ESAWAS
REGULATORS ASSOCIATION

REGIONAL BENCHMARKING OF LARGE WATER SUPPLY AND SANITATION UTILITIES 2014/2015 REPORT

June, 2016

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FOREWORD

This second report by ESAWAS marks the transition from the 2015 Millennium Development Goals (MDGs) to Sustainable Development Goals (SDGs) that will guide the global socio-economic development for the next 15 years. While commendable progress has been made with respect to the MDG targets for water and sanitation, access to clean and safe potable water, as well as adequate sanitation, remain a challenge for many countries in sub-Saharan Africa, as at the beginning of the millennium.

This report therefore provides an opportunity for Utilities to benchmark with their peers. Specifically, the report will serve as a tool for policy-makers, regulators and Utility managers in making informed decisions to uncover new strategies to enable the achievement of the SDGs of ensuring availability and sustainable management of water and sanitation for all by 2030.

Going forward, increased investment for infrastructural expansion and rehabilitation, increased efficiency in the existing systems, improved service and maximising on consumer contribution through cost reflective tariff will remain fundamental to the achievement of the SDGs. There is also need to re-examine the sector policies, legal and institutional framework, in order to ensure that they provide the right incentives to Utilities to perform (that is, extend services to the poor, build capacity and network, financial sustainability).These can only be guaranteed in the ambit of an effective regulatory environment.

ACKNOWLEDGEMENTS

The Eastern and Southern Africa Water and Sanitation (ESAWAS) Regulators Association wishes to acknowledge the various persons and institutions that supported the successful undertaking of the regional benchmarking exercise, particularly all its members that dedicated staff to the Technical Committee for the preparation of the regional benchmarking report.

ESAWAS also wishes to thank the water supply and sanitation Utilities benchmarked in this report for their cooperation in providing the required data. It is our aim that they find value in the usage of this report.

Finally, ESAWAS thanks all the stakeholders that took time to read the first report and gave their feedback. The suggestions and concerns were highly considered, and where possible taken on board in this second publication.

ABBREVIATIONS/ACRONYMS

AdeM	Águas da Região de Maputo
CRA	Conselho de Regulação de Aguas
DAWASCO	Dar es Salaam Water and Sewerage Corporation
ESAWAS	Eastern and Southern Africa Water and Sanitation
EWURA	Energy and Water Utilities Regulatory Authority
IBNET	International Benchmarking Network
KPI	Key Performance Indicators
LWSC	Lusaka Water and Sewerage Company
LEWA	Lesotho Electricity and Water Authority
NWASCO	National Water Supply and Sanitation Council
NCW&SC	Nairobi City Water and Sewerage Company
QoSSS	Quality of Supply and Service Standards
RURA	Rwanda Utilities Regulatory Authority
UN	United Nations
WASAC	Water and Sanitation Corporation
WASCO	Water and Sewerage Company
WASREB	Water Services Regulatory Board
WSS	Water Supply and Sanitation
WUPI	Water Utility Performance Index

EXECUTIVE SUMMARY

This second benchmarking report presents an analysis of the performance of the largest water and sewerage Utilities for the period 2014/2015, in each member country of ESAWAS which were: Lusaka Water and Sewerage Company (Zambia); Nairobi City Water and Sewerage Company (Kenya); Dar Es Salaam Water and Sewerage Corporation (Tanzania); Águas da Região de Maputo (Mozambique); Water and Sewerage Company (Lesotho); Water and Sanitation Corporation (Rwanda).

The analysis of the performance of the six water and sewerage Utilities was done against ten key performance indicators with benchmarks defined by ESAWAS. The key performance indicators were grouped according to similarity in the components of Quality of Service, Economic Efficiency and Operational Sustainability. Finally the performance of the Utilities was ranked using an integrated measurement of performance in the aforementioned components, called the Water Utility Performance Index.

For the second year in a row, the main results from the benchmarking analysis highlight a performance disparity by the Utilities among the components of quality of service, economic efficiency and operational sustainability. A number of the Utilities performed well in one component and poorly in one or two of the others. In overall, the report shows that the best performing KPIs were Staff/1000 Connections and Collection Efficiency while the worst performing KPIs were O&M Cost Coverage and NRW.

The report recommends a strong focus by all stakeholders to mobilising investment to particularly improve performance in the indicators related to the Quality of Service, that is, hours of water supply and service coverage

This report is organised as follows: the first section gives an overview of the ESAWAS Regulators Association; the second section describes the development of the regional benchmarking framework; the third section presents the comparative performance analysis and the final section of the report discusses the main conclusions and recommendations of the benchmarking exercise.

CHAPTER 1. OVERVIEW OF ESAWAS REGULATORS ASSOCIATION

1.1 BACKGROUND

In the year 2000, world-leaders committed their nations to a global partnership to reduce extreme poverty and set out eight Millennium Development Goals (MDGs) with a deadline of 2015. To build on the MDGs, Governments have now committed to implement the United Nations (UN) 2030 Agenda for Sustainable Development, comprising 17 Sustainable Development Goals (SDGs). Goal 6 of the SDGs on 'Clean Water and Sanitation' is to 'Ensure availability and sustainable management of water and sanitation for all'. In this regard, Governments, including in the Eastern and Southern African region, have set targets for universal access to water supply and sanitation (WSS) services. To achieve this, requires a strong regulatory framework that can accelerate access to improved and sustainable WSS services with innovate approaches, particularly for underserved populations in the low-income areas.

The premise of regulation is to ensure efficient, affordable, reliable and quality services while balancing the commercial interest (sustainability) with that of social consideration. Ongoing water sector reforms in the Eastern and Southern African region have established autonomous regulators for WSS services provision in Lesotho, Kenya, Rwanda, Tanzania, Mozambique, Zambia and, most recently, Burundi, Zanzibar and Angola.

Regulation impacts society, and a strong regulatory environment is one that (a) balances social, environmental and economic interests; (b) safeguards the interests of various stakeholders; and (c) increases public confidence and trust in government institutions, regulators and their decision-making processes. In recognising this, seven regulators from the Eastern and Southern African region are cooperating, through a regulatory association, in order to deliver effective WSS regulation.

The Eastern and Southern Africa Water and Sanitation (ESAWAS) Regulators Association began in 2007 as an informal meeting held among five WSS Regulators from different countries in the Eastern and Southern African region to exchange experiences and knowledge on WSS regulation. In recognising the need for collaboration in the development of an effective WSS regulatory framework, the five regulators resolved, through a Memorandum of Understanding (MoU), to establish an association for regional cooperation on issues of mutual concern and interest in the areas of water supply and sanitation regulation.

To formalise cooperation, the ESAWAS Regulators Association is governed by a Constitution ratified among the members and accompanied by Rules. The Association is registered under the Societies Act Cap 119 of the Laws of Zambia that gives it legal personality.

1.2 OBJECTIVES AND MEMBERS OF ESAWAS

The ESAWAS Regulators Association 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 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.

The ESAWAS Regulators Association is currently composed of seven members that are: Water Services Regulatory Board (WASREB) of Kenya; the Water Regulatory Council (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 and the Agency for Regulation of Electricity, Potable Water and Mines (AREEM) of Burundi. The overview of the regulators is given in Table 1.

Table 1: Overview of ESAWAS Members

	Regulator	Established by	Year began operations	Number of regulated Urban WSS Utilities
1	**National Water Supply and Sanitation Council** (NWASCO), Zambia	Water Supply and Sanitation Act No. 28 of 1997	2000	18
2	**Water Regulatory Council** (CRA), Mozambique	Decree No. 74 of 1998	2000	15
3	**Water Services Regulatory Board** (WASREB), Kenya	Water Act of 2002	2003	103
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	130
6	**Lesotho Electricity and Water Authority** (LEWA-Lesotho)	LEA Act of 2002, LEA Amendment Act of 2011	2013	1
7	**Agency for Regulation of Electricity, Potable Water and Mines** (AREEM) of Burundi.	Decree No. 100/320 of 2011	2015	1

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

For effective regulation, a number of instruments and tools have been put in place and generally include:

- Licensing: All WSS providers are required to operate under a license issued by the regulator except in Mozambique where the regulator, CRA, signs a regulatory agreement/contract with the provider that defines the regulatory framework.

- Development and Enforcement of Guidelines, Regulations, Rules and Standards: Various guidelines, regulations, rules and standards have been developed and enforced to ensure compliance to the governing water supply and sanitation legislation. Some key regulations, guidelines and standards include: Minimum Service Level, Business Planning, Corporate Governance, Reporting and Quality of Supply and Service Standards (QoSSS).

- Tariff Setting: All WSS providers are required to submit tariff applications to the regulator for review and approval.

- Performance Monitoring and Quality Control: The regulators undertake regular inspections of utility infrastructure and operations. Areas of non-compliance are addressed through written directives and orders.

- Sector Performance Reporting and Information Dissemination: The 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.

1.3 IMPLEMENTATION OF ESAWAS STRATEGIC PLAN

The ESAWAS Regulators Association concluded the implementation of its first Strategic Plan which had been set for the period 2013-2015. The activities for the period were formulated under the two objectives of ESAWAS (i) Capacity Building and Information Sharing and (ii) Regional Regulatory Cooperation. The implementation performance for 2015, in the key focus areas under these objectives, is highlighted in Table 2.

Table 2: Implementation Performance for 2015 Strategic Plan activities

OBJECTIVE 1: FACILITATE CAPACITY BUILDING AND INFORMATION SHARING	
Key Focus Areas	**Performance**
Share best practices in regulation	Regional benchmarking framework developed and first benchmarking report published for six large WSS Utilities from Kenya, Tanzania, Lesotho, Mozambique, Zambia and Rwanda. The activity was supported by the World Bank-IBNET and GIZ-Zambia.
Facilitate experience and knowledge transfer	A learning visit in legal aspects was facilitated for RURA to NWASCO and WASREB.
Establish partnership with other WSS sector associations	The ESAWAS 9th AGM held in Kenya approved the partnership of ESAWAS with the Turin School of Local Regulation and Energy Regulators Regional Association (ERRA) in the area of regulatory training. Discussions on areas of partnership were instituted with the African Forum for Utility Regulation (AFUR) and International Water Association (IWA) for implementation in 2016.
OBJECTIVE 2: ENHANCE REGIONAL REGULATORY COOPERATION	
Key Focus Areas	**Performance**
Annual General Meeting	9th Annual General Meeting held in Kenya in 2015 under the theme 'Enhancing Regulatory Substance'.
Set-up a Website for ESAWAS Regulators Association	Website updated periodically (www.esawas.org) and has had over 20,000 visits since its implementation in 2014.
Undertake Peer-Review of Regulators	Third Regulatory Peer Review undertaken for NWASCO after EWURA (2013) and WASREB (2014). The report of findings were disseminated among members.

