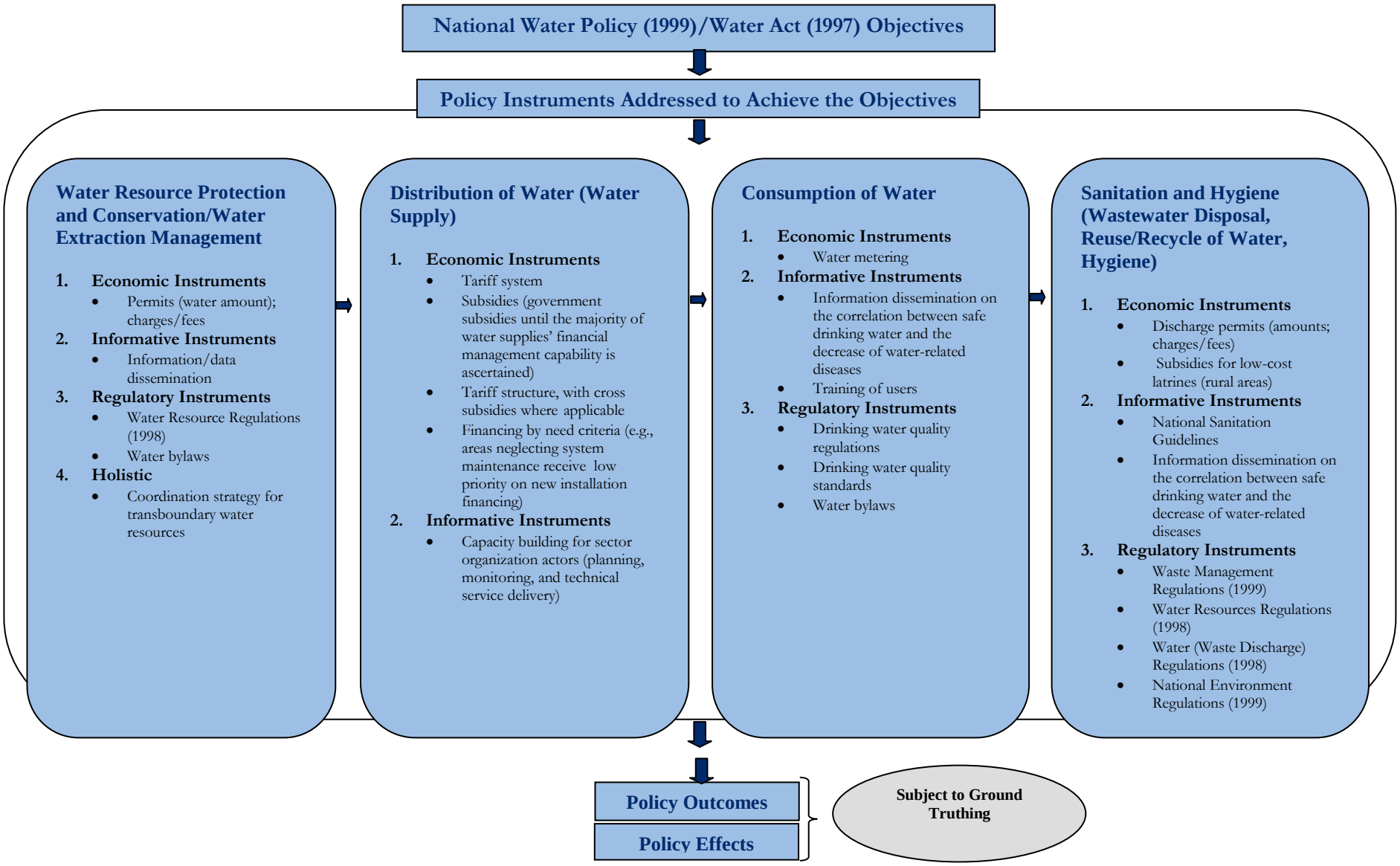
The act facilitates the enforcement and implementation of the provisions from various sectoral policies and legislations. The act sets the institutional framework at the local government level, based on the district, which is the highest political authority at district level and has both legislative and executive powers. Under the district level are the lower local governments and administrative units further linked to the lower local government councils consisting of subcounty councils (in rural areas), urban councils (in towns), division councils, and village councils.

The Land Act (1998)

Among other provisions, the act addresses the protection of the water resources. Article 44 requires the government to protect natural lakes, rivers, groundwater, wetlands, forest reserves, and others for ecological

and touristic purposes for the benefit of the citizens. Similarly, Article 70 addresses the water rights, in that "all rights in the water of any natural spring, river, stream ... [or] lake ... shall be reserved to the government … as the government reservation[,] and no such water shall be obstructed [or]… polluted ... except in pursuance of permission in writing granted by the minister."

Figure 0-3: Summary of the Identified Policy Instruments as Reflected in the Water Abstraction and Consumption Lifecycle



7.2.3 EFFICACY ANALYSIS

CENTRAL VALUE OF THE ADDRESSED POLICY INSTRUMENTS

Figure 7-3 is the water abstraction and consumption lifecycle with the analyzed policy instruments. Below is a detailed analysis of the identified policy instruments.

Water Abstraction

Various instruments are identified in the management and protection of water resource quality at this stage. These include economic instruments, such as water abstraction permits linked to relevant charges and fees. Informative instruments, such as information and data dissemination, are also described. The regulatory package includes water resource regulations as well as water resource bylaws, while the holistic tool elucidates the coordination strategy for transboundary water resources. The central value of these policy instruments is similar to that of the other four EAC Partner States discussed in this report.

Distribution of Water Services

In addition to the tariff system, another economic instrument is the provision of water subsidies for areas with fragile financial capability. It can be pointed out that this provision addresses the principle water rights of everyone. Moreover, the water system financing criteria (i.e., based on need) can be addressed as a public incentive for promoting the right behavior toward water supply system maintenance.

Water Consumption

In addition to the tariff system (metering), the policy framework provides informative instruments for water consumption. This includes creating public awareness regarding the correlation between safe drinking water and the decrease of water-related diseases. This can be regarded as an important approach in order to shape public attitudes toward the use of safe drinking water. Other included instruments are drinking water quality regulations and the drinking water quality standards. These two instruments are essential for drinking water safety and cleanness.

Wastewater Disposal: End of Pipe

Addressed economic instruments include wastewater discharge permits linked to relevant charges and fees. In addition, subsidies for low-cost latrines in rural localities are provided in order to encourage the community to adopt safe and improved sanitation systems. Other informative instruments include sanitation guidelines and awareness creation for the correlation between safe drinking water and the decrease of water-related diseases. The regulation package includes the waste management regulations and waste discharge regulations. These two types of regulations are essential in enhancing the community to adopt proper sanitation and better personal hygiene and to promote a cleaner environment.

Gaps

Similar to the Tanzania water policy framework, the Uganda policy and legislative framework needs to be updated. Both frameworks are old and do not engage new global and regional frameworks already in place. The National Water Policy was launched 1995, nearly 20 years ago. Since that time, new challenges have emerged in the water sector. These include climate change (mitigation and adaptation), meeting the MDGs, poor disaster preparedness, and promoting a green economy.

