

Water and Development Congress & Exhibition 2023

10-14 December 2023 | Kigali, Rwanda



UTILITY LEADERS FORUM

12 DECEMBER 2023

inspiring change

Chair of the Utility Leaders Forum



Dr. Rose Kaggwa
Director Business and Scientific
Services, NWSC Uganda

FORUM OUTLINE

❖ Opening and Welcome Messages

- Prof. Kalanithy Vairavamoorthy, IWA Executive Director, UK
- Dr. Eng. Silver Mugisha, Managing Director of the National Water and Sewerage Corporation, Uganda

❖ **SESSION I:** Water Utilities and the Digital World

❖ **SESSION II:** Accelerating Adoption and Scaling of Citywide Inclusive Sanitation - What is Working?

❖ **SESSION III:** Strategies for Becoming Climate Smart and Securing Financial Support for Utilities

❖ Highlights of the forum

Welcome Remarks



Prof. Kalanithy Vairavamoorthy
Executive Director, IWA

Welcome Remarks



Dr. Eng. Silver Mugisha
President, AfWASA



Water Utilities and the Digital World

SESSION 1

Keynote Speech 1

**Digital and Technology solutions and use
that drive operational performance
improvements**



Dr. Eng. Silver Mugisha
Managing Director, NWSC



Digital and Technology solutions and use that drive operational performance improvements

Dr.Eng. Silver Mugisha, MD NWSC Uganda



Cloud computing

Internet of things

Digitalization of everything

Mobile devices & anywhere access

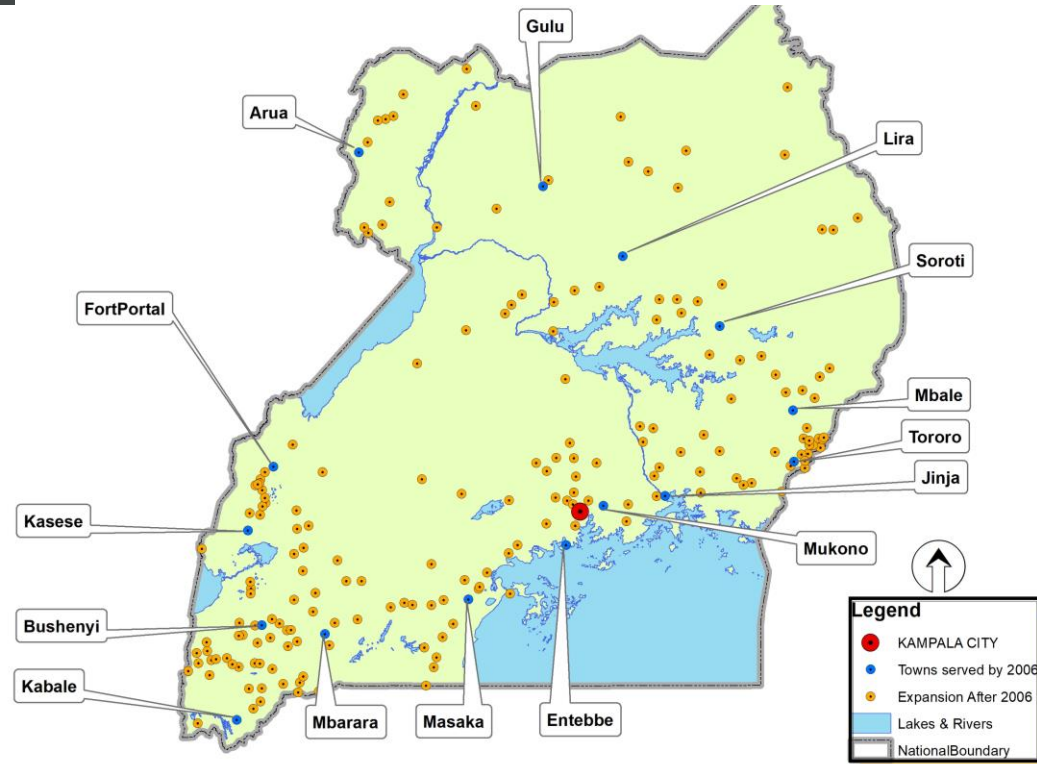
Collaboration & social networking

Technology is rapidly shifting

..

*“Things have never moved so fast....
Things will never be this slow again”*

NWSC IN A HISTORICAL PERSPECTIVE



Its a Public Corporation wholly owned by the Government of Uganda, established in 1972



Mandate: provide water and sewerage services in Urban Areas on commercial and financially viable basis



NWSC operates in 273 towns/urban centers in Uganda



Vision: *To be the Leading Customer Service Oriented Utility in the World*



Mission: *To Sustainably and Equitably provide Cost Effective, Quality Water and Sewerage Services to the Delight of All Stakeholders, while Conserving the Environment*

NWSC, a Public Utility with a vision to be the Leading Utility in the World...

MEASURES OF UTILITY OPERATIONAL SUCCESS



Performance Indicator	2013	2023	2028
Number of NWSC towns (No.)	27	273	350
Population Served (No.)	4,500,000	19,000,000	26,000,000
Total Connections (No.)	317,292	930,000	1,250,000
Network Length (km)	5,670	22,629	32,000
Water Production (MLD)	238	469	650
Assets (USD million)	260	1,185	1,632

SUCCESS MEANS THE UTILITY HAS SUFFICIENT RESILIENCE IN THE FOLLOWING RESPECTS;

A1: Generation of a quality product and selling it to the delight of customers



SUCCESS MEANS THE UTILITY HAS SUFFICIENT RESILIENCE IN THE FOLLOWING RESPECTS;



A2: Have in place robust systems and processes to support the entire production chain

