



REGIONAL BENCHMARKING OF WATER SUPPLY AND SANITATION UTILITIES

2021/2022 REPORT



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FOREWORD

Regulation of water supply and sanitation (WSS) service provision plays a pivotal role in driving WSS sector performance. A well-functioning regulatory system is a central feature of good sector governance. The premise of regulation is to ensure that Government policy is implemented, and service providers are accountable and supported in delivering efficient, affordable, reliable and quality services.

A key target for all water supply and sanitation regulators is the attainment of Sustainable Development Goal (SDG) 6 on universal access to safe drinking water and adequate and equitable sanitation and hygiene. From several continental and global efforts, there is a strong advocacy for implementing WSS regulation within countries, in most cases calling for review of policy, legal and institutional frameworks to institute and strengthen the regulation of WSS.

The Eastern and Southern Africa Water and Sanitation (ESAWAS) Regulators Association is a network of water supply and sanitation regulators, seeking to promote effective water supply and sanitation regulation through regional cooperation. In the reporting period 2021/2022, ESAWAS continued to execute a number of activities that are raising the visibility of WSS regulation and driving efforts towards improving service delivery under formalised arrangements. Key milestones in the period included a regulation landscape study in 54 African countries that is informing interventions to promote and strengthen regulation; the holding of the first Africa WSS regulators conference with 44 countries in attendance and the continued implementation of Citywide Inclusive Sanitation (CWIS) to integrate non-sewered sanitation in regulation.

ESAWAS has been conducting the benchmarking exercise for large utilities within the region since the period 2013/2014 and it has become an added incentive for Utility performance among countries. The general average performance in 10 KPIs continued to fluctuate and aligns with global concerns on the regressive performance of the sector in sub-Saharan Africa.

Regulators are now concerting efforts to strengthen public data systems from the local level up to national and global monitoring systems for evidence-based decision-making. Digitalisation is becoming top of the agenda to adopt technologies and build capacities that provide a more accurate basis for interventions. Issues of service resilience and emergency preparedness have also been recognised as key to address the impacts of shocks and stresses to service provision. Regulating rural WSS has become a clarion call following strides made in regulating non-sewered sanitation and regulators are keen to the task, while being mindful of the new intricacies posed by the service delivery setup. ESAWAS is supporting regulators to navigate these areas by formulating guidance, tools and frameworks at a harmonised level that are being adapted to context at country level.



Yvonne Magawa
ESAWAS Executive Secretary

ABBREVIATIONS/ ACRONYMS

AdRMM	Águas da Região Metropolitana de Maputo
ADERASA	Association of Regulators of Water and Sanitation of the Americas
AFUR	African Forum for Utility Regulators
AfWA	African Water Association
AGM	Annual General Meeting
AMCOW	African Ministers' Council on Water
AREEN	Autorité de Régulation des secteurs de l'Eau potable et de l'Energie
AURA	Autoridade Reguladora de Águas, Instituto Público
BMGF	Bill and Melinda Gates Foundation
CRIDF	Climate Resilient Infrastructure Development Facility
CWIS	Citywide Inclusive Sanitation
DAWASA	Dar es Salaam Water and Sewerage Authority
ESAWAS	Eastern and Southern Africa Water and Sanitation
EWURA	Energy and Water Utilities Regulatory Authority
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
IBNET	International Benchmarking Network
IWA	International Water Association
KPI	Key Performance Indicators
LWSC	Lusaka Water and Sanitation Company
LEWA	Lesotho Electricity and Water Authority
NCW&SC	Nairobi City Water and Sewerage Company
NSS	Non-Sewered Sanitation
NRW	Non-Revenue Water
NWASCO	National Water Supply and Sanitation Council
NWSC	National Water and Sewerage Corporation
REGIDESO	Régie de Production et de Distribution d'Eau et d'électricité
RWSS	Rural Water Supply and Sanitation
RURA	Rwanda Utilities Regulatory Authority
SDGs	Sustainable Development Goals
TeCRI	Technical Committee on Regulation Issues
WASAC	Water and Sanitation Corporation
WASCO	Water and Sewerage Company
WASREB	Water Services Regulatory Board
WIN	Water Integrity Network
WSS	Water Supply and Sanitation
WSUP	Water and Sanitation for the Urban Poor
WUPI	Water Utility Performance Index
WURD	Water Utility Regulation Department
ZAWA	Zanzibar Water Authority
ZURA	Zanzibar Utilities Regulatory Authority

EXECUTIVE SUMMARY

Regional benchmarking is a platform by which the performance of Utilities that tend to have no peer in-country can be compared to that of similar sized Utilities in other countries within the region. The exercise is intended to provide both Utilities and regulators with a learning opportunity of good practices that others may be implementing. It also provides guidance on regulatory interventions to enhance WSS service provision and sector performance in general. Regional benchmarking further enhances regional cooperation and development by promoting formulation of harmonised standards and approaches in areas of mutual challenges for adoption and adaptation to country contexts.

The first ESAWAS benchmarking exercise was conducted for the period 2013/2014 and the current report presents the results of the 8th edition covering the period 2021/2022. The number of benchmarked utilities remained nine and these are: Nairobi City Water and Sewerage Company (NCW&SC) of Kenya; Lusaka Water and Sanitation Company (LWSC) of Zambia; Dar Es Salaam Water Supply and Sanitation Authority (DAWASA) of Tanzania; Águas da Região Metropolitana de Maputo (AdRMM), former AdeM of Mozambique; Water and Sewerage Company (WASCO) of Lesotho; Water and Sanitation Corporation Limited (WASAC) of Rwanda; Zanzibar Water Authority (ZAWA) of Zanzibar; National Water and Sewerage Corporation (NWSC) of Uganda; and Lilongwe Water Board (LWB) of Malawi.

This report has seven chapters summarising the performance of the Association and the results of utility benchmarking in the period under review. Chapter 1 provides an overview of the ESAWAS Regulators Association; Chapter 2 highlights the performance of the Association in the first year of the implementation of the fourth Strategic Plan (2022 to 2024), while Chapter 3 presents the key milestones of the Association in the period. Chapter 4 describes the regional benchmarking framework and various indicators used for benchmarking while Chapter 5 presents the comparative performance analysis of the Utilities on the various indicators. Chapter 6 introduces the comparative performances of the best performing utilities in the region and Chapter 7 discusses the main conclusions and recommendations of the benchmarking exercise.

Generally, ESAWAS achieved most of the planned activities for the first year of the 2022-24 Strategic Plan. Major achievements include the completion and publication of a WSS regulatory landscape study across Africa, support to members to implement Citywide Inclusive Sanitation regulation, organisation of the first Africa WSS Regulators conference, as well as capacity development for members in various aspects of regulation.

Regarding Utility Benchmarking, the average performance improved in four indicators, declined in five indicators and remained the same for one indicator. For **Quality of Service** indicators, the averages for Water Service Coverage barely increased from 78.5% to 79%, Sewerage Service Coverage slightly declined from 19.6% to 19.3%, Water Quality dropped from 96.9 to 95.4% and Hours of Supply remained the same at 17. For **Economic Efficiency**, improvement was recorded only in Staff Cost vs O&M Cost from 41.9% to 38.5% while the average performance in O&M Cost Coverage by Billing and Collection Efficiency declined from 118% to 115% and from 97% to 94%, respectively. For **Operational Sustainability**, minimal improvements were recorded in Staff/1,000 Water & Sewerage Connections from 4.93 to 4.55 and NRW from 45.7% to 45.3%. Average performance in Metering Ratio declined to 86.9% from 87.6%.

A comparison of the best of the best performers was also done to incentivize competition among top performers within the region. The best of the best performing utilities was Nyeri WSP of Kenya.

CHAPTER 1. OVERVIEW OF ESAWAS REGULATORS ASSOCIATION

1.1 REGIONAL WSS REGULATORY COOPERATION

Expanding water supply and sanitation (WSS) services across Africa has progressed but not yet at the pace required to meet Sustainable Development Goal (SDG) 6, and considerable further improvements are needed. Achieving safe and equitable WSS service provision depends on effective regulation to formalise the sector and provide clear guidelines for those working within it.

Regulation impacts society and plays a key role in improving service delivery. A well-functioning regulatory system is a central feature of good sector governance. The premise of regulation is to ensure that Government policy is implemented, and service providers are accountable and supported in delivering efficient, affordable, reliable and quality services.

The challenge of any well-functioning regulatory system is to ensure that regulations are appropriate, necessary, and cost effective and that they serve the best interests of society. However, there is no single 'best-practice', or one-size-fits-all approach/design or model for WSS regulation. Therefore, countries must find the 'best-fit' according to their particular context. Effective regulation demands alignment with country specific reforms, governance systems and political economy and development objectives.

Nevertheless, while implementation of regulation should be aligned to country context, the principles and fundamentals of regulation are the same. This allows knowledge and experiences in regulatory governance and substance to be shared across several institutions for adoption or adaptation of what works.

Thus, in recognising the need for collaboration and promotion of the effective development of WSS regulation in Eastern and Southern Africa, several regulators came together to form an association to address new challenges and opportunities through regulatory cooperation for enhanced quality and effective regulations to achieve public policy objectives.

1.2 OBJECTIVES OF ESAWAS

The Eastern and Southern Africa Water and Sanitation (ESAWAS) Regulators Association is a network of water supply and sanitation (WSS) regulators that seeks to enhance the regulatory capacity of members to deliver quality and effective regulation to achieve public policy objectives, through cooperation and mutual assistance.

The ESAWAS Regulators Association began informally in 2007 and was officially formed in 2009 by a Memorandum of Understanding. It gained legal personality in 2012 as a registered society in Zambia. The activities of the Association are governed by a Constitution and Rules of Operation.

The objectives of the ESAWAS Regulators Association as stated in its Constitution are:

a) Capacity Building and Information Sharing

Facilitate information sharing and skills training at national, regional and international level to enhance the capacity of members in WSS regulation;

b) Regional Regulatory Co-operation

Identify and encourage the adoption of best practices to improve the effectiveness of WSS regulation in the region.

1.3 MEMBERS OF ESAWAS

The ESAWAS Regulators Association is currently composed of ten members as follows:

- **Eight autonomous WSS regulators:** the Water Services Regulatory Board (WASREB) of Kenya; the Autoridade Reguladora de Águas, Instituto Público (AURA, IP formerly CRA) of Mozambique; the Rwanda Utilities Regulatory Authority (RURA) of Rwanda; the Energy and Water Utilities Regulatory Authority (EWURA) of Tanzania; the National Water Supply and Sanitation Council (NWASCO) of Zambia; the Lesotho Electricity and Water Authority (LEWA) of Lesotho; the Autorité de Régulation des secteurs de l'Eau potable et de l'Energie (AREEN) of Burundi; and the Zanzibar Utilities Regulatory Authority (ZURA) of Zanzibar;
- **One ministry department:** the Water Utility Regulation Department (WURD) of Uganda; and
- **One association** of water and sanitation Utilities with regulatory oversight: the Water Services Association of Malawi (WASAMA).

Table 1 gives an overview of the ESAWAS members.

Table 1: Overview of ESAWAS Members

	Regulator	Established by	Year begun operations	Number of regulated WSS Utilities
1	National Water Supply and Sanitation Council (NWASCO), Zambia	Water Supply and Sanitation Act No. 28 of 1997	2000	11
2	Autoridade Reguladora de Águas, Instituto Público (AURA,IP formerly CRA), Mozambique	Decree No. 8 of 2019 preceded by Decree No. 74 of 1998	2000	57
3	Water Services Regulatory Board (WASREB), Kenya	Water Act of 2002	2003	93
4	Rwanda Utilities Regulatory Authority (RURA), Rwanda	Law No. 39 of 2001	2003	1
5	Energy and Water Utilities Regulatory Authority (EWURA), Tanzania	Cap 414 of 2001	2006	87
6	Lesotho Electricity and Water Authority (LEWA), Lesotho	LEA Act of 2002, LEA Amendment Act of 2011	2013	1
7	Autorité de Régulation des secteurs de l'Eau potable et de l'Energie (AREEN), Burundi	Decree No. 100/320 of 2011	2014	1
8	Zanzibar Utilities Regulatory Authority (ZURA), Zanzibar	Act No. 7/2013	2015	1
9	Water Services Association of Malawi (WASAMA)	Trustee Act	1998	5
10	Water Utility Regulation Department (WURD) of Uganda	Cap 152 of the water Act	2009	7

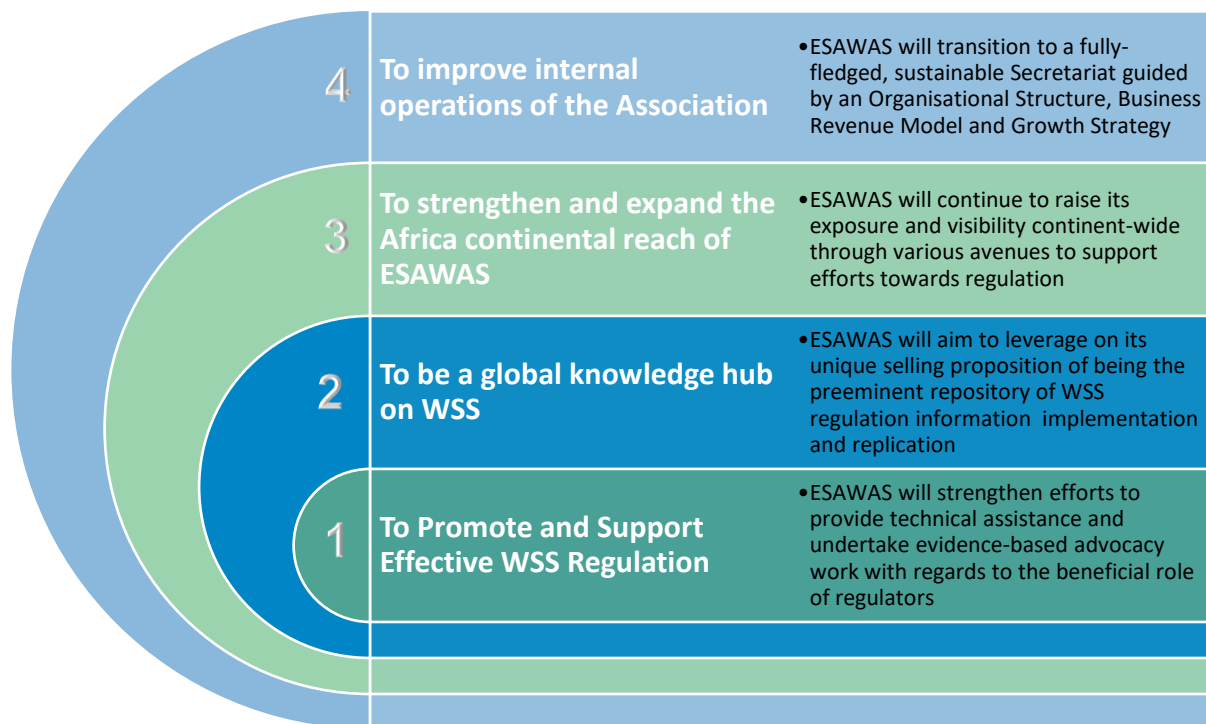
The regulators are generally mandated to undertake both economic and technical regulation of WSS service provision, ensuring a balance between the quality of service, the interests of consumers, and the financial sustainability of service providers.

For effective regulation, regulators have put in place a number of instruments and tools which include licensing; development and enforcement of guidelines, regulations, rules and standards; tariff Setting and performance monitoring and quality control.

Sector Performance Reporting and Information Dissemination is a key function of regulators. Most regulators have in place systems for data collection on the performance of the Utilities that is used for sector reporting. All the regulators produce annual reports on the performance of the sector which is published and disseminated to the public.

CHAPTER 2. PERFORMANCE ON THE FIRST YEAR OF 2022-2024 STRATEGIC PLAN

The activities of the ESAWAS Regulators Association are guided by three-year strategic plans. This reporting period marks the beginning of the fourth Strategic Plan spanning 2022-2024 that was developed to specifically respond to pertinent issues within the water supply and sanitation sector, requiring regulatory attention at regional level. Over three years, the Association aspires to achieve the following four Strategic Objectives:



This reporting period coincides with the first year (2022) of implementing the 4th Strategic Plan and the Association made considerable progress towards achievements of the set objectives as highlighted in Table 2.

Table 2: Performance on 2022 Implementation Year of the Strategic Plan

STRATEGIC OBJECTIVE 1: TO PROMOTE AND SUPPORT EFFECTIVE WSS REGULATION		
Key actions	Key Expected Results	Performance
1.1 Provide advocacy and technical assistance in regulation across the continent and globally	<p><i>At least eighteen (or six annually) institutions with regulatory responsibility (existing, newly formed and under establishment) supported with</i></p> <ul style="list-style-type: none"> • <i>Advocacy</i> • <i>Technical expertise</i> • <i>Guidance on WSS policy formulation incorporating regulation</i> • <i>Increased awareness creation and education of stakeholders</i> 	<p>Technical Assistance Strategy was developed based on the results of WSS regulatory landscape study. The Strategy was disseminated together with country reports from the landscape study for Eastern and Southern African Countries.</p>
1.2 Scale up the integration of Citywide Inclusive Sanitation (CWIS) in Regulation	<p><i>Number of member regulators supported in implementing clearly measurable CWIS regulation roadmaps increased from one to eight</i></p>	<ul style="list-style-type: none"> • CWIS regulation roadmaps developed by AREEN and EWURA to bring the total to three • Zambia, Tanzania, Rwanda, Burundi and Kenya regulators supported in implementing CWIS regulation through subgrants • Good practices in the implementation of CWIS were documented and shared through IWA sanitation stories and conferences
1.3 Enhance annual regional benchmarking exercise for WSS utilities	<p><i>Improved benchmarking mechanism by introducing</i></p> <ul style="list-style-type: none"> • <i>innovative ICT Tools</i> • <i>new utilities</i> • <i>new indicators</i> 	<ul style="list-style-type: none"> • AfDB supported ESAWAS to outline guidance for WSS Geographical Information Systems (GIS) • Data collection template that will guide CWIS data requirements for information systems was developed in consultation with IBNET, JMP and WHO-RegNet
1.4 Promote equity in terms of service provision (Rural WSS, pro poor/vulnerable communities, households and social inclusion)	<p><i>Guidance developed and/or refined to</i></p> <ul style="list-style-type: none"> • <i>address regulation of WSS in the rural areas and small schemes</i> • <i>improve measurement and identification of service levels to poor communities</i> 	<p>Not yet initiated</p>
1.5 Promote resilience in WSS service provision	<p><i>Resilience strategies/tools developed for shock resistance and recovery mechanisms (e.g., climate infrastructure, asset management, NRW)</i></p>	<p>ZURA, NWASCO, EWURA and WASREB initiated the development of Sanitation Safety Plans following the training facilitated by ESAWAS</p>
1.6 Identify new technologies and processes that can significantly enhance regulation	<p><i>Technology for enhanced regulation developed or documented and disseminated</i></p>	<p>Development of guidance on the regulatory role in WSS sector financing and investment was initiated with direct support from AfDB.</p>

STRATEGIC OBJECTIVE 1: TO PROMOTE AND SUPPORT EFFECTIVE WSS REGULATION		
Key actions	Key Expected Results	Performance
1.7 Develop a youth and gender engagement strategy	<i>Youth and women incentivized to participate in regulation and ESAWAS activities</i>	A strategy for youth and gender engagement in regulation was developed with its implementation planned to start in the second year of the Strategic Plan.