Following the expiry of its first Strategic Plan, ESAWAS developed its second Strategic Plan for the period 2016-2018 which builds on the achievements made in the first Strategic Plan for the period 2013-2015. Three strategic objectives have been identified for the three-year period as follows:

i. Strengthen regulatory capacity among Members and within the region
ii. Facilitate experience and knowledge transfer
iii. Improve operations of ESAWAS Regulators Association

CHAPTER 2. REGIONAL BENCHMARKING FRAMEWORK

2.1 RATIONALE FOR REGIONAL BENCHMARKING

Benchmarking analysis has become a strategic tool for water regulators to measure the performance of water Utilities. Each member of ESAWAS (except LEWA of Lesotho, which uses Quality of Supply and Service Standards (QoSSS) and newly-established AREEM of Burundi) has developed a benchmarking framework suitable to the respective environment with country-specific benchmarks against which they measure the performance of water supply and sanitation providers and the subsector as a whole. Utility performance reports are produced annually with comparative data that gauges utility performance against itself (from previous year) and against others.

The members of ESAWAS have been producing annual comparative benchmarking reports highlighting the performance of WSS providers in their respective countries. However, the large Utilities are often resistant to having their performance benchmarked against 'smaller' Utilities as they perceive their own required effort to improve as far greater in view of the size of area being serviced. This has raised challenges for the regulator to benchmark the performance of large sized Utilities with similar sized ones in its country, which tend to be few or none.

In cognisant of the above, in 2015, ESAWAS developed a regional benchmarking framework by a process of harmonising the Key Performance Indicators (KPIs) and benchmarks used by the different regulators. In this regard, a regional benchmarking report was introduced that presents the platform by which large Utilities can be compared to similar sized Utilities within the region.

While the operating environment may differ, by benchmarking against similar sized Utilities, lessons can be drawn on how to improve performance for both the regulator and the utility. 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 large Utilities;
- identify strengths and weakness within the large Utilities and areas for improvements;
- generate information for decision making; and
- contribute to the attainment of targets with respect to country visions and Sustainable Development Goals.

2.2 COMPARISON OF BENCHMARKING KPIS AMONG REGULATORS

ESAWAS developed a regional benchmarking framework by first comparing the KPIs used by each regulator for benchmarking in order to harmonise them. Key benchmarks to be achieved by Utilities have been set in the respective Minimum Service Level guideline /Quality of Supply and Service Standards developed by the regulators. EWURA has set a Service Level Benchmark

based on good practices while CRA utilises boundaries set under its indexing model. RURA, WASREB and NWASCO have defined an acceptable benchmark to be achieved.

The common KPIs among the regulators for which benchmarks have been set are:

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

It is worth noting here that Mozambique and Rwanda have separate entities for sanitation services, hence the regulators have not yet set benchmarks for sanitation coverage.

A snapshot of KPIs, benchmarks and related weights per regulator is given in Table 3.

Table 3: 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(*Turbidity, pH,Metals, Colour)*						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**
CRA		**N/A**	Residual Chlorine, Bacteriological, Physio-Chemical (*Turbidity, pH, Conductivity)*						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			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.

2.3 BENCHMARKING TOOLS ADOPTED

ESAWAS adopted the use of two tools for the purpose of regional benchmarking. These were the International Benchmarking Network (IBNET) tool developed by the World Bank and the Water Utility Performance Index (WUPI) developed by CRA.

- 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, among 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. The WUPI is a composite indicator to evaluate the performance of the Utilities in an integrated way for a set of similar indicators (see Appendix 2 for a detailed description).

2.4 HARMONISATION OF BENCHMARKS AND WEIGHTS

ESAWAS selected the ten common KPIs to use for regional benchmarking (see 2.2).

Due to the differences in definition of sanitation services among the regulators and unreliable data regarding septic tanks, the regional benchmarking framework considers Sewerage Coverage by network only.

The indicators were grouped into three main components namely, (i) Quality of Service, (ii) Economic Efficiency and, (iii) Operational Sustainability. ESAWAS agreed on the broad definition and calculation for each of the indicators as shown in Table 4. The benchmarks were converted into performance boundaries by considering the minimum average performance of the Utilities, as well as the minimum for the acceptable benchmark among the countries. The weights were arrived at by a process of normalisation of the various weights defined by the different regulators. The output of the harmonisation process is given in Table 4.

Table 4: Grouping of indicators and harmonised KPIs

	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	90-95%	15
4	**Hours of Supply**	Aggregated average hours of supply (per town/zone/area etc) in the reporting period	Sum of weighted averages per town	16-20	10
ECONOMIC EFFICIENCY					
5	**O&M Cost Coverage by Billing**	The level of costs covered by billed amounts	[Billed Amount/O&M Costs]	100-150%	10
6	**Collection Efficiency**	The collected amounts from the billing	[Collected amount/Billed amount]x100	85-95%	15
7	**Staff Cost**	Personnel Cost as a proportion of O&M cost	[Personnel Cost/ O&M Costs]*100	30-35%	5
OPERATIONAL SUSTAINABILITY					
8	**Staff/1000 Connections**	Staff per 1,000 water & sewerage connections	[Total Number of Staff x 1,000]/[No. of Water + Sewerage Connections]	5-8	5
9	**NRW**	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**	The proportion of metered customers from the total	[Functional Metered Connections]/Total Connections]x100	85-95%	10

2.5 WHO TO BENCHMARK?

ESAWAS considered widening the number of Utilities to be engaged in benchmarking by including all large Utilities from each member country. However, it was observed that the various regulators have different ways of classifying what is a large utility as shown in Table 5.

Table 5: Classification of Large Utilities by Country

Regulator	Classification in terms of connections	Number of Utilities
WASREB, Kenya	Large > 10,000 Very Large>35,000	31 5
NWASCO, Zambia	Large > 40,000	4
EWURA, Tanzania	Large > 25,000	6 (5 Cities +Dodoma)
CRA, Mozambique	Large > 50,000	2
LEWA, Lesotho	N/A	1 national
RURA, Rwanda	N/A	1 national
AREEM, Burundi	N/A	1 national

Due to the observed disparity, ESAWAS agreed to benchmark only the largest or single utility in a country as the case may be.

Nevertheless, it is worth noting that the ESAWAS regional benchmarking framework can be used by individual regulators to further compare the performance of more Utilities in the country against regional Utilities and thereby draw comprehensive conclusions regarding the performance of the local Utilities.

CHAPTER 3. PERFORMANCE ANALYSIS

This section focuses on the analysis of the performance of the largest water Utilities in Kenya, Tanzania, Zambia, Mozambique, Rwanda and Lesotho.

The water Utility in Burundi, REGIDESO, is not yet included as the regulator, AREEM, only became operational in 2015.

3.1 OVERVIEW OF BENCHMARKED UTILITIES

Only the largest Utilities in each ESAWAS member country have been selected for benchmarking. These are: Nairobi City Water and Sewerage Company (NCW&SC) of Kenya; Dar Es Salaam Water and Sewerage Corporation (DAWASCO) of Tanzania; Lusaka Water and Sewerage Company (LWSC) of Zambia; Águas da Região de Maputo (AdeM) of Mozambique; Water and Sanitation Corporation Ltd (WASAC) of Rwanda; and Water and Sewerage Company (WASCO) of Lesotho.

The general profile about the Utilities is shown in Table 6, while a detailed profile is presented in Appendix 1. All the Utilities are publicly owned companies.

Table 6: General Profile of Benchmarked Utilities

Utility	Abbreviation	Country	Areas of operation	Year Established
Lusaka Water and Sewerage Company	LWSC	Zambia	Lusaka city; Kafue; Chongwe; Luangwa; Chilanga	1989
Águas da Região de Maputo	AdeM	Mozambique	Greater Maputo City	1999
Nairobi City Water and Sewerage Company	NCW&SC	Kenya	City of Nairobi	2003
Dar Es Salaam Water and Sewerage Corporation	DAWASCO	Tanzania	Dar Es Salaam city; Kibaha; Bagamoyo;	2005
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

The key background data about the Utilities is shown in Table 7.

Table 7: Key background data on Benchmarked Utilities

Utility	Population in the Service Area 2013/14	Number of Water Connections 2013/14	Annual Water Production (m^3/yr) 2013/14	Population in the Service Area 2014/15	Number of Water Connections 2014/15	Annual Water Production (m^3/yr) 2014/15
NCW&SC, Kenya	3.72 Million	308,598	201,781,886	3.89 Million	312,426	201,861,138
LWSC, Zambia	2.18 Million	92,440	88,500,000	2.25 Million	94,184	80,564,003
DAWASCO, Tanzania	4.34 Million	138,680	85,871,543	4.59 Million	142,960	88,367,060
AdeM, Mozambique	2.13 Million	206,610	75,966,000	2.17 Million	214,872	75,828,468
WASCO, Lesotho	0.49 Million	78,336	17,820,117	0.51 Million	85,131	18,748,694
WASAC, Rwanda	2.57 Million	149,332	39,969,662	2.65 Million	156,618	41,061,229

From Table 7, DAWASCO had the largest population in its service area while WASCO had the smallest. NCW&SC had the highest volume of water produced, more than double of any of the Utilities. NCW&SC also had the highest number of connections followed by AdeM.

3.2 REPORTING PERIOD

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

- July-June for WASREB, RURA and EWURA
- April- March for LEWA
- January –December for NWASCO and CRA

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

3.3 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 KPIs (using traffic light colours) and components for grouped indicators are shown in Table 8.

The KPIs boundaries established by ESAWAS are constrained to the current scenario and could be revisited in the following years if the trends shift.

Table 8: 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	>95	95-90	< 90
	Hours of Supply	>20	20-16	< 16
Economic Efficiency	O&M Coverage	>150	150 – 100	< 100
	Collection Efficiency	>95	95 – 85	< 85
	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	>95	95 – 85	< 85

3.4 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.

