

June Issue // 21st Edition

KIWASCO

4TH QUARTER NEWSLETTER

THE KENYA WATER & SANITATION
INTERNATIONAL CONFERENCE & EXHIBITION 2025



World Menstrual Hygiene
Day Celebration

Summary Highlight
Report for the Kenyan
Conference 2025

*Transforming Sanitation
in Kisumu*

NRW Corner

A Strategic Shift
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Reduction

Elevating the
Customer Experience



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World Menstrual Hygiene
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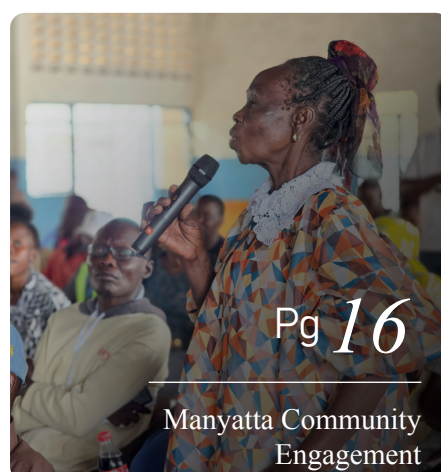
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Staff Branding and
Organisational Attitude

Strategic Foundation

.....

Vision

To be the most admired service provider.

Mission

To provide sustainable water and sanitation services for enriched livelihoods.

Value Proposition

Reliability, Quality & Accessibility

Core Values

Integrity
Collaboration
Excellence

Ladies and Gentlemen,



As we close the books on the 2024/25 financial year, I wish to take this opportunity to celebrate the incredible milestones we have achieved together, and to look ahead with optimism and renewed commitment.

This has been a year defined by resilience, growth, and collective determination. We've navigated operational challenges, strengthened internal systems, deepened employee engagement, and improved our service delivery metrics. While there were moments that tested our tenacity, the strides we've made across key areas are proof of a team that is driven, focused, and committed to excellence.

One of the most significant indicators of our internal progress in the year was the Employee satisfaction survey, which was conducted to gauge our resolve as a staff fraternity while also providing a platform for feedback and improvement. The process recorded a remarkable improvement, rising from a paltry 57% to 73%. This leap reflects our collective dedication to making KIWASCO a better place to work, where everyone feels valued and empowered. Thank you all for your contribution to creating this positive working environment.

In line with this, we carried out the periodical staff appraisals to evaluate performance, recognize strengths, and identify areas for growth. This process ensures we remain accountable and aligned with our strategic objectives and our key performance indicators as we strive for operational excellence. The final analysis on the reports is yet to be submitted; however, following the various performance indicators, i.e. the revenue collection that scored a high average of 96%, complaint resolution at 92%, and the reduction of Non-Revenue Water, is a clear pointer to a workforce that has been dedicated to excellence.

Notably, the recent WASREB Impact Report 17 positioned the company among the top-performing utilities nationally, a clear reflection of the dedication and productivity that these appraisals aim to cultivate and sustain. In the annual

report, the company was also feted best in Leadership and Governance, stamping our steadfast commitment to integrity, accountability, and strong institutional leadership in the delivery of water and sanitation services. This came alongside the recognition as best overall performer in the Lake Victoria South region, under the Lake Victoria Water Works Development Agency.

As a direct outcome of our proven performance and sector credibility, we successfully concluded salary negotiations with the Central Remuneration Body (CRB), resulting in a salary amendment for all staff. This achievement is not just a win for staff welfare, but a reinforcement of the value that each one of you brings to the company.

On the operational front, we made substantial progress on one of our biggest challenges: reducing Non-Revenue Water (NRW). We managed to bring NRW down from a concerning 30% range to 29%. While this reduction is commendable, we must acknowledge that it still falls short of the sector benchmark of below 20%. Therefore, I want to emphasize the need for each and every one of us, regardless of role or department, to redouble our efforts. Achieving our NRW target is not just a technical goal; it is central to our mission of providing sustainable water services to the residents of Kisumu City.

Together, these achievements underscore what is possible when we unite behind our shared values of excellence, collaboration, and integrity, and remain anchored in our vision: to be the most admired service provider.

Let us enter the new financial year with a renewed sense of purpose and confidence, knowing that each individual effort adds up to the extraordinary progress we can achieve as one team.

Thank you all for your hard work and dedication. Here's to an even more successful year ahead!

Summary Highlight Report for the KenyanSan Conference 2025



The KIWASCO team wrapped up a successful and impactful presence at the KenyanSan Conference 2025, held from 23rd to 27th June at Pride Inn Hotel, Mombasa. Organized by the Ministry of Water, Sanitation and Irrigation in partnership with WASPA, the conference brought together key players from across the water and sanitation sector under the theme:

“Innovative Financing Models, Technology & Innovations for Sustainable Pathways to Climate-Smart Water and Sanitation Solutions & Investments.”

Throughout the week, the company demonstrated its strong commitment to climate-smart water and sanitation through exhibitions, panel discussions, and technical abstract presentations. The company showcased a range of innovations including smart



Photo file: A section of KIWASCO exhibition booth.



Photo file: Kitinda engage a delegate during the exhibitions



Photo file: MD, Odongo engage the CS, Water, Mr. Mugaa during his visit to our exhibition booth.



Photo file: Timothy presenting his abstract.

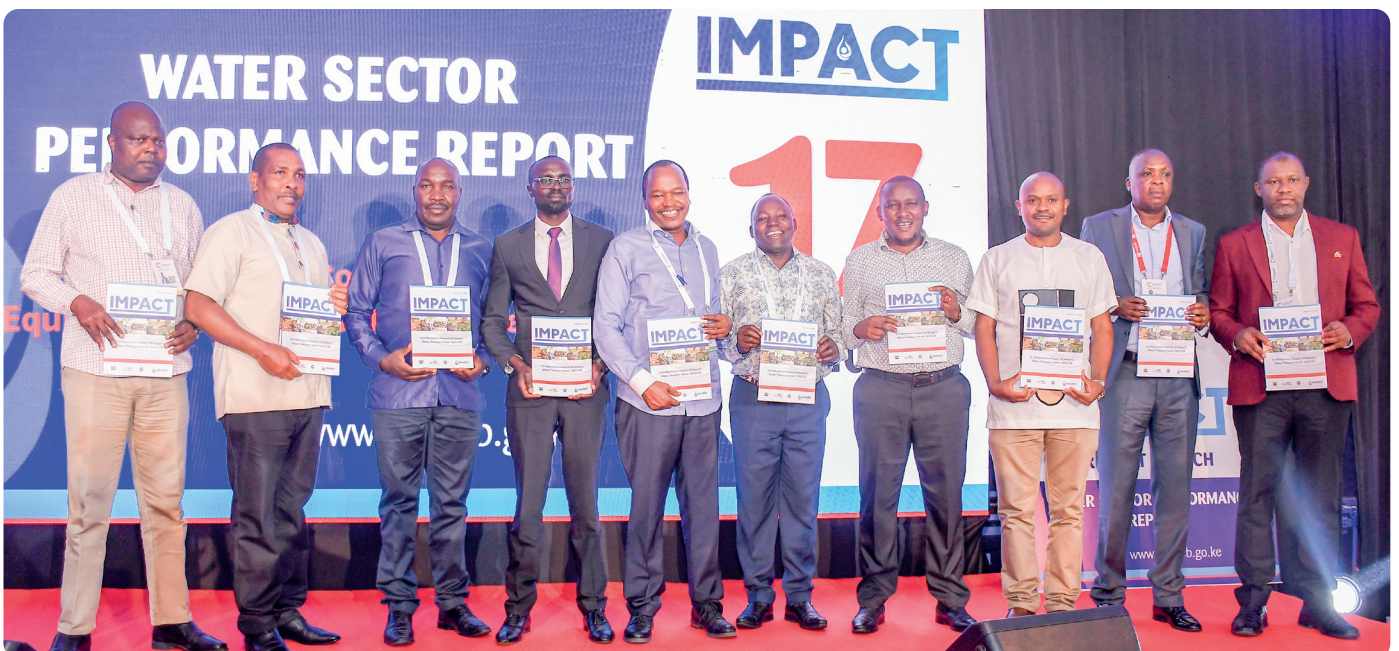


Photo file: Officials led by CS, Mugaa display the impact 17 report booklet.