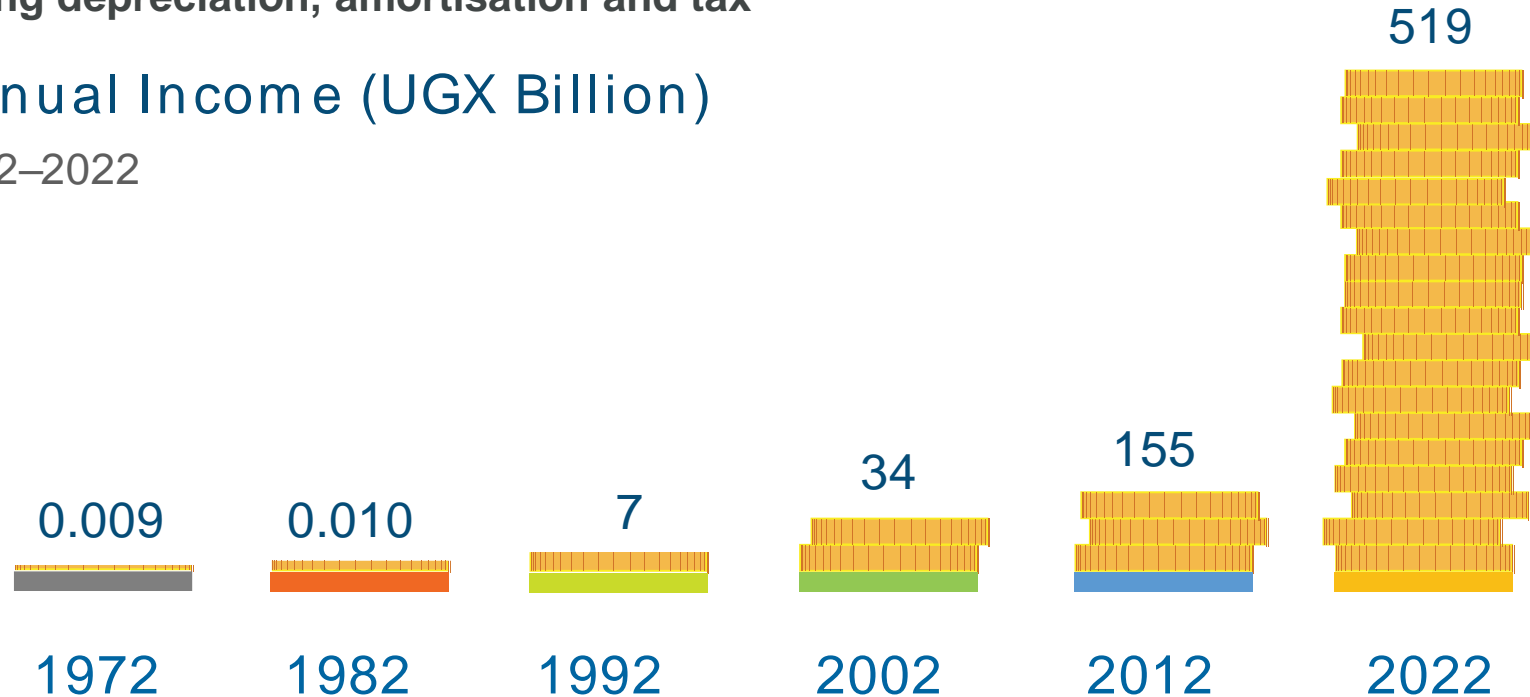


SUCCESS MEANS THE UTILITY HAS SUFFICIENT RESILIENCE IN THE FOLLOWING RESPECTS;

A3: The utility has sufficient “internal cash” to support all operational activities including depreciation, amortisation and tax

Annual Income (UGX Billion)

1972–2022



SUCCESS MEANS THE UTILITY HAS SUFFICIENT RESILIENCE IN THE FOLLOWING RESPECTS;....

A4: The utility has a comprehensive support human capital asset compliment



SUCCESS MEANS THE UTILITY HAS SUFFICIENT RESILIENCE IN THE FOLLOWING RESPECTS;....

A5: The governance framework is supportive, predictable and consistent



NWSC TECHNOLOGICAL AND DIGITAL INFRASTRUCTURE

Smart
WTPs

Smart Data
management
& intelligent
reporting

**NWSC
SMART
Utility
Vision**



Smart
Networks

Smart
operation
al systems

Smart
Customer
and
stakeholder
engagement
platforms

Smart
Financial
Manageme
nt Systems



IN-HOUSE VS
OUTSOURCED
SOFTWARE DEVELOPMENT

**In-House
Solution/software
development**

NWSC TECHNOLOGICAL AND DIGITAL INFRASTRUCTURE

In-house Information and Communication Technology (ICT) Innovations:

- ❑ **E-water Payment solution** - ease payment of bills using banks, mobile money services and other payment methods
- ❑ **NWSC Billing System** - internally developed which reduced costs in form of annual licenses, provides for on spot billing
- ❑ **NWSC Mobile App** - The application is flexible for use by customers to ensure quick response to customer complaints.
- ❑ **Customer Relationship Model (CRM)** - System to instantly reflect comments made by the marketing Assistants while carrying out on-spot billing in the field
- ❑ **Skype for business** - The tool has improved staff collaboration and Swift support between Head Office and Areas.
- ❑ **Document management and sharing system for the Board** - The system will facilitate circulation and sharing of documents.
- ❑ **E-inventory systems** - Inter-Area stock transfers
- ❑ **E- Procurement System** - Electronic procurement
- ❑ **E-Bill Delivery system**
- ❑ **SCADA System**



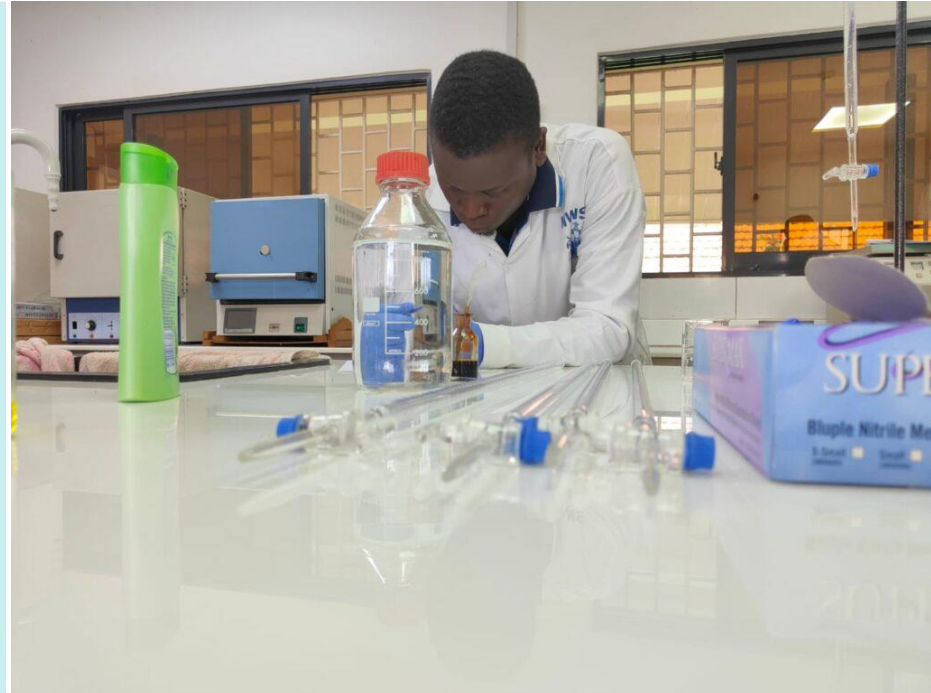
NWSC TECHNOLOGICAL AND DIGITAL INFRASTRUCTURE

A1: scada systems, billing system, mapkit etc



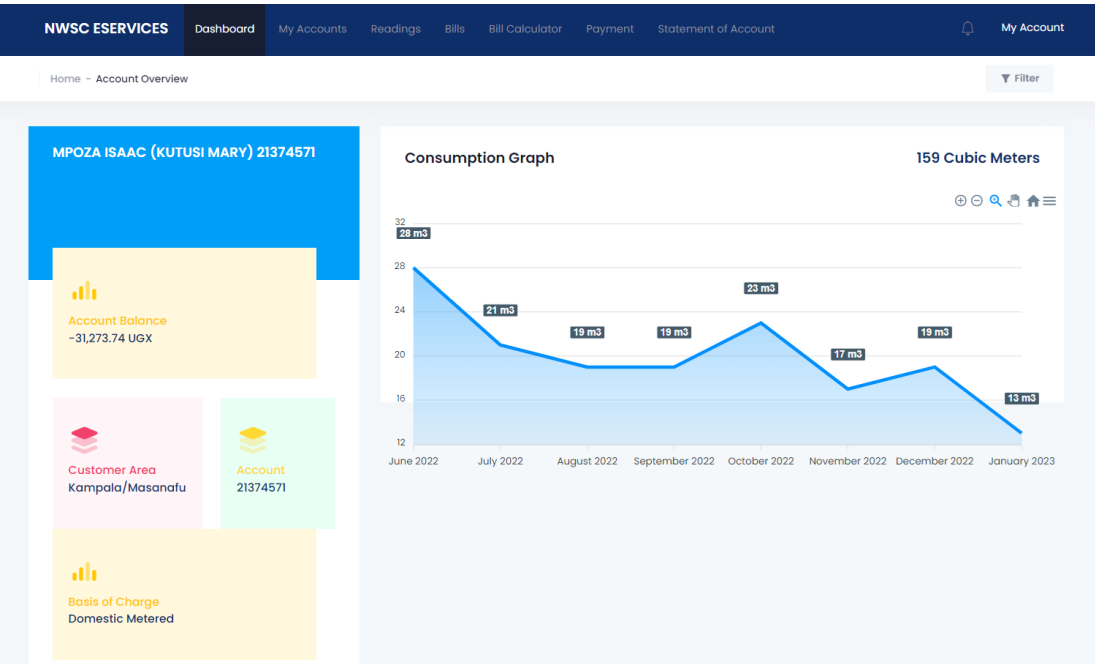
NWSC TECHNOLOGICAL AND DIGITAL INFRASTRUCTURE ...