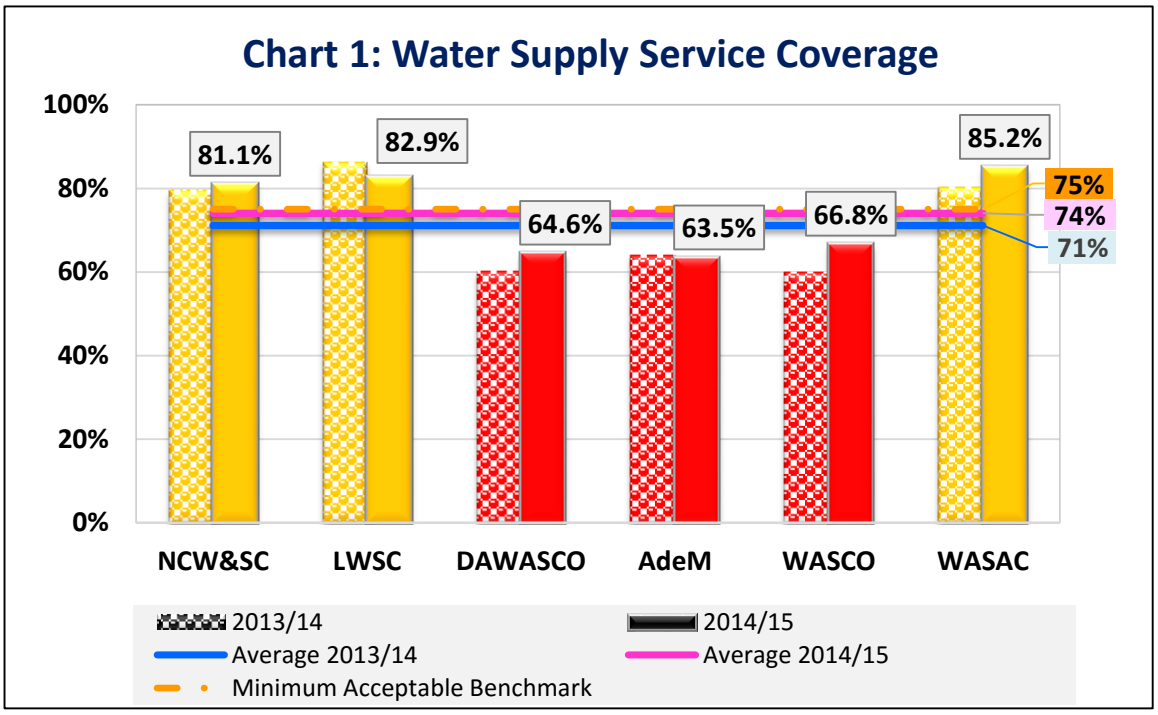
3.4.1 QUALITY OF SERVICE

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

3.4.1.1 Water Supply Service Coverage

Water supply coverage considers the domestic population served through individual household connections, public standpipes and water kiosks.

As shown in Chart 1, the average water supply coverage in 2014/15 increased to 74% from 71%. This was marginally below the acceptable benchmark of 75%. Three Utilities, that is, NCW&SC, LWSC and WASAC, were above the acceptable benchmark.



DAWASCO, WASCO and WASAC had notable increases in connections following the completion of major investment projects to extended services. Under DAWASCO, there was a marked increase in water production following the completion and commissioning of the project on the expansion of Lower Ruvu water treatment plant and laying of transmission main. The increase in water production went together with sensitising the community to be connected. WASCO undertook projects funded by Government to extend service to large areas such as Maseru South-West (MaSoWe) development area where over 6,000 new connections were added. WASAC increased the number of connections by over 7,000 to cover about 77,000 persons.

LWSC recorded a drop in water coverage due to a reduction in the number of domestic customers that were previously incorrectly classified as domestic but were instead non-domestic. Further, the rate of increasing new connections did not match the rate of population increase.

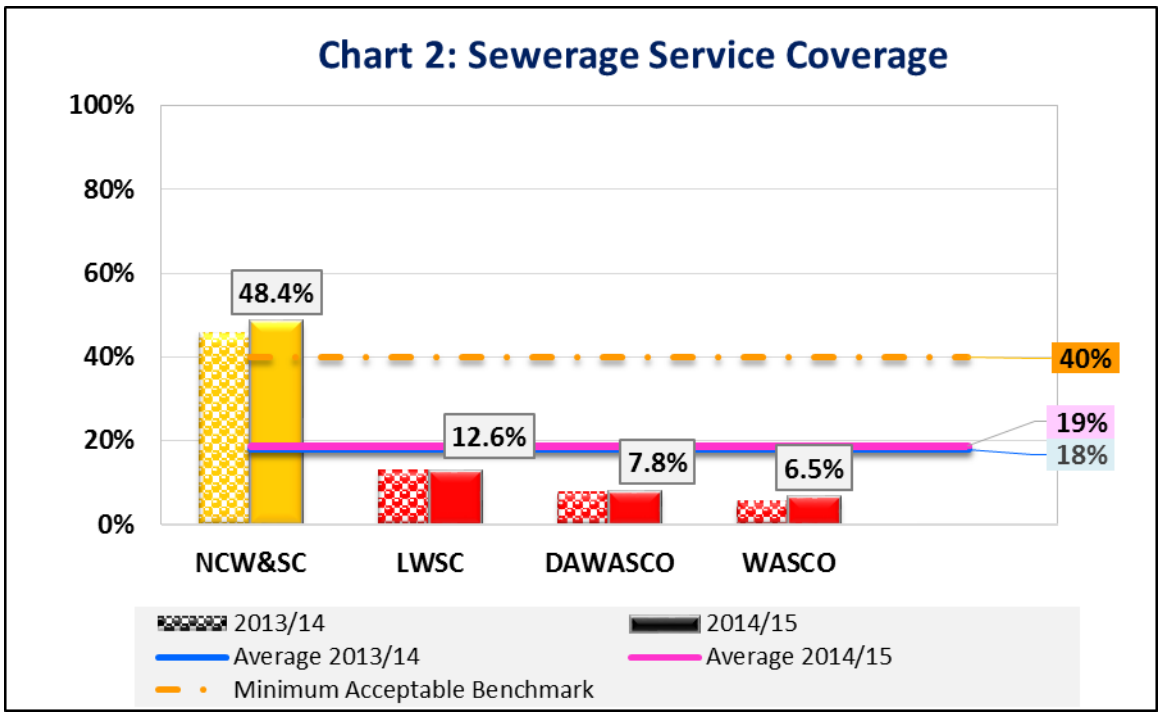
3.4.1.2. Sewerage Service Coverage

Mozambique and Rwanda have separate entities for sewerage and sanitation services[1], hence only NCW&SC, LWSC, DAWASCO and WASCO which provide sewerage services, were analysed.

Due to the unreliability of data regarding septic tanks, only the sewerage services by network were considered. The number of sewerage connections are shown in Table 9 while service coverage is depicted in Chart 2.

Table 9: Sewerage Connections per Utility

Utility	Sewerage Connections 2013/14	Sewerage Connections 2014/15
NCW&SC	213,543	208,554
LWSC	31,210	31,388
DAWASCO	21,742	21,742
WASCO	3,583	3,952



The average Sewerage services coverage barely changed from 18% to 19% and remained far below the acceptable benchmark of 40%.

[1] Sewage regulatory activity for Maputo city has not yet been established as negotiations with the City Council (entity responsible for the Sewage) still underway. According to the Department of Water and Sanitation of the Maputo Municipal Council, the sewerage coverage in the city is around 11%.
Kigali does not have a centralised sewer system and the private operator providing sewer services is not under regulation

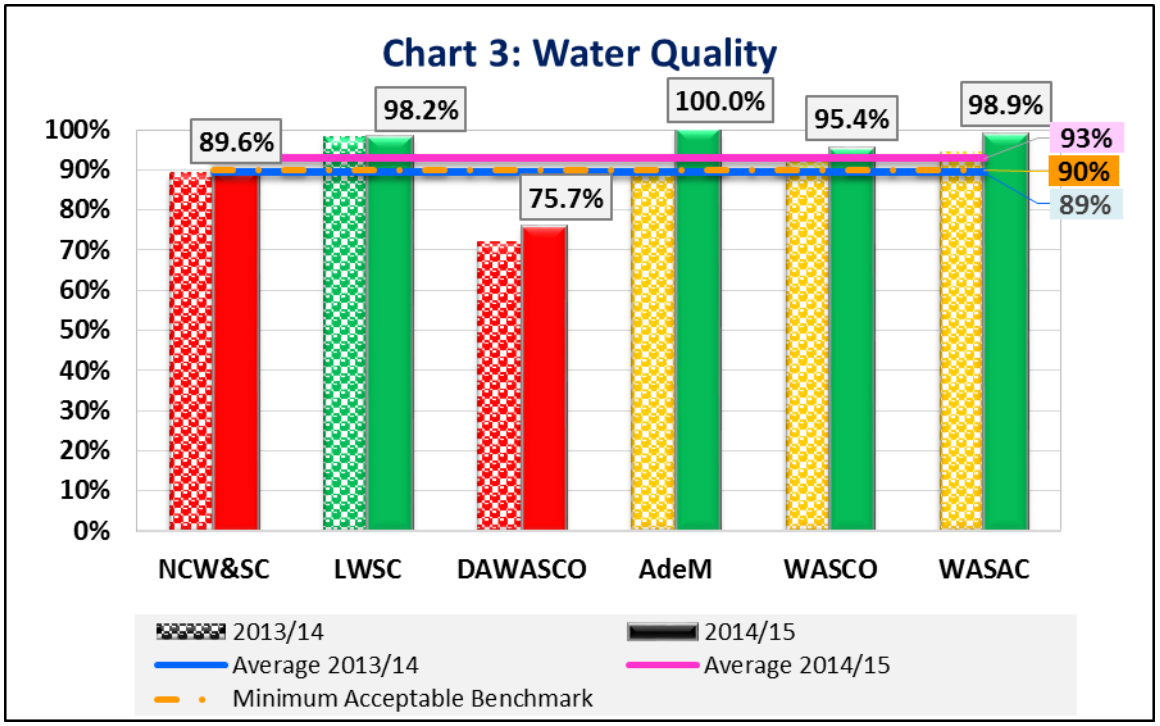
Low sewerage coverage levels in comparison to water supply coverage are majorly attributed to the high cost of investment required for sewerage infrastructure which tends to be an inhibiting factor. It is estimated that the cost of sewerage infrastructure can be more than three times the cost of water infrastructure. There is urgent need to address the investment gap in order not to reverse the gains made in water supply coverage.

NCW&SC undertook data clean up including consolidating some individual sewer connections into multi-dwelling units connections on account of current trend of redevelopment taking place within the prime areas of the city of Nairobi. Hence the sewerage coverage increased despite the drop in number of individual connections by 4,989.

3.4.1.3. 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. However, individual countries have different standards for water quality in conformity with the national standards.

Therefore, the drinking water quality result presented in Chart 3 is a composite indicator considering 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.



The average water quality compliance in the reporting period improved to 93%, above the acceptable minimum benchmark of 90%.