Photo file: MD, Thomas Odongo during a panel discussion.



metering systems, pressure and leak detection technologies, and real-time monitoring tools, all designed to reduce Non-Revenue Water (NRW), improve operational efficiency, and build climate resilience.

Our contribution went beyond technology, with staff leading thought-provoking abstract presentations on integrated NRW strategies, circular sanitation approaches, sustainable financing models, and digital utility transformation. These insights underlined KIWASCO's forward-thinking approach to addressing emerging sector challenges.

A key highlight was the participation of the Managing Director, Mr. Thomas Odongo, in a high-level panel discussion alongside top government officials and development partners. The panel explored how innovations in financing and technology can accelerate progress toward Sustainable Development Goal 6 (SDG 6). Discussions emphasized the power of collaboration and the role of digital solutions in building sustainable and inclusive water systems.

Further solidifying its leadership in the water sector, the Non-Revenue Water (NRW) Manager, Eng. Opiyo, led a compelling panel session on capacity strengthening during the GWOPA Mentorship Programme. In his presentation, he reflected on the transformative journey undertaken with mentee utilities, highlighting the collaborative efforts that have shaped a culture of continuous learning and improvement.

The Mentee Water Service Providers (WSPs) shared impactful experiences, demonstrating how structured mentorship has contributed to measurable progress in key areas. Under KIWASCO's guidance, the mentees have recorded notable improvements in non-revenue water reduction, enhanced governance practices, and strengthened operational performance.

It was during this conference that the regulator WASREB, released the IMPACT 17 Report and the company received national recognition for its performance in two categories. KIWASCO emerged top position in Governance and was also ranked Best Overall Performer in the Lake Victoria South Region under the Lake Victoria Water Works Development Agency. These accolades underscore the utility's strong governance structures, accountability, and dedication to service excellence.

The week culminated in a moment of celebration during the Gala Dinner Awards, where Bramu Ouma, Vanessa Akinyi, and Lilian Adanje were crowned top innovators in the Innovation Category. Their award-winning solution, a data-driven application for real-time team decision-making, intended to reduce turnaround time in resolving NRW cases and enhanced operational responsiveness. Their achievement reflects KIWASCO's culture of innovation and continuous improvement.

It was a night of pomp and celebration as the KIWASCO team brought the Kisumu spirit to Mombasa, proudly cheering their colleagues and celebrating a week filled with learning, leadership, and national recognition.

We extend our heartfelt gratitude to the management through the Managing Director & staff, who made this experience a success. Together, we continue to redefine excellence in water and sanitation service delivery.



Photo file: Chairman, Ms. Phyllis receiving one of the awards.



Photo file: Board of Directors led by Chairman, Ms. Phyllis receiving an award.



Photo file: KIWASCO staff engage in a dance during the Gala dinner.

World Menstrual Hygiene Day Celebration



Photo file: Pupils display some of the donated essentials.

This year's Menstrual Hygiene celebration sparked a significant step into the voice of normalizing period and preserving the dignity of each and every woman. KIWASCO joined by like-minded partners converged at Nyalunya Primary School in a powerful show of solidarity to break the silence around menstruation and reinforce the message that periods should never be a barrier to education, dignity, or opportunity.

Under the global theme "Together for a #PeriodFriendlyWorld," the event reached over 500 pupils, going far beyond material donations to foster awareness, inclusion, and open dialogue. For us, this initiative was more than just a day of giving but an extension of our ongoing

Water, Sanitation, and Hygiene (WASH) efforts and our commitment to supporting early childhood development through inclusive and informed health education.

As part of the outreach, the pupils, both girls and boys received over 1,000 sanitary towels (reusable and disposable), alongside soap, underwear for girls, and boxers for boys, ensuring that every child felt recognized and included. The distribution was designed not only to meet immediate hygiene needs but also to destigmatize menstruation and promote shared responsibility, including the participation of boys in what is often seen as a girls-only conversation.

During the event, we held a

comprehensive menstrual health education session, led by Kisumu Urban Apostolate Programmes (KUAP). This interactive session created a safe space for students to ask questions and engage openly around topics such as personal hygiene, self-care, menstrual stigma, and mutual respect. The session emphasized that dignity in menstruation is not just about access to products but, the access to knowledge, confidence, and a supportive environment.

The event brought together key partners including the County Government of Kisumu, Department of Public Health, Kenya Red Cross, Fresh Life Initiative, Finish INK, and KUAP. As one voice, we echoed a shared commitment to creating a future where no child misses school

or suffers in silence because of menstruation.

“Menstrual health is deeply connected to our WASH goals. Without water, sanitation, and hygiene in schools, menstrual dignity is impossible. This is why we are fully invested in ensuring our programs uplift every child, especially girls, who are disproportionately affected,” remarked Ms. Emmy.

During the event, we held a comprehensive menstrual health education session, led by Kisumu Urban Apostolate Programmes (KUAP). This interactive session created a safe space for students to ask questions and engage openly around topics such as personal hygiene, self-care, menstrual stigma, and mutual respect. The session emphasized that dignity in menstruation is not just about access to products but, the access to knowledge, confidence, and a supportive environment.

As we marked this global awareness day, we reaffirmed its belief that education, dignity, and health should never be interrupted by menstruation. We continue to stand with schools, communities, and partners in creating safe, inclusive, and informed spaces where every child can thrive regardless of gender or background.

Menstruation should never hold a child back. Together, we are making sure it doesn't.



Photo file: Dr. Ongwaya of County Public Health engaging with a pupil.



Photo file: Engaging pupils in the various demonstrations during the event.



Photo file: A representative from KUAP during the education session.



Photo file: A representative from KUAP during the education session.-2



Photo file: Display of the assorted donations.



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Photo file: Staff following training proceedings-2

Elevating the Customer Experience

As a calming stretch after the long, hectic fiscal year, a wave of renewed energy was infused into the company as a cross-section of staff undertook customer experience training, facilitated by Inspired Kenya. More than a learning opportunity, it was a moment of reflection on how we serve, why we serve, and the values that define our everyday engagements.

Carefully curated to align with modern service expectations and fast-changing customer behaviours, the training focused on sharpening and shaping our interactions with customers while embracing evolving industry best practices. Through

thought-provoking and practical sessions, staff delved into the real meaning of customer experience, explored the customer value chain, and uncovered new techniques for navigating challenges with empathy and precision.