A2: e-systems in procurement, inventory, records management, water quality management etc



NWSC TECHNOLOGICAL AND DIGITAL INFRASTRUCTURE ...

A3: e-payment, online tracking systems for CE and RR, iscala etc



The NWSC Mobile App

What you can do:

- Predict your Bill
- Check Balance
- Pay Bill
- Download Statement
- Report a fault
- Locate a Branch



E-WATER bills payment
Mobile Money, Partner Banks, Direct Debit

Bank

Mobile Money services Payment options, M-pesa, Mtn mobile money, Airtel Money and PayWay.

Partnering Banks: Bank of Baroda, Bank of Africa, Barclays Bank, Centenary Bank, Citi Bank, DFCI Bank, Diamond Trust Bank, Eco Bank, Equity Bank, Fina Bank, Finance Trust Bank, KCB, Orient Bank, Post Bank, Stanbic Bank, Standard Chartered Bank, Trust Bank and UBA.

Direct Debit: An instruction from you to your bank authorizing the corporation to collect varying amounts from your account in payment of water bills.

E-WATER bills payment
The e-water bill payment system consists of payment options over the counter at partner Banks, Mobile Money services, Direct Debit mandate, mobile banking options and PayWay.

NWSC TECHNOLOGICAL AND DIGITAL INFRASTRUCTURE ...

A4: e-payroll, e-appraisal, HRMS, MTO



NWSC HRMS HUMAN RESOURCE MANAGEMENT SYSTEM

SHAFIQ LUTAAYA
IT Officer Applications Development

Dashboard Control panel

- 9 New Staff this Month
- 49 Leave Applications this Month
- 10 Birthdays Today
- 190 Gratuity this Month

Staff Employment

New Staff Statistics | 2023 Monthly Employment Trends

Wednesday, December 6, 2023

Employee Gender Composition Graph

Female 1,536

Percentages: 67.59% (Female), 32.40% (Male)

E-APPRAISAL

Management Dashboard

SETTING

- SETTING
- APPRAISALS
- STAFF APPRAISALS
- TEMPORARY STAFF

REPORTS

- REPORTS

VIEW APPRAISAL

EMPLOYEE SUMMARY:

- EmpID: NWSC4325
- Active?: YES

SUPERVISOR/APPRaiser SECTION:

- Supervisor/appraiser Name: --- Select Supervisor/ Appraiser---

PEER APPRAISER SECTION:

- Peer Appraiser Name: --- Select Peer Appraiser---

OVERALL EMPLOYEE RATING


- Average Percentage Rating: 100

ACKNOWLEDGEMENT

- I agree with this performance evaluation


NWSC TECHNOLOGICAL AND DIGITAL INFRASTRUCTURE ...

A5: e-boards, digital communication



NWSC E-BOARDS

Home Help

SUSAN KATUSIIME
SignOut



eBoards Mobile

NWSC Board Document Center


Directory Navigation
In Directory: Files & Folders
Paper View

HOME / PAPERS / VIEW BOARD PAPERS

BOARD PAPERS

Search By Committee: --Select Committee--

+	2021_7	BOARD INFORMATION PAPER TO THE HR COMMITTEE	12/14/2021 11:28:43 AM	APPROVED	View	Delete	HR COMMITTEE
+	2021_6	BOARD INFORMATION PAPER TO THE TECHNICAL COMMITTEE	12/13/2021 12:07:58 PM	NEW	View	Delete	TECHNICAL COMMITTEE
+	2021_5	Performance Report for PCD	12/11/2021 9:47:49 PM	NEW	View	Delete	RISK MANAGEMENT COMMITTEE
+	2021_3	UPDATE ON CAPITAL DEVELOPMENT PROJECTS JULY – SEPTEMBER 2021 PERIOD (QUARTERLY REPORT)	12/10/2021 9:19:28 AM	APPROVED	View	Delete	RISK MANAGEMENT COMMITTEE
+	2021_2	Testing Paper Upload 2	11/26/2021 6:08:32 PM	ONHOLD	View	Delete	FULL BOARD

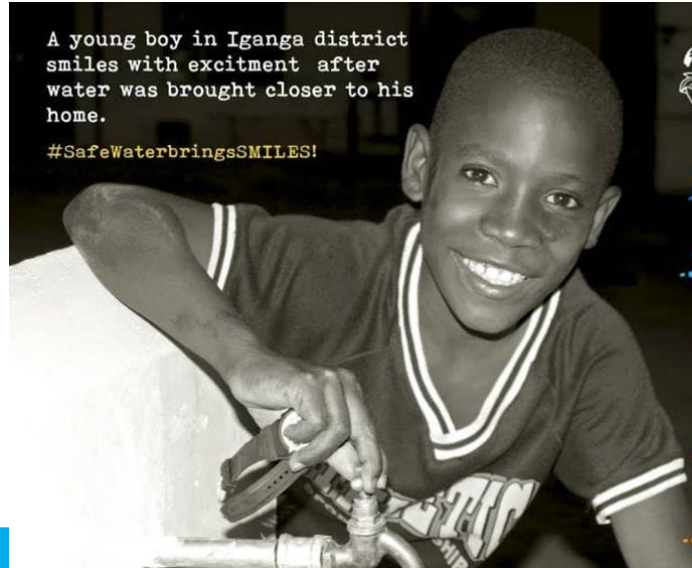
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Version 1



Technology is an important element in progress. See, we can always do something better. We can improve water technology, or energy efficiency. There is always progress forward using technology and that's where innovation starts.

— Santiago Calatrava —

Conclusion



A young boy in a dark t-shirt with white stripes on the sleeves is smiling broadly while turning a water tap. The background is dark.

A young boy in Iganga district smiles with excitement after water was brought closer to his home.
#SafeWaterbringsSMILES!