7.2.4 FOR EAC HARMONIZATION

RELEVANCE

Policy relevance implies that the content of the policy must address current global and regional initiatives. Additionally, the policy must show the potential to further economic development, as well as protect the environment and contribute to poverty alleviation. Uganda water policy highlights the importance of regional cooperation for shared water resources (Sections 3.2 and 4.3.1viii), which is among the EAC 2025 vision statements. Additionally, Uganda water policy was built on the foundation of various national initiatives. Section 3.3 elaborates that initiatives at a national level (such as the National Constitution [1995] and the Environment Management Policy and Statute) have been the cornerstones for shaping existing water policy. Thus, the National Constitution (1995), as supreme law, elucidates clean and safe water as one of the socioeconomic objectives that the state shall endeavor to fulfill as a fundamental right to the public (Section 3.3.1). Additionally, the Constitution highlights the objective of promoting sustainable development and awareness in order to manage water resources in a balanced and sustainable manner for present and future generations. These Constitution clarifications are directly linked to the Decentralization and Privatization Policy; the Environmental Management Policy; the Local Government Act; the Environmental Management Act; the Water Act; and the National Water and Sewerage Corporation Act, to mention a few. It can be generalized that the policy addresses sustainability as it highlights socioeconomic and environmental sustainability objectives.

POLICY INSTRUMENTS

The addressed policy instruments for water resources management, water supply, and sanitation are coherent. Though there is the need to review and update the general water policy framework, the addressed policy instruments can easily be harmonized with the EAC framework (see Table 24).

Table 24: Analysis of Harmony Between Uganda and EAC on Laws, Policies, Regulations, Framework, and Standards

COUNTRY	WATER SUPPLY	SANITATION	FUNCTIONING/ENFORCEMENT AT NATION LEVEL (YES, NO)	HARMONY AT EAC LEVEL (YES, NO, N/A)
UGANDA				YES
Laws	✓	✓		YES
Policy	✓	✓		YES
Regulation	✓	✓		YES
Standards	✓	✓		YES

7.4 INSTITUTIONAL FRAMEWORKS SETUP IN UGANDA WITHIN THE BASIN DISTRICTS RELEVANT TO THE PROVISION OF WASH SERVICES, ENGAGEMENT OF STAKEHOLDERS, AND EFFECTIVE MANAGEMENT OF FINANCIAL AND HUMAN RESOURCES

7.4.1 INSTITUTIONAL SETUP

In Uganda, the MWE has the responsibility of setting national policies and standards, managing and regulating water resources, and determining priorities for water development. The MWE is also charged with monitoring and evaluating development programs to enhance their performance, efficiency, and effective service delivery. The WPC advises the ministry on the above functions, initiates revisions to legislation and regulations, and coordinates sector ministries' plans and projects affecting water resources. WPC also: coordinates the formulation of water quality standards and guidelines; helps in mediations; and undertakes conflict resolution among national authorities on water resource matters. With regard to sanitation and hygiene, the MWE is responsible for developing public sanitary facilities and promoting good hygiene and sanitation practices in small towns and growth centers.

The NWSC is responsible for providing water supply and sewerage services in large towns, of which there are about 30. The NWSC is also responsible for facilitating private operators in managing water utilities through management contracts.

For towns that are not under the jurisdiction of NWSC, water supply and sewerage services are coordinated by the DWD. Generally, the DWD is responsible for providing overall technical oversight for planning, implementation, and supervision of delivering urban and rural water and sanitation services across the country, including water for production. DWD is also responsible for: regulating the provision of water supply and sanitation; the provision of capacity development; and other support services to local governments, private operators, and other service providers through its Technical Support Unit. DWD comprises three departments: Rural Water Supply and Sanitation; Urban Water Supply and Sewerage; and Water for Production. Through these departments, the DWD provides water supply and sewerage services for town boards and RGCs of more than 500 people. The local governments (districts, town councils, subcounties)—which are empowered by the Local Government Act (2000) to provide water services in their area of jurisdiction in consultation with the DWD—appoint and manage private operators for urban piped water schemes that are not under NWSC. District water offices manage water and sanitation development and oversee the operation and maintenance of existing water supplies in the district. The DWD therefore enters into performance contract agreements with water authorities and private water operators to guide provision of the required services in the particular area. This arrangement is in line with the delegated management approach adopted by the Government of Uganda (GoU) in the provision of water supply and sewerage services. District Water and Sanitation Coordination Committees (DWSCCs) consist of administrative and political leaders, technocrats, and nongovernmental/community-based organization (NGO/CBO) representatives at the district level.

The role of the DWSCC is to oversee the implementation of WSS programs. At the local level, communities—through their water-user committees/water and sanitation committees, established at each water point—are responsible for planning, operating, and maintaining water and sanitation facilities.

Remarks: Currently the DWD is also the regulator of water supply and sewerage services. This is not appropriate as the department is also a service provider in areas not under NWSC jurisdiction, so it is "a player and referee" at the same time. However, efforts under way to establish the independent regulatory body are commended.