At the core of this initiative was a clear demonstration of how the staff steers the drive toward excellence, a key value that continues to shape how we deliver services across the board. From demystifying the customer journey to enhancing problem-solving approaches, the training was a deliberate investment in ensuring every touchpoint reflects the highest standards of service.

Beyond technical skills, the training emphasized the human element of service, listening actively, communicating clearly, and responding with sincerity. These discussions were a timely reminder of our responsibility to uphold Integrity in every engagement, staying true to our promise and putting customers' needs at the forefront of what we do.

To emphasize our commitment to ethical leadership and service provision, members of the Board of Directors, together with the Management team, were also trained on integrity, transparency, and anti-corruption. This engagement was facilitated by the Water Integrity Network, an initiative that underscores our dedication to upholding good governance, accountability, and public trust throughout the company structure.

The sessions provided a platform for meaningful interaction. Staff from different departments came together to share insights, reflect on experiences, and engage in open dialogue. This spirit of collaboration reinforced the importance of teamwork in driving consistent and responsive service, reminding us that

exceptional customer experience is the product of collective effort.

These training affirms the company's continuous input into service delivery that has anchored our four-year successive award as best in customer service in the sector and also leadership and governance, as ranked by the sector regulator WASREB.

The long-term commitment to transforming service delivery sits at the centre of our business. It's one of many steps we are taking on our journey toward realizing our vision: *to be the most admired service provider*. And it starts with empowered employees, shared values, and an unwavering focus on people.



Photo file: Staff engagement during the training



Photo file: A section of staff engage in group work



Photo file: A section of staff engage in group work-2



Photo file: A section of staff display their issued during the training

Drive for Sector Growth Through Capacity Building and Benchmarking Initiatives

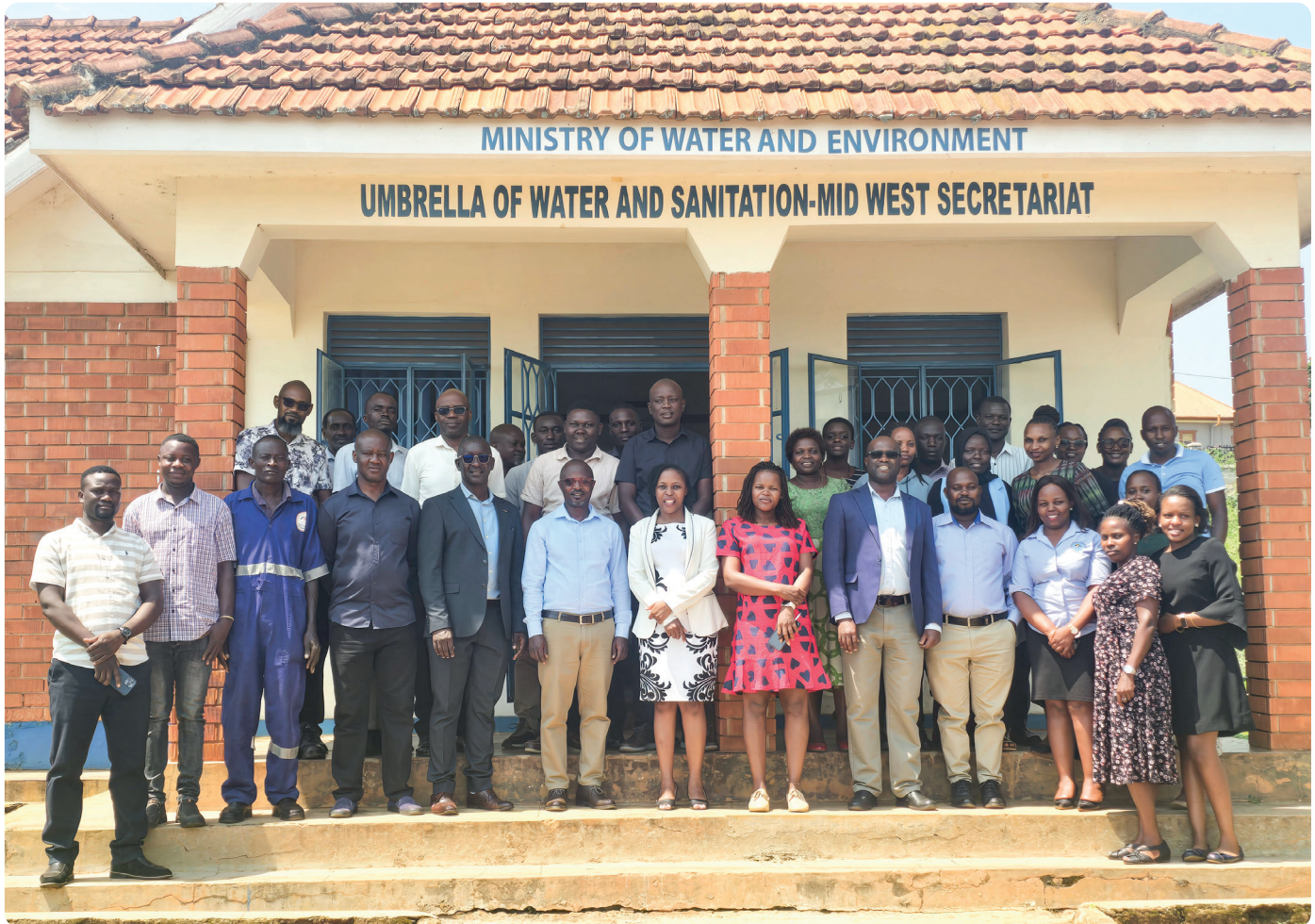


Photo file: KIWASCO team Mid Western Umbrella staff during a group photo

In the water and sanitation sector, capacity building and benchmarking are critical levers for sustainable service delivery. As utilities strive to meet the increasing demand for clean water and improved sanitation, peer learning, skills transfer, and exposure to best practices have emerged as powerful drivers of transformation. These initiatives not only enhance technical and operational efficiency but also strengthen institutional resilience and foster innovation across the board.

Over the past quarter, the company has remained actively engaged in advancing these ideals through impactful benchmarking and capacity-building initiatives across the region.



Photo file: Practical learning sessions during the field visits in Uganda-2

In a significant step toward strengthening regional partnerships, a team from KIWASCO conducted a week-long technical exchange visit to Uganda's Mid-Western Umbrella of Water and Sanitation. The initiative, supported by Water & Sanitation for the Urban Poor (WSUP), brought together teams from both utilities to share experiences, transfer knowledge, and explore practical solutions to common challenges with aim of enhancing proficiency of Mid-Western Umbrella. Discussions and practical sessions were centered around key thematic areas including customer service, non-revenue water management, metering and instrumentation, commercial operations such as billing, collections and debt recovery, branding and marketing, data and systems management, ICT, risk, audit, and governance.

The visit provided a platform for mutual learning, knowledge

sharing and co-creation of strategies to enhance efficiency and improve customer-focused service delivery for the utility that is currently grappling with such operational issues. More importantly, it reaffirmed the power of peer collaboration in addressing shared regional challenges and strengthening institutional performance. Both utilities emerged from the exchange with renewed commitment and a framework for continued partnership, aimed at fostering long-term engagement for growth and resilience in water service delivery.