National Water & Sewerage Corporation

- waterug
- @nWSCUG
- National Water & Sewerage Corporation
- @nWSCUG
- www.nwsc.co.ug

Thank You
For Listening



Keynote Speech 2

Harnessing digitalization and technology:
Are utilities ready for the challenge



Dr. Sandile Mbatha
Senior Manager, eThekweni's
Municipality

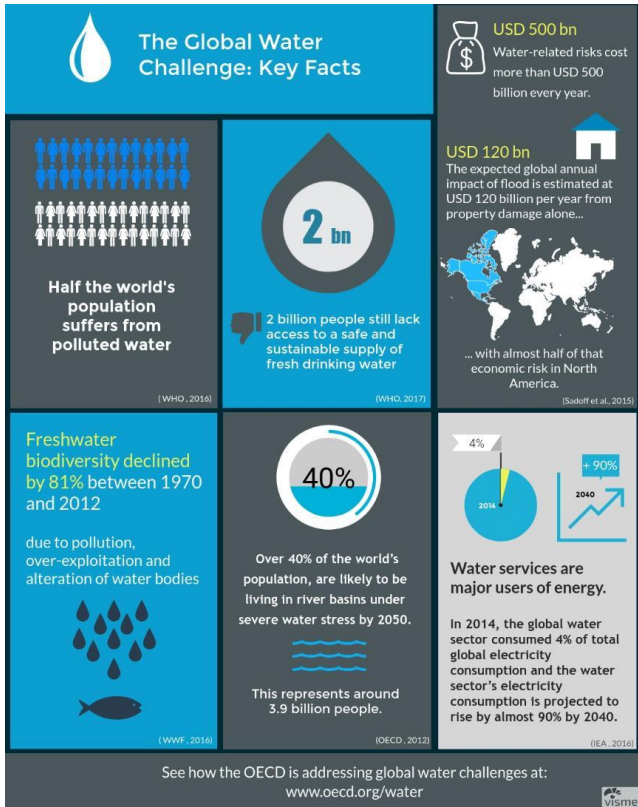


Harnessing the power of data and digital tools to improve efficiencies in the water sector: Are utilities ready for the challenge?

Dr Sandile Mbatha - eThekweni Municipality



- Global water challenges
- Can utilities survive without taking advantage of data and digital tools?
- Data and digital tools as enablers
- Governance ecosystem
- Lessons from Cities



- Rapid urbanisation
- Climate change impact
- Non-revenue water
- System inefficiencies
 - Declining levels of integrity of the reticulation system
- Aging infrastructure
 - Leaks
 - Unreliable service access
- Poor billing and collection system



CAN UTILITIES AFFORD TO IGNORE THE POWER OF DATA AND DIGITAL TOOLS?



www.strathub.durban.gov.za

- If they do, they risk:
 - Becoming absolute
 - inefficient
 - unsustainable
 - Unable to fulfil their primary mandate
 - Not viable businesses

- What it enables
 - Operational efficiency
 - Efficient resource allocation
 - Improved decision-making
 - Predicting user patterns

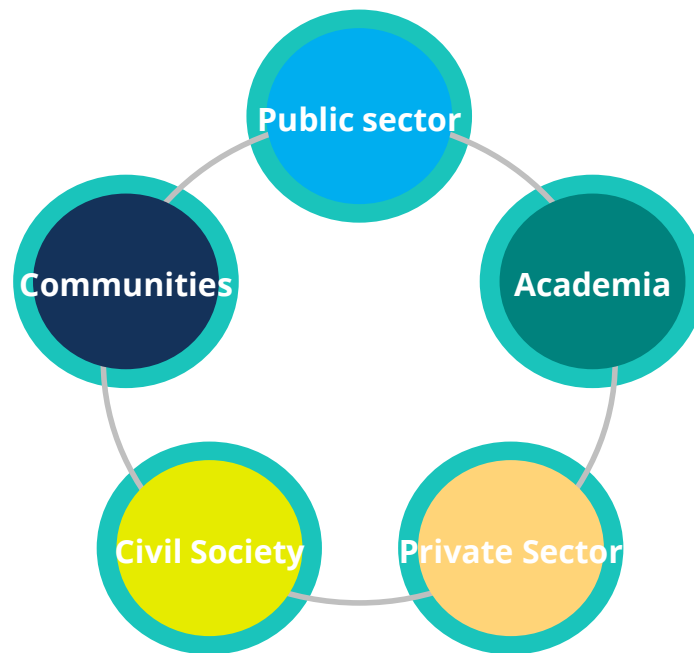
- What digital tools enable?
 - Optimization of water resource management
 - Detection of leaks and reduction of non-revenue water
 - Enhance overall sustainability of water businesses
 - Strengthens collaboration among stakeholders in the water management ecosystem

ENABLING CO-GOVERNANCE

- Data allows utilities
 - Under understand who they serve
 - What is the context they operate under
 - What are the needs of their stakeholders
 - How to meet these needs in an innovative and efficient manner
- What happens when data and digital tools are used properly?
 - It facilitates co-governance
 - Empowers stakeholders to meaningfully participate in the water management process
 - Fosters inclusive and equitable access



**“Leaving no one behind” – Water Management
is a collective responsibility**



OUR SINGLE SOURCE OF TRUTH



- Make sense of existing city-level data
- Enhance inclusive data collection
- Extract value from data for public good
- Build a data-driven culture for decision-making processes
- Position data as critical infrastructure for:
 - Improved operational efficiencies
 - Improved service delivery
 - Targeted resource allocation
- Supports a responsive city that promotes co-governance



Data Visualisation

Geospatial / Non geospatial



Cloud Data Warehousing

Data hosting, Data visualisation ready and
modelled datasets, Data security



Digitisation / Automation

Web forms, data automation



eThekweni Road Crashes Dashboard

eThekweni Flood Impact Dashboard

Human Capital Dashboard

Social Media Sentiment Analysis Dashboard

Ward Profiles Dashboard

Catalytic Projects Dashboard

eThekweni Service Provider Dashboard

Property Trends Dashboard

eThekweni Inventory Dashboard

eThekweni State of Safety Dashboard













Liveability Index

eThekweni Ward GDPs

Explore our Dashboards



Here we host a series of dashboards that provide insights on various functions and operations of the municipality. We have provided differentiated access to the dashboards. Some are primarily for internal use (eThekweni Municipality officials) and others are available to the public. Making these tools available to the public supports our objective of becoming a responsive city and promote co-governance. We want to improve citizen engagement and provide our communities with evidence-based state of the world upon which they can base their own decisions. Evidence-based participatory governance improves our communities' ability to make decisions, contribute meaningfully to political processes and hold us accountable.

 <p>eThekweni Road Crashes Dashboard eThekweni Road Crashes dashboard provides a statistical and specialized context of road...</p> <p>Explore</p>	 <p>eThekweni Municipality Flood Impact Dashboard This dashboard provided real-time reporting during the April and May 2022 flooding disaster.</p> <p>Explore</p>	 <p>eThekweni State of Safety Dashboard One of eThekweni's key strategic imperatives is to become a safer city. The availability of high...</p> <p>Explore</p>	 <p>eThekweni Human Capital Dashboard The human capital dashboard provides insights on critical trends such as staff retention...</p> <p>Explore</p>
 <p>eThekweni Social Sentiments Dashboard The city through this dashboard can acquire, identify, organize, and analyse public sentiments.</p> <p>Explore</p>	 <p>eThekweni Ward Profiles Dashboard This ward profiles dashboard provides detailed socio-economic information for each...</p> <p>Explore</p>	 <p>eThekweni Catalytic Projects Dashboard This dashboard maps Catalytic projects by region and provides information on the number of...</p> <p>Explore</p>	 <p>eThekweni Property Trends Dashboard On this dashboard we analyse residential property market trends along the C3 corridor...</p> <p>Explore</p>
 <p>eThekweni Stores Inventory Dashboard The purpose of this dashboard is to increase efficiencies around stock management and critical...</p> <p>Explore</p>	 <p>eThekweni Service Provider Dashboard eThekweni conducts its business through the support of thousands of service providers...</p> <p>Explore</p>	 <p>eThekweni Spatialised Economic Analysis The Spatialised Economic Analysis dashboard is a platform where users can interact with...</p> <p>Explore</p>	 <p>eThekweni Ward GDPs Dashboard The eThekweni Ward GDP dashboard provides an analysis of economic performance data...</p> <p>Explore</p>