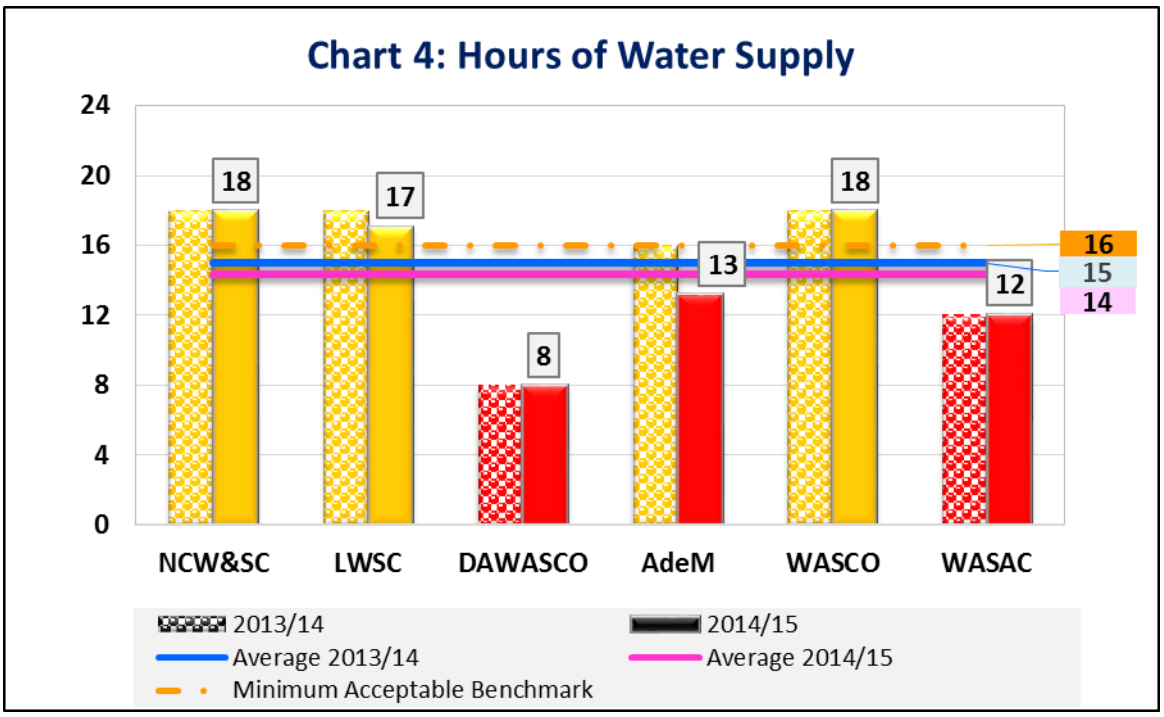
LWSC, AdeM, WASCO and WASAC were above the maximum acceptable benchmark of 95%. WASAC and WASCO met the requirements for the number of tests conducted which was lower in the previous period.

NCW&SC and DAWASCO were the only Utilities below the acceptable benchmark. NCW&SC conducted less tests than required for residual chlorine while a number of samples failed to meet the standard for bacteriological tests. DAWASCO conducted far less tests than required for both residual chlorine and bacteriological parameters.

3.4.1.4. Hours of Water Supply

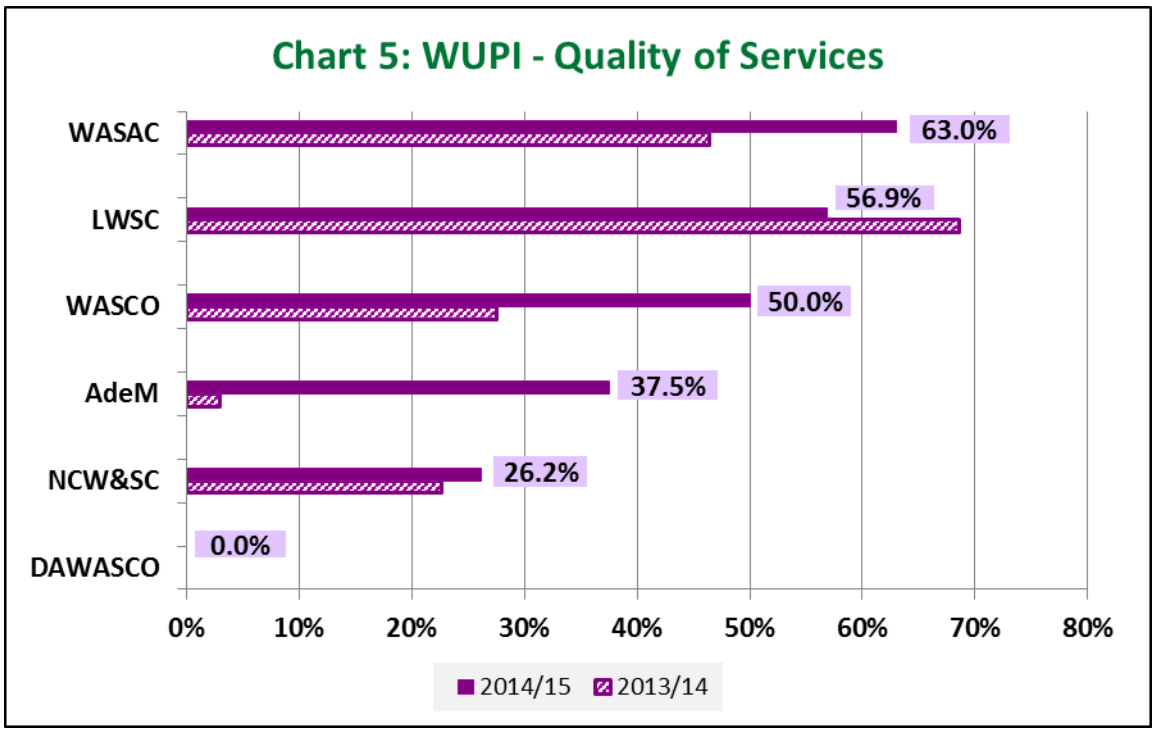
Hours of Supply refers to the average number of hours per day that a Utility provides water to its customers. It measures the continuity of services of a Utility and thus the availability of water to the customer. It is an important indicator of quality of service and shows the extent to which the Utility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

In the reporting period, the average hours of water supply per day among the Utilities remained largely static, as shown in Chart 4, with only LWSC and AdeM recording drops due to power outages. In Zambia, the electricity company introduced extensive power load shedding across the country which negatively affected water production and consequently hours of water supply.



3.4.1.5. Integrated Performance - Quality of Services

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



From the integrated performance, WASAC with a notable jump, had the highest performance score while DAWASCO, as in the previous period, did not meet the acceptable benchmark in all four single KPIs and hence scored 0%.

AdeM had a significant jump in performance, improving from 3% in the previous period to 37.5%, mainly attributed to the improvement in the Water Quality compliance indicator. WASCO also posted an improved performance score from 27.5% to 50% in the current period, due to improvements in the Water Supply Service Coverage and Water Quality indicators.

3.4.2. ECONOMIC EFFICIENCY

It is important to note that in the year 2015, the world economy stumbled and a number of countries suffered major economic shocks, including countries of the ESAWAS members. According to the United Nations, 2016 World Economic Situation and Prospects, the economic slowdown in a number of countries was attributed to 'persistent macroeconomic uncertainties and volatility, low commodity prices and declining trade flows; volatility in exchange rates and capital flow' among others. This resulted in increased costs of doing business amid rising interest rates and inflation, thus impacting negatively on the water sector as well.

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

3.4.2.1 Comparison of Residential Water Bill

A water bill is a charge made for the usage of water at a particular property. A comparison of water bills charged by the different Utilities for the same volume of water was done in order to demonstrate the average amount spent by a customer on water usage only. Hence the comparison does not include fixed or sewer charges.

The comparison of a residential water bill is made in Table 10 using three criteria:

(i) a lifeline or pro-poor consumption of $5m^3$ which is usually subsidised;
(ii) a bill for $30m^3$ which tends to be an average consumption for domestic customers; and
(iii) an average domestic bill for a Utility.

Table 10: Comparison of Residential Water Bill

Utility	Lifeline Consumption at $5m^3$ ($)	Bill at $30m^3$ ($)	Average domestic bill- ($)
NCW&SC	2.00	13.50	13.00
LWSC	1.73	9.31	12.14
DAWASCO	1.69	16.86	10.20
AdeM	3.88	23.86	7.1
WASCO	1.89	33.92	6.94
WASAC	2.30	15.24	7.72

From the table, the lifeline consumption bill for most Utilities was generally in the same range of about 2$ per month, except for AdeM which was the highest at above $3. There was wide disparity for the bill at $30m^3$ with LWSC charging the least amount while WASCO charged the highest, at more than triple the charge for LWSC.

The average domestic bill for DAWASCO, AdeM, WASCO and WASAC was less than the bill at $30m^3$ indicating that the average water consumption from the Utilities is far less than $30m^3$ per month. This, ideally, would be the area of focus for the Utilities in designing the tariff structure.

3.4.2.2 Operation and Maintenance Cost Coverage

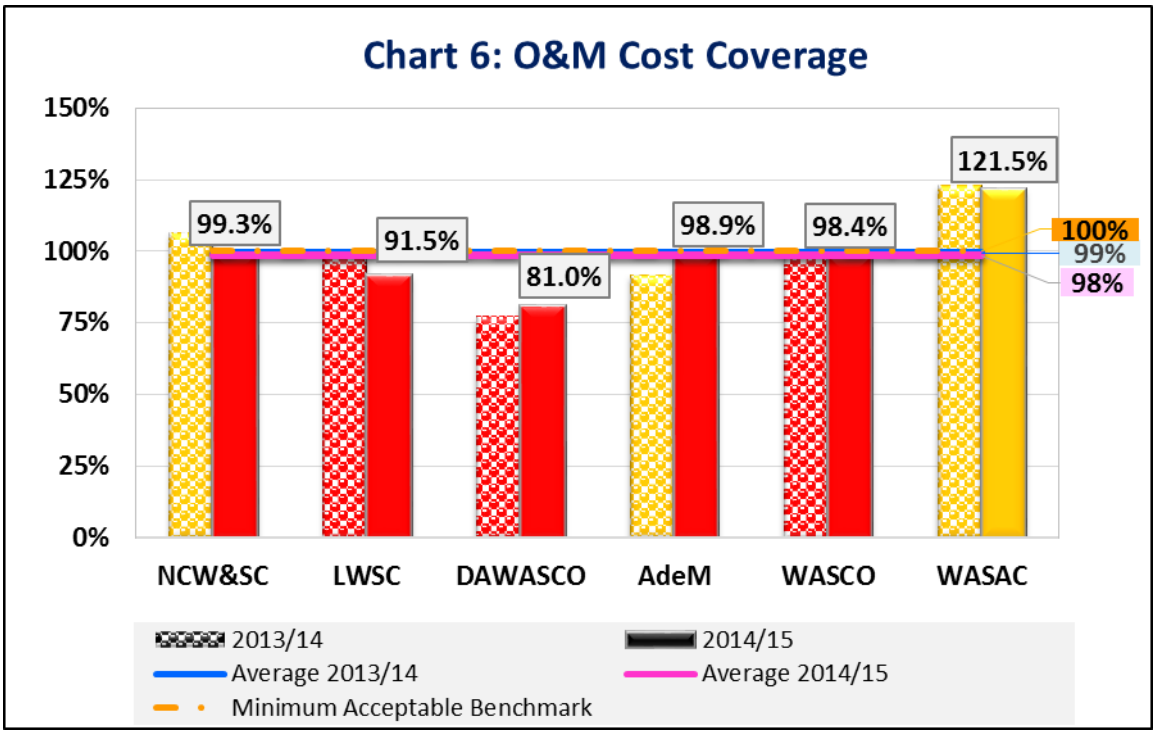
Operation and Maintenance (O&M) Cost Coverage in Chart 6 is the extent to which internally generated funds through billing, cover the cost of running a utility. It is a measure of the financial sustainability of a Utility. A Utility is said to have reached full cost coverage when it reaches above 150% O&M cost coverage. At this level a Utility is able to meet its O&M costs and undertake capital development.