Speaking during the wrap-up session, Mr. Ondigo, the Head of Audit Risk and Compliance, emphasized the company's commitment to not only sharing its tested models but also learning from the experiences of fellow utilities. "This mission is a testament to the fact that regional cooperation is not only possible, it is necessary for sustainable water and

sanitation solutions in Africa," he remarked.

Back in Kenya, the company hosted the management team from Nyeri Water and Sanitation Company Ltd (NYEWASCO) for a two-day peer-to-peer learning exchange. Led by their Managing Director, Eng. Peter G. Kahuthu, the visiting team engaged in intensive benchmarking sessions covering a wide range of operational areas including pro-poor service models, audit, risk and compliance, supply chain management, corporate services, finance, commercial operations, and ICT.

The sessions placed particular emphasis on internal assessments, digitization, and the adoption of sector-wide best practices. Through open dialogue and technical engagement, the two teams explored ways of streamlining operations and integrating innovation to meet emerging demands in water and



Photo file: Field visits in Uganda-Mid Wester Umbrella satellite stations



Photo file: Field visits in Uganda-Mid Wester Umbrella satellite stations-2



Photo file: MD, Odongo along Nyewasco MD Mr. Kahuthu distributing voucher to staff during a ONE-BEE meeting



Photo file: Nyewasco team debriefing at the Head Office

sanitation management in the sector. The visit concluded with an exchange of goodwill and a shared vision for sector advancement through collaboration and peer support.

These two milestone engagements underscore KIWASCO's ongoing commitment to strengthening sector capacity through regional cooperation. Whether through outbound missions or hosting peer institutions, the company continues to play a leading role in fostering a culture of excellence, transparency, and continuous improvement within the water sector. As utilities across the region confront challenges such as rapid urbanization, climate change, and resource constraints, such partnerships are proving to be not just beneficial, but essential toward the realization of the SDG 6.1; delivering sustainable water and sanitation services for all.

As a company, we are proud to contribute to a future where collaboration, innovation, and knowledge exchange define the path to universal access and improved service quality.



Photo file: Mr. Kitinda leading a group discussion during of the sessions



Photo file: KIWASCO team leading discussions in the Board Room during the Nyewasco visit

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Strengthening Access and Accountability in Water Service Delivery - Manyatta Community Engagement



Photo file: An attendee airing her concerns during the meeting.

Our commitment remains to serve the residents of Kisumu City with reliable, accessible and quality water and sanitation services. One of the ways to realize our promise is by getting feedback from our esteemed customers across the grid through various channels, for example outreach activities. During the quarter, we held a high-impact community engagement forum with the residents of Manyatta at Kosawo Hall. The session was one of several outreach efforts aimed at strengthening relationships with the community, demystifying water service procedures, and promoting joint responsibility in the management of shared water resources.

The forum came at a critical time, as the utility works to expand last-mile water connectivity under various water projects i.e. the Aqua-lift that seek to extend and boost supply in areas of Nyalunya and its environs. Further, the company is currently rolling out projects focused to resolve sanitation challenges in areas of Manyatta through construction and upgrading of dilapidated latrines into modern toilets. The company has also been on long stretch to address the growing concerns around meter theft, billing transparency, and the need to urgently address the staggering Non- Revenue Water index. Led community outreach and technical teams, the meeting provided residents

with a rare opportunity to interact directly with service providers, raise concerns, and receive immediate, clear responses.

During the session, the officials present took time to explain the step-by-step process for new water connections under the social connection initiative, ensuring residents clearly understood the documentation required, timelines involved, and customer rights and obligations. Discussions also covered tariff structures, helping to shed light on how bills are calculated and why responsible water use and accurate metering are essential to maintaining fair pricing and uninterrupted service.

A key point of discussion was the growing issue of meter theft, which not only financially inconvenience our customers, but also, disrupts supply, affects revenue collection and operational sustainability. The team emphasized KIWASCO's ongoing efforts to work with local authorities and communities to curb this vice, while also rolling out more secure and tamper-proof metering options.

Of particular importance was the emphasis placed on Non-Revenue Water (NRW), a persistent challenge for KIWASCO and many utilities across the country. Residents were sensitized on the role they play in reducing water losses by promptly reporting leaks, bursts, and illegal connections. These community reports, officials explained, are crucial in safeguarding public infrastructure and ensuring more homes gain access to clean, reliable water.

The forum was also graced by officials from the Water Services Regulatory Board (WASREB), whose presence underscored the importance of accountability,

regulatory compliance, and collaborative service delivery. They emphasized on customer rights and responsibility as this to keep the utility on check as it delivers its mandate. Their contributions added valuable insights into the water sector framework, consumer protection, and quality assurance.

Speaking at the event, the Head of Commercial, Ms. Eldah Odongo, reaffirmed the utility's commitment to transparency, accessibility, and community-centered service:

“At KIWASCO, we believe that lasting solutions are built through dialogue. This engagement reflects our belief that communities are not just beneficiaries, they are partners in service. Together, we can build a more responsive, fair, and sustainable environment.”

The success of the Manyatta engagement highlights KIWASCO's proactive approach to addressing service delivery issues at the grassroots level. It marks yet another step in the company's broader strategy to foster trust, promote civic participation, and ensure no one is left behind in the journey toward universal access to safe water and sanitation.

As KIWASCO continues to engage with communities across its service area, forums like this will remain a cornerstone in building mutual accountability and stronger, people-focused water services.



Photo file: Ms. Eldah addressing the meeting.



Photo file: WASREB representatives engage with the community members.