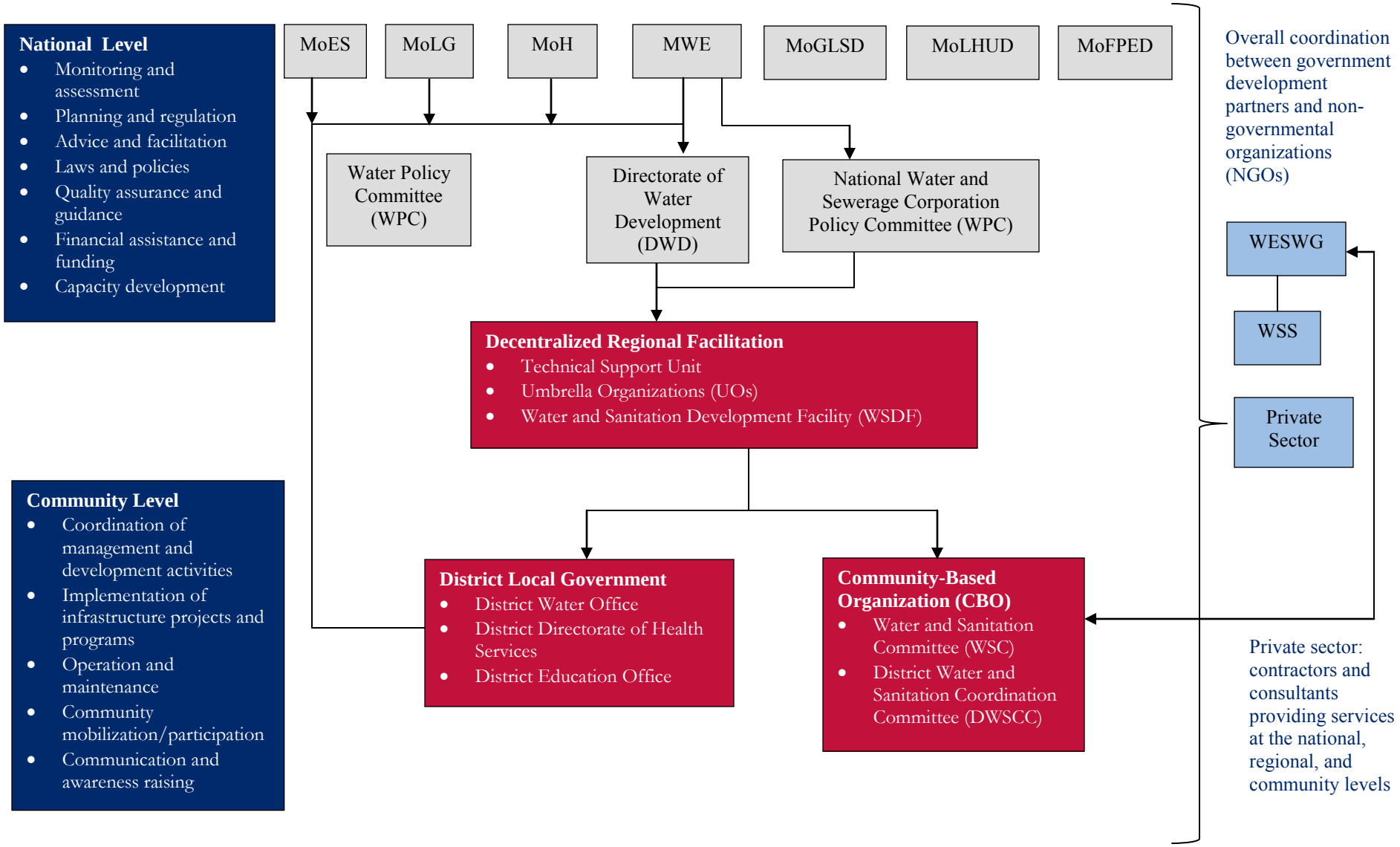


Figure 7-4: Institutional Framework for WASH Services in Uganda

7.4.2 ENGAGEMENT OF STAKEHOLDERS

Involvement of stakeholders is a cornerstone for effective, efficient, and appropriate provision of water supply and sanitation services. To ensure a high level of participation, the GoU has set mechanisms to ensure participation of various stakeholders in the provision of envisaged services (See Table 25). The minister on behalf of the GoU is charged with the overall responsibility of water resource management. The DWD is responsible for the collection, collation, and analysis of data concerning the occurrence, flow, characteristics, quality, and use of any water or waste. The DWD is also responsible for granting water allocation permits. Water and Sewerage Authorities, which are appointed by the minister under Section 45 of the Water Act, are responsible for providing water supply services for domestic, stock, horticultural, industrial, commercial, recreational, environmental, and other beneficial uses, as is required by the declaration establishing the authority or performance contract. Water and sewerage authorities also: manage the water resources entrusted to them; provide for and manage sewerage services; and give effect to any direction by the minister relating to water or sewerage.

Other stakeholders involved are water-user groups and water and sanitation committees, which are established under Section 50 of the Water Act. Water-user groups and water and sanitation committees are formed by a set of individuals or households to collectively plan and manage the point source water supply system in their area. Upon establishment, water-user groups and water and sanitation committees collect revenue from people using the water supply system for the maintenance of the system, and they maintain responsibility for sanitation and hygiene in the area.

Section 51 of the Water Act recognizes water-user associations as important stakeholders in the sector. According to this section, a water supply system is established by serving more than one water-user group, each operating through a water and sanitation committee; the committees involved form water-user associations, which consist of an agreed-upon representative from each committee. The association formed is responsible for managing the water system and may, with the approval of the DWD, set tariffs and collect revenue for the maintenance of the system.

Involvement of the private sector in Uganda has been the main basis of commercially sustainable service delivery in small towns, as its management is mainly through performance contracts between the MWE and WSSBs that are responsible for a gazetted WSSA. The WSSBs engage private operators through management contracts. Therefore, construction of water supply services and sanitation infrastructure is undertaken by the private sector through contracts, while operation and maintenance is done by private water operators for medium-size towns, and by individual operators for the smaller towns and RGC water supplies. According to GoU (2013), as of June 2013, there were 104 performance contracts with water authorities and private water operators. Of these, 58 had management contracts with private water operators; 21 were individual scheme operators; one had a private-public partnership; and 24 systems were managed directly by water authorities.

Table 25: Roles and Responsibilities of Stakeholders Involved in the Provision of Water and Sanitation Services in Uganda

STAKEHOLDER/INSTITUTION	ROLES AND RESPONSIBILITIES
Ministry of Water and Environment (MWE)	• Initiate national policies • Set standards and priorities for water resources management in the country
Water Policy Committee (WPC)	• Assist the minister in coordination of hydrological and hydrogeological investigations

STAKEHOLDER/INSTITUTION	ROLES AND RESPONSIBILITIES
	• Coordinate the formulation of national policies relating to international water resources • Liaise with international and regional water resource organizations • Coordinate the preparation of and keep under review plans and projects that may in any way affect water resources
Directorate of Water Development (DWD)	• Collect, collate, and analyze data concerning the occurrence, flow, characteristics, quality, and use of any water or waste • Ensure systematic gauging and recording of rainfall and the volume, flow, and quality of other water or waste • Manage the construction, operation, and removal of gauging, recording, and monitoring stations • Investigate and monitor boreholes • Grant water and discharge permits • Specify the quantity of water that may be taken under a permit where unspecified • Specify the duration of a permit where unspecified • Suspend or vary the water permit, by notice in writing to the holder of a water permit for that area (Section 22i) • Impose conditions on any permit varied, suspended, or granted (Section 22ii) • Register all permits granted and any works or uses of water
National Water and Sewerage Corporation (NWSC)	• Provide water supply services for domestic, stock, horticultural, industrial, commercial, recreational, environmental, and other beneficial uses as is required by the declaration establishing the authority or the performance contract • Manage the water resources entrusted to it • Provide and manage sewerage services as may be required by the declaration or performance contract • Give effect to any direction by the minister relating to water or sewerage • Do anything connected or incidental to the above duties
Water-User Groups and Water and Sanitation Committees	• Plan and manage the point source water supply system in their area • Collect revenue from people using the water supply system for the maintenance of the system • Operate through a water and sanitation committee, which is the executive organ of the group • Provide for sanitation and hygiene in the area

STAKEHOLDER/INSTITUTION	ROLES AND RESPONSIBILITIES
Water-User Association	• Manage the water system • Collect revenue using tariffs approved by the DWD • Carry out maintenance of the system
Private Operators	• Provide water supply and sanitation according to the performance contracts

7.4.3 HUMAN AND FINANCIAL MANAGEMENT

The NWSC performs its duties under the supervision of the board of directors. The board is chaired by the chairman, and the managing director of the corporation is secretary to the board. The day-to-day activities are manned by the managing director, who is assisted by chief managers. According to the current organization structure, the chief managers' duties include institutional development and services; engineering services; management services; finance and accounts; commercial and customer services; planning capital development; and internal auditors. The NWSC board of directors uses a committee system in its governance. This implies that management issues are submitted to the board through four committees: finance, administration, technical, and audit.