STRATEGIC OBJECTIVE 2: TO BE A GLOBAL KNOWLEDGE HUB ON WSS REGULATION		
Key actions	Key Expected Results	Performance
2.1 Undertake a feasibility assessment for the establishment of an Africa-based dedicated training centre for WSS Regulation	<ul style="list-style-type: none"> • <i>Regulatory training content developed based on a needs assessment</i> • <i>Feasibility strategy formulated for the establishment of a dedicated and formalized financially viable WSS regulation training centre with region and continent-specific content, but as a resource center for a global audience based on a demand approach</i> 	A high-level Training Needs Assessment was conducted alongside the landscape study. Findings indicate that institutions place highest demand on training in technical aspects of water regulation, technical aspects of sanitation regulation, policy and legislative formulation.
2.2 Offer tailored capacity development for Members and non-Members	<ul style="list-style-type: none"> • <i>At least three in-country capacity development interventions conducted annually to Members and non-Members addresses varying cardinal audiences (such as high-level policy makers, regulators, utilities, private operators etc)</i> • <i>Focused capacity development for non-members generates revenues for the operations</i> 	<ul style="list-style-type: none"> • The Department of Water and Sanitation of South Africa was supported with knowledge-sharing in regulatory governance and substance. • Single regulation advocacy undertaken for 44 countries at the 1st Africa WSS Regulators Conference
2.3 Identify, undertake and document regulatory studies/research	<ul style="list-style-type: none"> • <i>Three key research finding documented and shared</i> • <i>At least two good practices that enhance the capacity of Members to deliver effective regulation promoted.</i> 	<ul style="list-style-type: none"> • Research findings in the form of a published dissertation on CWIS in Zanzibar was supported under a Master's program for a staff at ZURA. • Good practices identified from several countries were documented and disseminated through a landscape study report
2.4 Expand technical and leadership skill building and training for member regulatory staff	<ul style="list-style-type: none"> • <i>Two leadership skill building facilitated for staff for members</i> • <i>Members participate in hand-on learning opportunities annually.</i> 	<ul style="list-style-type: none"> • LEWA and AREEN were supported for sanitation regulation exchange visits to NWASCO, Zambia as a replication centre • RURA-Rwanda, AREEN-Burundi and 2 utilities from Zambia were supported for CWIS-SAP learning visits to WURD, Uganda

STRATEGIC OBJECTIVE 3: STRENGTHEN AND EXPAND THE AFRICA CONTINENTAL REACH OF ESAWAS		
Key actions	Key Expected Results	Performance
3.1 Increase and strengthen membership through various options and incentives	<ul style="list-style-type: none"> • <i>Strategy developed and implemented to strengthen member services to existing and potential members within the east and southern Africa region</i> • <i>Membership base increased by 30% through expanded membership types and benefits</i> 	<p>DWS-SA and IRSEA-Angola actively engaged and both institutions initiated internal processes to join ESAWAS</p> <p>All regulatory institutions from East and Southern Africa identified in landscape study participated in the conference under ESAWAS sponsorship as a way of marketing membership.</p>
3.2 Increased awareness of ESAWAS	<i>Marketing strategy implemented that facilitate the growth and visibility of ESAWAS and its service offerings</i>	<ul style="list-style-type: none"> • In progress, ESAWAS is raising its visibility through participation in different international conferences as session convener or presenter sharing its experience and offerings in WSS regulation • ESAWAS joined GWOPA and SWA for global visibility.
3.3 Establish/ strengthen strategic partnerships with other like-minded WSS sector organisations	<i>Collaborative framework with strategic partners renewed or established for mutual benefits.</i>	<ul style="list-style-type: none"> • MoUs with WSUP, AMCOW, WIN and AfWASA under active execution. • A two-year MoU for collaboration was signed with IWA
3.4 Influence and support the formation of a dedicated Africa WSS Regulators Association	<p><i>Demand and agreement to establish an Africa WSS Regulators Association rallied through regional and country advocacy</i></p> <p><i>ESAWAS knowledge and experience feeds into development of a roadmap to support continent efforts for formation of an Africa-wide WSS Regulators Association</i></p>	<p>The exploration of modalities to establish a dedicated Africa WSS Regulators Association was initiated at the 1st Africa WSS Regulators Conference following consensus for its formation among 44 countries.</p>

STRATEGIC OBJECTIVE 4: IMPROVE INTERNAL OPERATIONS OF ESAWAS REGULATORS ASSOCIATION		
Key actions	Key Expected Results	Performance
4.1 Operationalise an independent sustainable Secretariat in line with Organisational Structure, Business Revenue Model and Growth Strategy	<ul style="list-style-type: none"> • <i>Full-time Executive Secretary and staff engaged that can absorb increased demand for ESAWAS offerings</i> • <i>Independent sustainable secretariat operationalized</i> 	Executive Secretary and Research & Knowledge Management Specialist recruited as full-time staff.
4.2 Improve organisation of annual conferences to raise the value / benefits for participation	<ul style="list-style-type: none"> • <i>Increased annual participation</i> • <i>Introduction of revenue generation option from conferences</i> 	1 st Africa WSS Regulators meeting held as a way of marketing ESAWAS' services and offerings
4.3 Set up a specialist group to support ESAWAS technical assistance activities	<ul style="list-style-type: none"> • <i>Provision of technical assistance generates revenues for operations</i> • <i>Former staff of members as an expertise resource alleviate Secretariat load in peak-demand periods</i> 	Externals Services Unit established by AGM decision as a cadre of specialists to support Secretariat in specific expertise
4.4 Implement a quality management system	<ul style="list-style-type: none"> • <i>Institute quality management processes towards ISO 9001:2015 certification</i> • <i>Evaluate the impact of ESAWAS interventions to members</i> 	Not yet initiated

CHAPTER 3. KEY MILESTONES OF THE PERIOD

3.1 DEVELOPMENT OF DATA COLLECTION TEMPLATES FOR INCLUSIVE SANITATION SERVICE REGULATION

Regulating inclusive urban sanitation services is still in the formative stages. Regulators that have integrated this mandate have established the need to undertake baseline surveys in order to inform data requirements for both sewerage and non-sewerage sanitation service provision.

The ESAWAS Guidelines for Inclusive Sanitation Service Provision outline several key performance indicators for sanitation service provision monitoring and progress reporting. In 2022, ESAWAS elaborated the KPIs into data collection templates that can be used to develop or modify sector information systems to report Citywide Inclusive Sanitation service provision more comprehensively. The data collection requirements align to the following KPIs:

Table 3: Key Performance Indicators for sanitation services

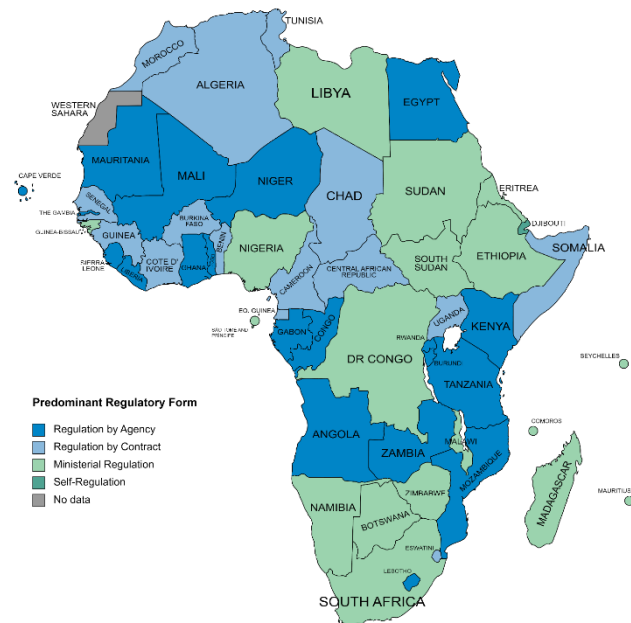
Area	Key Performance Indicator
1. Indicators along the SDG Sanitation ladder	i) Percentage of population with safely managed sanitation <i>(Use of improved facilities that are not shared with other households and where excreta are safely disposed of in situ or transported and treated off-site)</i>
	ii) Percentage of population with basic sanitation <i>(Use of improved facilities that are not shared with other households)</i>
	iii) Percentage of population with limited sanitation <i>(Use of improved facilities shared between two or more households)</i>
	iv) Percentage of population with unimproved sanitation <i>(Use of pit latrines without a slab or platform, hanging latrines or bucket latrines)</i>
	v) Percentage of population practising open defecation <i>(Disposal of human faeces in fields, forests, bushes, open bodies of water, beaches or other spaces, or with solid waste)</i>
2a. Sewerage sanitation – collection and transport indicators	i) Sewer system coverage: Percentage of population that are connected to the sewer system
	ii) Utilisation of a sewerage system
	iii) Sewer Flooding: Percentage of connected properties that are affected by flooding from sewers during the assessment period
	iv) Interruption of wastewater collection and transport services: Percentage of the number of properties affected by service interruption during assessment period
	v) Sewer blockages: the average number of blockages occurring per 100 km of sewers or 100 connections during the assessment period
	vi) Percentage of wastewater delivered to treatment plant vs total wastewater discharged to sewers (i.e. not including leakages and/or discharges other than to WWTP).

2b. Sewered sanitation – wastewater treatment indicators	i) Capacity of the treatment plant: Inflow waste water (volume) as a percentage to the capacity of the treatment plant
	ii) Compliance to sewage quality standards: Percent of sewage (wastewater treated) effluent quality tests which meet the effluent quality standards.
	iii) Proportion (percentage) of wastewater generated by households and by economic activities which is safely treated (at least secondary treatment) compared to total wastewater generated by households and economic activities
2c. Sewered sanitation – Re-use indicators	i) Re-use and recycling of treated sewage - treated sewage re-use/ recycled as a percentage of total treated sewage (%)
3a. Non-sewered sanitation – sludge collection indicators	i) Septic tank coverage: Percentage of population connected to septic tanks (%)
	ii) Population using emptiable facilities (%): Percentage of population using emptiable toilets in service area
	iii) Collection efficiency of septage (%) – Percentage of septage which is collected to the total expected septage to be collected during the assessment period (<i>can be broken down by containment type</i>)
	iv) Desludged facilities (%): Percentage of onsite sanitation facilities that have been desludged (<i>can be broken down by method</i>)
3b. Non-sewered sanitation – sludge transportation indicators	i) Number of septage sucking machines (cesspit emptier) / 1000 septic tanks (Ratio)
	ii) Percentage of septic tanks connected to soak pit for effluent disposal (%)
3c. Non-sewered sanitation – sludge treatment indicators	i) Faecal sludge transport: Percentage of received septage at the treatment plant to total emptied septage during the assessment period (%)
	ii) Capacity of FS treatment facility: FS treatment capacity as a percentage of current volume of sludge received
	iii) Sludge treatment: Percentage of faecal sludge that receives treatment of both solid and liquid fraction to all faecal sludge delivered to treatment
	iv) Compliance to sludge quality standards: Percent of treated sludge quality tests which meet the sludge quality standards.
3d. Non-sewered sanitation – Reuse of treated sludge indicators	i) Re-use of treated sludge: Percentage of reuse and recycling of treated effluent (from septic tank and grey water) to total treated effluent.
4. General Indicators – applicable to both sewered and non-sewered	i) Total cost coverage ratio – a ratio of total operation and maintenance costs over the revenue during the assessment period.
	ii) Billing Complaints
	iii) Timely resolution of billing complaints
	iv) Billing Efficiency
	v) Revenue collection efficiency
	vi) Staff/Personnel per 1000 sewerage customers

3.2 WSS REGULATORY LANDSCAPE STUDY REPORT

ESAWAS released its landmark continent-wide report on the status of Water Supply and Sanitation regulatory frameworks in 54 African countries. The report indicates that WSS regulation has progressed at different levels across Africa with many countries at initial stage of strengthening WSS regulation. The following were the key findings of the study:

- **Policy provisions:** the national WSS policy documents consistently state the need to strengthen WSS regulation but vary in the extent to which they provide tangible measures or strategies. These documents exist for water supply in 45 of 54 African countries (83% of countries) and sanitation in 44 countries (81%).
- **Legal backing:** Legal instruments touching on WSS have been developed in all African countries; however, substantial variations exist in the extent to which they meaningfully address WSS regulation. Twenty-nine countries (or 54%) have a strong legal backing for regulating water supply services compared to just 15 for sanitation services (28%).
- **Regulatory Models:** A diversity of regulatory frameworks exist for WSS service delivery. The predominant regulatory models are regulation by agency (37% of countries), ministerial regulation (33% of countries), and regulation by contract (28%).
- **Spheres of Regulation:** All African countries have multiple WSS service providers operating at diverse scales and degrees of formality. 59% of countries are regulating networked piped water supply services at scale compared to just 11% for point water sources. Sewered sanitation serves just 13% of Africa’s population, compared to the 47% of Africans that use onsite sanitation facilities of varying levels of quality.
- **Regulatory Mechanisms:** Considerable variations exist in the development and application of regulatory mechanisms. Overall, 7 countries (13%) have developed 15 to 16 of the regulatory mechanisms, 14 (26%) have developed 12 to 14, 14 (26%) have developed 9 to 11, 7 (13%) have developed 6 to 8, 11 (20%) have developed between 3 and 5, and 2 (4%) have developed 0 to 2 regulatory mechanisms.
- **Regulatory Environment:** Despite many good practices, most countries have pressing limitations in their regulatory environment for WSS. Regulatory actors in only 30% of countries have the autonomy to set or approve tariffs independently of government, only 28% of lead regulatory actors are financially autonomous, and regulatory reports on service provider performance are publicly available in only 33% of countries.



The study provided strong evidence that significant work is required in many African countries to translate policy objectives and legal provisions into strengthened regulatory frameworks. It also provides guidance on required interventions to strengthen WSS regulation and improve the sector performance.

3.3 FIRST AFRICA WSS REGULATORS CONFERENCE

In pursuit of the Strategic Objective to ‘strengthen and expand the Africa continental reach of ESAWAS’, the Association held the first ever gathering of all institutions with primary WSS regulatory responsibilities from across Africa based on the regulatory landscape study report. The conference was hosted under the auspices of the Zanzibar Utilities Regulatory Authority (ZURA) from 15th to 17th November 2022 under the theme “*Changing the narrative for WSS Regulation across Africa: Strengthened Sector Accountability*”. It was attended by more than 150 participants from 44 countries and 8 cooperating partners.

The conference was convened in line with the findings of the regulatory landscape study which provided the foundation for strengthening WSS regulation across Africa through advocacy, technical assistance, collaborations and synergies. The focus was on strengthening sector accountability and discussions evolved around the following topics:

- **Conducive environment for effective WSS Regulation**
 - Improving the enabling environment for WSS Regulation
 - Regulatory models and sector impact
 - Defining autonomous regulation
 - Regulating by design/provider
- **Regulatory mechanisms for effective delivery of regulatory mandate**
 - Strengthening tools and instruments for regulation
 - Strengthening sector monitoring and data
 - ESAWAS Support for Regulatory Institutions
- **Stakeholders’ interventions for effective WSS regulation and service provision**
 - Approaches for strengthening regulation within institutions
 - Improving Citywide Inclusive Sanitation (CWIS) Regulation
 - The role of private sector in WSS
 - Integrity, accountability and transparency in WSS

The conference participants agreed on the following key actions to be undertaken by ESAWAS and partners in order to strengthen WSS regulation in Africa:

- **Policy** - increase advocacy by engagement with government and provision of holistic guidance for enabling policy for WSS Regulation;
- **Legal framework** – documentation of good practices on strong provisions that enable regulators to discharge their mandate and have a certain level autonomy in decision-making, financing activities and compliance enforcement;
- **Regulatory models** – facilitate learning exchange on common principles of WSS regulation and guidance for countries to apply regulatory models specific to their context;
- **Documentation of good practices**– creation of a learning space on ESAWAS website where good practices on various aspects of WSS Regulation can accessed for learning purpose;
- **Monitoring and data** – put in place adequate tools and systems for collection and management of data required for sector planning, monitoring and reporting;
- **Capacity development** – need for dedicated training and country specific training driven by demand from countries;
- **Africa WSS Regulators Association** – need of single voice for stronger advocacy and funding support.

3.4 NEW PARTNERSHIPS

Collaboration among organisations is essential to create synergies and leverage on each other in pursuit of common goals. It is also recognised as a central pillar to achievement of Sustainable Development Goals (SDGs) as espoused by SDG 17 that calls for cross-sectoral and cross-national partnerships to achieve the goals. As such, the ESAWAS Regulators Association values partnerships in its quest to realise its long-term objectives and continued to strengthen working ties with its partners, while also exploring new collaborative opportunities.

In addition to the existing collaborative relations with Water and Sanitation for the Urban Poor (WSUP), African Minister's Council on Water (AMCOW), Bill Melinda Gates Foundation (BMGF), African Water and Sanitation Association (AfWASA) and WHO-REGNET, ESAWAS engaged into new partnership with:

- **International Water Association (IWA)** - ESAWAS and IWA formalized their existing relation by signing a Memorandum of Understanding for collaboration. The purpose of the MoU is to promote a holistic approach to policy reform, institutional arrangements and regulations that improve the operational and commercial efficiency of utilities and strengthen the sector through professional and capacity development (all within the context of achieving SDG 6: Ensure availability and sustainable management of water and sanitation for all).
- **Water Integrity Network (WIN)** – Collaboration between ESAWAS and WIN consists in developing approaches and tools to identify and address integrity risks in Citywide Inclusive Sanitation. The initiative consists mainly in conducting research on integrity along the entire sanitation service chain, develop and apply a methodology for conducting an integrity assessment of regulatory frameworks for CWIS, identify areas of high integrity risks and conceptualize potential mitigation tools as well as capacity development of different stakeholders on integrity and accountability in CWIS.

CHAPTER 4. REGIONAL BENCHMARKING FRAMEWORK

4.1 RATIONALE FOR REGIONAL BENCHMARKING

Benchmarking is a key regulatory tool for assessing and encouraging improvement in performance of WSS Utilities by comparing the performance of a Utility against that of others or industry's best practices or standards. However, in the Eastern and Southern African region, the largest Utility, in-country, tends to have no peers while some countries have a single national WSS provider, thus making reasonable comparison of performance difficult.

Therefore, for large or single Utilities that have no comparable peer within a country, regional benchmarking becomes an essential tool to gauge and incentivise performance improvements. While the operating environments may differ from country to country, by benchmarking against similar sized Utilities, lessons can be drawn by both the regulator and the Utility, on how to improve performance.

In order to design appropriate performance incentives and set minimum targets for key indicators, regulators need to establish where a Utility is coming from (past trends), how it has performed against others (comparative performance) and how it has performed against good practice (industry standards or set acceptable performance).

With regard to the above, ESAWAS developed a regional benchmarking framework in 2015 by a process of harmonising the Key Performance Indicators (KPIs) and benchmarks used by the different regulators.

The regional benchmarking presents a platform by which large Utilities can be compared to similar sized Utilities within the region. The results of the benchmarking exercise are therefore intended to serve as a support tool to:

- foster improvement in the WSS services by creating competition among the benchmarked Utilities;
- identify strengths and weaknesses within the Utilities and areas for improvements;
- generate information for decision making; and
- contribute to the attainment of targets with respect to country visions and SDGs.