Photo file: Community



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FY 2024/2025 Performance

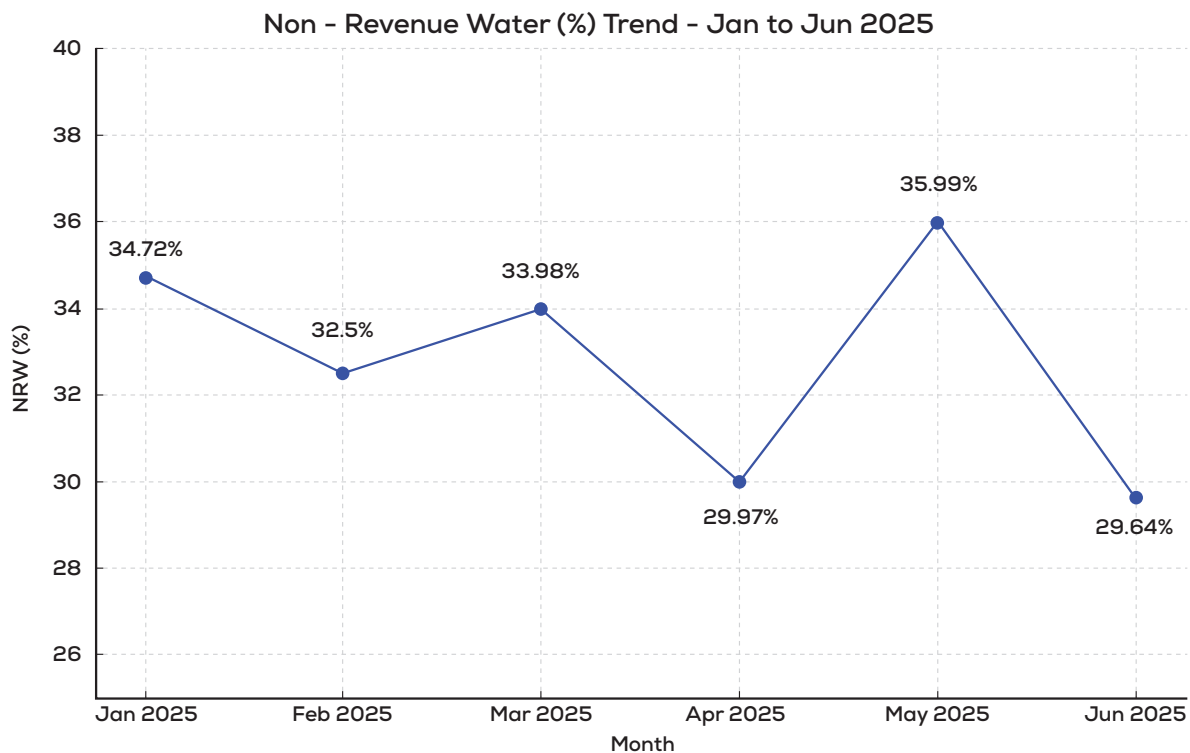


Commercial Performance

Indicator	Target	Achieved	%
Billing	1,186,484,671.67	1,139,157,797.30	96%
Collection		1,118,610,878.18	98%

Other Performance

Water Coverage	93%
Sewer Coverage	18%
Sanitation Coverage	60%
Non - Revenue Water	34.8%
Water Quality	99.53%
Customer Satisfaction	79.9%
Employee Satisfaction	73%



A Strategic Shift in Water Loss Reduction

KIWASCO has recorded one of its sharpest declines in Non-Revenue Water (NRW) in recent years, marking a strong step towards operational efficiency. Between April and June 2025, NRW levels dropped dramatically from 39.9% to 29.6%. This achievement reflects the fruits of cross-departmental collaboration and deliberate strategy execution.

Key Drivers of Success

The notable reduction in NRW was propelled by:

- Demand-driven production systems to cut real losses
- Swift response to pipe bursts and leakages
- Stronger field coordination across zones
- Real-time data monitoring and timely follow-up
- Increased community and stakeholder engagement

These combined efforts underscore KIWASCO's holistic approach to tackling water losses through both technical and human-centered strategies.

Zero Consumption Accounts: The Hidden Revenue Leak

Behind the scenes, another challenge has drawn KIWASCO's attention - zero consumption accounts. These are active accounts that consistently record no water usage, often masking issues such as:

- Faulty or tampered meters
- Illegal connections or meter bypass
- Disconnected and suspended accounts still listed as active
- Outdated customer records

Why It Matters

These silent culprits not only misrepresent actual water usage but also:

- Skew NRW data and planning
- Conceal theft or unbilled consumption
- Disrupt budget forecasts and investment decisions

KIWASCO's Targeted Response

In response, KIWASCO has strengthened its Apparent Loss control strategy through:

- **System Flagging:** Identifying zero-use accounts over two billing cycles
- **Field Verification:** Ground inspections to verify usage and meter condition
- **Disconnection & Data Cleanup:** Deactivating dormant and suspended accounts from off-take points
- **Tampered Accounts Investigations:** Proactively monitoring and jointly investigating suspicious cases with the Water Police Unit and the inspections unit
- **Meter Upgrades:** Replacing faulty, old and under-performing meters with accurate, new meters

"Zero consumption doesn't mean zero impact." Tackling these hidden losses is now central to restoring billing accuracy and boosting revenue.

By combining aggressive NRW reduction strategies with data-driven and predictive analysis approach to account accuracy, KIWASCO is setting a benchmark in water utility management and moving steadily toward sustainable service delivery.



Staff Branding and Organisational Attitude



Photo file: Mr. Kongeto during a stakeholders meeting.

As a young attachee at KIWASCO, I found myself immersed in the world of public relations, where every action and decision spoke volumes about the organization's values and culture. An opportunity arose for me to contribute towards enhancing the staff's brand image, a task that would shape my understanding of the importance of organizational attitudes.

The staff at KIWASCO were the heartbeat of the organization, dedicated individuals working tirelessly to provide essential services to the community. However, as time went by, it became evident that many of them had outgrown their uniforms. The once well-fitted t-shirts now clung uncomfortably, a visible sign of the hard work and dedication they put into their jobs.

Recognizing this issue, the organization decided to invest in new

uniforms for its staff. It was not just a matter of aesthetics; it was a statement of appreciation and recognition for the hard work put in by each employee. As an attachée with a passion for branding, I saw this as an opportunity to make a real difference.

With the support of the public relations team, we embarked on a mission to ensure that each staff member received a new, well-fitted t-shirt. It was a small gesture, but the impact was profound. The smiles on their faces as they tried on their new





Photo file: Field staff donning branded PPEs.

uniforms spoke volumes about the organization's attitude towards its employees.

The act of providing new t-shirts was more than just a physical change; it was a symbol of the organization's commitment to its staff's well-being and professionalism. It reinforced the idea that each employee was valued and respected, a vital aspect of creating a positive work culture.

Through this experience, I learned that the way an organization treats its employees says a lot about its values and priorities. By investing in staff branding, KIWASCO not only improved the visual representation of its workforce but also fostered a sense of pride and belonging among its employees.

As my attachment at KIWASCO came to an end, I left with a newfound appreciation for the power of small gestures in shaping organizational attitudes. The simple act of providing new t-shirts had made a significant



Photo file: Ms. serving a client draped in KIWASCO branded attires.

impact on the staff, reinforcing the idea that they were more than just employees; they were valued members of a supportive and caring organization. This experience would stay with me, a reminder of the

importance of nurturing a positive work environment through actions that speak louder than words.

Article by

Cassandra Monique Ohito.



Photo file: A section of the lagoon

Public Private Partnership; A Case of Pit Emptying Services in Kisumu City

Introduction

Kisumu City faces significant challenges in providing adequate sewage infrastructure. Currently, only 18% of the city's residents have access to proper sewage systems. This stark reality has led to a pressing need for alternative sanitation solutions among the city's inhabitants. A substantial portion of Kisumu's population resides in low-income areas, accounting for approximately 60% of the city's residents. These individuals are compelled to utilize non-sewered sanitation methods due to limited access to conventional sewage networks. The primary sanitation options employed by these residents include: Container-based toilets, Ventilated improved pit latrines, Bio digesters, Traditional pits, Septic tanks, Leach pits and Composting toilets. Among these alternatives, traditional pit latrines stand out as the most prevalent choice, with 62% of residents relying on this method for

sanitation. The widespread reliance on non-sewered sanitation options has created a substantial market for pit emptying services within Kisumu City. This demand arises from the necessity of regular maintenance and disposal of human waste from various alternative sanitation systems.

Background

Initially, pit emptying service providers in Kisumu operated without regulation. In informal settlements, burying faecal waste in soil or discharging in open drains was a common practice, despite posing significant health risks due to groundwater contamination. Workers in this field were stigmatized and lacked training, unaware of occupational safety and health standards.

Current Situation

KIWASCO has established formal partnerships with ten licensed pit emptying entities in Kisumu

namely Gasia Poa, Mayaya Waste Management Services, Vuka Sasa, Blue Stars, Busy Bees, Changers, Saniwise Technologies, Home & Away, Greenhood Enterprises and Sequence Holding Limited. These entities dispose of faecal sludge at KIWASCO's Nyalenda stabilization ponds at no cost, as part of the company's behaviour change strategy to encourage others operating illegally.