NWSC is responsible for the provision of water supply and sewerage services in 30 towns, spread all over the country, with a population of 2.4 million people. This represents 75 percent of large urban centers. Over the last 10 years, NWSC has undergone structural, operational, and financial changes aimed at improving performance. One of the major changes is the devolution of powers through internal performance contracts with each of its operating areas. NWSC emphasized improved customer care as a steppingstone toward improved performance and image.

With regard to financial matters, NWSC, during the 2010–2011 fiscal years, registered a total turnover of 131.4 billion Ugandan shillings, an increase of 18 percent compared with the previous year's turnover of 111.1 billion (NWSC, 2012a,b). The improved financial performance was attributed to: NWSC's conscious efforts in expanding service coverage (including to the urban poor); improving efficiency of supply; and improving billing performance (which is now done electronically). These are improvements in both customer care and information technology. According to NWSC (u.d), the corporation stands out as a model utility in the African region because of its exemplary exploits and achievements. It produces about 77.7 million cubic meters of water per annum, supplying 78 percent of its targeted population. It operates with a staff productivity ratio of 6 staff members per 1,000 connections, and a customer base of about 317,292; roughly 90 percent of these are active connections. The NWSC has been able to plow back its surplus into network expansion, minor capital investments, and rehabilitation.

Key challenges remain: increased fuel prices; breakdown of electro-mechanical equipment of older schemes; power load shedding and voltage fluctuations; limited production well yields and/or poor groundwater resource potential affecting older schemes; and ongoing roadwork on major highways destroying nearby towns' pipelines.

Generally, daily O&M is implemented by private or scheme operators, supervised by water authorities or WSSBs, and exclusively financed through tariffs. This means that in order to meet their O&M and the targets set in their performance contracts, private operators need to operate in a cost-reflective manner and impose water tariffs, which can help pay for their O&M expenses. However, the National Constitution of Uganda clearly stipulates that water is the right of every citizen; therefore, consideration of vulnerable groups and underserved areas is inevitable. To stimulate water service provision for poor and underserved areas, the GoU has established five umbrella organizations (UOs) for water supply and sanitation. The UOs are registered as nonprofit companies, limited by guarantee with a membership comprising selected small towns; RGCs; and

rural, large, gravity-flow water supply schemes to help member water supply schemes carry out O&M functions and share services that would otherwise be too costly for individual water supply schemes. By June 2013, the total number of small towns and rural growth centers' water supplies supported by UOs was 309, an increase of 62 members from 247 in the previous year (GoU, 2013). For investment purposes, small towns are mainly carried through the Water and Sanitation Development Fund (WSDF), which has four branches. The MWE has also established regionally based technical support units to build and strengthen district capacity.

7.5 KEY ISSUES AND CONSTRAINTS AFFECTING PROVISION OF WATER SUPPLY AND SANITATION SERVICES

7.5.1 LOW WATER SUPPLY AND SEWERAGE COVERAGE

Water supply and sewerage coverage do not meet the demand and expectation of the majority of the people who are in need of such service. Low capital investment contributes largely to the limited expansion of services.

7.5.2 FUNCTIONALITY

The functionality of water supplies is defined as the percentage of improved water sources (rural and urban for production) that were found functional at the time of a spot check. For urban areas (small towns), the percentage is the ratio of actual hours of water supply to the required hours. The functionality of rural water supplies has stagnated at the range of 80 to 84 percent in the last 10 years. This is lower than the set target of 90 percent by 2015 (GoK, 2013). In 2012–2013, an increase of 1 percentage point (from 83 percent in the past two years to 84 percent) was achieved. At the district level, an average of 67 percent was recorded, compared with the national average of 84 percent in 2012–2013; 57 percent was recorded against the national average of 83 percent in 2011–2012. Districts with the highest functionality rate include Namtumba (97 percent), Kaliro (97 percent), Yumbe (95 percent), and Mbarara (94 percent). Those with the lowest rate include Ntoroko (54 percent), Kitgum (55 percent), Masaka (62 percent), and Nakasongola (66 percent).

With regard to functionality of water technology, the national overall average stood at 83 percent in 2011–2012 and 84 percent in 2012–2013. The highest functionality of water technology was found in springs, at a rate of 88 percent in 2011–2012 and 2012–2013. The lowest functionality under this category was found in shallow wells, with the rate of 74 percent in 2011–2012 and 75 percent in 2012–2013.

Functionality of water for production increased from 67 percent in 2011–2012 to 71 percent in 2012–2013. The ratio of actual hours of water supply to the required hours increased from 84 percent in 2011–2012 to 87 percent in 2012–2013, which was also the target for 2012–2013. These are commendable efforts, and water authorities need to continue making these improvements.

Technical breakdowns were the major reason for non-functionality of rural drinking water sources, accounting for 43 percent in 2012 and 44 percent in 2013. This implies that in order to improve functionality of rural water supplies, it is necessary to address the technical breakdowns.

7.5.3 LACK OF POLITICAL WILL TO COMPLY WITH SOME OF THE PROVISIONS IN THE PERFORMANCE CONTRACT AND TARIFF POLICY

Performance contracts detail the obligations of each partner in achieving the set targets. However, private water operators have for some time not achieved performance targets due to the lack of political will to comply with provisions in the performance contract. Lack of political will to comply poses problems for

private water operators and contractors. For instance, nonapproval of business plans and delayed tariff approvals drastically affect operators' cash flow; as a result, some operators are compelled to compromise the quality of services. Furthermore, tariff adjustments have not been done on time, despite the price hikes in water inputs and the 33 percent increase in the electricity tariff on January 1, 2012. The tariff policy developed by the MWE through the DWD and adopted by the cabinet in May 2008 allows each service area to have its own tariff based on the uniqueness of the water infrastructure and O&M costs. Failure of the government to implement this policy affects private water operators in the attainment of their performance contract targets.

7.5.4 NON-REVENUE WATER

NRW is another issue of concern affecting service providers and jeopardizing revenues. For instance, by June 2013, the overall average NRW for large towns under NWSC was 32.6 percent in 2012–2013, –compared with 32.8 percent in 2011–2012 and 33.3 percent in 2010-2011. For small towns, NRW stood at 22 percent in 2012–2013, compared with 23 percent in 2011–2013. The main causes of high NRW are dilapidated networks, leakages, vandalism of networks, illegal use of water, and damage caused to the network by road construction.

7.5.5 EQUITY

For rural water supply in Uganda, equity is defined as "the mean subcounty deviations from the district average in persons per water point." This indicator intends to promote provision of equal opportunities for water supply delivery services, and minimize differences between groups of people (GoU, 2013). A lower numeric value indicates a more even distribution between subcounties within a district.

The equity value increased from 153 in 2011-2012 to 160 in 2012–2013. The equity value in both years exceeded their respective targets of 120 and 140, respectively. This achievement implies there were improvements made to the distribution of water sources between subcounties,. The reported improvement was due to the following reasons: targeted provision of new water sources; funds allocation within districts based on water situations, where more funds were directed to the least-served areas; good collaboration between NGOs and district local governments; and steady investment in rainwater-harvesting technologies where groundwater is low or the water quality is poor. These initiatives should be commended and intensified by water authorities in order to continue lowering the equity value, which implies availability of water services in underserved and vulnerable areas.