The average O&M Cost Coverage in the reporting period marginally declined further below the acceptable benchmark of 100% to 98%. Only WASAC remained above the acceptable benchmark.

Apart from DAWASCO and AdeM, all the Utilities experienced reduced cost coverage levels largely driven by unmatched revenue generation against escalating costs.

AdeM had an improved cost coverage due to a reduction in costs with improved revenues. DAWASCO's cost coverage also improved, however, it remained the lowest among the Utilities as it has not had a cost recovery tariff since the 2013/14 period.

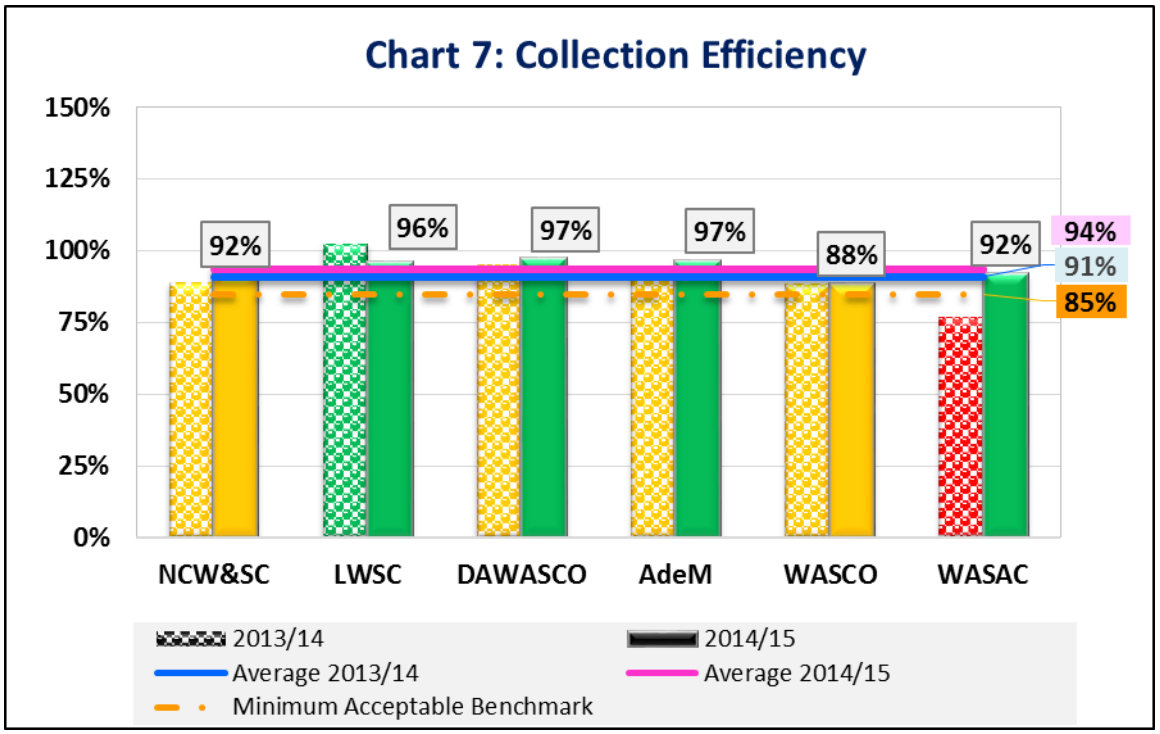
NCW&SC delayed the review of the tariff for two years which impacted negatively on revenue generation against a significant increase in costs. LWSC recorded a lower billed revenue than the previous period as a result of a reduced billed consumption which was affected by reduced water supply (as a consequence of lower production due to extensive power load shedding) and increased non-revenue water.



3.4.2.3. Collection Efficiency

Collection Efficiency in Chart 7 shows the level of cash income in the Utility against the billed amount. Collection ratios above 85% are a key factor in sustaining financial performance of water and sewerage services Utilities, both in the short and medium term.

The average Collection Efficiency ratio improved to 94% in the reporting period with all Utilities above the acceptable benchmark of 85%.



For NCW&SC, DAWASCO and WASAC the use of e-payments, such as mobile money, have contributed to improved collection efficiencies over time. WASAC had a significant increase in collections which was partly attributed to the introduction of an online system (https://water.wasac.rw) for customers to check their bills and pay at any available pay point. With Rwanda being an ICT savvy country, the online bill delivery system eased the payment process by reducing the need and time for paper bills and delivery to customer premises.

LWSC collected less amounts than in the previous period owing to non-payment by some Government institutions.

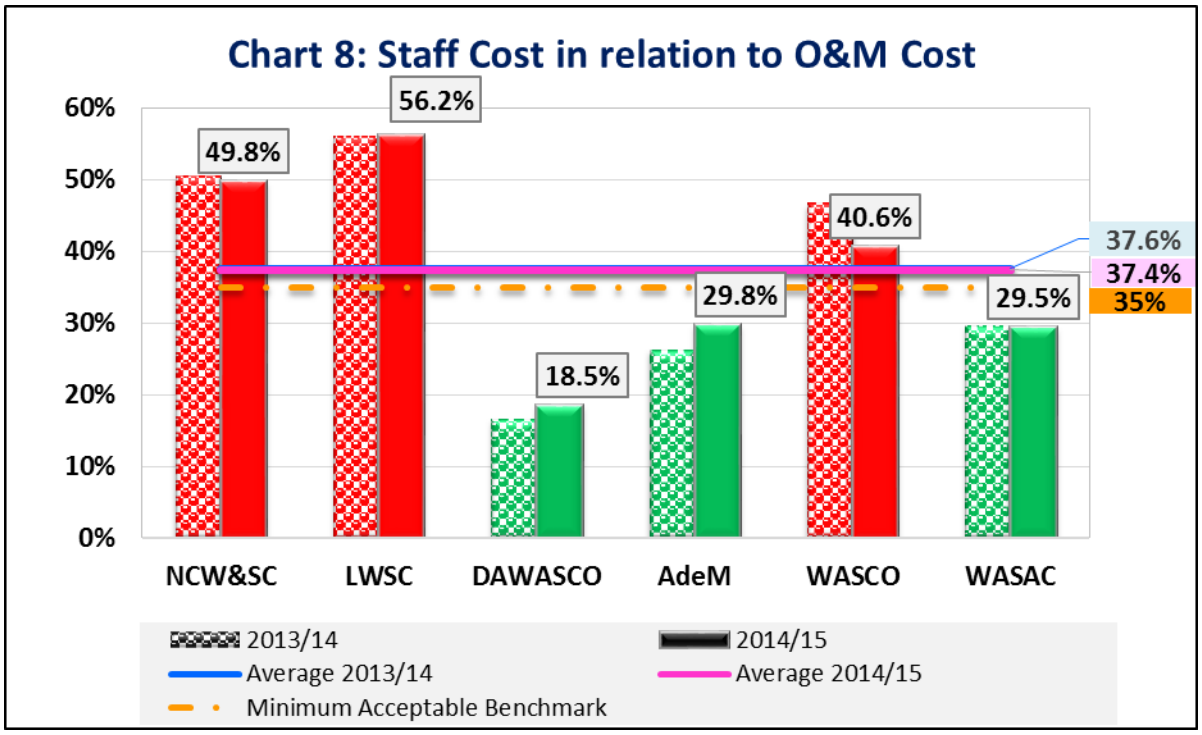
3.4.2.3. Staff Cost as a proportion of O&M Costs

The staff cost is analysed against the O&M costs of the utility and presented in Chart 8. The internationally accepted “bottom line” for the staff cost is 30% of the total cost. To put the cost proportion in perspective, the number of staff per Utility is shown in Table 11.

Table 11: Total Staff per Utility

Utility	Total Staff 2013/14	Total Staff 2014/15
NCW&SC	2,612	2,948
LWSC	848	889
DAWASCO	913	924
AdeM	769	831
WASCO	501	535
WASAC	834	793

NCW&SC had the highest complement of staff, at three times more than any of the other Utilities.



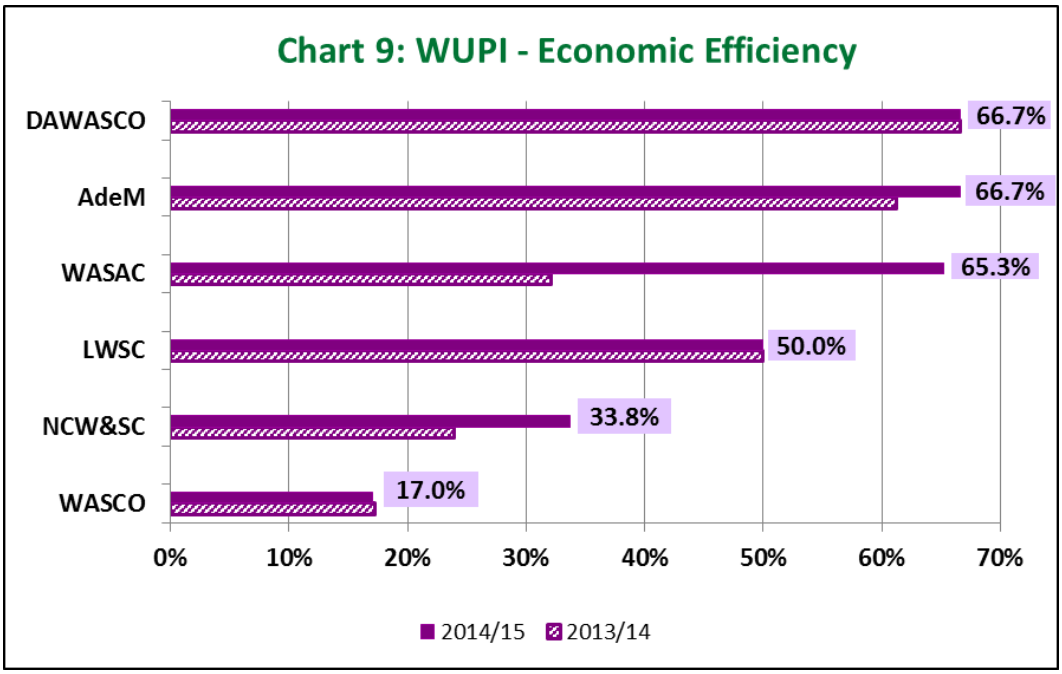
The average proportion for staff costs against O&M costs barely changed and was still above the acceptable benchmark of 35%.

DAWASCO, AdeM and WASAC met the acceptable benchmark of 35% proportion. The proportions for NCW&SC, WASCO and LWSC remained unacceptably high though the former two made improvements despite an increase in staff.

The staff cost proportion for DAWASCO remained remarkably low. While this is commendable, it could also signal a lowly remunerated workforce.

3.4.2.4. Integrated Performance –Economic Efficiency

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



DAWASCO and AdeM had the highest performance scores while WASCO maintained bottom, similar to the previous period. WASAC scored a major jump in performance, largely boosted by the improvement in collection efficiency.