In collaboration with strategic partners such as WSUP, Fresh Life, Sanivation, FINISH Inc, and OPERO Services, the pit emptying groups have undergone training in Faecal Sludge Management, adherence to public health standards, occupational safety and personal protective equipment usage, and policy compliance. This initiative has significantly enhanced the professionalism of the trade, transforming pit emptying in Kisumu from an informal activity into a viable income-generating enterprise.

Impacts and Benefits

- **Social Transformation:** Kisumu residents have embraced modern sanitation practices, readily seeking professional faecal sludge removal and disposal services.
- **Environmental Stewardship:** The shift from shallow burial to centralized treatment at Nyalenda stabilization ponds has significantly improved environmental protection.
- **Quantifiable Progress:** In FY 2023-2024, 138,500 cubic meters of faecal sludge were successfully processed through company-owned treatment facilities.
- **Human Capital Enhancement:** Improved working conditions and health standards among pit emptiers have contributed to increased productivity thus improved livelihoods.

Challenges

- **Sanitation Infrastructure:** The disposal of solid waste, particularly menstrual hygiene products, remains a pressing concern in pit latrines.
- **Technological Advancement:** Current manual emptying methods are inefficient, necessitating exploration

of advanced technologies for improved efficiency and effectiveness.

Way Forward

- The city of Kisumu to embrace the principles of the circular economy. By implementing sustainable faecal sludge management, KIWASCO will be able to reduce, recycle, and reuse waste products effectively.
- 2024 to 2026, various mechanized pit-emptying technologies will undergo trials under the Sanitation Service Chain Action Research project by B&M Gates Foundation. Technologies such as Pitvaq, pulper, pupu pump, and trash

pump will be tested during this period. This will be in collaboration with Opero.

- After thorough evaluation, the most suitable technology for Kisumu will be selected for adoption. This initiative aims to enhance the efficiency and sustainability of sanitation services in the city.

Conclusion

Pit emptiers have played a pivotal role in advancing safely managed sanitation in Kisumu, contributing significantly to the city's efforts towards improved public health and environmental stewardship.

Written By: Joel Obunga
KIWASCO



Photo file: MD Thomas Odongo and Opero services officials, during the unveiling of the pupu pump truck

Transforming Sanitation in Kisumu

In November 2020, driven by our commitment to expand sanitation coverage to residents without access to the sewer network, we partnered with Fresh Life to bring access to safe and affordable sanitation to the hearts of Kisumu informal settlements. What began as a pilot for adoption of City Wide Inclusive Sanitation (CWIS) in Kisumu has morphed into a model that's reshaping how communities approach the concept of dignified sanitation.

Fresh Life is a social enterprise delivering non-sewered sanitation through an innovative container-based system across Nairobi, Kisumu, Eldoret, Lusaka Zambia and with a plan to launch operations in Mombasa in 2025. Their approach provides clean, easy to use toilets to communities with limited or no access to sewer infrastructure. In delivering safe sanitation services, they adopt a circular economy model developing cost-effective, eco-friendly toilets designed for urban areas, where waste is securely contained in sealable cartridges, safely removed on a regular basis by trained personnel and transported to our treatment plants for treatment and disposal.



Photo file: Fresh life toilet and a pit latrine in Nyalenda

Today Fresh Life serves 300,000 people daily with access to safe sanitation through a network of 8,000 toilets across Nairobi, Kisumu, Eldoret and Lusaka, Zambia. In Kisumu, we have successfully installed 1,976 Fresh Life Toilets, serving over 20,000 people in Nyalenda A, Nyalenda B and Manyatta B every single day!

By integrating our deep knowledge and expertise of the local setting, with Fresh Life's innovative technology and proven track record, we have streamlined our service delivery and operations for maximum impact. The results speak for themselves - improved livelihoods, cleaner

environments, reduced waste disposal into the lake and other surrounding water bodies, and most significantly - improved health and reduced sanitation related diseases within the communities. Additionally, Fresh Life employs youths from the communities, and franchises the Fresh Life Toilet for commercial use - creating green jobs and promoting entrepreneurship. Residents feel a renewed sense of ownership and pride.

Together with Fresh Life, we are not just improving sanitation, we are transforming lives building a more inclusive sustainable future for Kisumu.



Photo file: Fresh life staff disposing off waste at the lagoon

Championing Safer Sanitation Practices for Pit Emptiers



Photo file: Pit emptiers display their branded PPEs.

At KIWASCO, we understand that sanitation goes beyond clean water and modern toilets, it includes the critical, behind-the-scenes work that keeps process owners safe and our environment clean. Recognizing this, we have continually supported some of the most essential yet often overlooked players in the sanitation chain: manual pit emptiers.

In partnership with sanitation development organizations, we have adopted initiatives to build capacity and equip these teams with essential tools and technologies suited for their work. Recently, Opero Services, under the Sanitation Service Chain Action Research Program, held a hands-on training session aimed at improving faecal sludge management, promoting safe emptying practices, and introducing modern emptying technologies such as the Pupu Pump, Trash Pump, Gulper, and Pit VaQ. These tools are

not just about efficiency, they are about safety, dignity, and reducing the risks associated with this tough job.

Manual pit emptiers often work in hazardous conditions, coming into direct contact with harmful waste. To mitigate these risks, we conducted a targeted vaccination drive after the training to protect them against serious health threats like cholera, hepatitis B, and tetanus. This is a small but critical step in addressing the health challenges these workers face daily.

This initiative is part of a larger regional program supported by the Bill and Melinda Gates Foundation, which focuses on finding practical, affordable solutions for safer sludge management. Kisumu is proud to be among the few African cities participating in this effort, alongside Lusaka, Kigali, and Kampala.

It is a valuable opportunity to confront the realities of sanitation work in Kisumu, reflect on progress, identify areas of innovation, and address where improvements are still needed. Most importantly, it allowed us to have honest conversations about protecting the people on the ground who make sanitation possible.

This effort follows months after KIWASCO, in partnership with Opero Services, donated occupational safety gear to manual pit emptiers in Kisumu, providing comprehensive Personal Protective Equipment (PPE) essential for their safety during service delivery.

We are not just focused on pipes and pumps, we are focused on people. Whether it's a customer drawing water from a tap or a pit emptier working in the field, every link in the sanitation chain matters. We are proud to be part of a movement turning that truth into action.



**Hi Cousin,
hiyo pipe ya
maji
imepasuka,
iko mtaa yako?**



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0700 517 517

The Kenya Water & Sanitation International Conference & Exhibition 2025

Innovation Abstract



Title: Leveraging Smart Meter Data Analytics to Enhance NRW Management

Presenters:

Mary Ogutu - Kisumu Water and sanitation Company
Lilian Andanje - Kisumu Water and Sanitation Company



Mary Ogutu



Lilian Andanje

Introduction

Climate change continues to challenge water resource management, necessitating innovative solutions for sustainability and resilience. Smart water meters, integrated with real-time data analytics, offer a transformative approach to monitoring water consumption, detecting leaks, and optimizing distribution networks. Smart meter data analytics can enhance climate-resilient water management by providing actionable insights into demand forecasting, non-revenue water (NRW) reduction, and equitable water distribution. Kisumu Water and Sanitation Company (KIWASCO) adopted the use of smart metering technology through the Upande platform, which enables real-time monitoring of water flow and anomalies. This has been instrumental in detecting leaks, managing illegal connections, and predicting system failures thus leading to the overall management of NRW. By leveraging artificial intelligence (AI) and

machine learning (ML), utilities can utilize smart meter data to improve operational efficiency and proactive decision-making. The findings will contribute to a framework for integrating smart meter analytics into climate adaptation strategies, ensuring sustainable and efficient water management.