7.5.6 WATER POLLUTION

Pollution of water resources is another issue of concern facing the subsector. Various causes of pollution are reported, including degradation of catchment areas through various undertakings. Additionally, noncompliance to the abstraction and discharge permit conditions contributes to pollution of water sources. According to GoU (2013), compliance to conditions related to wastewater discharge was only 48 percent. This is a problem that needs to be addressed accordingly.

7.5.7 EFFECTIVE COMMUNITY MANAGEMENT

This is assessed by the percentage of water points (water sources) with actively functioning water and sanitation committees (for rural water facilities and water for production) and WSSBs (urban areas). A water and sanitation committee/WSSB is considered functional if it regularly collects O&M funds; holds regular meetings; undertakes repairs; and maintains good sanitation at the water source. Results indicate that water points with functional committees slightly decreased from 72 percent and 79 percent in 2011–2012 to 71 percent and 78 percent in 2012–2013 for rural and water-for-production committees, respectively. In urban

areas, water points with active, functional WSSBs increased from 73 percent in 2011–2012 to 75 percent in 2012–2013.

The decrease of functionality rate for committees in rural and water-for-production water points have been reported to be an increased sample size, and only 65 percent of districts submitted their up-to-date data; the annual review report (GoU, 2013) provides other explanations that could have contributed to the observed situation. The report shows that in order for water and sanitation committees to be effective, district local governments are obliged to provide post-construction support to communities, establish district water and sanitation coordination committees, and hold extension workers meetings. However, based on the available data, only 53 percent of district local governments provided post-construction support to communities; some districts have not yet established district water and sanitation coordination committees; and only 77 percent of districts carried out extension workers meetings. These issues could also be possible causes for the observed low functionality rate of water and sanitation committees. Therefore, district local governments need to play their roles effectively so as to enhance functionality of water and sanitation committees.

7.5.8 LOW PRIORITY ON SANITATION AND HYGIENE ISSUES

Sanitation and hygiene are important issues for creating healthier communities. However, the current situation is not encouraging, as the adoption rate is still low. For instance, the pupil to latrine/toilet stance ratio decreased from 60:1 in 2011–2012 to 70:1 in 2012–2013, while the set standard is 50:1. Furthermore, the percentage of people with access to (and using) hand-washing facilities is still low, despite the increase from 27 percent in 2011–2012 to 29 percent in 2012–2013 for rural households, and 35 percent to 37 percent for schools. This calls for concerted efforts to ensure that sanitation and hygiene issues are given high priority.

7.5.9 POOR URBAN PLANNING

Proper planning of urban centers is very critical in enhancing the expansion of water supply and sewerage services. However, it was noted that planning of urban centers is not done properly to enable smooth expansion of water supply and sewerage networks.

7.5.10 CAPACITY BUILDING ON TECHNICAL KNOW-HOW FOR STAFF AND OTHER STAKEHOLDERS

Staff involved in the provision of services need to be imparted with necessary knowledge and skills to enable them to perform their responsibilities in a professional manner. The emergence of various new technologies requires staff to be professionally developed. In addition, capacity building of WSSB members needs to be addressed if functionality of the boards is to be sustained.

7.5.11 OTHER ISSUES OF CONCERN

1. Vandalism of equipment and networks by local people
2. Inadequate climate-change resilience strategies
3. Transport to support routine maintenance of the infrastructure at the community level
4. Public toilets seem to belong to everybody, which in reality means they belong to nobody, so there is little maintenance or ownership by users. As a result, they often become unhygienic places. Challenges for operation of the public toilets include how to ensure that (1) appropriate cleaning and O&M take place; (2) capital investments are provided; (3) they are affordable to the poor; (4) the service provider is accountable; (5) regulation is carried out; (6) the private sector is attracted to contractually provide services; and (7) there is oversight by management.

7.6 SWOT ANALYSIS FOR WATER SUPPLY AND SANITATION SERVICE PROVISION IN UGANDA

In Uganda, a number of strengths and opportunities exist which can enhance improvement of water supply and sanitation. Weaknesses and threats also exist. A SWOT analysis is provided in Table 26 below to give a better understanding of the situation in Uganda.

Table 2126: SWOT Analysis for WASH Services Provision in Uganda

STRENGTHS	WEAKNESSES
• Dedicated, hardworking, and skilled staff with vast experience • Good customer care • High staff integrity • Well-established institutional structures and systems • Sound financial systems, especially in large towns • Well-established monitoring and evaluation system • Use of performance contracts enhance accountability and attainment of the set targets	• Insufficient funding limits service expansion • High debt age (arrears) • Aged infrastructure in some areas • Inadequate sewerage services • Inadequate capacity building on technical know-how for staff and other stakeholders • Inadequate human, financial, and physical resources • Inadequate compliance of O&M schedules
OPPORTUNITIES	**THREATS**
• Rapid urbanization and economic growth (industrialization and growth in housing industry leading to increasing service demand) • Involvement of development partners in water, sanitation, and hygiene (WASH) activities • Abundant raw water resources • Favorable economic and political environment • Government support to WASH activities • Establishment of autonomous urban water supply regulatory authority will strengthen the regulation framework • Existence of Water and Sanitation Development Facilities (WSDFs) • Active involvement of private water operators in provision of water supply and sewerage services • Global focus on sanitation	• Non-revenue water • Growing government arrears • Competition from alternative sources (boreholes, wells, etc.) • Climate change • Poor catchment management and pollution control leading to deterioration of raw water sources • High investment cost for water supply and sewerage networks • Poor urban planning limits network coverage • Increasing cost of living affects customer ability and willingness to pay • Non-full cost recovery tariff • Inadequate enforcement of laws and regulations with respect to water quality • Not all the budgeted funds are released (or untimely release of funds) • Inadequate political will to comply to some provisions in the performance contract and tariff policy • Water authorities diverting the conditional grants allocated for use in O&M of water supply systems. • Low priority on sanitation issues • Vandalism of water supply and sewerage networks

8.0 DISCUSSION (SYNTHESIS OF THE FINDINGS AND THE WAY FORWARD)

8.1 WATER SUPPLY AND SANITATION SERVICES

8.1.1 WATER SUPPLY

Each country among the five Partner States in the East African Community defines access to improved water supply and sanitation services differently. However, commonality can be found in the use of distance as a key unit of measurement.

It has been observed that all countries have, through laws and policy guidance, established systems in support of providing equitable services, especially for urban and small towns at regional and district levels, respectively. Huge improvements have been made in Uganda, Rwanda, Burundi, and Tanzania, as compared with Kenya. In Kenya, rural communities are still disadvantaged; there are no equal services despite the countries' water reform initiatives undertaken since 2002. Uganda and Rwanda seem to be ahead of other countries, which implies some achievement of water supply improvement.