1. OPEN SDGs

2. GREENBOOK METROVIEW

POPULATION	WOMEN	BOYS
UNWEIGHTED POPULATION	NUMBER OF POPULATION	PERCENTAGE OF POPULATION
Very Low Likelihood	47 227	2,2%
Low Likelihood	1 139 242	26,4%
Medium Likelihood	1 139 242	26,4%
High Likelihood	70 500	1,6%
Very High Likelihood	70 500	1,6%

3. LIVEABILITY INDEX

Suburb ADAMS RURAL

Overview

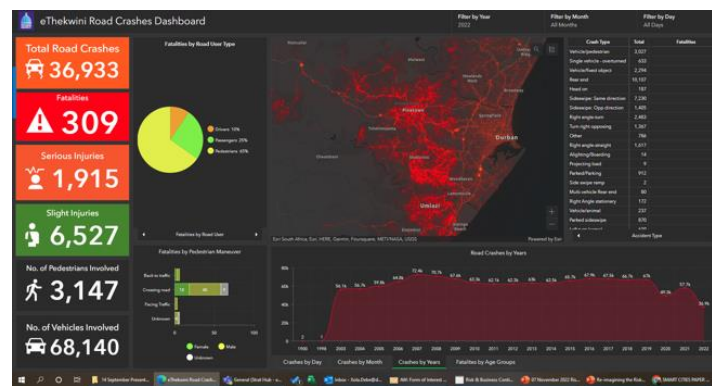
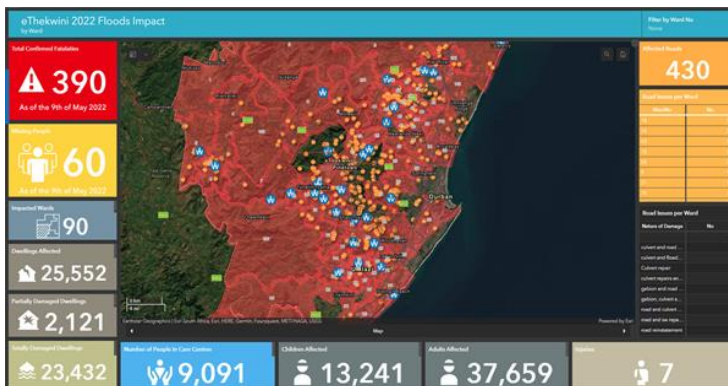
Suburb Liveability Information

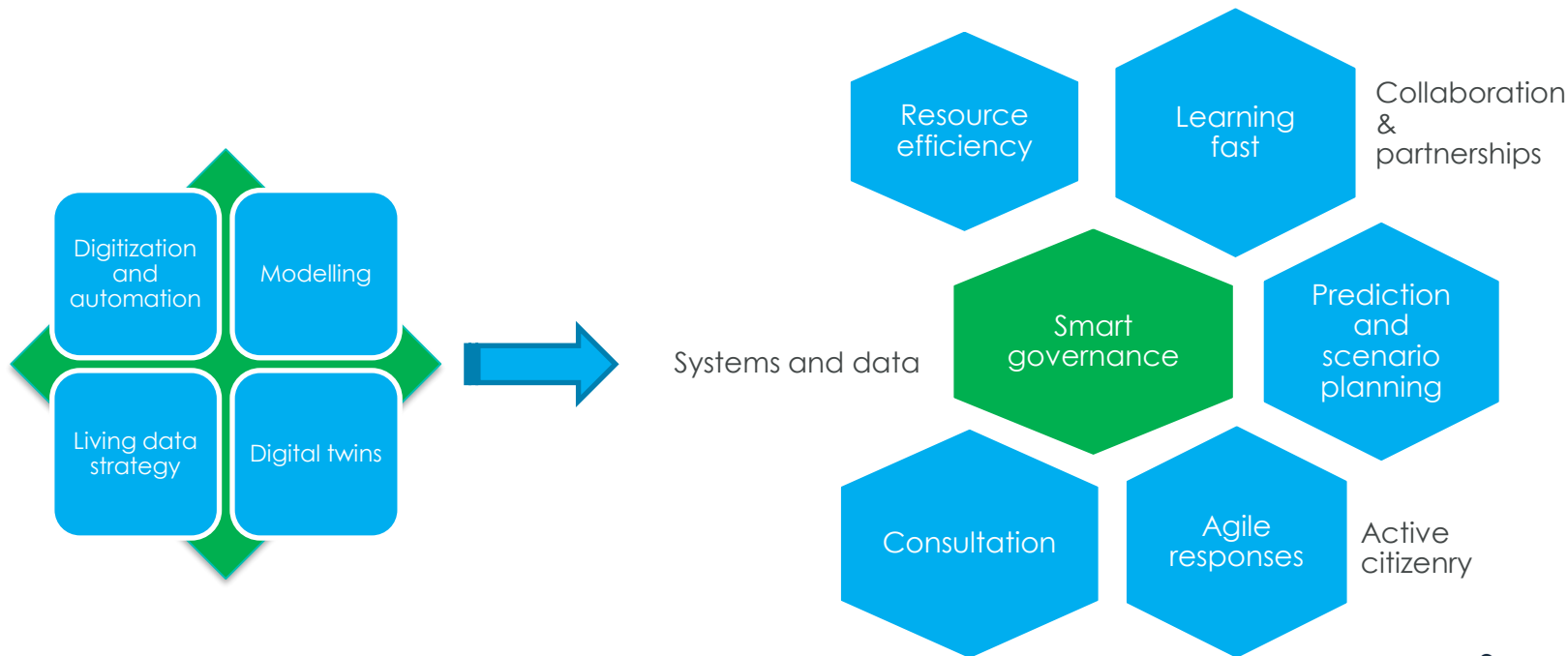
Category Scores

ANSWERING THE 'SO WHAT QUESTION?'



- Cultivating an insight driven decision-making culture
- Integrating city-level data for enhanced operational efficiencies
- Optimizing co-governance through providing data to our citizens and stakeholders