Methodology

The initiative involves an analysis of smart meter-generated data from meters installed within KIWASCO's CBD DMA to measure the effectiveness in real-time data flow monitoring.

Additionally, predictive analytics are applied to identify consumption patterns, leakage points, and system vulnerabilities.

Results

Preliminary findings indicate that smart meters have significantly improved water distribution efficiency and NRW management by detecting leaks and illegal connections early.

The Upande platform has enabled KIWASCO to optimize resource allocation, reduce supply disruptions, and enhance customer service within CBD DMA. Predictive analytics has further supported proactive decision-making in response to supply constraints and network failures.

Conclusion

The integration of smart meter data analytics into water resource management presents a viable strategy for NRW Management. By adopting AI-driven insights and real-time monitoring tools, KIWASCO can enhance sustainability, reduce water losses, and improve service delivery. The study recommends a structured framework for the company to maximize the potential of smart meter analytics in mitigating Non-Revenue Water.

Key Words

Smart water meters, data analytics, predictive analytics, real-time monitoring, Upande platform.

Title: Real-Time Water Network Intelligence; Transforming Big Data Analytics into Action

Solution Type: New Innovation | Year: 2023-04

Received Award: No | Original Innovation: Yes

Patented Innovation: No

Innovators' Name:

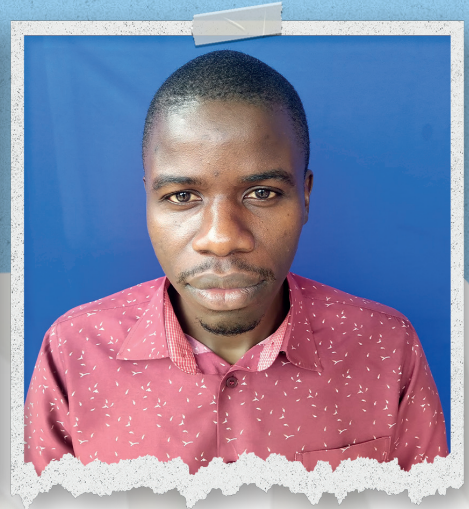
Venessa Akinyi, Lilian Night Andanje and Bramwel Ouma



Venessa Akinyi



Lilian Night Andanje



Bramwel Ouma

Innovation Description: The innovation is a real-time water network intelligence system that integrates field data collection, automated warehousing, and live dashboards using Kobo Toolkit, Google Sheets, and Looker Studio. Since 2021, over 27,000 leak incidents have been digitally captured, improving resolution efficiency from 52% to 78%. The low-cost, scalable solution enables predictive maintenance, reduces non-revenue water, and offers a replicable model for utilities with limited resources, empowering data-driven.

Problem Solved

The innovation by Kisumu Water and Sanitation Company (KIWASCO) aims to solve persistent inefficiencies and water losses within its distribution network, primarily driven by delayed response to leak and burst events. Traditionally, KIWASCO relied on

retrospective, manually compiled monthly reports to track technical issues—an approach that limited real-time visibility, delayed interventions, and hampered effective planning. This reactive system often led to prolonged water losses, increased non-revenue water (NRW), poor service delivery, and inefficient resource allocation. A key issue was the lack of a centralized, real-time platform to collect, analyze, and visualize field data for informed decision-making. The absence of timely technical insights into pipe material, size, failure frequency, location, and cause of damage meant that maintenance teams operated without evidence-based prioritization. Moreover, the inability to spatially map vulnerable zones prevented the utility from identifying hotspots, leading to recurring issues and increased operational costs.

KIWASCO also faced challenges

in monitoring and evaluating staff performance in the field due to the lack of automated accountability mechanisms. Leak resolution times were difficult to track, and data inconsistencies undermined reporting accuracy. To address these systemic problems, KIWASCO introduced a real-time monitoring and visualization system. By integrating mobile-based Kobo data collection with an automated Google Sheets backend and a Looker Studio dashboard, the innovation enables high-frequency updates, spatial analytics, and improved transparency. It empowers the utility to shift from reactive to predictive maintenance, monitor staff productivity, optimize resources, and prioritize critical repairs. Ultimately, this innovation tackles the twin challenges of water loss and operational inefficiency, paving the way for a data-driven

culture that enhances service delivery, reduces NRW, and ensures better infrastructure planning for long-term sustainability.

Uniqueness

KIWASCO's solution is innovative in its integration of low-cost, readily available digital tools to create a real-time, end-to-end water network monitoring system. Unlike traditional systems, this innovation combines mobile-based field data collection (Kobo Toolkit), automated data warehousing (Google Sheets), and dynamic data visualization (Looker Studio) into a unified and scalable platform. The innovation lies not only in the tools used, but in how they are orchestrated. A custom-built JavaScript interface enables seamless synchronization between the Kobo API and Google Sheets, ensuring that data on leaks, and bursts repair occurrence is auto-updating every 15 minutes. This continuous flow of information powers a live dashboard that provides real-time spatial and temporal insights into network performance. Additionally, the solution introduces data intelligence into operations by allowing granular analysis of trends, vulnerable zones, and staff performance. It enables KIWASCO to shift from reactive maintenance to predictive planning, significantly improving leak response times and reducing non-revenue water. The system's adaptability, affordability, and focus on open-source tools make it a model for utilities with limited resources. It exemplifies how digital transformation can be achieved through innovation in design and integration, rather than costly technology upgrades.

End Users

The primary end users of the solution are KIWASCO's technical operations teams, including water network plumbers, physical losses management team (NRW), and network supervisors who rely on

real-time data to prioritize and execute field interventions efficiently. Additionally, mid-level managers and decision-makers utilize the dashboard insights for performance tracking, resource allocation, and strategic planning. The customer service team benefits indirectly through improved service delivery and faster response to leak and burst repairs. Lastly, the utility's executive leadership uses the system's analytics for policy formulation and investment decisions. This comprehensive usability ensures that all levels of the organization are informed and aligned in addressing network challenges.

Impact

The implementation of KIWASCO's real-time monitoring and visualization system has had a transformative impact on the utility's operational efficiency and service delivery. By shifting from retrospective reporting to a real-time, data-driven framework, the solution has reduced response times to leaks and bursts, with resolution efficiency improving from 52% in 2023 to 78% in 2024.

This has led to significant reductions in water loss. Spatial analytics have enabled the identification of high-risk areas and recurring issues, allowing for targeted maintenance and infrastructure investment. Insights from over 27,000 logged incidents have informed policy shifts, such as the in-house last mile connection strategy, reducing unauthorized connections and improving network integrity. The solution has also enhanced internal accountability, as real-time dashboards foster transparency in team performance tracking and resource deployment. Moreover, the integration of low-cost digital tools demonstrates that impactful innovation does not require massive investment, making the solution scalable and replicable by other utilities facing similar

challenges. The system empowers KIWASCO to transition from reactive maintenance to predictive planning, improving sustainability, reducing Non-Revenue Water, and contributing to better overall urban water governance.