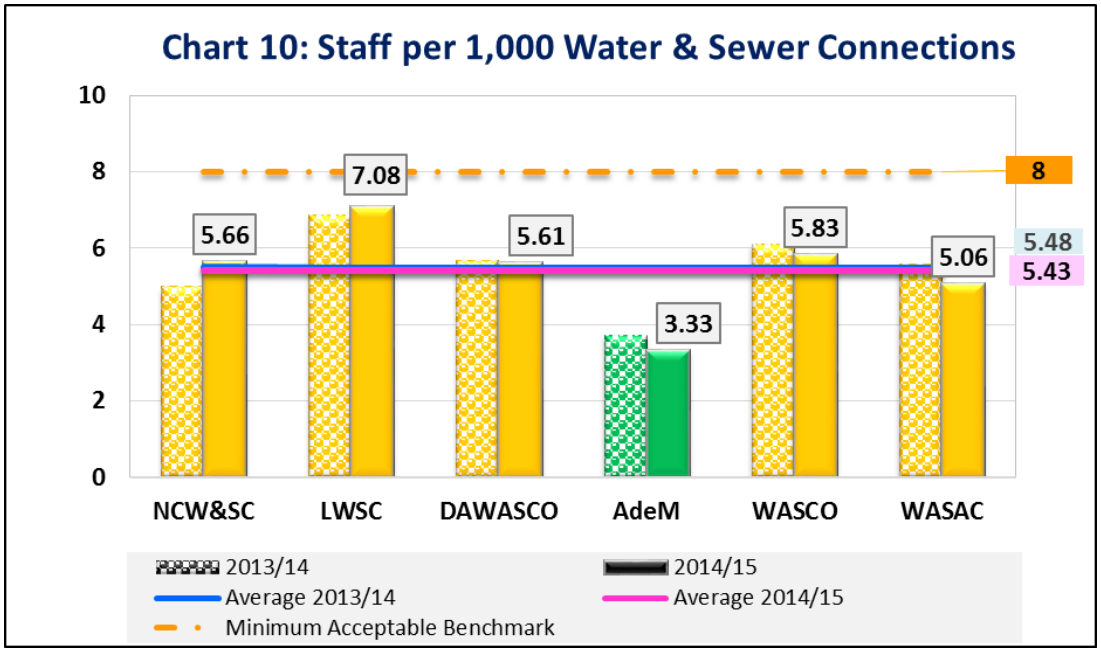
3.4.3 OPERATIONAL SUSTAINABILITY

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

3.4.3.1. Staff per 1,000 Water and Sewer Connections

Staff per 1,000 Water and Sewer Connections, shown in Chart 10, indicates the number of employees servicing 1,000 connections. It measures 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 settlement, skills mix, Utility business model (outsourcing), geographical distributions of areas served and where a Utility provides water alone or water and sewerage connections.

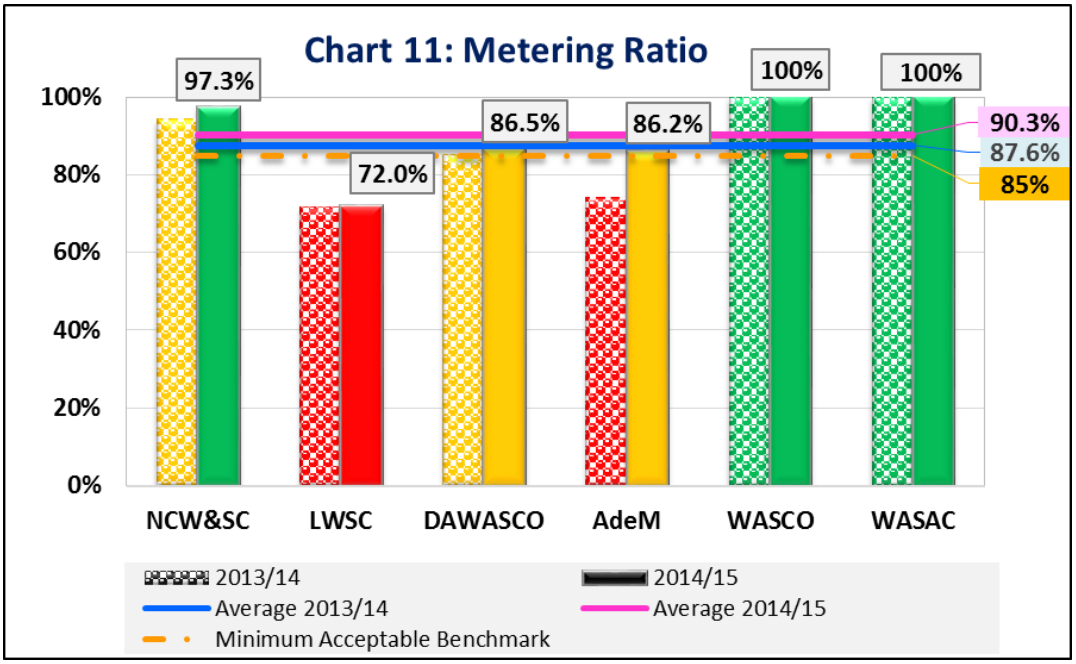
The average for Staff per 1,000 Connections, at 5.43, remained well within the acceptable benchmark of 8. All the Utilities met the acceptable benchmark but only AdeM maintained the good benchmark. The drop in NCW&SC was due to a significant increase in staff. LWSC was just below the maximum acceptable benchmark and would therefore need to take caution to improve the indicator.



3.4.3.3. 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.

The average metering ratio increased to 90.3% from the previous period as shown in Chart 11. WASCO and WASAC maintained 100% metering despite both Utilities increasing connections by over 6,000. NCW&SC meet the good benchmark while LWSC remained the only Utility below the acceptable benchmark.



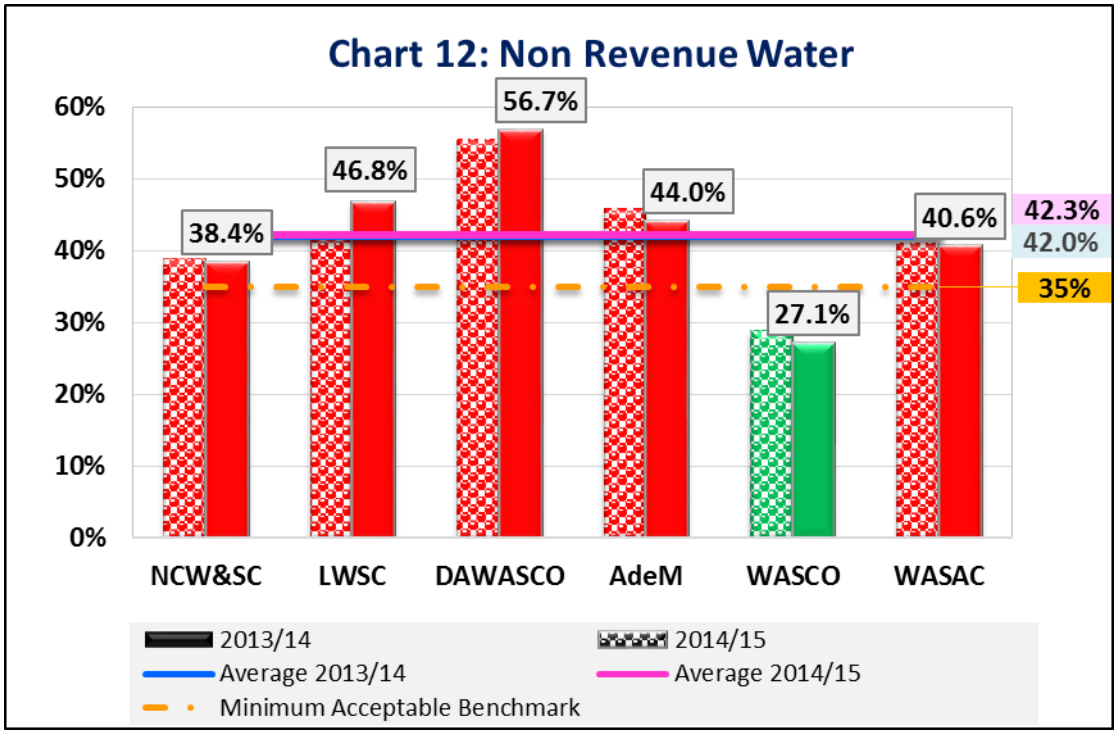
3.4.3.2. Water Losses

Non-Revenue Water is water that has been placed in the distribution system but lost before reaching the customer, that is, water produced but not sold. It measures the efficiency of a Utility in delivering the water it produces to customers' take-off points. It is made up of technical losses (leakages), 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.

As shown in Chart 12, the average NRW deteriorated slightly to 42.3% in the reporting period.

WASCO and WASAC recorded improvement in NRW. WASCO was the only Utility to have met and maintained the good benchmark. This was attributed to the installation of pressure switches to curb reservoir overflows, introduction of zoning and pressure reducing valves. WASAC instituted a leak detection unit and embarked on installation of regional meters to manage water losses.

The significant increase in NRW in LWSC was as a result of numerous major pipe damages experienced, mainly caused by road construction works.



However there are different perspectives as to the most appropriate measure of NRW. A percentage approach can make Utilities with high levels of consumption, or compact networks, look to be better performing than those with low levels of consumption or extensive networks. Thus, for NRW to be truly meaningful, it is related to the distribution network and customer connections as shown in Table 12.

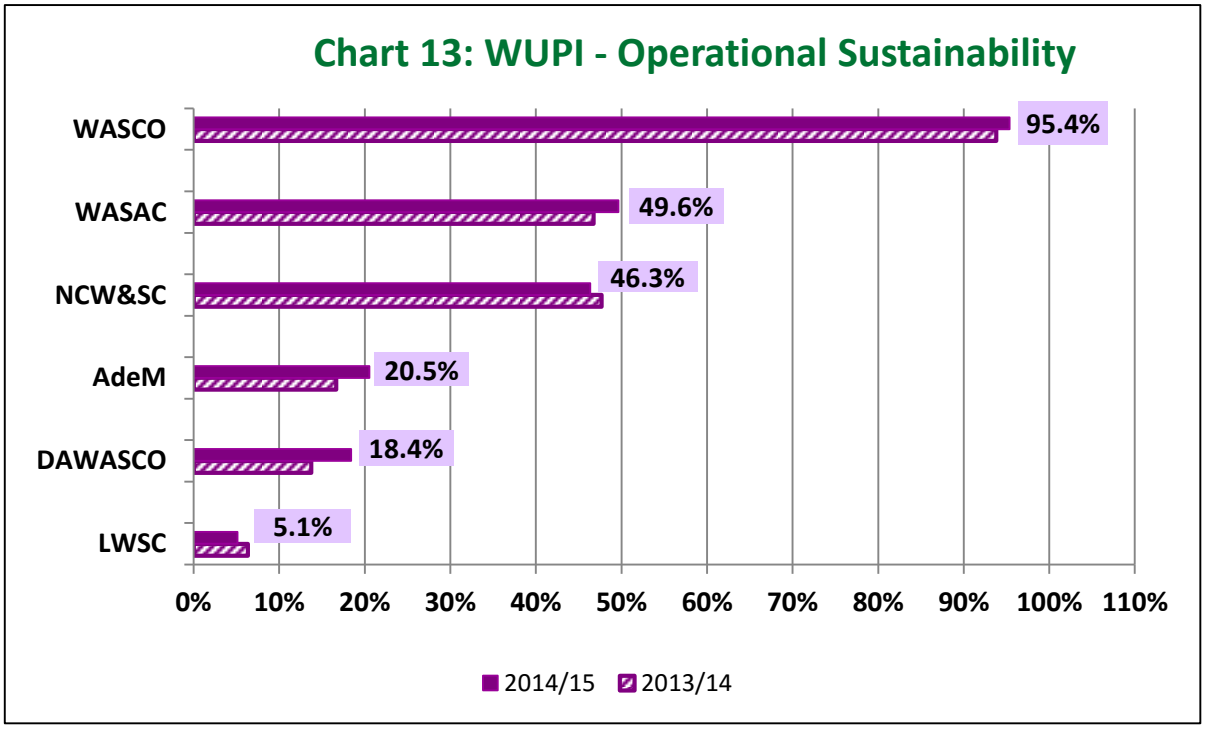
Table 12: Non Revenue Water in terms of Length of Network and Connections