The regional benchmarking exercise is not restricted to the members of the ESAWAS Regulators Association due to the value generated from the exercise. Therefore, any country in the Eastern and Southern African region can participate and individual regulators can use the exercise to further compare the performance of more Utilities in-country against other Utilities in the region and thereby draw comprehensive conclusions regarding the performance of the local Utilities.

4.2 BENCHMARKING TOOLS

For the purpose of regional benchmarking, ESAWAS combines the use of the International Benchmarking Network (IBNET) tool developed by the World Bank with the Water Utility Performance Index (WUPI) developed by AURA IP, as described hereunder.

- **IBNET:** The IBNET Toolkit provides a set of financial, technical and process indicators (mainly capturing the institutional context in which the Utilities are operating) for the assessment of Utility performance in the provision of water and sewerage services. This set of indicators provides the basis for cross-Utility and cross-country comparisons. IBNET caters for a large number of indicators in different categories such Service Coverage, Non-Revenue Water, Quality of Service, Cost and Staffing and Financial Performance, amongst others.
- **WUPI:** Analysing single KPIs individually is a useful way to analyse the performance of a Utility at technical level. However, by only using single KPIs in the performance analysis, it is difficult to conduct an integrated evaluation of the overall performance of the Utilities in closely related indicators. Thus, the WUPI is a composite indicator to evaluate the performance of the Utilities in an integrated way for a set of similar indicators (see Annex 3 for a detailed description).

4.3 BENCHMARKING KPIs

Ten KPIs are used for regional benchmarking as follows:

- i. Water Coverage
- ii. Sewerage Coverage
- iii. Water Quality
- iv. Hours of Supply
- v. Non-Revenue Water
- vi. Operational and Maintenance (O&M) Cost Coverage
- vii. Collection Efficiency
- viii. Metering Ratio
- ix. Staff per 1,000 Connections
- x. Staff Cost as a proportion of O&M Costs

The indicators are grouped into three main components namely,

- a) Quality of Service- *relating to the extent and assurance of the service;*
- b) Economic Efficiency - *relating to the viability of the service provider;* and
- c) Operational Sustainability – *relating to operational efficiencies.*

Performance boundaries for regional benchmarking were defined by considering the minimum average performance of the Utilities, as well as the minimum for the acceptable benchmarks among the countries. The weights were arrived at by a process of normalisation of the various weights defined by the different regulators.

Table 4 shows the framework used for regional benchmarking.

Table 4: Regional Benchmarking KPIs and Performance measurements

	INDICATOR	DEFINITION	CALCULATION	ACCEPTABLE BOUNDARIES	WEIGHT
QUALITY OF SERVICE					
1	Water Coverage	% of total population with access to improved water supply: individual household connection, kiosk, public standposts, communal/shared tap	[Total Population Served/Total Population in the Service Area]	75-90%	10
2	Sewerage Coverage	% of total population with access to sewerage services (no septic tanks)	[Total Population Served/Total Population in the Service Area]	40-70%	5
3	Water Quality • Residual Cl (w0.4) • Bacteriological (w0.6)	% of water samples undertaken meeting quality requirements	% of tests compliant in relation to applicable / national standards	95-99%	15
4	Hours of Supply	Aggregated average number of hours of supply (per town/zone/area etc) in the reporting period	Sum of weighted averages per town	18-23	10
ECONOMIC EFFICIENCY					
5	O&M Cost Coverage by Billing	% of costs covered by billed amounts	[Billed Amount/O&M Costs] x100	100-150%	10
6	Collection Efficiency	% of collected amounts from the billing	[Collected amount/Billed amount] x 100	90-99%	15
7	Staff Cost	% of personnel Cost as a proportion of O&M cost	[Personnel Cost/ O&M Costs] x 100	30-35%	5
OPERATIONAL SUSTAINABILITY					
8	Staff/1000 Connections	Number of staff per 1,000 water & sewerage connections	[Total Number of Staff x 1,000]/[No. of Water + Sewerage Connections]	5-8	5
9	NRW	% of water that does not produce revenue in a given period	[System Input Volume (imported + produced) –billed Volume]/System Input Volume	30-35%	15
10	Metering Ratio	% of metered customers from the total connections	[Functional Metered Connections]/Total Connections]x100	90-99%	10

CHAPTER 5. PERFORMANCE ANALYSIS

The number of Utilities participating in the benchmarking exercise remained nine as Régie de Production et de Distribution d'Eau et d'électricité (REGIDESO) of Burundi did not have data available for submission. This presents a real challenge for regulatory monitoring and reporting in the absence of verifiable and reliable data.

This section presents an analysis of the performance of the nine Utilities in urban areas based on ten set KPIs and benchmarks.

5.1 REPORTING PERIOD

In conformity with country requirements, the regulators have different reporting periods as follows:

- July-June for WASREB, RURA, EWURA, WURD and ZURA
- April- March for LEWA and WASAMA
- January –December for AURA and NWASCO

Hence, the data used in this report is drawn from the respective reporting periods as applicable.

5.2 OVERVIEW OF BENCHMARKED UTILITIES

The benchmarking exercise considers only the largest or single national Utilities from each country. The nine Utilities considered in this report are: Nairobi City Water and Sewerage Company (NCW&SC) of Kenya; Lusaka Water and Sanitation Company (LWSC) of Zambia; Dar Es Salaam Water and Sanitation Authority (DAWASA) of Tanzania; Águas da Região Metropolitana de Maputo (AdRMM) of Mozambique; Water and Sewerage Company (WASCO) of Lesotho; Water and Sanitation Corporation Ltd (WASAC) of Rwanda; Zanzibar Water Authority (ZAWA) of Zanzibar; National Water and Sewerage Corporation (NWSC) of Uganda and Lilongwe Water Board (LWB) of Malawi.

The general overview of the Utilities is presented in Table 5, while a detailed profile is presented in Annex 2. All the Utilities are publicly owned companies.

Table 5: General profile of benchmarked Utilities

Utility	Abbreviation	Country	Areas of operation	Year Established
Nairobi City Water and Sewerage Company	NCW&SC	Kenya	City of Nairobi	2003
Lusaka Water and Sanitation Company	LWSC	Zambia	Lusaka city; Kafue; Chongwe; Luangwa; Chilanga, Chirundu	1989
Dar Es Salaam Water and Sanitation Authority	DAWASA	Tanzania	Dar Es Salaam city; Kibaha; Bagamoyo;	2005
Águas da Região Metropolitana de Maputo	AdRMM	Mozambique	Greater Maputo City	1999
Water and Sewerage Company	WASCO	Lesotho	Maseru + 15 urban centres	2010
Water and Sanitation Corporation	WASAC	Rwanda	Kigali + all urban centres in the country	2014
Zanzibar Water Authority	ZAWA	Zanzibar	Zanzibar	2006
National Water and Sewerage Corporation	NWSC	Uganda	Kampala + 217 towns	1972
Lilongwe Water Board	LWB	Malawi	Lilongwe	1947

The basic operational data about the Utilities is shown in Table 6.

Table 6: Basic operational data of benchmarked Utilities

Utility	Urban Population in the Service Area 2020/21	Number of Water Connections 2020/21	Annual Water Production (mil m ³ /yr) 2020/21	Urban Population in the Service Area 2021/22	Number of Water Connections 2021/22	Annual Water Production (mil m ³ /yr) 2021/22
NCW&SC, Kenya	4.82 Million	232,946	179.341	5.02 Million	244,813	178.523
LWSC, Zambia	2.92 Million	130,150	87.675	3.01 Million	134,807	106.068
DAWASA, Tanzania	7.53 Million	343,091	145.888	8.17 Million	370,982	141.098
AdRMM, Mozambique	2.52 Million	288,051	86.885	2.91 Million	301,718	91.349
WASCO, Lesotho	0.742Million	110,750	25.186	0.767 Million	114,638	26.621
WASAC, Rwanda	6.46 Million	263,344	59.524	6.75 Million	287,608	69.454
ZAWA, Zanzibar	1.71 Million	124,776	67.676	1.89 Million	166,636	69.596
NWSC, Uganda	22.54Million	775,794	144.105	23.36Million	840,508	164.608
LWB, Malawi	1.11 Million	96,589	38.582	1.14 Million	102,051	28.522

Table 6 shows that there was an increase in the number of water connections for all Utilities. The highest increase of 64,714 water connections was recorded by NWSC followed by ZAWA which added 41,860 new water connections. AdRMM had a high number of connections despite having less population in the service area compared to NCW&SC, LWSC, DAWASA and WASAC. This was attributed to the implementation of Greater Maputo Water Supply Expansion Project which included the construction of the Mathlemele and Guava Distribution Centres allowing AdRMM to increase the number of connections significantly. Additionally, there was an increase in water production resulting from the construction of the new water treatment plant in Corumana, Maputo in 2021 with production capacity of 60,000m³ per day and a pumping station installed in the reservoir of the Corumana dam with a storage capacity of 1.23 billion m³.

For water production, LWSC and NWSC reported the highest increase of 21% and 14% respectively. For LWSC, the increase was attributed to the commissioning of a new bulk pipeline which brought in additional 50mil m³ of water. For LWB, the apparent decline in water production of 10mil m³ was due to a change in the financial year pattern from July-June to April-March, hence the reported water production is for a 9-month period.

5.3 PERFORMANCE BOUNDARIES

In order to obtain an integrated view of the Utilities' performance, benchmarking has been done using both single KPIs and composite indicators as defined under the WUPI. The single and components for grouped indicators are shown in Table 7.

The KPIs boundaries established by ESAWAS are not fixed and could be revised as trends progress towards the benchmarks.

Table 7: KPIs and Performance boundaries

Component	KPI	Good	Acceptable	Poor
Quality of Service	Water Coverage	>90	90-75	< 75
	Sewerage Coverage	>70	70-40	< 40
	Water Quality	100	>95	< 95
	Hours of Supply	24	23-18	< 18
Economic Efficiency	O&M Coverage	>150	150 – 100	< 100
	Collection Efficiency	>100	99 – 90	< 90
	Staff Cost	<30	30-35	>35
Operational Sustainability	Staff/1,000 Water and Sewerage Connections	<5.0	5.0 – 8.0	>8.0
	NRW	<30	30 – 35	>35
	Metering Ratio	100	99 – 90	< 90

5.4 PERFORMANCE ANALYSIS

The performance analysis was done according to the clusters of indicators in the components of:

- i. Quality of Service
- ii. Economic Efficiency
- iii. Operational Sustainability

Per component of indicators, the performance results by single KPIs are presented first, then the performance is analysed using the WUPI, which integrates the single KPIs.

5.4.1 QUALITY OF SERVICE

The quality of service is measured using four KPIs: water supply coverage, sewerage coverage, water quality and hours of water supply.

5.4.1.1 Water Supply Service Coverage

Water supply coverage is the proportion of domestic population served through individual household connections, public standpipes and water kiosks from the total population in the service area.

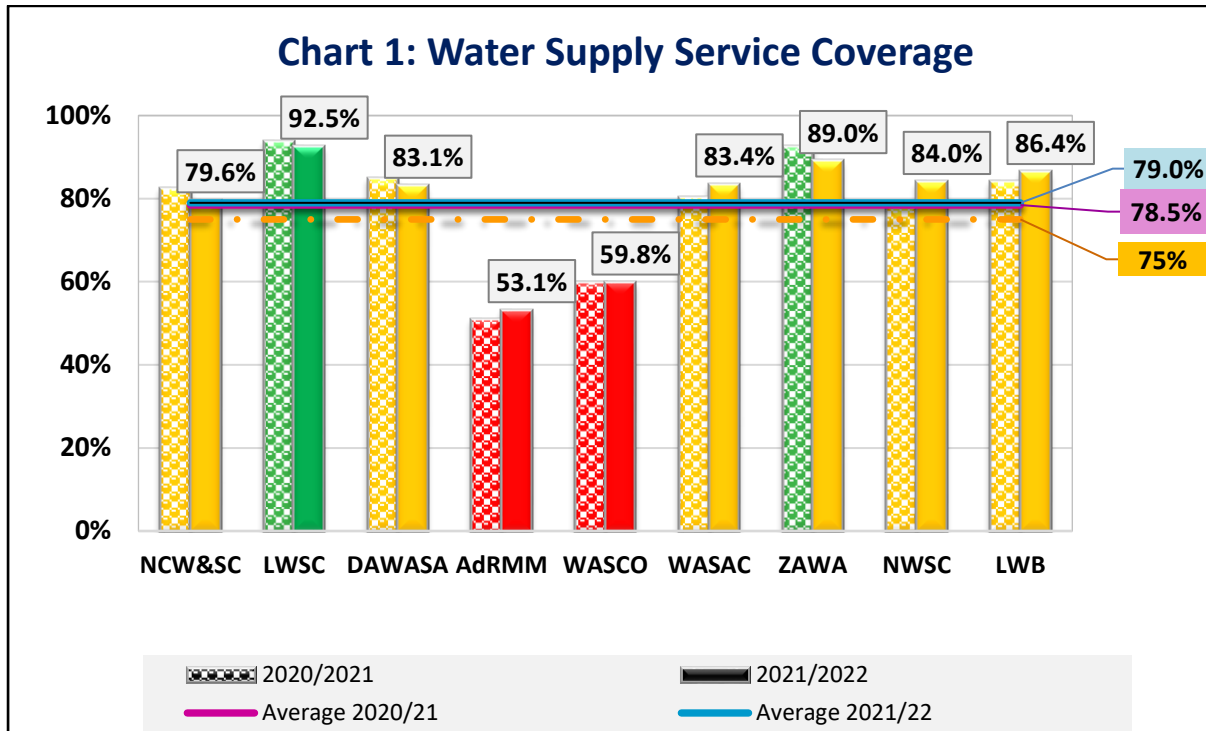
Table 8 presents the number of domestic water connections per Utility. An increase in water coverage typically indicates that there is a corresponding growth in domestic connections against population increase. It is to be noted, however, that public taps also serve a significant portion of the population.

Table 8: Domestic water connections

Utility	Domestic Connections 2020/21	Domestic Connections 2021/22
NCW&SC	216,998	212,652
LWSC	114,988	119,555
DAWASA	332,489	358,762
AdRMM	276,605	286,300
WASCO	100,545	104,147
WASAC	241,186	263,708
ZAWA	121,636	143,636
NWSC	627,234	675,644
LWB	95,965	91,715

Table 8 shows an increase in the number of domestic water connections for seven out of nine benchmarked utilities. NWSC recorded the highest increase of 48,410 new connections followed by DAWASA and WASAC with 26,273 and 22,522 new connections, respectively. A decline in the number of domestic water connections was recorded by NCW&SC and LWB. For NCW&SC, the drop is a result of database clean up and aggregation of connections for multi-dwelling units due to pressure challenges.

As shown by Chart 1, on average, the water service coverage increased slightly from 78.5% to 79%. LWSC was the only Utility to have met and maintained the good benchmark with the highest water service coverage of 92.5% despite a slight decline from the previous period. The highest increase of 6% was recorded by NWSC followed by WASAC with 3.1% increase in water service coverage. AdRMM and WASCO remained below the minimum acceptable benchmark with minimal increase in coverage. DAWASA and ZAWA recorded declines in their water service coverage performance despite the increase in domestic water connections.



KPI	Good	Acceptable	Poor
Water Coverage	>90	90-75	< 75

5.4.1.2. Sewerage Service Coverage

For this indicator, only the sanitation services by sewer networks were considered for NCW&SC, LWSC, DAWASCO, WASCO, ZAWA and NWSC. The data on onsite sanitation systems such as septic tanks, pit latrines and other forms of off-grid sanitation are not yet reported in all countries.

It is to be noted that in Malawi, Mozambique and Rwanda, sewerage and sanitation services are provided by different entities: Local Authorities in Malawi and City Councils in Mozambique. In Rwanda, in addition to the absence of central sewerage system, sanitation services dominated by faecal sludge collection and transportation are provided by private operators.

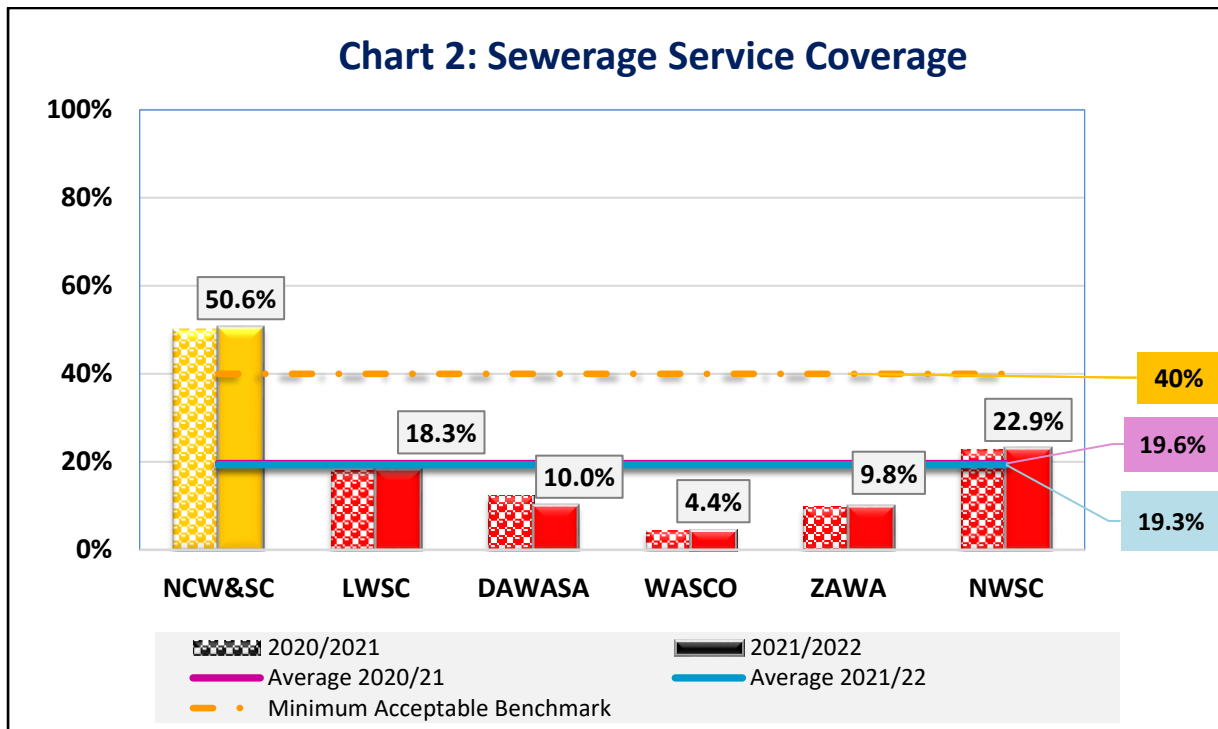
The number of sewerage connections are shown in Table 9 while service coverage is presented in Chart 2.

Table 9: Sewerage connections per Utility

Utility	Sewerage Connections 2020/21	Sewerage Connections 2021/22
NCW&SC	232,946	184,070
LWSC	39,724	43,221
DAWASA	20,004	19,203
WASCO	8,215	8,505
NWSC	25,180	28,007
ZAWA	3,022	3,022

As presented in Table 9, LWSC, NWSC and WASCO recorded minor increases in the number of sewerage connections. NCW&SC and DAWASA recorded a decline in connections to the sewer network. The significant decline of 48,876 connections for NCW&SC is due to data clean-up which removed dormant accounts from the data system.