NGIYABONGA

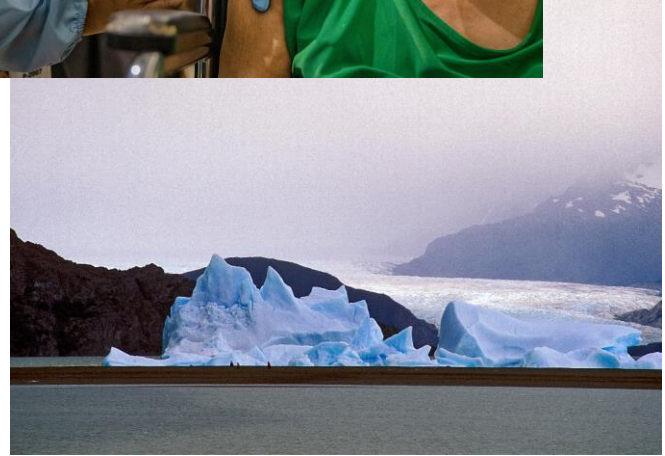
Utilities Benchmark: A Snapshot

**“Management Practices are also
Good Predictors of Performance”?**

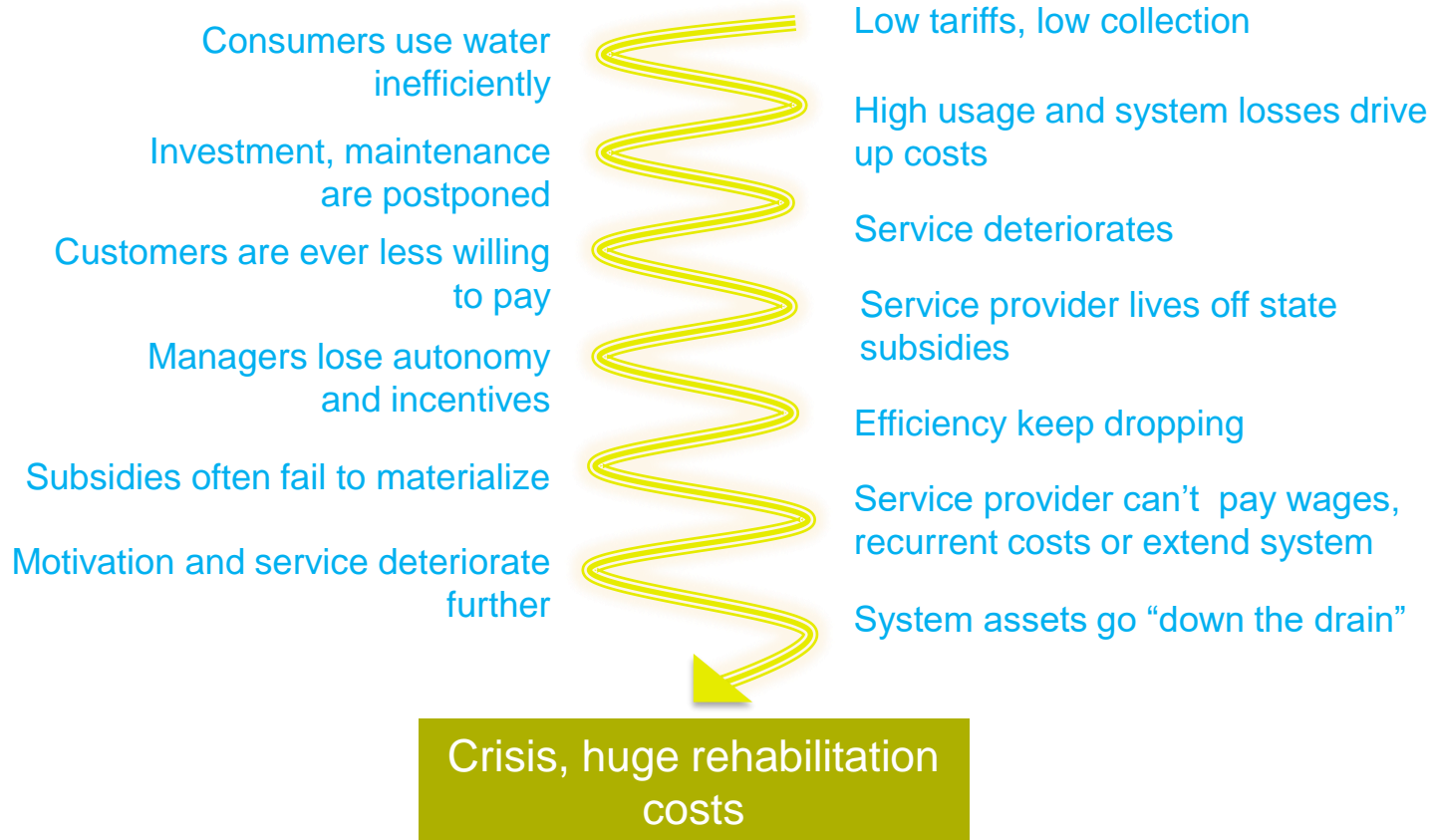


Marco Antonio Aguero
Senior WSS Specialist (World Bank - iBNET)

Water Utilities Today: The responsibilities are huge



The slope for many utilities is slippery



How can utilities **get off** that slippery slope...?.

What “makes” a well performing Water & Sanitation Utility?

Input

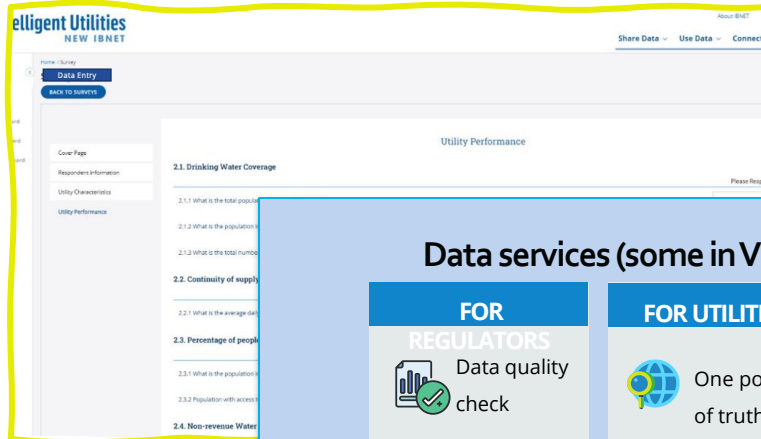
- Investment
- Design
- Technology
- Infrastructure
- Staff
- Mandate/Policy
- Ownership Structure









Value Created

- Hours of Service
- Service Coverage
- Water Quality
- Customer Service
- Limited Losses (NRW)

When IBNET was reviewed: Introducing Management Practices was a significant innovation



Data services (some in V2)

FOR REGULATORS	FOR UTILITIES
 Data quality check	 One point of truth
 Country Reports	 Match Point
 Pages for Regulators	 Point to Improve

Join Communities of Practice

Cross linkages with World Bank operations (Projects aiming at WSS providers)

1. **This is a *Service* for Utilities:** Dashboards for easy-to-check insights and comparisons (“Data Services”)
2. **Less is more:** Only 15 Key Performance Indicators
3. **Management matters:** Self-Assessment on 27 Management Dimensions
4. **Peer2Peer Learning:** The NewIBNET Community and Partnership
5. **Utilities are in charge:** Self-directed Data Entry – not a “survey” activity

15 Key Performance Indicators



Water Operations

- Drinking water coverage (%)
- Continuity (hr/day)
- % customers 24/7 supply
- NRW (l/Conn./hr or %)



Sanitation Operations

- Sanitation coverage (%)
- Continuity (hr/day)
- Wastewater Collected and Treated (%)



Commercial Operations

- Collection rate
- % of Metered connections
- Service complaints resolved
- Drinking water quality