Utility	Length of Network	Water Production	Connections	Non Revenue Water		
				%	m^3/km/day	m^3/conn/day
LWSC	1,667	80,564,003	94,184	46.75%	61.90	1.10
WASAC	6,177	41,061,229	156,618	40.59%	7.39	0.29
NCW&SC	2,113	201,861,138	312,426	38.38%	100.45	0.68
WASCO	1,733	18,748,694	85,131	27.14%	8.04	0.16
DAWASCO	2,810	88,367,059	138,680	56.73%	48.88	0.99
AdeM	2,978	75,828,468	214,872	44.04%	30.72	0.43

WASCO had the best management of water losses in terms of percentage, length of network and customer connection. NCW&SC had the poorest management of losses in terms of length of network while LWSC was the poorest in terms of losses at customer connections.

3.4.3.4. Integrated Performance – Operational Sustainability

The WUPI Operational Sustainability as 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.



WASCO maintained the highest performance score, particularly due to its exemplary performance in all three KPIs. The rest of the Utilities were far below WASCO's score, due to undesirable performance majorly in NRW. LWSC, similar to the previous period, continued to trail bottom.

3.5 SUMMARY ANALYSIS

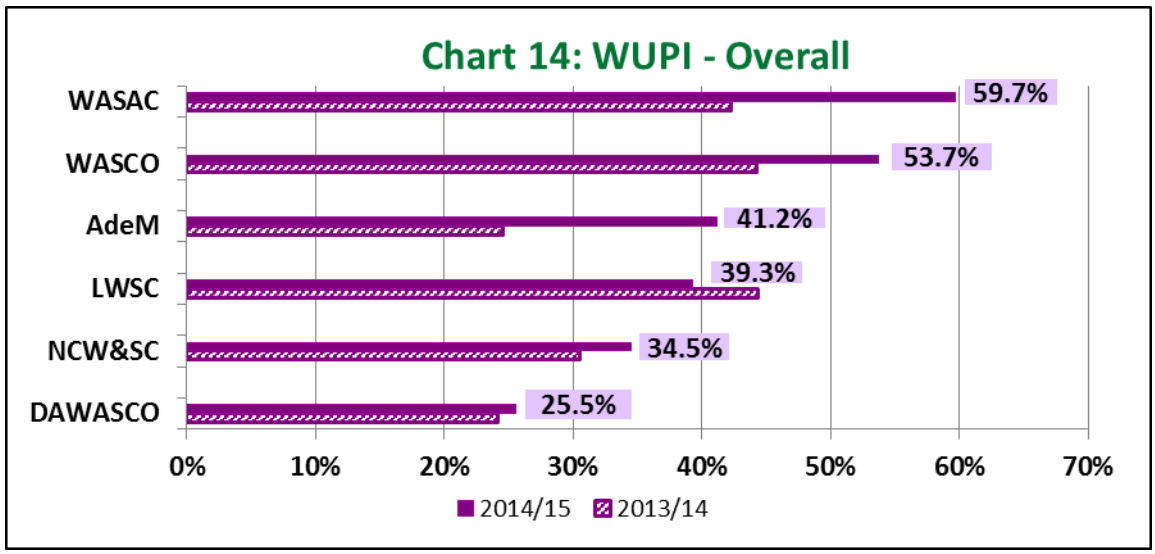
This section summarises the main findings of the performance analysis by using the single KPIs (Table 13) and the overall WUPI (Chart 14) which aggregates the three components of Quality of Services, Economic Efficiency and Operational Efficiency.

Table 13: Summary of Utility Performance

	KPI	NCWSC	LWSC	DAWASCO	AdeM	WASCO	WASAC
Quality of Services	**Water Coverage**	81.1%	82.9%	64.6%	63.5%	66.8%	85.2%
	Sewerage Coverage	48.4%	12.6%	7.8%	-	6.5%	-
	Water Quality	89.6	98.2%	75.7	100%	95.4	98.9%
	Hours of Supply	18	17	8	13	18	12
Economic Efficiency	**O&M Cost Coverage**	99%	91%	81%	99%	98%	121%
	Collection Efficiency	92%	96%	97%	97%	88%	92%
	Staff Cost vs O&M Costs	49.8%	56.2%	18.5%	29.8%	40.6%	29.5%
Operational Sustainability	**Staff/1,000 W&S Connections**	5.66	7.08	5.61	3.33	5.83	5.06
	Metering Ratio	97.3%	72.0%	86.5%	86.2%	100%	100%
	NRW	38.4%	46.8%	56.7%	44.0%	27.1%	40.6%

On overall, at least half the Utilities met the minimum acceptable benchmark in each KPI except in Sewerage Coverage, O&M Cost Coverage and NRW. The best performing KPIs were Staff/1000 Connections and Collection Efficiency where all Utilities met the acceptable benchmark. The worst performing KPIs were O&M Cost Coverage and NRW with only one Utility having met the acceptable benchmark in each case.

Finally, Chart 14 shows the ranking of the Utilities by integrating the three WUPI components into an overall WUPI. WASAC and AdeM made huge leaps in performance which displaced LWSC from 1st to 4th position and DAWASCO from 4th to 6th position.



CHAPTER 4: CONCLUSIONS

The results obtained from this exercise reveals the heterogeneity of the Utilities performance in the region. By comparing the performance of the Utilities using the different performance components (quality of service; economic efficiency; operational efficiency) an apparent imbalance in performance presents itself. For instance, a utility scoring high in the economic efficiency components does not automatically imply a similar score in the quality of service components. In fact, in some cases, there is a converse in performance.

The picture for 2014/15 indicates that the Utilities need to concert efforts to improve in the Quality of Service and Operational Sustainability components with special focus on O&M Cost Coverage and NRW respectively. The inability of most of the Utilities to attain the level of financial sustainability is a big threat to the achievement of the Sustainable Development Goals.

The indicators linked with the Quality of Services need massive investments in the water and sewerage infrastructure that would result in service extensions and increased hours of supply. Therefore, in addition to increased investment for infrastructural expansion and rehabilitation, the Utilities need to increase efficiency in the existing systems by reducing wastage, improving service quality leading to improved cash flows and maximising on consumer contribution. The improved cashflows could be leveraged in the mobilisation of resources from the private sector to accelerate access to service coverage. Also, there is need to re-examine the sector policies, as well as, legal and institutional framework in order to ensure that they provide the right incentives to Utilities to perform(extend services to the poor, build capacity and network, financial sustainability). Hence, regulators have to promote investments and to ensure value for money by developing and enforcing enabling tools.

From the comparison of performance among the Utilities, the following are the conclusions and recommendations made:

- ***NCW&SC***: the Kenyan utility presented low performance in all three components. NCW&SC needs to strive to meet the acceptable benchmarks for Water Quality, O&M Cost Coverage, Non-Revenue Water and Staff Costs. In addition, efforts must be made to improve collection efficiency, grow the revenue base and control costs.

- ***DAWASCO***: the Tanzanian utility continued to present a significant imbalance in performance, with a high performance in the Economic Efficiency component yet low performance in both the Operational Sustainability and the Quality of Service components. DAWASCO is commended for maintaining a very low proportion of staff costs although this could also signal a lowly remunerated staff. The less than average performance in quality of services under the Utility could be a major contributing factor to the low O&M Cost Coverage. DAWASCO needs a strong focus on investment to extend services and improve hours of supply with the aim of increasing the revenue

base. The Utility must urgently concert efforts to reducing NRW which is the highest among all the Utilities, in a bid to increase hours of supply.

- ***LWSC***: the Zambian utility also exhibited an imbalance in performance with moderate performance in both the Quality of Services and Economic Efficiency components but very low performance in the Operational Sustainability component. LWSC needs to focus on improving its metering ratio which has lagged far behind its peers and in tandem reduce NRW. Further efforts must be directed at controlling costs to bring down the high proportion of staff costs and improve O&M Cost Coverage.

- ***AdeM***: the Mozambican utility had a relatively good performance in Economic Efficiency but low performance in both the Operational Sustainability and Quality of Services components. AdeM needs to focus on investments for infrastructure and service extensions to increase water supply coverage and hours. The Utility seems to have a good control of costs evidenced by the low proportion of staff costs, hence it must broaden its revenue base in order to improve O&M Cost Coverage.

- ***WASCO***: the Lesotho utility exhibited the most imbalance in performance, with the highest performance in Operational Sustainability, lowest in Economic Efficiency and medium performance in Quality of Services. WASCO is commended for maintaining 100% metering and the lowest NRW. However, the Utility needs to focus on investment efforts to extend service coverage. Further effort must be directed at controlling costs in order to reduce the proportion of staff costs and improve O&M Cost Coverage. WASCO also needs to explore innovations to improving collection efficiency.

- ***WASAC***: the Rwandese utility had moderate performance in both the Quality of Services and Economic Efficiency components but medium performance in the Operational Sustainability component. WASAC is commended for posting marked improvements in all three components and maintaining a high O&M Cost Coverage. Nevertheless, the Utility must concert efforts to extending services, reducing NRW (particularly with 100% metering) and increasing hours of supply.

The harmonisation and definition of the regional standards for benchmarking has facilitated the performance comparison among the Utilities. This is an innovative process and approach at the regional level which ESAWAS intends to expand within the region and Africa in the coming years.

APPENDIX 1.DETAILED PROFILES OF UTILITIES

DAR ES SALAAM WATER AND SEWERAGE CORPORATION (DAWASCO) - TANZANIA

Water Utility

The DAWASA Act 2001 established Dar es Salaam Water and Sewerage Authority (DAWASA) as the principle water service provider in Dar es Salaam and parts of Kibaha and Bagamoyo in Coast Region. In fulfilling its obligations, DAWASA has entered into a ten (10) years Lease contract with Dar es salaam Water and Sewerage Corporation to operate water and sewerage infrastructures. In the current arrangement DAWASA is the asset owner responsible for capital investment while DAWASCO is the operator of water and sanitation services; the Lease contract was extended for a year to June 2016 to allow for a restructuring process. DAWASA/DAWASCO reports functionally to the Ministry of Water and Irrigation.