FOR EAC HARMONIZATION

The East African Standards (EAS, 12:2000) provide standard prescriptions for drinking water that assess physical, chemical, radiological and bacteriological composition of water. Therefore, improved water supply services in EAC Partner States should conform to the defined standards from the sources of use. Furthermore, time and distance have to be taken into account as much as possible to ensure convenience to the users—thus, at least 500 meters away from the farthest homestead.

8.1.2 SANITATION

Based on measuring and testing of sanitation data obtained in each of the five Partner States, it is obvious that Rwanda has made significant steps in ensuring that all households are free from open defecation: The total coverage stands at 92.1 percent. Households with flush latrines account for 1.2 percent. However, it is not known to what extent people are aware of hygiene practices such as hand washing, as there is no data provided.

On the other hand, Uganda has attained very good awareness of hand-washing practices (93 percent), though in reality the actual practice remains low at 29 percent in rural areas and 32 in urban areas. Sanitation coverage is as high as 71 percent and 82 percent in rural and urban areas, respectively.

Conversely, Burundi has the worst scenario, as all regions/provinces have recorded low coverage for households with improved sanitation facilities—the lowest being 4 percent, the highest being 37 percent, and the overall country being only 16 percent. This implies the country still practices open defecation in fields and

farms. Eventually, that waste washes away into various existing water bodies (such as the River Ruvuvu), some of which are being used by others as water sources.

Kenya is still challenged by improved sanitation coverage, as the majority of people in both urban and rural settings are using pit latrines (either covered or uncovered). These pose high risks of surface-water pollution to streams, ponds, and Lake Victoria, water bodies on which livelihoods depend. The country household coverage stands at 50 percent, with allowable adequate improved sanitation facilities (42 percent for rural and 62 percent for urban).

Tanzania is still challenged in most areas, as some still practice open defecation. Coverage is only 32 percent in urban areas and 21 percent in rural areas. This situation poses serious health problems, not only to the communities within the vicinity but the downstream users within the LVB.

FOR EAC HARMONIZATION

Improved sanitation is defined as adequate access to excreta disposal facilities that can effectively prevent people, animal, and rodents from contact with excreta. Improved facilities are simple but protected pit latrines; VIP latrines; and flush toilets connected either to sewerage networks or on-site systems such as septic tanks.

8.1.3 CONCLUSION

From the analysis, it is evident that the LVB is highly contaminated from Kenya and Burundi, and partially by Tanzania. From a technical point of view, Kenya and Tanzania are contributing to its pollution more, since Burundi is farther away from the lake. And according to the transportation model of pollutants, subject to study and analysis, most bacterial pollutants die with distance during transportation in river systems. Improved health and quality of life among Lake Victoria Basin residents has to start with improved water and sanitation services, as these remain the key performance indicators and measures for lifelong wellness. To address the challenges observed from the study, the partner states of Burundi, Kenya, and Tanzania have the following strategies.

BURUNDI

The Government of Burundi has laid out objectives for providing water supply and sanitation services in the rural sector. These are to provide at least one potable water source within a 500-meter radius of each household, and to provide one covered indoor latrine in every household and one public latrine in each public establishment. The right to water and sanitation ensures that access to the minimum essential supplies of safe water and basic sanitation is a legal entitlement, rather than a charity. This right provides a basis for individuals to hold governments and other actors accountable. Therefore, by 2015, the government intends to supply drinking water and basic sanitation to at least an additional 1,320,000 and 2,100,000 inhabitants, respectively. It also intends to prioritize water and sanitation on the same footing as health and education, in terms of its dialogue with donors and its presence in national development plans, poverty reduction strategy papers, and sectoral strategies.

KENYA

Sanitation is now a constitutional right in Kenya. The country aims to ensure: that all households will be made aware of the importance of improved ESH practices for improved health; and that 90 percent of households will have access to hygienic, affordable, and sustainable toilet facilities, improved housing, food safety, safe drinking water, and the means to safely dispose of waste products by 2015. Hence the rapidly increasing sanitation hygiene coverage with the goal of attaining sanitation for all people by 2015, as a contribution to attaining the MDGs.[18]

[18] Kenya Draft National Environmental sanitation and Hygiene Strategy (2010–2015).

TANZANIA

Tanzania has adopted the MDG sanitation target of halving the number of people without improved sanitation by 2015. Additionally, under its Vision 2025, Tanzania has pledged to provide improved sanitation to 95 percent of the population by 2025. To achieve the desired target, the country has designed a five-year Usafi wa Mazingira Tanzania (UMATA) sanitation and hygiene program that takes into account the existing challenges, gaps, national priorities, and strategies that are in process, planning, or are being implemented. The program is informed by the National Sanitation Policy; the National Environmental Health, Hygiene, and Sanitation Strategy; the sanitation indicators proposed in the National Strategy for Growth and Reduction of Poverty; the School Water, Sanitation, and Hygiene Strategic Plan 2010–2016; and other ongoing initiatives of the government and its partners. The overall goal of the program is to see "communities with increased access [to] and use of improved sanitation facilities and with changed sanitation and hygiene behaviors at scale." This goal is to be realized through intervention at two levels: (1) strengthening national knowledge, skills, and systems to support the further improvement of sanitation and hygiene; and (2) district level implementation at scale to have a significant impact on coverage.

8.2 POLICIES FRAMEWORK

BURUNDI

The Burundi Water Policy (2009) and Water Code (2012) address the EAC Water Vision (2010), as well as other related global initiatives. However, it was noted that due to the absence of other supporting implementation tools, Burundi's water supply and sanitation services situation is not dictated at the country level. This could be contributed to the existing political instability in the country (USAID, 2010). The EAC Water Vision requires Partner States to translate the vision into policies and strategies that clearly define the roles and responsibilities of individual Partner States, basin authorities, and corresponding state agencies at every level, including private sector and public roles. Thus, the best approach for harmonizing Burundi with the EAC Water Vision is to interpret the developed Water Policy (2009) and the Water Code (2012) downstream through well-developed policy tools.

The identified policy instruments are relevant to (and almost a subset of) the instruments addressed in other EAC countries. However, there is still a need to develop additional instruments for each component in order to establish an adequate mix of policy instruments, which can enhance effectiveness. Notably, it may be appropriate for Burundi to adopt some of the policy instruments from other EAC countries.

KENYA

The Kenya Water Policy (2012) is a revision of the former Water Policy (1999). This policy has taken on global development initiatives such as climate change initiatives, the MDGs, and the East African Community Vision (2012). In addition, the new policy takes into account the requirements of the newly established Constitution of 2010—with the view that water is a public resource—as well as the National Vision 2030. Basically, the policy establishes that it is relevant and well-linked to the local policy context, including the Land Reclamation Policy (2013); the Wetland Conservation and Management Policy (2013); the Water Resource Management Authority Strategic Plan; and the Environmental Management Policy. Further, the policy instruments addressed for water resource management are principally relevant to sustainability and the EAC Water Vision (2010). Equally, the provisions under the water supply services were noted to be relevant and valuable, although the water consumption component addresses limited instruments. Therefore, it can be pointed out that the water policy and legislation framework in Kenya can easily be harmonized with the East African Community water resource management framework.