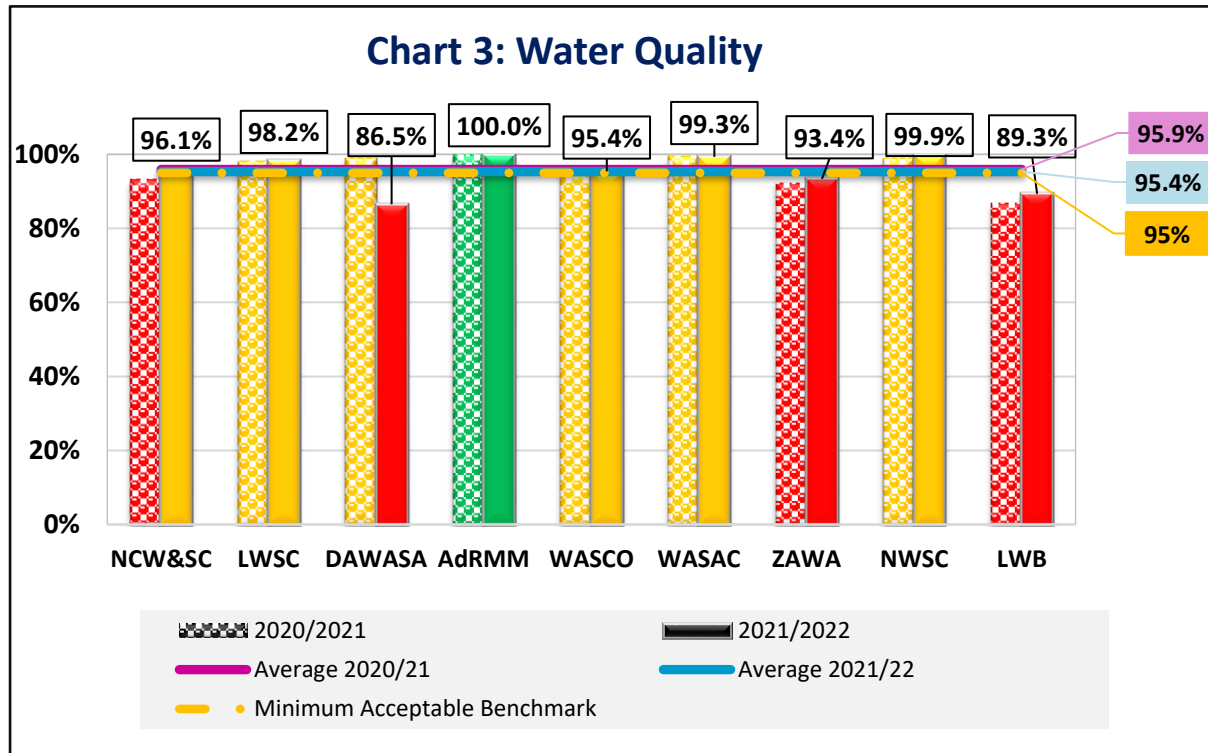
Chart 2 shows that the average sewerage service coverage remained almost the same with a minor decrease of 0.3% and was still significantly below the minimum acceptable benchmark of 40%. Only NCW&SC met the acceptable benchmark with sewerage service coverage performance of 50.6%. The persistent low sewerage service coverage by network underscores the need to adopt the Citywide Inclusive Sanitation (CWIS) approach that considers both sewered and non-sewered sanitation options to provide safely managed sanitation services for all, particularly that the majority of the population in the service areas of benchmarked utilities rely on onsite sanitation systems or other unregulated options.



KPI	Good	Acceptable	Poor
Sewerage Coverage	>70	70-40	< 40

5.4.1.3. Water Quality

Drinking water quality measures the potability of water supplied by a Utility. It is a critical performance indicator since it has a direct impact on the health of consumers. With individual countries having different standards, the drinking water quality result presented in Chart 3 is a composite indicator. It considers compliance in the parameters of Residual Chlorine (40%) and Bacteriological (60%) in terms of number of tests carried out against the required, and number of tests meeting the respective national standards.

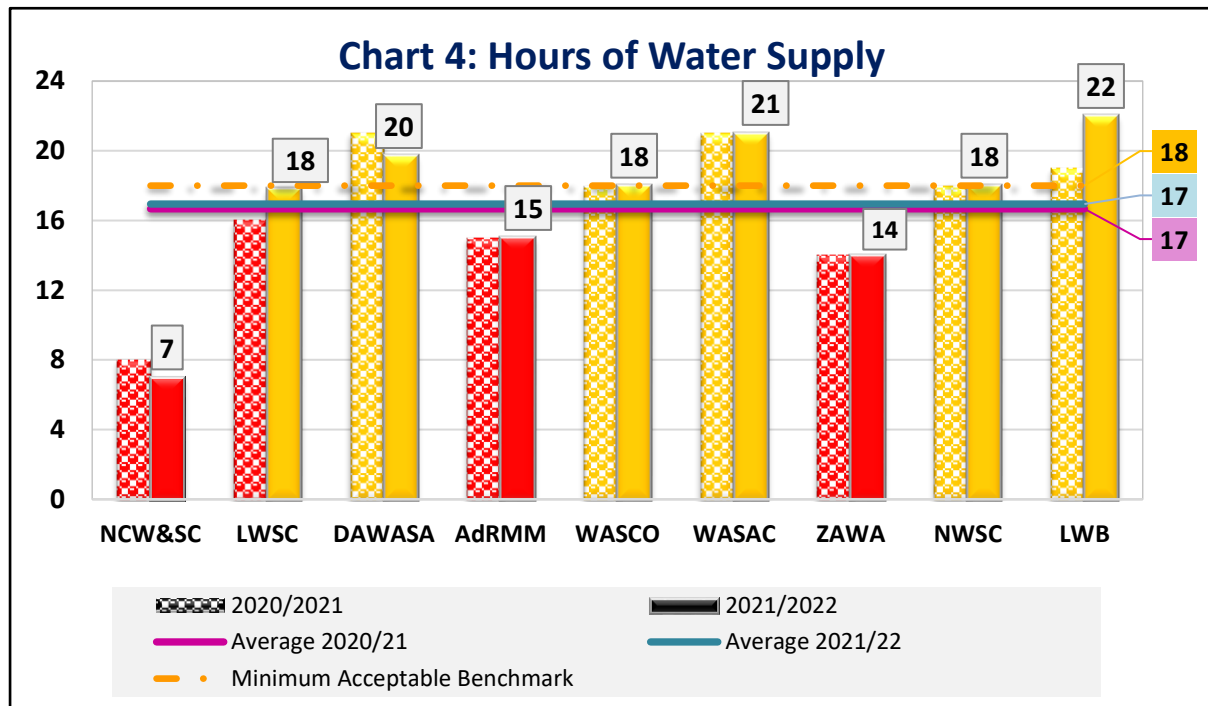


KPI	Good	Acceptable	Poor
Water Quality	100	>95	< 95

From Chart 3, the average compliance for water quality slightly decreased from 95.9% to 95.4% but remained above the acceptable benchmark of 95%. Five out of the nine Utilities met the acceptable benchmark. Only AdRMM maintained the good benchmark for water quality. NCW&SC, ZAWA and LWB posted improvements in water quality compliance. Nevertheless, ZAWA and LWB were still below the acceptable benchmark as a result of conducting less tests than required number of tests combined with the low number of conducted tests meeting the standards for both residual chlorine and bacteriological parameters. DAWASA in particular recorded a significant decline of 12.5% in performance, falling below the acceptable benchmark. This was attributed to the lower number of performed tests against the total number of tests required by the revised EWURA Water and Wastewater Quality Monitoring Guidelines for WSSAs.

5.4.1.4. Hours of Water Supply

Hours of Supply refers to the average number of hours per day that a Utility provides water to its customers. It measures the continuity of services by a Utility and thus the availability of water to the customer. It is an important indicator of quality of service and shows the extent to which the Utility is making progress towards the fulfilment of the human right to water and sanitation in terms of availability of water in sufficient quantities.

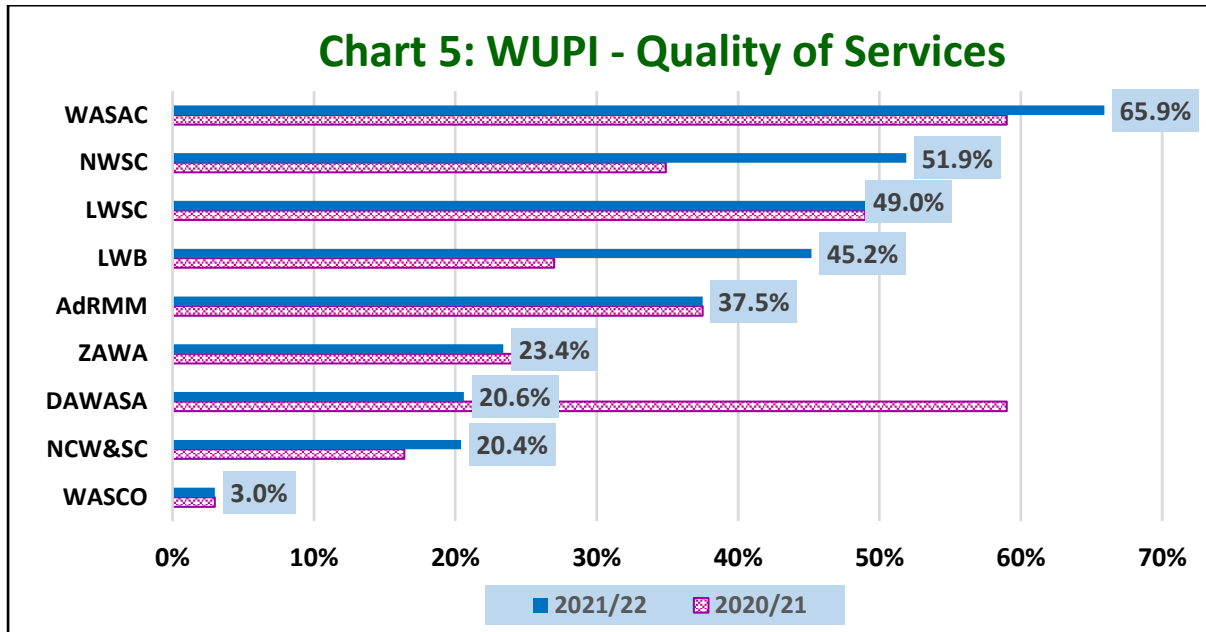


KPI	Good	Acceptable	Poor
Hours of Supply	24	23-18	< 18

The average hours of supply remained the same at 17 and below the acceptable benchmark of 18. LWB made a significant increase of 3 hours recording the highest number of 22 hours of water supply. This was attributed to the use of toll-free line which allowed for quick identification of faults and improvement in time taken to address them. LWSC also recorded an increase from 16 to 18 hours of supply owing to the commissioning of a new bulk pipeline which brought in additional 50mil m³. DAWASA experienced a drop in water production against an increase in connections hence resulting in a decrease in hours of water supply. Except NCW&SC, AdRMM and ZAWA which recorded average hours below the acceptable benchmark, all other utilities met or maintained the acceptable benchmark of 18 hours of supply. NCW&SC water production barely changed against an increased population in the service area, hence the drop in hours of supply.

5.4.1.5. Integrated Performance - Quality of Services

The integrated performance for the WUPI-Quality of Services shown in Chart 5 was measured by combining the Water Supply Coverage, Sewerage Coverage, Water Quality and Hours of Supply indicators.



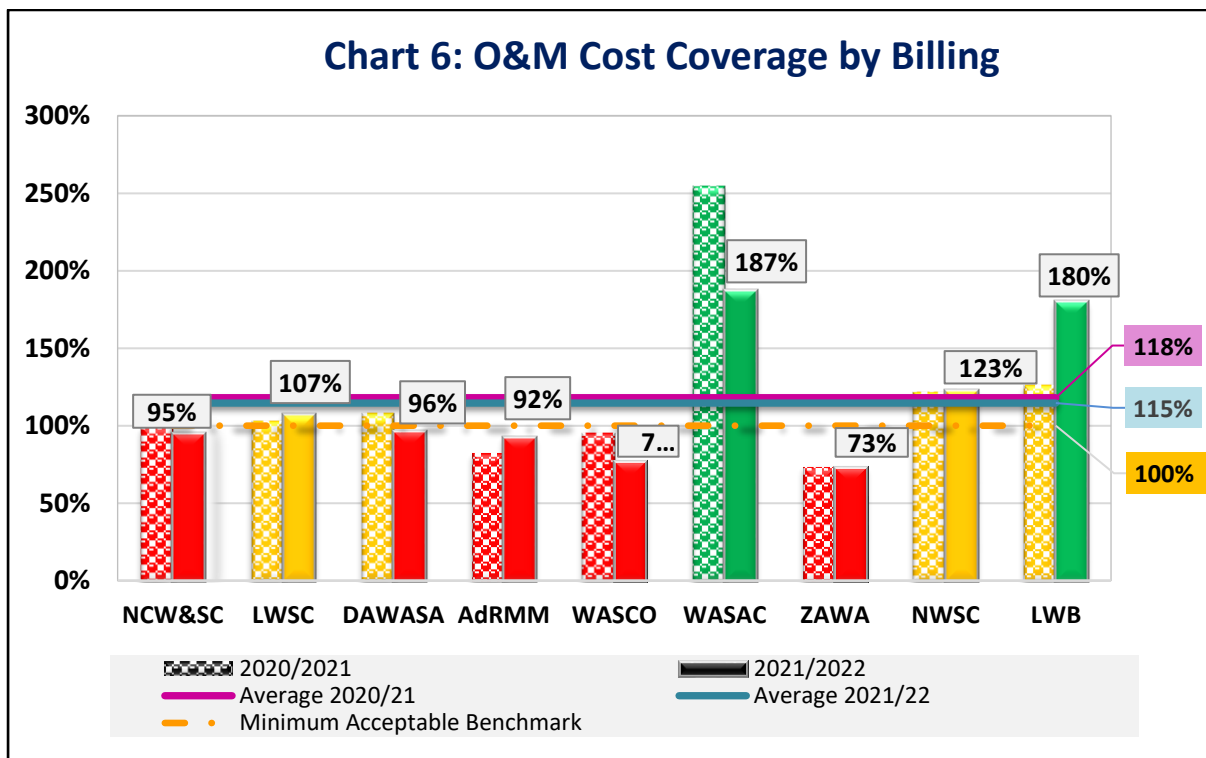
WASAC maintained the top position in Quality of Services and improved from 59% to 65.9% with improved performance in Water Supply Service Coverage. NWSC and LWB also recorded notable improvement and ranked second and fourth from 5th and 6th positions, respectively. DAWASA which was also the best performer at 59% in the previous period, experienced a significant drop in ranking owing to poor performance in sewerage coverage and water quality indicators. WASCO remained in the last place owing to low performance in both water supply and sewerage service coverage.

5.4.2 ECONOMIC EFFICIENCY

Economic Efficiency performance is analysed using three KPIs: Operation and Maintenance (O&M) Cost Coverage by Billing, Collection Efficiency ratio and Staff Cost as a proportion of O&M Costs.

5.4.2.1 Operation and Maintenance Cost Coverage by Billing

The Operation and Maintenance (O&M) Cost Coverage is the extent to which internally generated funds from billing for water and sewerage services, cover the cost of running a Utility. It is a measure of the financial sustainability of a Utility. It is desirable that Utilities achieve full cost coverage at some point. However, a good performance of 150% O&M Cost Coverage is set in order to encourage the Utilities to not only meet the O&M costs but also generate funds for some capital investments.

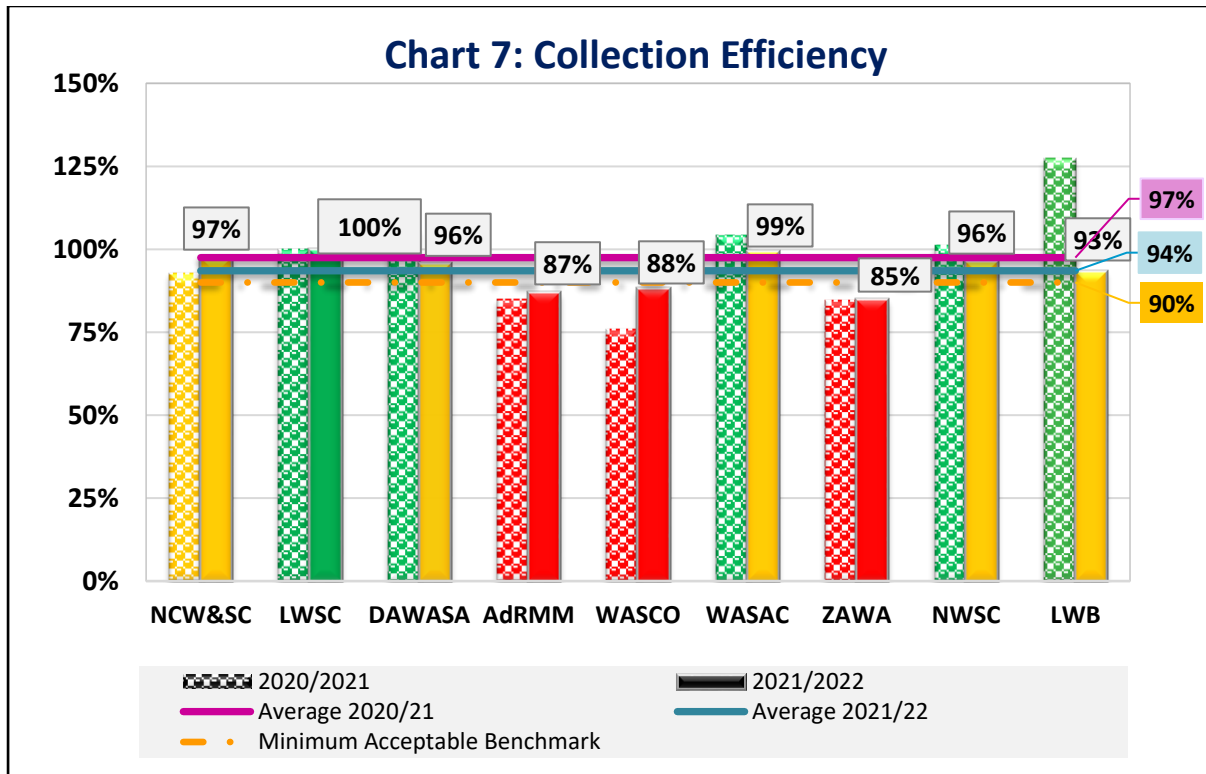


KPI	Good	Acceptable	Poor
O&M Coverage	>150	150 – 100	< 100

As per Chart 6, the average performance in O&M Cost Coverage by Billing declined from 118% recorded in 2020/21 to 115% in 2021/22 with only four Utilities above the acceptable benchmark of 100%. Only LWB, LWSC and NWSC improved their performance in O&M Cost covered by billed revenues. LWB recording the highest increase of 54% cost coverage with a significant drop in costs of about 39% despite a slight decline in billing. AdRMM recorded an improvement of 10% with a 28% increase in billed revenue against a 14% increase in costs. However, AdRMM's performance remained below the minimum acceptable benchmark. WASCO and WASAC suffered significant drops in performance. Despite maintaining the good benchmark of above 150%, WASAC experienced a significant decline from 254% to 187% of O&M Cost covered by billed revenues due to a high increase in costs of about 59% against an increase in billed revenue of about 17%. For WASCO, billed revenues decreased against a rise in expenses.

