UTILITY LEADERS FORUM

12 DECEMBER 2023
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
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

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

NWSC SMART Utility Vision

Smart WTPs

Smart Networks

Smart operation al systems

Smart Customer and stakeholder engagement platforms

Smart Financial Manageme nt Systems

Smart Data management & intelligent reporting

Inspiring change
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
NWSC TECHNOLOGICAL AND DIGITAL INFRASTRUCTURE ...

A4: epayroll, e-appraisal, HRMS, MTO
NWSC TECHNOLOGICAL AND DIGITAL INFRASTRUCTURE ...

A5: e-boards, digital communication

<table>
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<tr>
<th>Board Paper Description</th>
<th>Committee</th>
<th>Action</th>
<th>Date</th>
<th>Time</th>
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<td>BOARD INFORMATION PAPER TO THE HR COMMITTEE</td>
<td>HR COMMITTEE</td>
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<td>12/14/2021</td>
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<td>NEW</td>
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<td>UPDATE ON CAPITAL DEVELOPMENT PROJECTS JULY – SEPTEMBER 2021 PERIOD (QUARTERLY REPORT)</td>
<td>RISK MANAGEMENT COMMITTEE</td>
<td>APPROVED</td>
<td>12/10/2021</td>
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<td>11/26/2021</td>
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Conclusion

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

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

#SafeWaterbringsSMILES!
Thank You For Listening
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 - eThekwini Municipality
OUTLINE

- 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
GLOBAL WATER CHALLENGES

- 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 billing and collection system
If they do, they risk:
- Becoming absolute
- Inefficient
- Unsustainable
- Unable to fulfil their primary mandate
- Not viable businesses
DATA & DIGITAL TOOLS AS ENABLERS

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
  - 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
• Positions data as critical infrastructure for:
  • Improved operational efficiencies
  • Improved service delivery
  • Targeted resource allocation
• Supports a responsive city that promotes co-governance
3-TIERED APPROACH

Data Visualisation
Geospatial / Non geospatial

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

Digitisation / Automation
Web forms, data automation
eThekwini Road Crashes Dashboard
eThekwini Flood Impact Dashboard
Human Capital Dashboard
Social Media Sentiment Analysis Dashboard
Ward Profiles Dashboard
Catalytic Projects Dashboard
eThekwini Service Provider Dashboard
Property Trends Dashboard
eThekwini Inventory Dashboard
eThekwini State of Safety Dashboard
Liveability Index
eThekwini Ward GDPs
STRATEGIC PLATFORMS

1. OPEN SDGs

2. GREENBOOK METROVIEW

3. LIVEABILITY INDEX
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
REIMAGING CO-GOVERNANCE THROUGH DATA

- Digitization and automation
- Modelling
- Living data strategy
- Digital twins

Systems and data

- Resource efficiency
- Learning fast
- Collaboration & partnerships
- Prediction and scenario planning
- Agile responses
- Active citizenry

Smart governance

Consultation

Inspiring change
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

Consumers use water inefficiently
Investment, maintenance are postponed
Customers are ever less willing to pay
Managers lose autonomy and incentives
Subsidies often fail to materialize
Motivation and service deteriorate further

Low tariffs, low collection
High usage and system losses drive up costs
Service deteriorates
Service provider lives off state subsidies
Efficiency keep dropping
Service provider can’t pay wages, recurrent costs or extend system
System assets go “down the drain”

Crisis, huge rehabilitation costs
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)

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

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

<table>
<thead>
<tr>
<th>Water Operations</th>
<th>Sanitation Operations</th>
<th>Commercial Operations</th>
<th>Financial Management</th>
<th>Human Resources</th>
</tr>
</thead>
</table>
| • Drinking water coverage (%)  
• Continuity (hr/day)  
• % customers 24/7 supply  
• NRW (l/Conn./hr or %)  | • Sanitation coverage (%)  
• Continuity (hr/day)  
• Wastewater Collected and Treated (%)  | • Collection rate  
• % of Metered connections  
• Service complaints resolved  
• Drinking water quality  | • Operational cost coverage (%) (includes info on Energy Cost)  | • 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

<table>
<thead>
<tr>
<th>Commercial &amp; Customer Relations</th>
<th>Operations</th>
<th>Financial</th>
<th>Organization &amp; Strategy</th>
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<tbody>
<tr>
<td>Meter Reading</td>
<td>Asset Management</td>
<td>Operational cost recovery</td>
<td>Balance and timing of targets</td>
</tr>
<tr>
<td>Payment Methods</td>
<td>Infrastructure Maintenance</td>
<td>Financial planning and forecast</td>
<td>Performance tracking and Review</td>
</tr>
<tr>
<td>Communications channels</td>
<td>Non-revenue water</td>
<td>Infrastructure life cycle</td>
<td></td>
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<tr>
<th>Human Resources</th>
<th>Climate Change</th>
<th>Integrity</th>
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<tr>
<td>Attracting and managing Talent</td>
<td>Water Savings</td>
<td>Transparency &amp; Disclosure</td>
</tr>
<tr>
<td>Promotion and retention mechanisms</td>
<td>Water Sources Conservation</td>
<td>Procurement Protocols</td>
</tr>
<tr>
<td></td>
<td>Green Infrastructure</td>
<td></td>
</tr>
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</table>
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

1: This is your selection

Source: Visual based on 70 data entries of utility data from 2021
Operations – the more the better...

**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.

- Don’t Know
- Refuse to Answer
- Billed metered consumption
- Billed unmetered consumption

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.

- 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
### Management Practices on Climate Change

#### 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 been **somewhat** 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 is a leader in monitoring the quality of its source water body

**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

**Definitions:**
- Minimally: Meets the minimum legal requirements
- Somewhat: Meets additional, non-regulatory standards
- Extensively: Meets the minimum legal requirements and employs additional, non-regulatory standards
- Leader: Consistently exceeds regulatory standards and employs innovative practices to ensure water quality.
Thank you!

Do Join New IBNET!

https://newibnet.org
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Thank you