RWANDA

Rwanda addresses water supply and sanitation through the Water Resource Management Policy (2011) and the Water Policy and Strategy for Supply and Sanitation Service (2010). Though the framework coincides with the EAC Water Vision, the challenge is that the framework would like to address water resource management challenges in a similar manner to water supply and sanitation issues. However, it should be noted that the framework for water resource management, as well as for water supply and sanitation policies, is well-packed with the relevant policy instruments. As such, the combination of these instruments for each component (water abstraction and consumption lifecycle) can be regarded relevant, predictable for effectiveness, and able to motivate innovation. It can be concluded that the policy package can easily be harmonized within the EAC framework.

TANZANIA

Though Tanzania has had a Water Policy since 2002, it took another seven years to update the relevant sector legislation (the Water Act of 2009 and the Water Supply and Sanitation Act of 2009). Without enforcement mechanisms, the policy's effectiveness was not realized in that interim period. Surprisingly, water policy effectiveness still does not prevail years after having in place the Water Resource Management Act (2009) and the Water Supply and Sanitation Act (2009). This could be due to the absence of supplemental policy tools such as the water abstraction and consumption bylaws, economic incentives, and awareness programs. Furthermore, Tanzania is already a victim of the impacts of climate change, particularly in the water sector (URT, 2012). The Water Policy does not address issues related to climate-change adaptation or mitigation measures. Neither do the main policy-implementing tools, the Water Resource Management Act (2009) and the Water Supply and Sanitation Act (2009). This situation inhibits the possibility of exploiting new innovation opportunities within the water sector, both at the regional and global settings. Therefore, it is recommended that the Water Policy be reviewed and updated in order to take on the EAC Water Vision and climate change policy.

Regarding policy instruments, it can be generalized that the framework does a good job of addressing instruments for water resources management, as well as water distribution components. However, the framework does not provide enough policy mechanisms for water consumption, rainwater harvesting, or wastewater recycling and reuse. In addition, the framework does not address policy instruments for transboundary water resource management. It can be concluded that it is possible for Tanzania's water policy framework to be in harmony with EAC framework, but there is a need for developing or adopting other instruments already in place in other EAC countries.

UGANDA

Uganda water policy highlights the importance of regional cooperation for shared water resources (Sections 3.2 and 4.3.1viii), which is among EAC Vision 2025 statements. Additionally, Uganda water policy was built on the foundation of various national initiatives. Section 3.3 of the policy elaborates that the initiatives at a national level, such as the National Constitution (1995) and the Environment Management Policy (1995) and the National Environment Statute (1995), have been among the cornerstones for shaping the existing water policy. The Constitution, as supreme law, elucidates clean and safe water as one of the socioeconomic objectives that the state shall endeavor to fulfill as a fundamental right of the public (Section 3.3.1). Furthermore, the addressed policy instruments for water resources management, water supply, and sanitation are coherent, though there is a need to review and update the general water policy framework. The framework is a bit old and thus not yet engaged in the current global and regional matters already in place. The National Water Policy was launched 1995, nearly 20 years ago. In this time interval, various new challenges have emerged in the water sector. Among these are climate change (mitigation and adaptation), MDGs, the lack of disaster preparedness, and the communities buy-in to promote a green economy. If the

policy and legislation framework are updated, the addressed policy instruments can easily be harmonized with the EAC framework.

8.2.1 CONCLUSION

All five EAC Partner States have at least the relevant water policies and water acts in place. Burundi already has the Water Policy (2009) and the Water Code (2012) in place; Kenya recently launched the new Water Policy (2012), following the Water Act (2002); Rwanda has in place the new Water Resource Management Policy (2011), as well as the National Policy and Strategy for Water Supply and Sanitation Services (2010); Tanzania has the National Water Policy (2002), the Water Resource Management Act (2009), and the Water Supply and Sanitation Act (2009); and Uganda has the National Water Policy (1995) and the Water Act (1997). However, effectiveness of these policies is limited, due to the absence of further policy implementation tools. Moreover, many frameworks are either outdated or only partially updated, thus missing some important water sector features addressed in the EAC Water Vision (2010), as well as climate change aspects. Therefore, updating these policy documents and including the essential policy implementation tools can address effectiveness, as well as harmonization with the EAC framework.

8.3 INSTITUTIONAL FRAMEWORK

Just like the policy aspect, all of the five EAC Partner States were noted to have the institutional setup for water supply and sanitation with stakeholders' involvement. Additionally, all Partner States have committed staff as well as legal entities entrusted for the provision of water supply and sanitation services. Further, each Partner State was found to have at least one capacity-building institution in the water sector. Importantly, all Partner States share the same opportunity of having enough storage of water resources, as well as rainwater harvesting. Each Partner State was also found to have rapid economic and population growth, thus creating demand for the service. It can be argued that such common strengths and opportunities enhance the possibility of harmonization within the EAC water sector framework.

Conversely, all five Partner States were noted to suffer from inadequate provision of water supply and sanitation services; high non-revenue water; inadequate quality and quantity of human, financial, and physical resources to boost service provision; and inadequate availability of reliable and valid data and information to enhance scientific decision making. Though these weaknesses are common, their causative roots rely heavily on the respective country of origin. For instance, Burundi has long suffered from political instability, a situation that destroyed almost all of the systematic planning within the water sector. However, these noted common weaknesses provide a strong incentive for a converged effort to eliminate them.

It was further indicated that most EAC Partner States face similar threats. These include weak enforcement of laws; absence of regulations and bylaws; vandalism of water supply systems; pollution of water resources as a result of encroachment to water sources; and discharge of effluents and solid and liquid wastes. These addressed threats are mostly linked to the governance status. Thus, with effective governance and the right institutional framework system, it is possible to eradicate them.

However, the issue of high non-revenue water needs to be highlighted, due to the resulting high economic loss for water service providers. Current practices indicate that the available data on NRW is sometimes unreliable, due to inaccurate quantification of both real and apparent losses, and inadequate bulk and customer meters that lead to estimation of data. In order to have accurate and reliable NRW data, the following are necessary:

1. Quantification of actual impacts of each contributory factor on total NRW (i.e., the water loss due to commercial and physical NRW should be well calculated in order to design appropriate mitigation measures)

2. Increased metering ratio by ensuring that all production, distribution, and consumption points are metered either by bulk meters or customer meters. This will assist in the actual measuring of water produced, distributed, and consumed at different points
3. Improved inspection to detect network defects by supporting inspectors through skills development and appropriate equipment
4. Adequacy repair by restoring water meters, pipes, and equipment to a state in which they can perform their required functions; this means avoiding reactive and ad hoc basis repairs rather than a proactive way based on a planned water network survey.
5. Regulatory and supervisory bodies ensure that water authorities implement the given conditions, requirements, and corrective measures sooner rather than later.

Notably, some of the EAC Partner States already indicated notable progress in the water supply and sanitation sector. Uganda, for instance, was noted to already have a good mechanism for revenue collection and NRW, which is likely linked to its well-established institutional base. Equally, Rwanda is in the process of establishing an effective institutional framework linked to the pre-existing water resource management and supply/sanitation service base. It is possible to share these achievements with the other Partner States in order to facilitate the harmonization process. In Burundi, based on the given institutional setup, it seems that several ministries and institutions share responsibilities, which leads to an overlap of activities. This could be a problem in enhancing proper execution of responsibilities. There is a need to streamline the responsibilities for WSS services so as to improve efficiency.