Financial management

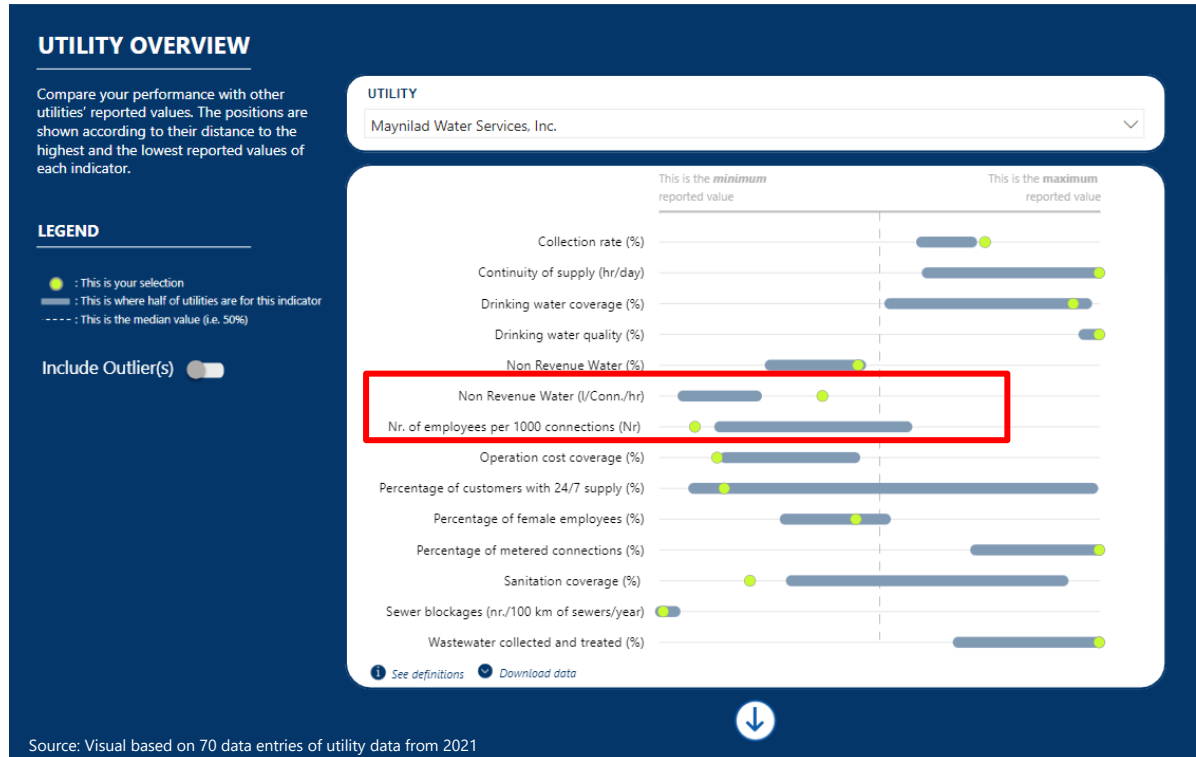
- Operational cost coverage (%) (includes Info on Energy Cost)



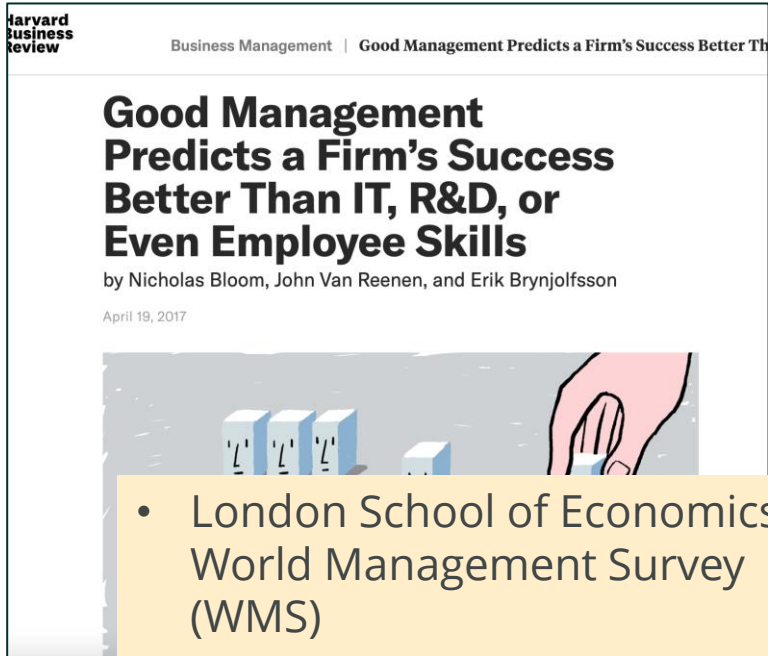
Human Resources

- Number of employees per 1000 connections
- Percentage of female employees

By now: Every NewIBNET utility can compare themselves on their performance... as well as...



Good management practices: Targets, monitoring, HR



- London School of Economics: World Management Survey (WMS)
- 20,000 interviews in over 35 countries over 18 years

- **Not just the private sector:** SMEs – more recently also hospitals and schools.
- **Explains a lot:** Up to one-third of cross-country and within-country total productivity gaps could be attributed to management
- **Three areas stand out:** Target setting, monitoring and people management



27 Management Practices – in 7 Groupings



Commercial & Customer Relations

Meter Reading
Payment Methods
Communications channels



Operations

Asset Management
Infrastructure Maintenance
Non-revenue water



Financial

Operational cost recovery
Financial planning and forecast
Infrastructure life cycle



Organization & Strategy

Balance and timing of targets
Performance tracking
and Review



Human Resources

Attracting and managing Talent
Promotion and retention
mechanisms



Climate Change

Water Savings
Water Sources Conservation
Green Infrastructure



Integrity

Transparency & Disclosure
Procurement Protocols


Compare own Management Practices with others' (in broad dimensions...specific dashboards under development)

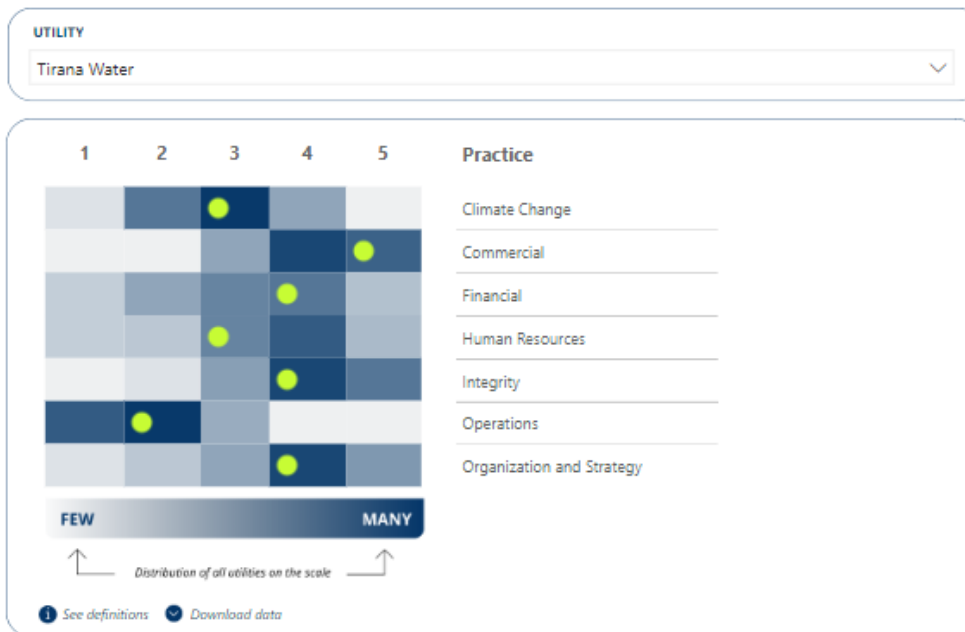
MANAGEMENT PRACTICES OVERVIEW

Compare your performance with other utilities based on your selection of indicator based on absolute reported values.