5.4.2.2. Collection Efficiency

Collection Efficiency in Chart 7 indicates the cash income of the Utility against the billed amounts for water and sewerage services only. Collection ratios above 90% are a key factor in sustaining financial performance of water and sanitation service Utilities. Because collections include arrears, current and advance payments, a collection efficiency of above 100% is accepted.



KPI	Good	Acceptable	Poor
Collection Efficiency	>100	99 – 90	< 90

The average collection efficiency declined from 97% to 94% although remained above the minimum acceptable benchmark of 90%. LWSC was the only Utility that maintained the good performance of 100% which was the highest for the reported period. It is worth mentioning that the Zambian WSS regulator has capped Collection Efficiency at 100%, hence excess amounts are not considered.

Except AdRMM, WASCO and ZAWA all other Utilities met the acceptable benchmark for collection efficiency. Despite the poor performance, WASCO recorded the highest increase of 12%. The performance of LWB dropped by 34% due to an apparent decline in billing and collections as a result of change in the fiscal year pattern with the data being for nine months. Digital and mobile payment platforms instituted by all Utilities have assisted to improve collection efficiency over the years with wider reach of customers.

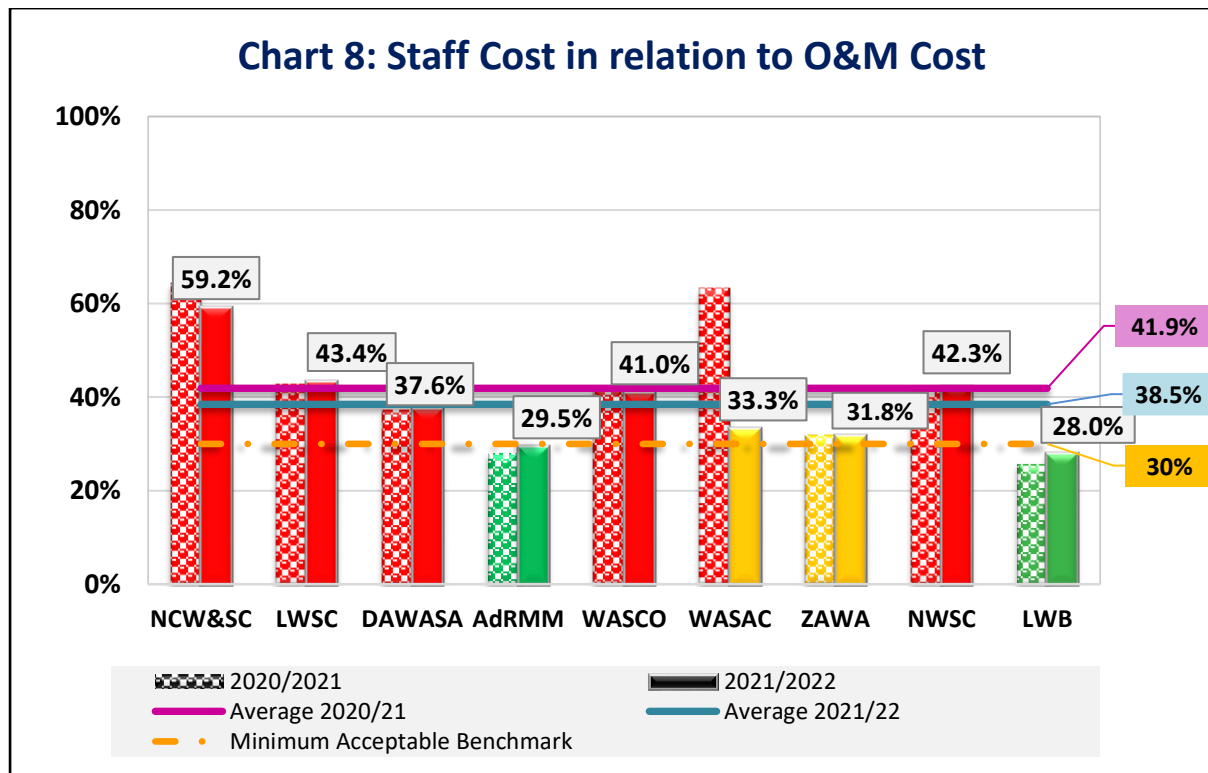
5.4.2.3. Staff Cost as a proportion of O&M Costs

The staff cost is analysed against the O&M costs of the Utility. It is expressed as the proportion (%) of the total O&M costs spent on staff. The internationally accepted “bottom line” for the staff cost is 30% of the total cost and is considered as the maximum acceptable benchmark in this report. To put the cost proportion in perspective, the number of staff per Utility is shown in Table 10.

Table 10: Total Staff per Utility

Utility	Total Staff 2020/21	Total Staff 2021/22
NCW&SC	3,239	3,143
LWSC	756	680
DAWASA	1,565	1,552
AdRMM	963	983
WASCO	533	490
WASAC	1,496	1,441
ZAWA	574	574
NWSC	4,244	4,467
LWB	517	509

NWSC and AdRMM increased the number of staff in line with business growth while other utilities reported notable reductions in the number of staff due to turnover.

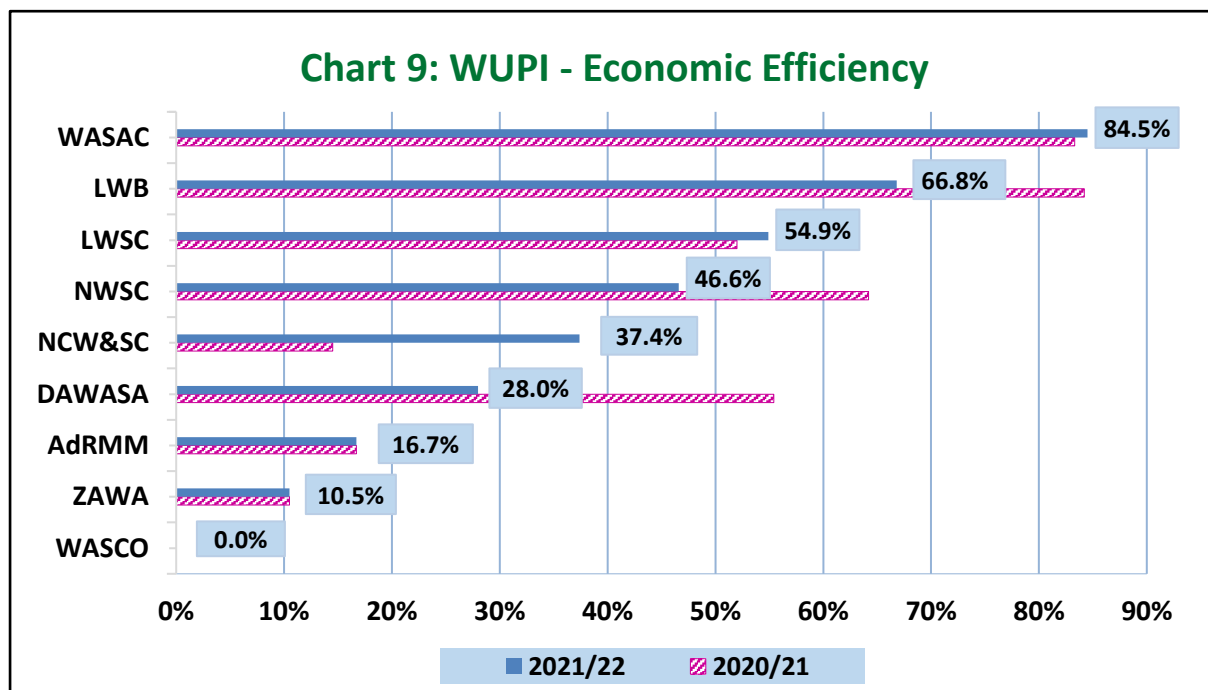


KPI	Good	Acceptable	Poor
Staff Cost	<30	30-35	>35

Chart 8 shows an improvement in the average for Staff Cost in relation to O&M Cost from 41.9% to 38.5%. AdRMM and LWB maintained the good benchmark (below 30% ratio) while ZAWA and WASAC met the acceptable benchmark ratio. On a particular note, WASAC reduced its staff cost ratio by almost half and this could be attributed to the reduction of staff including those at management level. NCW&SC continued to have the highest staff cost ratio (59.2%) despite continued reduction in the number of staff, this could negatively impact the effectiveness of other business operations.

5.4.2.4. Integrated Performance –Economic Efficiency

The WUPI-economic efficiency, shown in Chart 9, shows an integrated view of the Utilities' performance in the three KPIs of Operation and Maintenance (O&M) Cost Coverage by Billing, Collection Efficiency and Staff Cost as a proportion of O&M Costs.



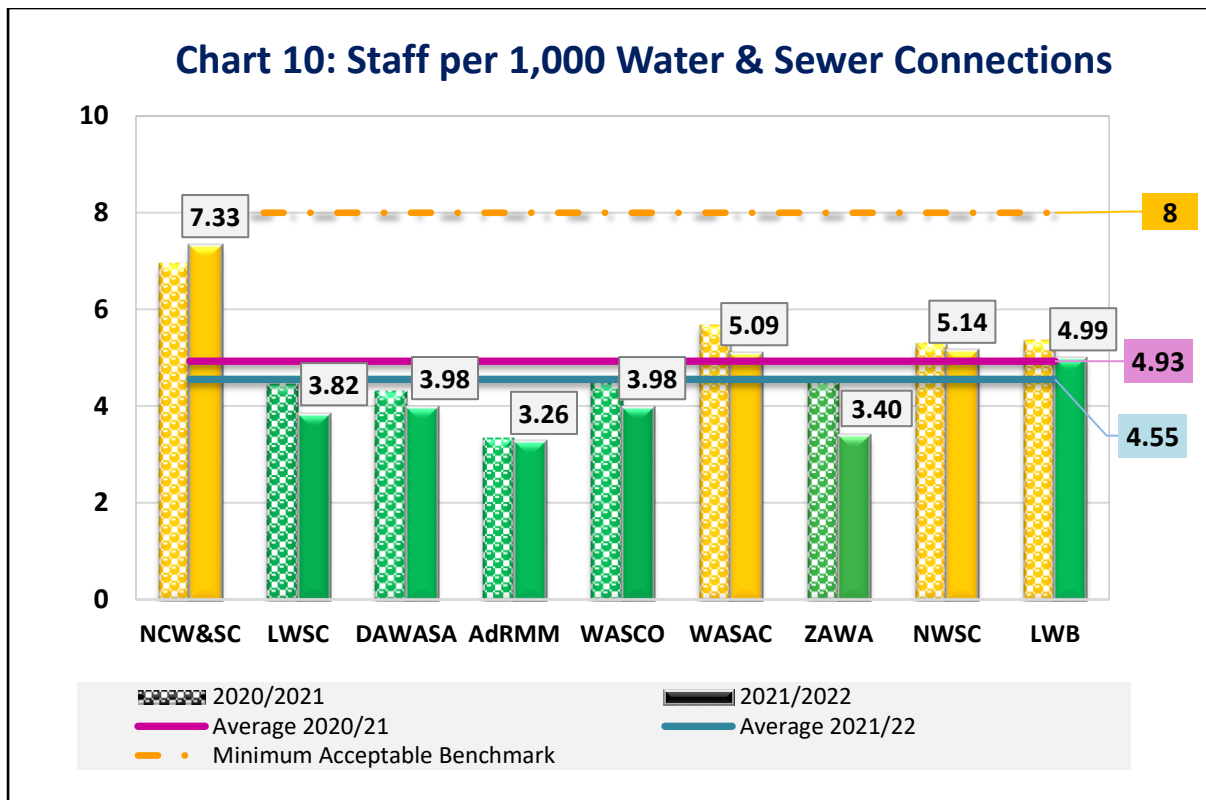
From Chart 9, WASAC and LWB interchanged in the two top positions from the previous period. WASAC achieved the highest score of 84.5% owing to good performance in O&M Cost covered by billing, improvement in staff cost ratio and acceptable performance in collection efficiency. LWB ranked second-best performer but experienced a significant drop in WUPI-Economic Efficiency performance from 83.3% to 66.8% due to significant decline in Collection Efficiency. NCW&SC recorded notable increase from 14.5% to 37.4% attributed to improvement in Collection Efficiency. The performance of NWSC and DAWASA declined due to poor performance in Staff Cost in relation to O&M Cost. WASCO remained in the last place with a score of 0% due to its poor performance (below the acceptable benchmark) in all WUPI-Economic Efficiency indicators.

5.4.3 OPERATIONAL SUSTAINABILITY

The Operational Sustainability component is measured using Staff per 1,000 Water and Sewer Connections, Non-Revenue Water and Metering ratio.

5.4.3.1. Staff per 1,000 Water and Sewer Connections

Staff per 1,000 Water and Sewer Connections, shown in Chart 10, represents the number of employees servicing 1,000 connections. It indicates the efficiency of Utilities in utilising their staff and hence a low figure is desirable. However, this measure is affected by factors such as nature of human settlements, skills mix, Utility business model (for instance, outsourcing of services), geographical distributions of the served areas and whether a Utility provides water supply only or both water and sewerage services.

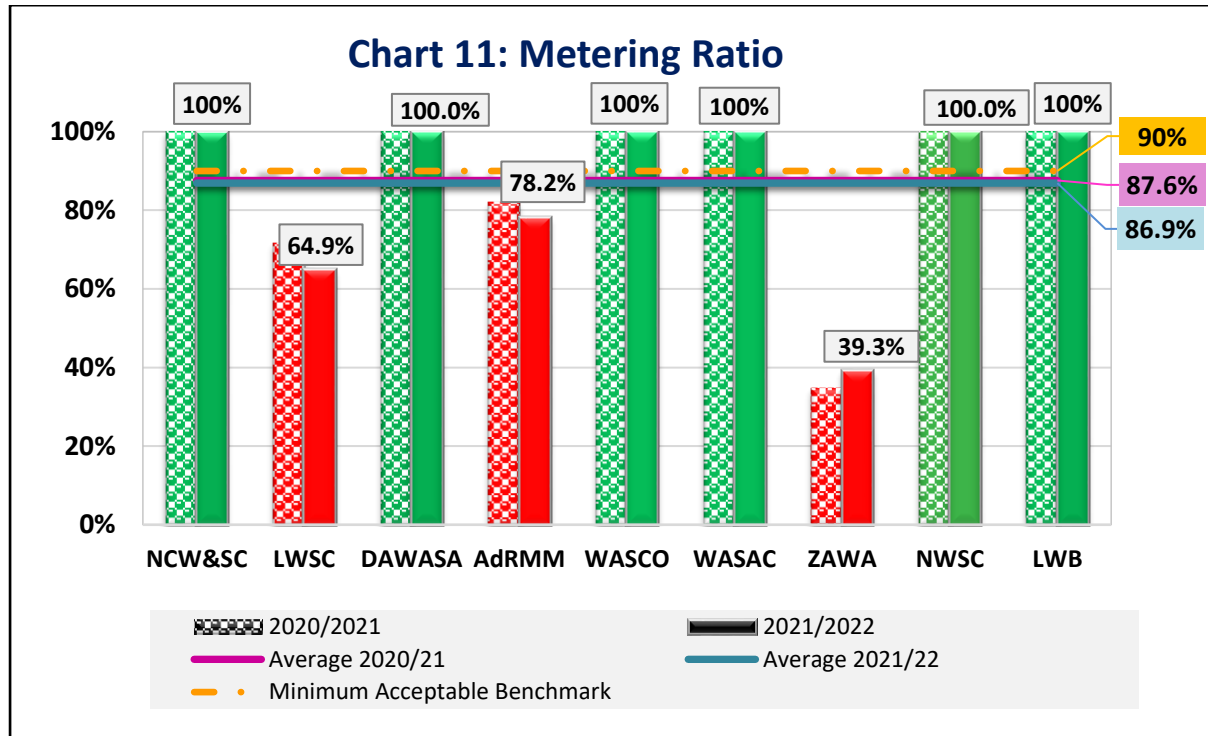


KPI	Good	Acceptable	Poor
Staff/1,000 Water and Sewerage Connections	<5.0	5.0 – 8.0	>8.0

Except NCW&SC all other Utilities had a decrease in the number of Staff per 1,000 Water and Sewerage Connections leading to a marginal decrease in the average from 4.93 to 4.55. As depicted in Chart 10, LWB met the good performance benchmark while LWSC, DAWASA, AdRMM, WASCO and ZAWA, maintained the same with the number of staff per 1,000 connections less than 5. NCW&SC, WASAC and NWSC were within the acceptable benchmark. The drop by NCW&SC in staff efficiency was due to a drastic drop in both water and sewerage connections against a slight decrease in the number of staff.

5.4.3.2. Metering ratio

Metering ratio is the proportion of metered connections compared to the total connections. Metering is closely linked to the management of water losses as it measures the volume of water consumed by customers.

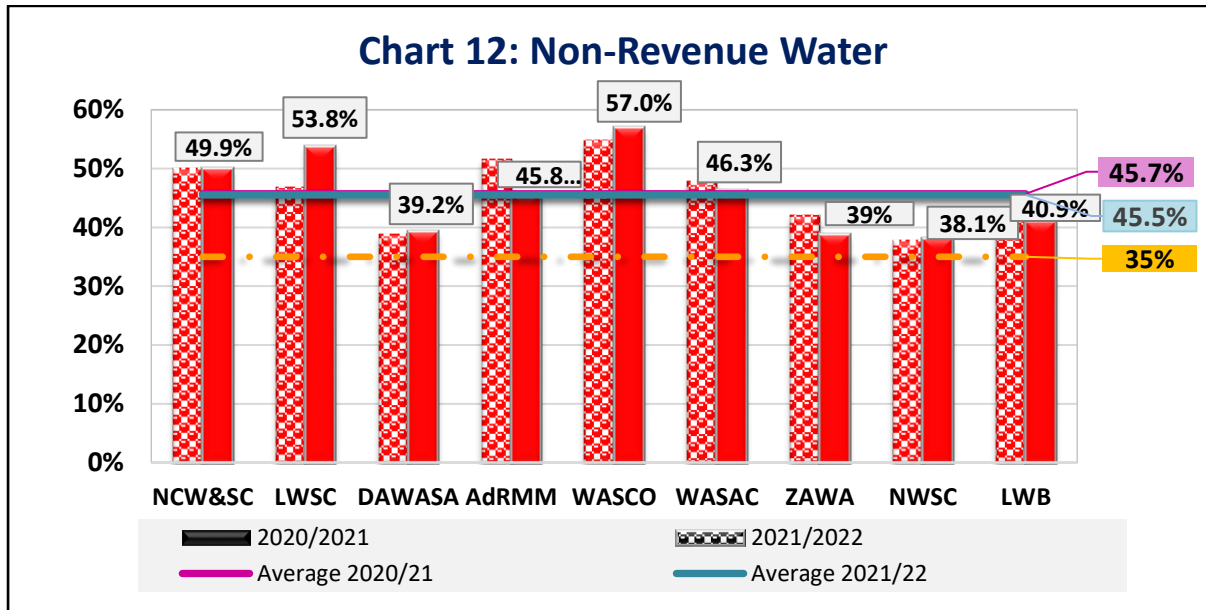


KPI	Good	Acceptable	Poor
Metering Ratio	100	99 – 90	< 90

As shown in Chart 11, the average performance in metering ratio slightly declined and remained below the acceptable benchmark despite the fact that the majority of Utilities maintained 100% metering ratio. This was attributed to the dropping and poor performance reported by LWSC (from 71.7% to 64.9%), AdRMM (from 82% to 78.2%) and ZAWA (39.3%). The principle of ensuring that every customer is metered upon connection has maintained metering ratio at 100% for the six Utilities despite increases in connections.