8.3.2 CONCLUSION

All of the EAC Partner States were noted to share similar experiences in almost every institutional aspect related to the provision of water supply and sanitation services. Thus, the converged institutional endeavor among EAC Partner States can make a difference. As the way forward, the identified weaknesses and threats need to be urgently addressed for improvement of water supply and sanitation services. For Partner States to increase overall efficiency, concerted actions are especially needed on the reduction of non-revenue water and the increase of revenue collection efficiency, capacity building, technical knowledge, and good governance. Existing opportunities and strengths should be capitalized to enhance service provision. For instance, initiatives undertaken by various groups related to solid waste management, operation, and maintenance of the water scheme should be enhanced.

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18. Mr. Cyprien Barambonerانye: LVEMP II Project, Burundi.
19. Ms. Evelyne Izobiriza: Muyinga Administrative Officer, Burundi.
20. Director General IGEBU, Burundi.
21. Mr. Mburente Nestor: *Représentant Légal*, Burundi.
22. Eng. Herbert Nuwamanya: Principal Engineer, Ministry of Water and Environment (LVWATSAN Project Coordinator), Uganda.
23. Eng. Kavutse Dominic: Commissioner, Urban Water and Sewerage Services, Ministry of Water and Environment, Uganda.
24. Eng. Martin Kalibala and Mr. Joseph Ndegeya: National Water and Sewerage Corporation (NWSC), Uganda.

25. Mr. Uwonkunda Bruce: Environment Specialist, LVWATSAN II-EWSA, Rwanda.
26. Eng. Benard Kasabuli, Planning and Design Engineer, Ministry of Environment, Water and natural Resources, Kenya.

ANNEX 3: DEFINITION OF IMPROVED WATER SUPPLY AND IMPROVED SANITATION BY EAST AFRICAN PARTNER STATES AND THE EAST AFRICAN COMMUNITY

S/NO.	COUNTRY	IMPROVED WATER SUPPLY DEFINITION	IMPROVED SANITATION DEFINITION
1	Tanzania	An improved drinking-water source is defined as one that, by nature of its construction or through active intervention, is protected from outside contamination, in particular from contamination with fecal matter. People should have access to clean water and water supply services from improved sources within a 400-meter walking distance from the furthest homestead (National Water Policy, 2002). "Improved" sources of drinking water include: piped water into dwelling; piped water to yard/plot; public tap or standpipe; tubewell or borehole; protected dug well; protected spring; and rainwater.	Improved sanitation/latrine implies one that hygienically separates human excreta from human contact, such as latrines with clean washable slabs; vent pipes; shelter with roof; and doors that provides privacy. Improved latrines include: flush toilets; piped sewer systems; septic tanks; flush/pour flush to pit latrine; ventilated improved pit latrines (VIPs); pit latrines with slab; and composting toilets (MOHSW, 2012).
2	Kenya	Improved is defined based on access to water. Access is defined based on "adequate" or "inadequate" by the following criteria: • Piped water is "adequate" in both urban and rural settings. • Fifty percent of springs, wells, and boreholes are "adequate" only in rural settings, but "inadequate" in urban settings. • Ponds, lakes, streams,	Access to improved sanitation is defined based on status or condition of the sanitation facility, as follows: • Sewers, septic tanks, and cesspool are "reasonably adequate" in both urban and rural settings/sublocations. • All VIP latrines are "reasonably adequate" in rural settings/sub locations. • Fifty percent of VIPs and 50 percent of pit latrines are "reasonably

S/NO.	COUNTRY	IMPROVED WATER SUPPLY DEFINITION	IMPROVED SANITATION DEFINITION
		jabia/rain/harvested, water vendors, and other sources are "inadequate" in both urban and rural settings.	adequate" in urban settings/sublocations. • Fifty percent of pit latrines are "reasonably adequate" in rural settings/sublocations. • Buckets, bushes, and others are "not adequate" in both urban and rural settings/sublocations.
3	Uganda	Access to an improved water source refers to the percentage of the population with reasonable access to an adequate amount of water from an improved source, such as a household connection; public standpipe; borehole; protected well or spring; and rainwater collection. Unimproved sources include vendors; tanker trucks; and unprotected wells and springs. Reasonable access is defined as the availability of at least 20 liters per person per day. In urban areas, it is also the percentage of people within 200 meters of an improved water source; in rural areas, it is the percentage of people within 1.5 kilometers of an improved water source.	Access to improved sanitation facilities refers to the percentage of the population with at least adequate access to excreta disposal facilities that can effectively prevent human, animal, and insect contact with excreta. Improved facilities range from simple but protected pit latrines to flush toilets with a sewerage connection. To be effective, facilities must be correctly constructed and properly maintained.
4	Rwanda	Improved water supply is defined as the percentage of people with access to an improved source of drinking water within 500 meters in rural areas and 200 meters in urban areas. This access should be reliable and affordable, and provide an adequate quantity (minimum of 20 liters per person per day) within reasonable time. Improved water sources are piped water; protected wells and springs; and rainwater collection. Water quality is assumed to be acceptable for improved water sources, but shall be tested for compliance with national and World Health Organization standards for potable water.	Improved sanitation is defined as the percentage of people with access to a private sanitation facility of one of the following types: Flush or pour-flush to piped sewer system; septic tank or pit latrine; ventilated improved pit latrine (VIP); pit latrine with slab; composting toilet; or other ecosan toilets.
5	Burundi	Improved water supply is defined based on access to safe water supply as the percentage of people with access to an improved source of drinking water within 1 kilometer in rural areas and 500 meters in	Improved sanitation is defined based on condition of a sanitation infrastructure. An adequate latrine should have a sealing slab with a superstructure comprising a roof and walls that can ensure the privacy

S/NO.	COUNTRY	IMPROVED WATER SUPPLY DEFINITION	IMPROVED SANITATION DEFINITION
		urban areas. This access should be reliable and affordable, and provide an adequate quantity (minimum 25 liters per person per day) within reasonable time. Improved water sources are piped water; protected wells and springs; and rainwater collection.	of the user. Specifically for urban areas, the existence of a door is also required in order to respect the privacy of the user as the space of the plot is limited. Adequate facilities include: WC connected to the sewer, the septic tank, and waterproof pit; ventilated improved pit latrine; improved latrine; single latrine; and composting toilet.
6	EAC Level	Improved water supply services in the EAC Partner States should always conform to the defined standards from the sources of use. Furthermore, time and distance have to be taken into account as much as possible to ensure economic gain for the users. Thus, within 500 meters of the farthest homestead.	Improved sanitation is defined as adequate access to excreta disposal facilities that can effectively prevent people, animals, and rodents from contact with excreta. Improved facilities are simple but protected pit latrines; ventilated improved pit latrines (VIPs); and flush toilets either connected to sewerage networks or on-site systems such as septic tanks.

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