The total population in the DAWASCO operation area is 4,592,454 people. The sources of water are Ruvu river with intakes at Mlandizi and Bagamoyo, River Kizinga with intake at Mtoni and boreholes located in various areas within the service area. The utility has a sewerage system with sewer line of 265km long. The system has eight (8) waste water stabilization ponds, out of which only two (2) receive cesspits emptier.

General Data About Water Utility

Abbreviation	DAWASCO
Start of Operations	2005
Number of Towns in Operation Area	3
Total Population in Operation/Service Area	4,592,454
Total Water Connections	142,960
Total Waste Water/Sanitation Connections	21,742
Total Production/year	88,367,060m^3
Total Staff	924
Annual O&M Costs	TZS 55,667,000,000
Annual Water and Sewerage billing	TZS 45,105,977,119
Annual Water and Sewerage Collections	TZS 43,803,527,761

Tariff Structure

**Exchange Rate: TZS1,844.06 to 1US$ (2015)*

Domestic			
Tariff Band	**0-5 m3**	**>5m3**	**Kiosks**
TZS/m^3	624	1,119	20/20Litres

AVERAGE WATER TARIFF	
Category	**Non-Domestic**
TZS./m^3	1,119

Note :

- 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
- The sewerage tariff is TZS 275/m^3
- The flat for sewerage tariff is 80% of the water tariff

ÁGUAS DA REGIÃO DE MAPUTO (ADEM)- MOZAMBIQUE

Water Utility

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

In 2010, after evaluation by the Government of the Delegated Management Framework implementation process, FIPAG (Water Asset Management Found) acquired the majority shareholder position of AdeM. Functionally, AdeM reports to the Ministry of Public Works.

The total population in the AdeM operation area is 2,170,604 people. The main source of water is the Umbeluzi River. The Utility does not provide sewerage services.

General Data About Water Utility

Abbreviation	AdeM
Start of Operations	2010
Number of Towns in Operation Area	3
Total Population in Operation/Service Area	2,170,604
Total Water Connections	214,872
Total Waste Water/Sanitation Connections	N.A
Total Production/year	75,828,468m^3
Total Staff	831
Annual O&M Costs	MT 1,285,347,699
Annual Water Billing	MT 1,270,652,000
Annual Water Collections	MT 1,226,430,000

Tariff Structure

**Exchange Rate: MT38.65 to 1US$ (2015)*

DOMESTIC				
Tariff Band	**Service Availability rate *(Fixed rate)***	**0 -5 m^3 *(Fixed value)***	**5m^3-10m^3**	**Above 10m^3**
	MT/Month	**MT/Month**	**MT/m^3**	**MT/m^3**
	60.00	73.00	19.00	29.50

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	14.60	781.25	1,562.50	31.25

Note :

- There is a social consumption up to 5m^{3}and all domestic tariffa 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 10% 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 handling 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 2,645,067 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 (August)
Number of Towns in Operation Area	14
Total Population in Operation/Service Area	2,645,067
Total Water Connections	156,618
Total Waste Water/Sanitation Connections	Not applicable
Total Production/year	41,061,229
Total Staff	793
Annual O&M Costs	FRW10,985,630,216
Annual Water and Sewerage billing	FRW13,345,997,558
Annual Water and Sewerage Collections	FRW12,259,065,111

Tariff Structure

**Exchange Rate: FRW702.75to 1US$ (2015)*

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	15Frw/ 20LJerrycan

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 fixed yet since no centralized sewerage system

LESOTHO WATER AND SEWERAGE COMPANY (WASCO) - LESOTHO

Water Utility

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.

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.

The total population in the WASCO operation area is 509,803 people.

Industries and commercial premises, particularly in Maseru, use about 64% of the water produced, and domestic customers consume 36%.

General Data About Water Utility

Abbreviation	WASCO
Start of Operations	2010
Number of Towns in Operation Area	10 towns plus 6 designated urban areas
Total Population in Operation/Service Area	509,803
Total Water Connections	85,131
Total Waste Water/Sanitation Connections	6,593
Total Production/year	18,748,694 m^3
Total Staff	535
Annual O&M Costs	M201,826,000
Annual Water and Sewerage billing	M198,666,000
Annual Water and Sewerage Collections	M175,628,000

Tariff Structure

**Exchange Rate: M11.07 to 1US$ (2015)*

DOMESTIC

Tariff Band	0-5kl	> 5-10kl	> 10-15kl	>15 kl	Standpipe
M./m^3	4.51 *(fixed)*	7.64	13.42	18.50	6.11 (flat rate)
Standing Charge	21.93	40.90			

NON-DOMESTIC

Category	Institutions	Non-Domestic	Churches/Schools
M./m^3	12.21	12.21	12.21
Standing Charge	393.39	272.35	196.70

Note:

- Sewerage charged on 85% of water consumed at M9.70
- Water closet customers charged on 60% of water consumed at M9.70

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 3,891,490. The sources of water are four namely Thika dam with a storage capacity of 70 million m^3, Ruiru dam with a storage capacity of 2.9 million M^3, Sasumua dam with a storage capacity of 15.9 million $m^3$and Kikuyu Springs whose storage capacity is 10 million m^3.The four water sources jointly produce 550,000 m^3/day for the city against its demand of 750,000m^3/day. The utility has two waste water treatment plants, Dandora with a treatment capacity of 180,000m^3/day and Kariobangi with a treatment capacity of 80,000m^3/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	3,891,490
Total Water Connections	312,426
Total Waste Water/Sanitation Connections	208,554
Total Production/year	201,862,138m^3
Total Staff	2,948
Annual O&M Costs	KSHS 7,225,765,000
Annual Water and Sewerage billing	KSHS 7,175,479,000
Annual Water and Sewerage Collections	KSHS 6,583,548,000

Tariff Structure

**Exchange Rate: KSHS92.75 to 1US$ (2015)*

WATER TARIFF						
Category	**Domestic**	**Institutions**	**Commercial**	**Industrial**	**Water to Kiosks for Resale**	**Bulk Water to WSPs for Resale**
Consumption Block	**KSHS./m^3**					
0-6	34	34	34	34	20	30
7-60	53	53	53	53		
>60	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 M^3
- Bulk meter for gated communities is at Kshs 53 per M^3

LUSAKA WATER AND SEWERAGE COMPANY(LWSC) - ZAMBIA

Water Utility

Lusaka Water and Sewerage 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 Local Government and Housing has principal oversight of all WSS Utilities in Zambia.

The total population in the LWSC operation area is 2,246,825. The main sources of water are the Kafue River situated about 65km from Lusaka town, Chongwe River and Zambezi River and over 100 boreholes situated in various areas. 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	2,246,825
Total Water Connections	94,184
Total Waste Water/Sanitation Connections	31,388
Total Production/year	80,564,003 m^3
Total Staff	889
Annual O&M Costs	ZMW235,284,848
Annual Water and Sewerage billing	ZMW215,179,139
Annual Water and Sewerage Collections	ZMW206,777,257

Tariff Structure

**Exchange Rate: ZMW8.65 to 1US$ (2015)*

DOMESTIC						
Tariff Band	**0 - 6**	**6 - 30**	**30 - 100**	**100 - 170**	**+170**	**Kiosks/ Public Tap**
Lusaka - K./m^3	3.03	3.63	4.11	4.84	5.93	2.50
Kafue, Chongwe, Luangwa- K./m^3	1.94	2.30	2.54	2.78	3.15	
*Chirundu- K./m^3	2.40	3.60	4.30	5.70	5.70	

NON-DOMESTIC			
Tariff Band	**0-30**	**30-170**	**+170**
Lusaka - K./m^3	5.27	7.28	8.28
Kafue, Chongwe, Luangwa- K./m^3	4.14	6.15	7.02
*Chirundu- K./m^3	4.77	5.64	6.90

Note :

*****Town was under another Utility before changes in administrative provincial boundaries

- Flat rates for non-metered customers vary per customer category (i.e High, Medium and Low)
- Fixed monthly meter charge is K8 for domestic and K20 for non-domestic.
- The sewerage tariff is 30% and 45% of water for domestic and non-domestic respectively
- In 2007 the Utility was awarded a sanitation surcharge at 2.5% of water bill levied on all customers (except kiosks and stand pipes) specifically for sanitation service extension and improvements.

APPENDIX 2. 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 on 2012. The WUPI used at CRA has been harmonized for this regional comparison. The WUPI allows to measure 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 KPIs normalisation. The aim of the KPIs normalization is to transform 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, all of which are 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, it was pre-established the minimum and maximum threshold values for each indicator to perform the indicator normalisation (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:

$$WUPI_{quality\_service,\ i} = \frac{\sum_{k=1}^{k=4} w^*_k \cdot I_{k,\ i}}{\sum_{k=1}^{k=4} w^*_k} \qquad WUPI_{economic\_efficiency,\ i} = \frac{\sum_{k=5}^{k=7} w^*_k \cdot I_{k,\ i}}{\sum_{k=5}^{k=7} w^*_k}$$

$$WUPI_{operatinoal\_sustainability,\ i} = \frac{\sum_{k=8}^{k=10} w^*_k \cdot I_{k,\ i}}{\sum_{k=8}^{k=10} w^*_k} \qquad WUPI_{overall,\ i} = \sum_{k=1}^{k=10} w^*_k \cdot I_{k,\ i}$$

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*.

APPENDIX 3: COMPOSITION OF ESAWAS TECHNICAL COMMITTEE FOR BENCHMARKING

Name	Position	Task
Mutaekulwa Mutegeki	Director of Water and Sanitation, Energy and Water Regulatory Authority, Tanzania	Data Collection, Analysis, Reporting
Jacques Nzitonda	Director of Water and Sanitation Regulation, Rwanda Utilities Regulatory Authority, Rwanda	Data Collection, Analysis, Reporting
Peter Njaggah	Director-Technical Services, Water Services Regulatory Board, Kenya	**Chairperson – Technical Committee** Data Collection, Analysis, Reporting
Thuso Ntlama	Manager- Economic Regulation, Lesotho Electricity and Water Regulatory Authority, Lesotho	**Secretary – Technical Committee** Data Collection, Analysis, Reporting
Falla Seboko	Technical Manager -Water and Sanitation Lesotho Electricity and Water Regulatory Authority, Lesotho	LEWA Proxy
Chola Mbilima	Commercial and Financial Inspector, National Water Supply and Sanitation Council, Zambia	Data Collection, Analysis, Reporting
Anselmo Munhequete	Operations Technician-Northern Region, Water Regulatory Council, Mozambique	Data Collection, Analysis, Reporting
Yvonne Magawa	Executive Secretary, ESAWAS Regulators Association	Team Coordinator-Consolidating data and Logistics