5.4.3.3. Water Losses

Water loss expressed as Non-Revenue Water (NRW) is water that has been placed in the distribution system but is either lost before reaching the customer or does not translate into revenue at a predetermined price. It measures the efficiency of a Utility in delivering the produced water to customers' take-off points against the revenue generated. It is made up of technical losses (leakages) and commercial losses (illegal connections/water theft, metering errors and unbilled authorised consumption). Water losses imply revenue loss and becomes a key area for Utilities to address urgently.



KPI	Good	Acceptable	Poor
NRW	<30	30 – 35	>35

Chart 12 shows that on average, there is a minimal improvement in NRW, however the performance is still poor as none of the Utilities achieved the acceptable benchmark of 35%. Nevertheless, ZAWA, AdRMM, WASAC and LWB reported a slight reduction in NRW. The improvement in NRW for AdRMM was attributed to the implementation of the Accelerated and Integrated Water Loss Reduction Program (PAIRP) aiming at improving the performance and efficiency of water system in Maputo. For ZAWA, the Government invested in a new water project, replacing old pipes and infrastructure that contributed to water losses. LWSC and WASCO experienced increased water losses against an increase in production volumes.

There are different perspectives as to how NRW can be measured. Table 11 shows the results of NRW evaluated based on distribution network and the number of connections.

Table 11: Non-Revenue Water in terms of length of network and connections

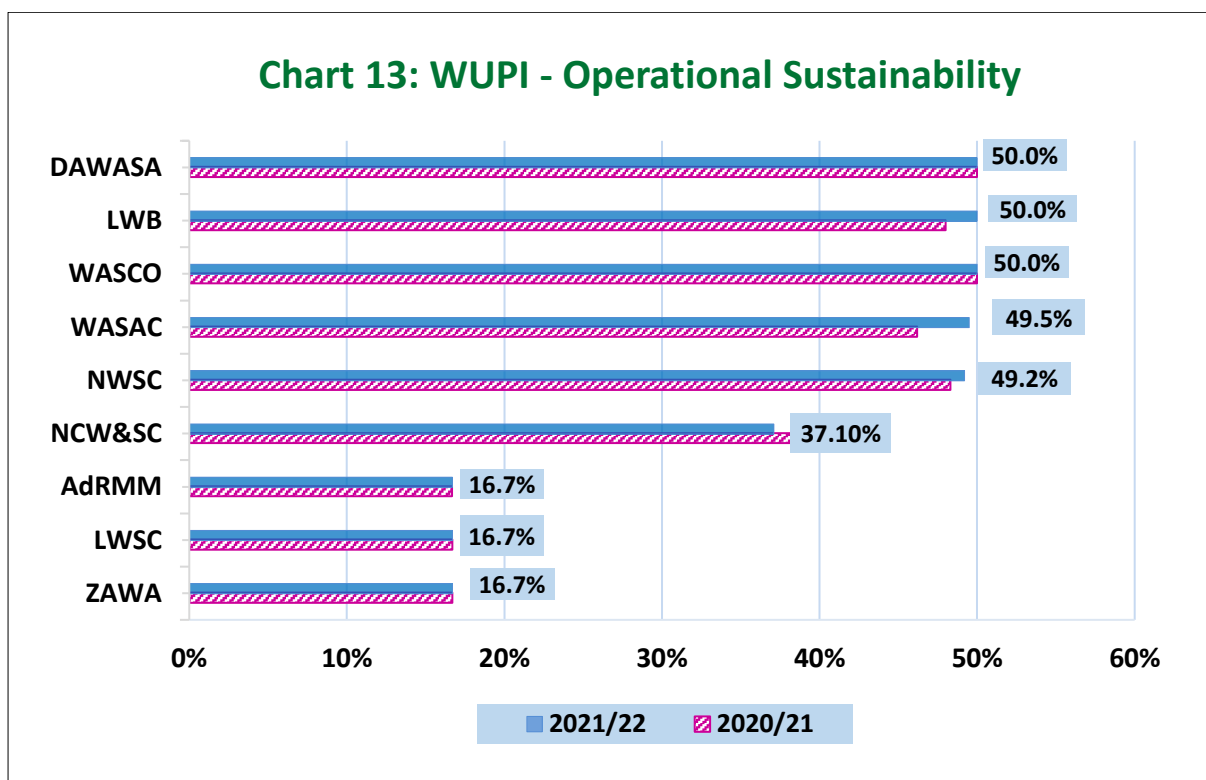
Utility	Length of Network (km)	Water Production (m ³)	Water Connections	Non-Revenue Water		
				%	m ³ /km/day	L/conn/day
NCW&SC	3,973	178,526,913	244,672	49.9%	61.4	997.5
LWSC	2,605	106,068,280	134,807	53.8%	60.0	1,159.7
DAWASCO	4,999	141,097,720	370,982	39.2%	30.3	408.5
AdRMM	3,358	91,349,000	301,718	45.8%	34.1	379.9
WASCO	2,228	26,620,847	114,638	57.0%	18.7	362.6
WASAC	16,022	69,454,409	287,608	46.3%	5.5	306.3
ZAWA	2,635	67,676,482	166,636	37.0%	26.0	411.7
NWSC	21,794	164,608,492	840,508	38.1%	7.9	204.4
LWB	2,274.00	28,522,372	102,051	40.9%	14.1	313.2

Table 11 shows that, NCW&SC and LWSC had the highest water losses in all three dimensions of NRW combined. This requires a very comprehensive approach to managing water losses for efficiency gains. On the contrary, NWSC is a representation of an ideal case, with low losses in all three dimensions of NRW, despite having the longest network, highest number of connections and water production.

In terms of the porousness of the network by length, WASAC that had the second longest network had the lowest losses of 5.5 m³/km/day. Whereas in losses by connections, again WASAC has the second lowest losses per connections despite having the fourth highest number of connections.

5.4.3.4. Integrated Performance – Operational Sustainability

The WUPI - Operational Sustainability shown in Chart 13 is based on the aggregation of the three KPIs; Staff per 1,000 Water and Sewer Connections, Non-Revenue Water and Metering Ratio.



DAWASA, LWB and WASCO were the best performers with a score of 50%. This is attributed to their good performance in Staff per 1000 Water and Sewerage Connections and Metering Ratio indicators. DAWASA and WASCO maintained the top performance from the previous period while LWB moved from 4th position. WASAC moved up in the ranking with a score of 49.5% from 46.2% owing to its good performance in Metering Ratio and improvement in staff efficiency. The performance of NCW&SC declined from 39.2% to 37.1% while AdRMM, LWSC and ZAWA remained in the last position with the same score of 16.7%.

5.5 SUMMARY ANALYSIS

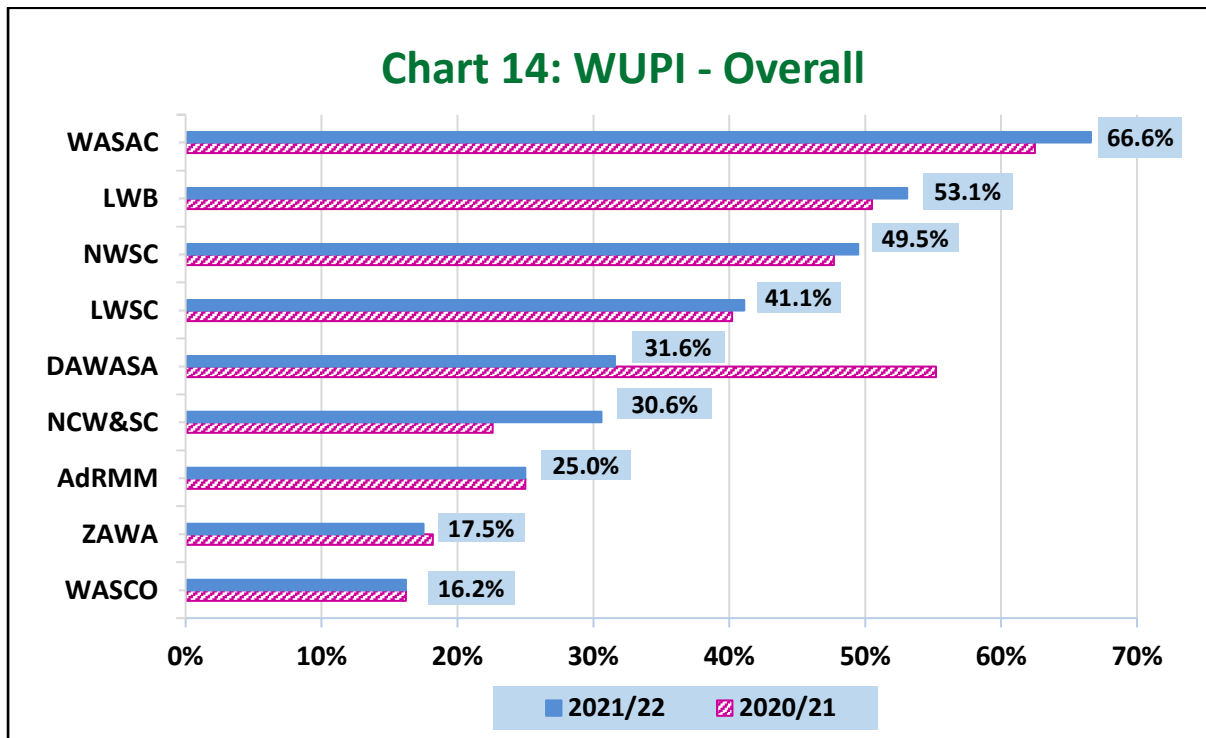
The performance analysis of the Utilities in the ten selected single KPIs is summarized in Table 12 and an Overall WUPI is shown in Chart 14. The Overall WUPI is derived by aggregating the three WUPI of Quality of Services, Economic Efficiency and Operational Sustainability.

Table 12: Summary of Utilities performance

KPI and Weight		NCW&SC	LWSC	DAWASA	AdRMM	WASCO	WASAC	ZAWA	NWSC	LWB
Quality of Services	Water Coverage [10]	79.6%	92.5%	83.1%	53.1%	59.8%	83.4%	89.0%	84.0%	86.4%
	Sewerage Coverage [5]	51.3%	18.3%	10.0%	-	4.4%	-	9.8%	22.9%	-
	Water Quality [15]	96.1%	98.2%	86.5%	100%	95.4%	99.3%	93.4%	99.9%	89.3%
	Hours of Supply [10]	7	18	20	15	18	21	14	18	22
Economic Efficiency	O&M Cost Coverage [10]	95%	107%	96%	92%	77%	187%	73%	123%	180%
	Collection Efficiency [15]	97%	100%	96%	87%	88%	99%	85%	96%	93%
	Staff Cost vs O&M Costs [5]	59.2%	43.4%	37.6%	29.5%	41.0%	33.3%	31.8%	42.3%	28.0%
Operational Sustainability	Staff/1,000 W&S Connections [5]	7.33	3.82	3.98	3.26	3.98	5.09	3.40	5.14	4.99
	Metering Ratio [10]	100%	64.9%	100%	78.2%	100%	100%	39.3%	100%	100%
	NRW [15]	49.9%	53.8%	39.2%	45.8%	57.0%	46.3%	37%	38.1%	40.9%

All the Utilities maintained acceptable performance in Staff/1,000 W&S Connections. Conversely, the worst performance by all the Utilities was in Non-Revenue Water where none met the acceptable benchmark. WASAC met the acceptable benchmark in all indicators except NRW while LWB recorded poor performance in only two indicators. ZAWA had 7 indicators with poor performance followed by AdRMM and WASCO that had unsatisfactory performance in six indicators.

From the Overall WUPI in Chart 14, WASAC, LWB, NWSC, LWSC and NCW&SC made improvements in their overall performance. WASAC of Rwanda maintained the first position with a score of 66.6% followed by LWB and NWSC in the second and third positions. DAWASA recorded a notable deterioration in performance and occupied the fifth position while WASCO ranked last with the same score of 16.2%.



CHAPTER 6. BEST PERFORMING UTILITIES IN THE REGION

6.1 INTRODUCTION

In countries where there is more than one WSS service provider, regulators rank their performance to establish the best performer against certain KPIs. In most cases, the country best performer is different from the regionally benchmarked utility therefore, this section was introduced to compare the performance of the best performing utility within a country against the performance of similarly ranked utilities within the region. This is in recognition that there may be good practices of best performers within a country that can be learnt and replicated by other Utilities.

6.2 PROFILE OF BEST PERFORMERS

As presented by Table 13, five utilities were considered for comparing and ranking the best performers. These include WASAC from Rwanda which ranked the best of the regionally benchmarked utilities, Nyeri WSP from Kenya, Eastern WSC (EWSC) from Zambia, Iringa WSSA from Tanzania and Blantyre Water Board (BWB) from Malawi. Lesotho and Zanzibar did not participate as they only have national utilities while Uganda does not yet perform country ranking. For Mozambique, the exercise of ranking the utilities at country level was not completed by the time of preparation of this report.

Table 13: Profile of best performers

Utility	Year of establishment	Areas of operation	Population in the service area 2021/22	Number of water connections 2021/22	Annual water production (m ³ /yr) 2021/22
NYERI WSP Kenya	2002	Nyeri central sub-county and its environs	169,203	43,641	7,883,000
EASTERN WSC, Zambia	2009	Eastern Province of Zambia	350,574	27,616	6,539,001
IRINGA WSSA, Tanzania	1998	Iringa Municipality and Ilula and Kilolo towns	268,959	37,666	5,710,000
BLANTRYE WATER BOARD (BWB), Malawi	1995	Blantyre City and surrounding areas	1,471,640	69,561	24,300,000
WASAC, Rwanda	2014	Kigali + all urban centres in the country	6,753,933	287,608	69,454,409

6.3 PERFORMANCE RANKING OF THE BEST PERFORMERS

The ESAWAS benchmarking framework was used to rank the performance of the best performers in the ten KPIs and three components of Quality of Services, Economic Efficiency and Operational Sustainability.

6.3.1 OVERVIEW OF PERFORMANCE AGAINST KPIS

From Table 14,

- Quality of Services:** All the utilities met the acceptable benchmarks in Water Coverage, Water Quality and Hours of Supply. The worst performance was recorded in Sewerage Coverage. The best former in each indicator was Nyeri WSP-Kenya in all four KPIs and Iringa-Tanzania in Hours of Supply.
- Economic Efficiency:** The best performing KPI was Collection Efficiency with only Blantyre WB below the acceptable benchmark while the worst performing KPI was O&M Cost Coverage by Billing with only Nyeri-Kenya and WASAC-Rwanda meeting the acceptable and good benchmarks, respectively. The best former in each indicator was WASAC-Rwanda in O&M Cost Coverage, Eastern WSC-Zambia in Collection Efficiency and Blantyre WV-Malawi in Staff Cost.
- Operational Sustainability:** All the utilities achieved good performance in Metering Ratio indicator with 100%. The worst performing KPI was NRW with only Nyeri WSP-Kenya and Iringa WSA-Tanzania meeting the good benchmark. The best performer in each indicator was Iringa WSA-Tanzania in Staff per 1,000 WS Connections, Nyeri WSP-Kenya in NRW and all Utilities in Metering Ratio.

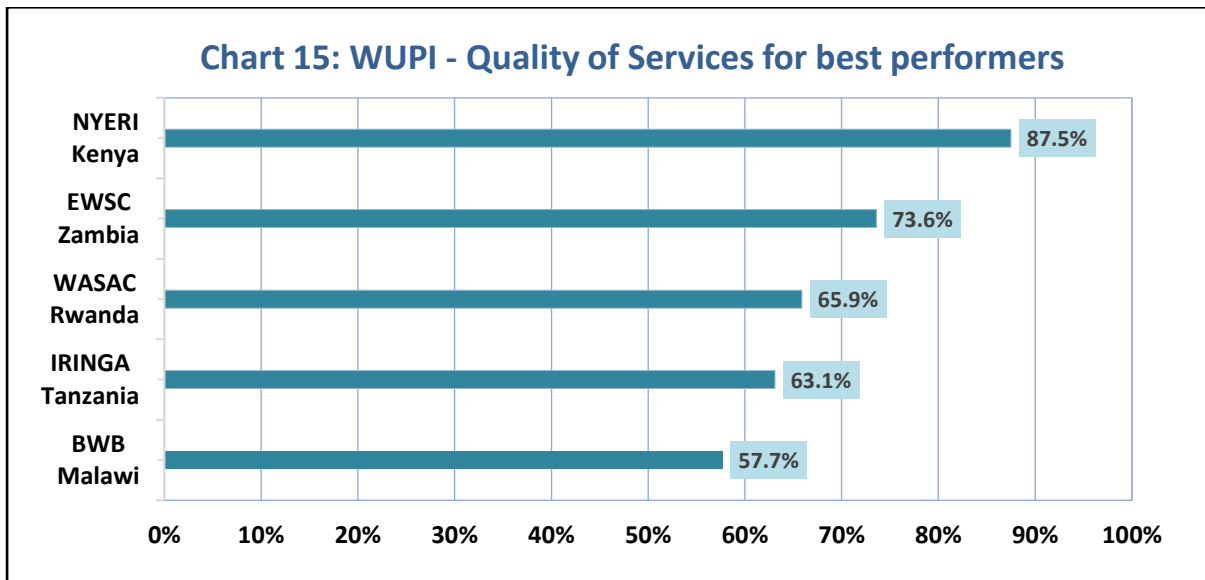
Table 14: Performance of the best utilities in the ten KPIS

Utility	Quality of Services				Economic Efficiency			Operational Sustainability		
	Water Coverage [10]	Sewerage Coverage [5]	Water Quality [15]	Hours of Supply [10]	O&M Coverage [10]	Collection Efficiency [15]	Staff Cost as a % of O&M Cost [5]	Staff/1,000 WS Connections [5]	NRW [15]	Metering ratio [10]
	%	%	%	Hours/day	%	Ratio	%	Ratio	%	%
Nyeri WSP, Kenya	97.7%	33.4%	100.0%	24	101.9%	96.5%	39.2%	4.10	17.3%	100%
Eastern WSC, Zambia	93.5%	4.3%	99.8%	21	63.6%	100.0%	58.2%	5.58	45.9%	100%
Iringa WSSA, Tanzania	95.2%	30.2%	97.0%	24	96.9%	95.9%	31.0%	3.54	23.0%	100%
Blantyre WB, Malawi	85.1%	N/A	97.1%	22	90.3%	87.7%	27.5%	8.68	52.7%	100%
WASAC, Rwanda	83.4%	N/A	99.3%	21	187.3%	99.1%	33.3%	5.09	46.3%	100%

6.3.2 PERFORMANCE RANKING USING WUPI

6.3.2.1 WUPI - Quality of Services

The performance of utilities in Quality of Services was measured combining the performance in Water Coverage, Sewerage Coverage, Water Quality and Hours of Supply indicators.