This chart summarizes where you stand in each management practices when compared to the distribution of all other utilities.

LEGEND

 : This is your selection



Source: Visual based on 70 data entries of utility data from 2021

Operations – the more the better...

Commercial & Customer Relations

Meter Reading
Payment Methods

OPS1: Water Asset Maintenance

6. Which best describes the maintenance practices of essential **water assets**? Please select one answer.

Don't Know
 Refuse to Answer
 Water assets are **not maintained**
 Water asset maintenance is **primarily reactive**. The Utility replaces or repairs when things break or fall into disrepair.
 Water asset maintenance is **partially periodic, reactive**.

OPS3: Non-Revenue Water

8. Which components of **non-revenue water** are tracked? Please select all that apply.

Definitions:

1. *Non-revenue water is water that has been produced and is "lost" before it reaches the customer. These losses can be real or apparent losses.*

Don't Know
 Refuse to Answer
 Billed metered consumption
 Billed unmetered consumption
 Unbilled metered consumption
 Unbilled, unmetered consumption
 Unauthorized consumption
 Customer metering inaccuracies
 Systematic data handling errors
 Leakage on transmission and/or distribution mains
 Leakage and overflows at Utility's storage tanks
 Leakage on service connections up to point of customer metering
 None of the above

asset maintenance is **primarily** ve.
asset maintenance is **preventive AND** is l by risk assessments and equipment ag.


agency & Disclosure
ement Protocols

Management Practices on Climate Change



Commercial & Customer Relations

- Meter Reading
- Payment Methods
- Communications channels



Asset Infrastructure

- Non-renewable



Human Resources

ICC1: Green Planning and Infrastructure

23. To what extent have **green technologies** been implemented in your Utility's operations? Please select one answer.

- Don't Know
- Refuse to Answer
- Green technologies have **not** been implemented in Utility operations
- Green technologies have been **minimally** implemented in Utility operations
- Green technologies have **somewhat** been implemented in Utility operations
- Green technologies have been **extensively** implemented in Utility operations
- Green technologies have been **extensively** implemented in Utility operations **AND** the Utility

Definitions:

1. "Green technologies" refers to technologies or practices such as water reuse, renewable energy sources, or other technologies that aim to reduce pollution, encourage environmental protection, reduce utilities' carbon footprint, etc.

ICC2: Incentives for Customers to Conserve Water

24. To what extent does the Utility **incentivize** customers to **conserve** water? Please select one answer.

- Don't Know
- Refuse to Answer
- The Utility does **not** incentivize customers to conserve water
- The Utility **minimally** incentivizes customers to conserve water – usually when reacting to external circumstances.
- The Utility **somewhat** incentivizes customers to conserve water, but implementation is still in progress.
- The Utility **extensively** incentivizes customers to conserve water by various means (financial and non-financial)
- The Utility **extensively** incentivizes customers to conserve water by various means (financial and non-financial) **AND** customer consumption has **decreased** in measurable ways.

ICC3: Source Water Quality Monitoring

25. To what extent does the Utility **monitor** the **quality** of its **source water body**? Please select one answer.

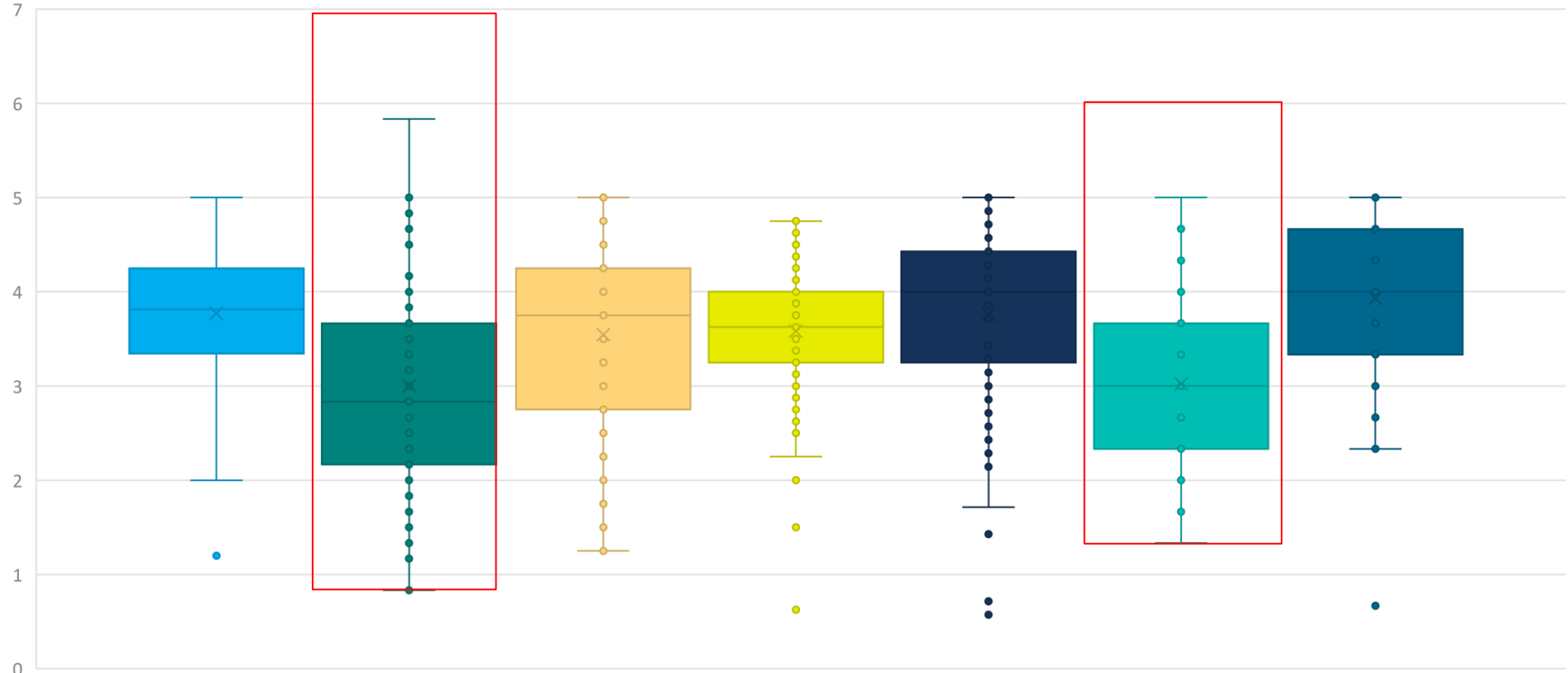
- Don't Know
- Refuse to Answer
- The Utility does **not** monitor the quality of its source water body
- The Utility **minimally** monitors the quality of its source water body
- The Utility **somewhat** monitors the quality of its source water body
- The Utility **extensively** monitors the quality of its source water body
- The Utility **is a leader** in monitoring the quality of its source water body

ng.

Insights Management Practices



Commercial Score Operations Financial Organization and Strategy Human Resources Climate Change Integrity



<https://newibnet.org>

Thank you!

Do Join New
IBNET!



MODERATOR AND PANELISTS



Deepa Karthykeyan
Athena Infonomics, India



Blaise MOUSSA
Director, CAMWATER



Dr. Eng. Silver Mugisha
Managing Director, NWSC



Walter C. Emnace
Maynilad Water Services



Jabulile Mashwama
Director, EWSC



Dr. Sandile Mbatha
Senior Manager, eThekwinī's
Municipality





Thank you