As per Chart 15, Nyeri WSP- Kenya ranked the best performer in Quality of Services with a score of 87.5% while Blantyre WB-Malawi came last with a score of 57.7%

6.3.2.2 WUPI - Economic Efficiency

O&M Cost Coverage by billing, Collection Efficiency and Staff Cost in relation to O&M Cost indicators are used to determine the performance of utilities in Economic Efficiency component.

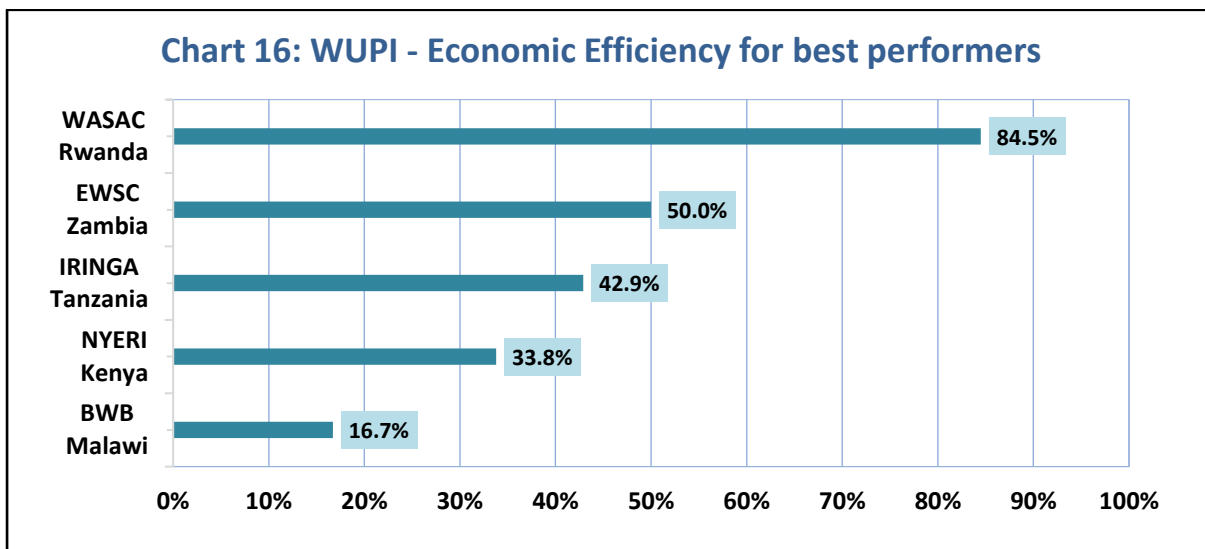
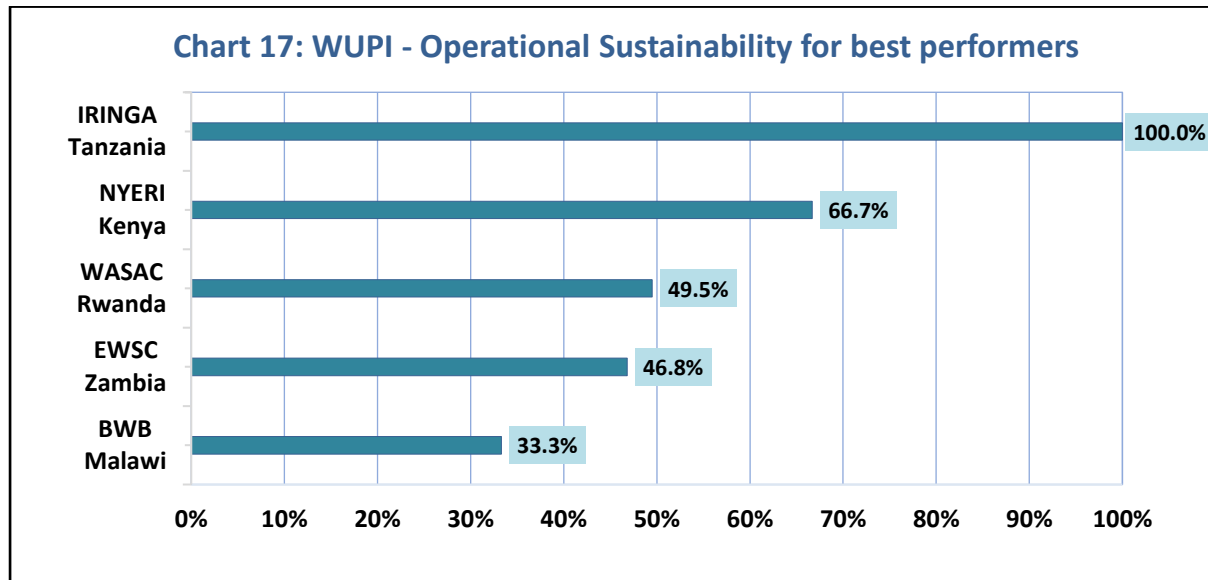


Chart 16 depicts that WASAC-Rwanda was the best performer while Blantyre WB-Malawi was again the least performer in Economic Efficiency due to its poor performance in both O&M Cost Coverage and Collection Efficiency indicators.

6.3.2.3 WUPI - Operational Sustainability

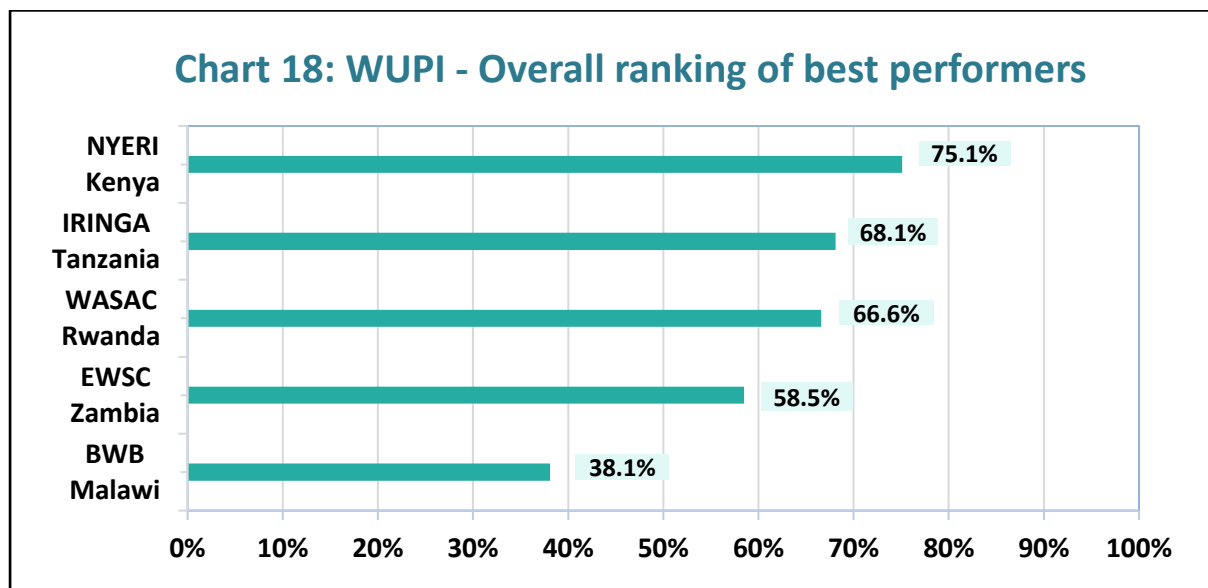
Chart 17 shows the ranking of utilities in operational sustainability based on their performance in Staff Productivity, NRW and Metering Ratio indicators.



Iringa WSSA of Tanzania emerged as the best performer with a score of 100% owing to good performance in all indicators of Operational Sustainability component. Blantyre WB-Malawi recorded poor performance in Staff Productivity and NRW hence again occupied the last position.

6.3.2.4 WUPI Overall

The ranking of the best of the best performers was done by combining the three WUPI components and the results are shown in chart 18.



Congratulations to Nyeri WSP of Kenya for emerging the overall best of the best performers for 2021/22 with a total score of 75.1% followed by Iringa WSSA of Tanzania in second place.

CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS

Benchmarking is a strategic tool that can stimulate improvements in the performance of an industry. It helps identify the system strengths and weaknesses and provides opportunity for enhancing operational efficiencies. Thus, the benchmarked Utilities should examine their own operations further, draw the inspiration from others and embrace good practices as they strive to make improvements.

This section provides a general picture of the performance of benchmarked Utilities. Using the average performance, Table 15 provides an overview of the progress on Key Performance Indicators in the period under review. Overall, only five of the ten benchmarks were met and improvements were made in only four KPIs while the performance declined in five indicators.

Table 15: Progress on average Key Performance Indicators

	KPIs	2020/21	2021/22	Progress	Benchmark
Quality of Service	Water service coverage %	78.5	79.0	↑	75
	Sewerage service coverage %	20	19.3	↓	40
	Water quality %	96	95.4	↓	95
	Hours of supply	17	17	→	18
Economic Efficiency	O&M cost coverage by billing %	118	115	↓	100
	Collection efficiency %	97	94	↓	90
	Staff cost in relation to O&M cost %	41.9	38.5	↑	30
Operational Sustainability	Staff/1,000 W&S connections	4.93	4.55	↑	8
	Metering ratio %	87.6	86.9	↓	90
	NRW %	45.7	45.3	↑	35
	↑ Increase ↓ Decline Benchmark met Benchmark not met				

With regard to the three components of KPIs:

- **Quality of Service** –there was a slight improvement in Water Supply Service Coverage and a performance decline in Sewerage Service Coverage and Water Quality indicators while Hours of Supply remained the same.
- **Economic Efficiency** – an improvement was recorded in Staff Cost vs O&M Cost. However, the performance in O&M Cost Coverage and Collection efficiency dropped but remained above the acceptable benchmark.
- **Operational Sustainability** – Utilities made improvement in Staff Efficiency but the average performance in Metering Ratio dropped. Despite a slight improvement in NRW, performance in this indicator is still significantly poor for all utilities.

Table 16 presents the conclusions and recommendations for each individual Utility based on an overview of performance whether the utility met the good, acceptable and poor benchmarks for all ten KPIs.

Table 16: Performance of Utility per indicators

Utility	Good performance	Acceptable performance	Poor performance	Conclusions and Recommendations
NCW&SC	Metering ratio	Water coverage Sewerage coverage Water quality Collection efficiency Staff/1000 W&S Connections	Hours of Supply O&M Cost coverage by billing Staff Cost vs O&M Cost NRW	The Kenyan Utility maintained good performance in Metering Ratio and recorded the highest and acceptable performance of 51.3% in Sewerage Service Coverage among all the Utilities. However, the Utility needs to concert more efforts to improve KPIs with low performance, particularly Hours of Supply which is tied to the high NRW and low billing.
LWSC	Water coverage Collection Efficiency Staff/1000 W&S Connections	Water quality Hours of supply O&M Cost coverage by billing	Sewerage coverage Staff Cost vs O&M Cost Metering ratio NRW	The Zambian Utility achieved good and acceptable performance in six KPIs. However, significant improvements are needed in KPIs with deteriorating performance particularly Metering Ratio and NRW which are linked for efficiency gains.
DAWASA	Staff/1000 W&S Connections Metering ratio	Water coverage Collection efficiency Hours of Supply	Sewerage coverage Water quality O&M Cost coverage by billing Staff Cost vs O&M Cost NRW	The Tanzanian Utility experienced performance decline in most of indicators despite achieving good performance in Staff/1000 Water and Sewerage Connections and Metering Ratio. Efforts are particularly required in Sewerage Coverage and Water Quality indicators.
AdRMM	Water quality Staff Cost vs O&M Cost Staff/1000 W&S Connections	-	Water coverage Hours of Supply O&M Cost coverage by billing Collection efficiency Metering ratio NRW	The Mozambican Utility maintained its good performance in Water Quality, Staff Cost and Staff Efficiency. Significant efforts are needed to improve its performance in all other indicators where the performance is still below the acceptable benchmark.
WASCO	Staff/1000 W&S Connections Metering ratio	Water quality Hours of supply	Water coverage Sewerage coverage O&M Cost coverage by billing Collection efficiency Staff Cost vs O&M Cost NRW	The Lesotho Utility still maintained good performance in Staff Efficiency and Metering Ratio and acceptable performance in 2 KPIs. However, improvement is required in 6 KPIs with performance below acceptable benchmark and the declining O&M Cost Coverage. Urgent interventions are needed to address increasing water losses of more than 50%
WASAC	O&M Cost coverage by billing Metering ratio	Water coverage Water quality Hours of supply Collection efficiency Staff Cost vs O&M Cost Staff/1000 W&S Connections	NRW	The Rwandese Utility maintained the first position following the good performance in 2 KPIs and acceptable performance in 6 KPIs. Special attention is required to improve NRW at least to acceptable benchmark.

Utility	Good performance	Acceptable performance	Poor performance	Conclusions and Recommendations
ZAWA	Staff/1000 W&S Connections	Water Coverage Staff Cost vs O&M Cost	Sewerage coverage Water quality Hours of supply O&M Cost coverage by billing Collection efficiency Metering ratio NRW	The Zanzibari Utility achieved good performed Staff/1,000 Connections indicators. Its performance in Water Coverage dropped but met the acceptable benchmark together with Staff Cost vs O&M Cost. Significant efforts are required to improve 7 KPIs which remain below the acceptable benchmark.
NWSC	Metering ratio	Water coverage Water quality Hours of supply O&M Cost coverage by billing Collection efficiency Staff/1000 W&S Connections	Sewerage Coverage Staff Cost vs O&M Cost NRW	The Ugandan Utility recorded good performance in Metering Ratio and 6 KPIs met acceptable benchmark. However, improvements are needed for declining performance in Collection Efficiency and Staff Cost in relation to O&M Cost as well as rising water losses
LWB	O&M Cost coverage by billing Staff Cost vs O&M Cost Staff/1000 W&S Connections Metering ratio	Water coverage Hours of supply Collection efficiency	Water quality NRW	The Malawian Utility made notable improvement by achieving good benchmark in 4 KPIs and acceptable benchmark in 3 KPIs. However, its performance in Water Quality and NRW needs to be improved significantly.

Annex 1. COMMON KPIS WITH BENCHMARKS SET BY EACH REGULATOR

	WATER COVERAGE	SEWERAGE COVERAGE*	WATER QUALITY	HOURS OF SUPPLY	NRW	O&M COST COVERAGE	COLLECTION EFFICIENCY	METERING RATIO	STAFF EFFICIENCY
WASREB			Residual Chlorine, Bacteriological						Staff per 1,000 water and sewer connections
Acceptable Benchmark	80-90%	80-90%	90-95%	16-20	20-25%	100-149%	85-95%	95-99%	5-8
Weight	30	15	30	20	25	25	20	15	20
NWASCO			Residual Chlorine, Bacteriological Physio-Chemical (<i>Turbidity, pH, Metals, Colour</i>)						Staff per 1,000 water connections
Acceptable Benchmark	80-90%	80-90%	95%	18-20	20-25%	100-150%	85-90%	100%	6-8
Weight	5	5	20	15	10	15	20	15	10
EWURA			E-Coli, Turbidity						Staff per 1,000 water connections
Service Level Benchmark	100%	30%	98%	24	20%	150%	95%	100%	5
Weight	5	40	15	5	15	10	15	15	10
AURA IP		N/A	Residual Chlorine, Bacteriological, Physio-Chemical (<i>Turbidity, pH, Conductivity</i>)						Staff per 1,000 water connections
Boundaries	40-80%	-	65-100%	9-24	25-47%	85%-150%	80-90%	80-90%	10-15
Weight	5.5		33	5	25.5	13	8	5	5
RURA		N/A	Residual Chlorine, Bacteriological						Staff per 1,000 water connections
Acceptable Benchmark	80-90%		90-95%	16-20	20-25%	#	85-90%	95-99%	5-8
Weight	25	-	25	20	25		20	20	20
LEWA, ZURA			Residual Chlorine, Bacteriological						
Benchmark	Not yet defined								

*Mozambique and Rwanda have separate entities providing sewerage services.

#The water Utility in Rwanda had until June 2014 been a single Utility providing both electricity and water. Hence, the Utility had been unable to separate O&M costs for water services only given that the costs incurred, for example at headquarters, could not be allocated either to electricity or water, thus the benchmark could not be defined.

Annex 2. DETAILED PROFILES OF UTILITIES

DAR ES SALAAM WATER AND SANITATION AUTHORITY (DAWASA) - TANZANIA																							
Water Utility	<p>The DAWASA Act 2001 established Dar es Salaam Water and Sewerage Authority (DAWASA) responsible for operating and maintaining all water supply and sewerage services in the City of Dar es Salaam and the towns of Kibaha, Bagamoyo and the corridors of its two transmission lines. DAWASA changed its name in 2019 to Dar es salaam Water Supply and Sanitation Authority under the new Water Supply and Sanitation Act no 5 of 2009 which came in to operation on July 1st 2019. DAWASA reports functionally to the Ministry of Water and Irrigation.</p> <p>The total population in the DAWASA operation area is 8,174,991 people. The sources of water are Ruvu and Kizinga Rivers and 20 boreholes located in various areas within the service area. The Utility has a sewerage system with sewer line of 189.27km and eight (8) waste water stabilization ponds.</p>																						
General Data About Water Utility	<table> <tr> <td>Abbreviation</td> <td>DAWASA</td> </tr> <tr> <td>Start of Operations</td> <td>2005</td> </tr> <tr> <td>Number of Towns in Operation Area</td> <td>3</td> </tr> <tr> <td>Total Population in Operation/Service Area</td> <td>8,174,991</td> </tr> <tr> <td>Total Water Connections</td> <td>370,982</td> </tr> <tr> <td>Total Waste Water/Sanitation Connections</td> <td>19,203</td> </tr> <tr> <td>Total Production/year</td> <td>141,097,720 m³</td> </tr> <tr> <td>Total Staff</td> <td>1,552</td> </tr> <tr> <td>Annual O&M Costs</td> <td>TZS 140,576,969,788</td> </tr> <tr> <td>Annual Water and Sewerage billing</td> <td>TZS 135,326,795,000</td> </tr> <tr> <td>Annual Water and Sewerage Collections</td> <td>TZS 129,372,416,020</td> </tr> </table>	Abbreviation	DAWASA	Start of Operations	2005	Number of Towns in Operation Area	3	Total Population in Operation/Service Area	8,174,991	Total Water Connections	370,982	Total Waste Water/Sanitation Connections	19,203	Total Production/year	141,097,720 m ³	Total Staff	1,552	Annual O&M Costs	TZS 140,576,969,788	Annual Water and Sewerage billing	TZS 135,326,795,000	Annual Water and Sewerage Collections	TZS 129,372,416,020
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Tariff Structure	<p><i>*Exchange Rate: TZS2,298.10 to 1US\$ (2021/22)</i></p> <table border="1"> <thead> <tr> <th colspan="3" style="background-color: #e0e0e0;">Water</th> </tr> <tr> <th style="background-color: #e0f0e0;">Tariff Band</th> <th style="background-color: #e0f0e0;">Domestic Institutional Commercial Industrial</th> <th style="background-color: #e0f0e0;">Kiosks</th> </tr> </thead> <tbody> <tr> <td>TZS/m³</td> <td>1,663</td> <td>1,106</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2" style="background-color: #e0e0e0;">Sewerage</th> </tr> <tr> <th style="background-color: #e0f0e0;"></th> <th style="background-color: #e0f0e0;">All Categories</th> </tr> </thead> <tbody> <tr> <td>TZS/m³</td> <td>386</td> </tr> </tbody> </table> <p>Note:</p> <ul style="list-style-type: none"> No approved flat rate tariff, in case of faulty meter, customers are billed according to the assessed average water consumption based on previous meter reading 	Water			Tariff Band	Domestic Institutional Commercial Industrial	Kiosks	TZS/m ³	1,663	1,106	Sewerage			All Categories	TZS/m ³	386							
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ÁGUAS DA REGIÃO METROPOLITANA DE MAPUTO (AdRMM)- MOZAMBIQUE

Water Utility

Maputo Water Supply System, supplies water to the metropolitan area of Maputo and is managed by the Water Regional Commercial Society of Maputo Metropolitan Region (AdRMM), former AdeM under a Lease Contract.

In 2010, after evaluation by the Government of the Delegated Management Framework implementation process, FIPAG (Water Asset Management Fund) acquired the majority shareholder position of AdeM. Functionally, AdeM (now AdRMM) reports to the Ministry of Public Works. In 2021, AdeM was changed to a Regional Commercial Society called AdRMM.

The total population in the AdRMM operation area is 2,910,831 people. The main source of water is the Umbeluzi River. The Utility does not provide sewerage services.

General Data About Water Utility

Abbreviation	AdRMM
Start of Operations	2010
Number of Towns in Operation Area	3
Total Population in Operation/Service Area	2,910,831
Total Water Connections	301,718
Total Waste Water/Sanitation Connections	N.A
Total Production/year	91,349,000 m ³
Total Staff	983
Annual O&M Costs	MT 3,306,160,187
Annual Water Billing	MT 3,058,029,292
Annual Water Collections	MT 2,660,492,705

Tariff Structure

*Exchange Rate: MT64 to 1US\$ (2021)

DOMESTIC					
Tariff Band	Service Availability rate (Fixed rate)	0 -5 m ³ (Fixed value)	The first 5m ³	5m ³ - 10m ³	Above 10m ³
	MT/Month	MT/Month	MT/Month	MT/m ³	MT/m ³
	60.00	58.40	132.66	39.80	54.29

NON DOMESTIC				
Category	Municipalities	Minimum Consumption (Commercial, Public)	Minimum Consumption (Industrial)	Above Minimum Consumption
	MT/m ³	MT/Month	MT/Month	MT/m ³
MT./m ³	19.87	1,386.97	2,773.94	55.48

Note :

- There is a social tariff up to 5m³ and all domestic tariffs include a fixed charge;
- In case of faulty meter, customers are billed according to the average of previous three meter readings;
- The initial sewerage tax fee will be 15% and will be applied as soon the negotiations are finalised with Municipalities Authority

RWANDA WATER AND SANITATION CORPORATION (WASAC)- RWANDA

Water Utility

WASAC was established in August 2014 with the mandate to produce and distribute Water and provide Sanitation services in all urban areas in Rwanda. The Company was created in replacement of the Energy, Water and Sanitation Authority (EWSA), a public Utility that was providing both Water and Electricity. WASAC reports functionally to the Ministry of Infrastructure but is overseen strategically by a Board of Directors.

WASAC is the water service provider for Kigali and all other towns in Rwanda and was created to operate on commercial basis and inherited all water infrastructures and is mandated to improve the service and coverage in all urban areas. In the current arrangement, WASAC is also mandated to mobilize capital investment and execute major water investment works (through projects & programs) in rural areas before handing over the assets to districts (assets holders) that also delegate the management to private operators (rural).

The total population in the WASAC operation area is 6,753,933 people. The sources of water are mainly surface water from rivers, lakes and springs as well groundwater (only in Kigali). The Utility does not provide sewerage services.

General Data About Water Utility

Abbreviation	WASAC
Start of Operations	2014
Number of Towns in Operation Area	14
Total Population in Operation/Service Area	6,753,933
Total Water Connections	287,608
Total Waste Water/Sanitation Connections	Not applicable
Total Production/year	69,454,409 m ³
Total Staff	1,441
Annual O&M Costs	FRW 17,179,609,250
Annual Water and Sewerage billing	FRW 32,179,318,297
Annual Water and Sewerage Collections	FRW 31,889,954,441

Tariff Structure

*Exchange Rate: FRW 1,183 to 1US\$ (2021/22)

DOMESTIC						
Tariff Band	Public taps & lifeline block (0-5 m ³)	6-20 m ³	21-50 m ³	51-100 m ³	Above 100m ³	Kiosks
FRW/m ³	323	331	413	736	847	323

NON-DOMESTIC	
Category	Industrial
FRW/m ³	736

Note:

- No approved flat rate tariff but can be used in case of faulty meter and customers are billed according to the average of previous three meter readings
- No sewerage tariff since there is no centralized sewerage system

LESOTHO WATER AND SEWERAGE COMPANY (WASCO) - LESOTHO																																																																							
Water Utility	<p>The Water and Sewerage Company (PTY) Ltd was established through a Water and Sewerage Act No. 13 of 2010, thereby making it fully fledged private company wholly owned by the Government of Lesotho earmarked to deliver water and sewerage services in the urban centres of the country. WASCO reports functionally to the Ministry of Energy, Meteorology and Water Affairs., but is overseen strategically by a Board of Directors.</p> <p>With effect from 2012 and in order to enhance its operational efficiency and effectiveness, WASCO was placed under regulation undertaken by the Lesotho Electricity and Water Authority (LEWA), as per the LEA Act 2002 as Amended. LEA Amendment Act 2011 extended the Mandate of Lesotho Electricity Authority (LEA) to include the regulation of water and sewerage services, having regulated the electricity sub-sector only since 2004.</p> <p>The total population in the WASCO operation area is 766,792 people.</p>																																																																						
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NAIROBI CITY WATER AND SEWERAGE COMPANY (NCW&SC)- KENYA

Water Utility

In 2002 the Kenyan government launched an ambitious programme of reforms for the water sector through the enactment of the Water Act 2002. The new legislation separated policy formulation, regulation, water resources management, water services and created clear roles and responsibilities of the newly established key water institutions. This resulted in the establishment of the Water Services Regulatory Board (WASREB) in 2003 to oversee the implementation of policies and strategies relating to provision of water and sanitation services. Also established were regional Water Services Boards (WSBs), in the capacity of asset holders, and over 100 Water Service Providers (WSPs), as their appointed agents for actual service delivery.

Nairobi City Water and Sewerage Company (NCW&SC) was incorporated in December 2003 and appointed by the Athi Water Service Board (AWSB) as its agent, with the mandate of providing water and sewerage services within the jurisdiction of the city of Nairobi. Further the Constitution of Kenya (CoK-2010) devolved water service provision to the 47 county governments. Therefore NCW&SC is now wholly owned by the County Government of Nairobi. The Company is ISO 9001:2008 certified.

Nairobi City has an estimated population of 5,016,585. The sources of water are four namely Thika dam Ruiru dam, Sasumua dam and Kikuyu Springs. The four water sources jointly produce 550,000 m³/day for the city against its demand of 750,000m³/day. The Utility has two waste water treatment plants, Dandora with a treatment capacity of 180,000m³/day and Kariobangi with a treatment capacity of 80,000m³/day.

General Data About Water Utility	Abbreviation	NCW&SC
	Start of Operations	2003
	Number of Towns in Operation Area	1
	Total Population in Operation/Service Area	5,016,585
	Total Water Connections	244,813
	Total Waste Water/Sanitation Connections	184,070
	Total Production/year	178,526,913 m ³
	Total Staff	3,143
	Annual O&M Costs	KSHS 9,614,454,110
	Annual Water and Sewerage billing	KSHS 8,912,266,740
Annual Water and Sewerage Collections	KSHS 9,142,985,433	

Tariff Structure

**Exchange Rate: KSHS 117.83 to 1US\$ (2021/22)*

WATER TARIFF						
Category	Domestic	Institutions	Commercial	Industrial	Water to Kiosks for Resale	Bulk Water to WSPs for Resale
Consumption Block	KSHS/m³					
0-6	34	34	34	34	20	30
7-20	53	53	53	53		
>20	64	64	64	64		
	Schools and Colleges					
0-600	48					
601-1200	55					
>1200	60					

Note :

- Sewerage is charged at 75% of the water billed for all customers with a sewer connection.
- Resale by manned kiosk vendors and communal water dispensers is Kshs 1 per 20-litres.
- Resale at ATM water dispenser is Kshs 0.50 per m³
- Bulk meter for gated communities is at Kshs 53 per m³

LUSAKA WATER AND SANITATION COMPANY(LWSC) - ZAMBIA

Water Utility

Lusaka Water and Sanitation Company (LWSC) was established in 1989 under the Companies Act to provide water supply and sanitation services to the Greater City of Lusaka. In the 90s, Zambia embarked on water sector reforms that saw the establishment of the WSS regulator, NWASCO and brought LWSC under regulation through the Water Supply and Sanitation Act, No. 28 of 1997.

In 2008, LWSC, as a private limited liability company, became a provincial Utility for Lusaka Province and extended its WSS services to five other towns. LWSC is fully owned by the Local Authorities in Lusaka Province namely Lusaka, Luangwa, Chongwe, Kafue, Chilanga and Chirundu. The Ministry of Water Development, Sanitation and Environmental Protection has principal oversight of all WSS Utilities in Zambia.

The total population in the LWSC operation area is 3,012,425. The main sources of water are the Kafue River situated about 65km from Lusaka City, Chongwe River and Zambezi River and over 100 boreholes situated in various areas. About 60% of the water for Lusaka City is produced from the boreholes. The Utility has a sewerage system with two mechanised treatment plants and about six sewage ponds.

General Data About Water Utility

Abbreviation	LWSC
Start of Operations	1989
Number of Towns in Operation Area	6
Total Population in Operation/Service Area	3,012,425
Total Water Connections	134,807
Total Waste Water/Sanitation Connections	43,221
Total Production/year	106,068,280 m ³
Total Staff	680
Annual O&M Costs	ZMW 428,398,665
Annual Water and Sewerage billing	ZMW 459,754,494
Annual Water and Sewerage Collections	ZMW 459,754,494

Tariff Structure

*Exchange Rate: ZMW18 to 1US\$ (2022)

DOMESTIC						
Tariff Band	0 - 6	6 - 30	30 - 100	100 - 170	+170	Kiosks/ Public Tap
Lusaka - K./m ³	5.65	6.79	7.69	9.04	11.08	5.00
Kafue, Chongwe, Luangwa- K./m ³	3.62	4.30	4.74	5.20	5.88	
Chirundu- K./m ³	3.62	5.43	6.48	8.60	8.60	

NON-DOMESTIC			
Tariff Band	0-30	30-170	+170
Lusaka - K./m ³	10.24	14.14	16.09
Kafue, Chongwe, Luangwa- K./m ³	7.73	11.49	13.12
*Chirundu- K./m ³	7.88	9.33	11.40

Note:

- Flat rates for non-metered customers vary per customer category (i.e High, Medium and Low).
- Standing/Fixed monthly meter charge is K8 for domestic and K25 for non-domestic.
- The sewerage tariff is 30% and 45% of water for domestic and non-domestic respectively
- Sanitation surcharge is 2.5% of water bill levied on all customers (except kiosks and stand pipes) specifically for sanitation service extension and improvements.

ZANZIBAR WATER AUTHORITY (ZAWA) - ZANZIBAR

Water Utility

The Zanzibar Water Authority (ZAWA) was established under Act. No. 4 of 2006, and is a semi-autonomous entity tasked to offer water supply services and water resources management in Zanzibar. ZAWA has the responsibility of providing clean, reliable and good quality water supplies through the operation and maintenance of water infrastructure, and development of new waterworks in the urban and rural areas of Unguja and Pemba islands. It is also responsible for the management and regulation of water resources and effluent discharges in Zanzibar

In 2013, Zanzibar Utilities Regulatory Authority (ZURA) was established under the ZURA Act No.7/2013 as a multi sectoral regulatory authority. ZURA began operating in 2015 and brought ZAWA under regulation.

The total population in the ZAWA operation area is 1,889,773.

General Data About Water Utility

Abbreviation	ZAWA
Start of Operations	2006
Number of Towns in Operation Area	6
Total Population in Operation/Service Area	1,889,773
Total Water Connections	166,636
Total Waste Water/Sanitation Connections	3,022
Total Production/year	67,676,482 m ³
Total Staff	574
Annual O&M Costs	TSH 12,782,542,650
Annual Water and Sewerage billing	TSH 9,352,786,230
Annual Water and Sewerage Collections	TSH 7,932,853,238

Tariff Structure

**Exchange Rate: TSH 2,440 to 1US\$ (2021/22)*

DOMESTIC		
Tariff Band	0-8	+8
TSH/m ³	667	1,540

NON DOMESTIC		
Tariff Band	0-15	15-1000
Institutional TSH/m ³	924	2,259
Commercial TSH/m ³	0-15	15-100
	821	1,437

Note:

- Flat rate is TSH4,000 per month

NATIONAL WATER AND SEWERAGE CORPORATION (NWSC) - UGANDA

Water Utility

The National Water and Sewerage Corporation (NWSC) is a public Utility company 100% owned by the Government of Uganda. The Corporation was established in 1972 under Decree No: 34. At its inception in 1972, the corporation operated in three (3) major towns of Kampala, Jinja and Entebbe. These laws were revised in 1995 by the NWSC Statute and later on, the statute was incorporated in the Laws of Uganda as CAP 317 (Laws of Uganda 2000). The primary aim of this law was to revise the objectives, powers and structure of NWSC to enable the corporation operate and provide water & sewerage services in areas entrusted to it on a sound commercial and viable basis.

The Water Utility Regulation Department, under the Directorate of Water Development in the Ministry of Water and Environment, is responsible for regulation of provision of water supply and sanitation services.

The total population in the NWSC operation area is 23,365,821. NWSC has over 56 water treatment facilities and operates 3 conventional sewerage treatment plants and 28 waste stabilisation ponds with a total sewer network length of 20,489.73 km.

General Data About Water Utility

Abbreviation	NWSC
Start of Operations	1972
Number of Towns in Operation Area	218
Total Population in Operation/ Service Area	23,365,821
Total Water Connections	840,508
Total Waste Water/ Sanitation Connections	28,007
Total Production/ year	164,608,491.6 m ³
Total Staff	4,467
Annual O&M Costs	UGX 396,538,489,000
Annual Water and Sewerage billing	UGX 487,002,595,548
Annual Water and Sewerage Collections	UGX 468,835,834,135

Tariff Structure

**Exchange Rate: UGX 3,571.8 to 1US\$ (2021/22)*

DOMESTIC		
Tariff Band	/m ³	Price per 20 ltr Jerrycan
Domestic	1,553	31
Public Standpipe	2,490	50

NON-DOMESTIC		
Tariff Band	/m ³	Price per 20 ltr Jerrycan
Institution/Government	3,065	61
Commercial <500m ³ /month	3,760	75
Commercial >500-1,500m ³ /month	3,760	75
Commercial >1,500m ³ /month	3,005	60

LILONGWE WATER BOARD (LWB) - MALAWI

Water Utility

The Lilongwe Water Board (LWB) is a Statutory Corporation established in 1947 and reconstituted by the Act of Parliament 'Water Works Act' No. 17 of 1995. As Utility service provider, LWB is responsible for the provision of water supply services to the City of Lilongwe and surrounding areas to all categories of customers (domestic, institutional, industrial and commercial).

The main source of water for the Board is Lilongwe River, over which two dams have been constructed; the Kamuzu Dam I and Kamuzu Dam II. Kamuzu Dam I has a storage capacity of 4.5mil m³ while Kamuzu Dam II has storage of 19.8mil m³. LWB operates two main water treatment plants and is not mandated to provide sewerage services, which mandate lies with the Lilongwe Local Authority.

The total population in the LWB area of jurisdiction is 1,137,875.

General Data About Water Utility

Abbreviation	LWB
Start of Operations	1947
Number of Towns in Operation Area	1
Total Population in Operation/Service Area	1,137,975
Total Water Connections	102,051
Total Waste Water/Sanitation Connections	-
Total Production/year	28,522,372 m ³
Total Staff	509
Annual O&M Costs	MK 11,885,344,000
Annual Water and Sewerage billing	MK 21,366,388,356
Annual Water and Sewerage Collections	MK 19,946,917,131

Tariff Structure

*Exchange Rate: MK 1,030 to 1US\$ (2021/22)

DOMESTIC			
Tariff Band	0-5	6-10	>10
MK/m ³	1,727*	496	690

NON DOMESTIC			
Tariff Band	0-5	6-40	>40
Commercial/ Industrial MK/m ³	8,415*	1,849	2,011
Tariff Band	0-10	11-40	>40
Institutional MK/m ³	15,114*	1,690	1,810

Note:

- *Fixed amount for first bracket
- Kiosks have flat rates of K215 (Community built) and K239 (LWB), respectively.

Annex 3. WUPI

The Water Utility Performance Index (WUPI) was developed following the guidelines suggested by the OECD-JRC (2008). In summary, the OECD-JRC (2008) recommends to build the composite indicators following 10 steps: 1) development of a theoretical framework; 2) selection of the basic indicators; 3) imputation of missing data; 4) multivariate analysis; 5) normalisation; 6) weighting and aggregation; 7) robustness and sensitivity; 8) back the details (indicators); 9) association with other variables; and 10) dissemination.

The Water Utility Performance Index (WUPI) is a composite indicator developed by CRA in 2012. The WUPI used by CRA (now AURA IP) was harmonized for regional comparison. The WUPI allows measurement of the performance of the Utilities in an integrated way by aggregating three main performance components: quality of service, economic efficiency and operational sustainability. 10 KPIs are used to build up the WUPI and are clustered in the three components.

The WUPI uses the max-min technique for the normalisation of the KPIs. The aim of the KPI normalization is to convert the set of KPIs selected for the construction of the WUPI (which are expressed in different units of measurement), into a homogeneous set of variables measured in the same unit. The KPIs are then measured on a scale that ranges from 0 (the worst possible performance) to 1 (the best possible performance). For ESAWAS, the minimum and maximum threshold values for each indicator to perform the indicator normalisation were pre-established (see Annex 1).

The final step of the construction of the WUPI is the aggregation of all of the normalised indicators into the three WUPI components and the overall WUPI. The weighted sum of the indicators, which assume total compensation among the indicators is used to aggregate the indicators. This linear aggregation of the indicators is calculated using the following formulas:

$$WUPI_{quality_service, i} = \frac{\sum_{k=1}^{k=4} w_k^* \cdot I_{k, i}}{\sum_{k=1}^{k=4} w_k^*} \quad WUPI_{economic_efficiency, i} = \frac{\sum_{k=5}^{k=7} w_k^* \cdot I_{k, i}}{\sum_{k=5}^{k=7} w_k^*}$$

$$WUPI_{operatinoal_sustainability, i} = \frac{\sum_{k=8}^{k=10} w_k^* \cdot I_{k, i}}{\sum_{k=8}^{k=10} w_k^*} \quad WUPI_{overall, i} = \sum_{k=1}^{k=10} w_k^* \cdot I_{k, i}$$

Where i refers to the specific water Utility under analysis, w_k^* is the relative importance of the KPI k , and $I_{k,i}$ is the normalised value of the KPI k for water Utility i .