Sustainability

The sustainability and replicability of KIWASCO's real-time monitoring solution lie in its strategic use of open-source and low-cost technologies, ensuring long-term viability without dependence on expensive proprietary systems. By leveraging tools such as Kobo Toolkit, Google Sheets, and Looker Studio, the system minimizes operational costs while maximizing flexibility, allowing for continuous customization and scaling as needs evolve. The architecture is lightweight yet powerful, requiring minimal infrastructure and technical support, which makes it suitable even for utilities with limited ICT capacity.

From a sustainability perspective, the solution enhances institutional resilience by embedding data-driven decision-making into daily operations, improving service delivery and reducing water losses. Its alignment with ongoing capacity-building initiatives ensures that internal teams can maintain and adapt the system without heavy reliance on external consultants. The replicability of this model is evident in its modular design—field data collection, automated warehousing, and visualization—which can be tailored to fit different utilities, contexts, and regions. By focusing on local needs and integrating with existing workflows, the innovation avoids disruption while fostering adoption. This presents a scalable blueprint for other utilities seeking to enhance operational efficiency, reduce non-revenue water, and build smart, sustainable urban water systems using affordable, adaptable technology.

Title: Fusing Space and Sensors; Predicting Turbidity for Smarter Water Treatment in Kisumu

Solution Type: New Innovation | Year: 2025

Received Award: No | Original Innovation: Yes

Patented Innovation: No

Innovators' Name:

Bramwel Ouma, Venessa Akinyi, Kennedy Kitindah



Bramwel Ouma



Venessa Akinyi



Kennedy Kitindah

Innovation Description: This innovation integrates real-time telemetry with satellite-based Earth observation and machine learning to predict turbidity in the Kibos River, supporting proactive water quality management for KIWASCO. A telemetry unit captures turbidity data every 10 minutes, while Sentinel-2 imagery processed in Google Earth Engine provides spatial insights through the Normalized Difference Turbidity Index (NDTI). These datasets are combined and used to train a Random Forest model that forecasts turbidity.

Problem Solved

Supplying safe, reliable drinking water that earns the confidence of consumers is the foremost responsibility of every water utility. Kisumu Water and Sanitation Company (KIWASCO) faces

persistent challenges in maintaining this standard, especially at the Kajulu Water Treatment Plant, which abstracts raw water from the Kibos River. During the rainy season, increased runoff from the upstream catchment area raises sediment loads in the river, resulting in turbidity levels that frequently exceed treatable limits. These turbidity spikes often force the plant to shut down temporarily, disrupting water supply to consumers and increasing operational costs.

Traditional turbidity monitoring methods have been manual, reactive, and spatially limited, providing insufficient early warning to respond effectively to rapid water quality fluctuations. These constraints significantly hinder KIWASCO's ability to manage chemical dosing efficiently and ensure uninterrupted service delivery. To address this,

KIWASCO has adopted a dual-layered innovation that combines real-time telemetry and satellite-based Earth observation with machine learning. A telemetry unit located 1.8 km upstream of the treatment plant provides turbidity readings every 10 minutes via GPRS, while Sentinel-2 imagery accessed through Google Earth Engine is used to compute the Normalized Difference Turbidity Index (NDTI). This satellite-derived data, when calibrated and validated against real-time telemetry, forms a robust dataset enriched with temporal factors. Using this combined data, a Random Forest regression model is trained in Python to predict turbidity trends. The model outputs are visualized spatially, offering plant operators actionable insights to anticipate turbidity surges and adjust chemical treatment proactively. This

innovation addresses the urgent need for predictive, data-driven water quality management. It empowers KIWASCO to minimize treatment disruptions, reduce chemical usage inefficiencies, and enhance overall service reliability—particularly in a resource-constrained environment. Ultimately, it strengthens consumer confidence by ensuring consistent delivery of safe drinking water.

Uniqueness

This solution is innovative because it seamlessly fuses Earth observation technology, real-time telemetry, and machine learning to create a predictive turbidity monitoring system—an approach not commonly applied in water utilities, especially in resource-constrained settings. By leveraging freely available Sentinel-2 satellite imagery through Google Earth Engine (GEE), the solution extracts the Normalized Difference Turbidity Index (NDTI), offering spatial insights that traditional in-situ monitoring cannot provide. What sets this system apart is the integration of high-frequency telemetry data—captured every 10 minutes via a GPRS-enabled IoT station upstream of the Kajulu Water Treatment Plant—with satellite-derived indices. This dual-source dataset is used to train a machine learning model (Random Forest regression), which forecasts turbidity trends with spatial and temporal context. The innovation lies not just in using advanced technologies, but in how they are adapted to solve a local, real-world challenge: improving water treatment efficiency and reducing plant downtime due to unpredictable turbidity surges. The solution enables proactive, data-driven decisions on chemical dosing, transforming KIWASCO's operations from reactive to anticipatory. Scalable and cost-effective, this approach offers a

blueprint for other utilities seeking to modernize water quality monitoring using existing open-source tools and affordable sensor technologies.

End Users

The primary end users of this solution are the water treatment plant operators and water quality managers at Kisumu Water and Sanitation Company (KIWASCO), who rely on timely and accurate turbidity data to adjust chemical dosing and maintain treatment efficiency. Secondary users include utility decision-makers, engineers, and planning teams who use forecast insights for operational and infrastructure planning. Regulatory bodies and environmental agencies can also benefit from the data for compliance monitoring. Additionally, the wider community served by KIWASCO indirectly benefits through improved water quality, reduced supply interruptions, and enhanced trust in the reliability of their water service provider.

Impact

The solution significantly enhances KIWASCO's ability to manage raw water quality and sustain uninterrupted water supply, particularly during high-turbidity events. By combining real-time telemetry with satellite-derived turbidity indices and machine learning, the system empowers treatment plant operators with accurate, predictive insights into river turbidity. This enables proactive adjustment of chemical dosing before quality deteriorates, reducing the risk of operational shutdowns and improving treatment efficiency. Operationally, the solution helps cut downtime by up to three hours during turbidity spikes, improving water availability for thousands of Kisumu residents. It also optimizes the use of treatment chemicals, lowering costs and minimizing environmental

impacts from overuse. Strategically, the use of freely available satellite data and affordable IoT devices makes this approach scalable and replicable for other utilities, especially in low-resource settings. It shifts water quality management from a reactive model to a forward-looking, data-driven system, improving resilience against climate-related variability in water quality. Overall, the innovation improves service delivery, supports informed decision-making, and contributes to long-term sustainability in urban water management for KIWASCO and potentially other utilities in similar contexts.

Sustainability

The solution is designed with sustainability and scalability in mind, leveraging open-source platforms like Google Earth Engine and freely available Sentinel-2 satellite imagery, minimizing ongoing costs. The integration of affordable telemetry IoT systems reduces the financial burden typically associated with high-tech monitoring infrastructure. Because the system relies on reproducible methodologies—such as the derivation of the Normalized Difference Turbidity Index (NDTI) and machine learning algorithms—it can be easily adapted for different river basins and treatment plants. This makes the solution highly replicable for other water utilities across Kenya and beyond, particularly those facing similar challenges with turbidity and resource limitations. With proper training and access to internet connectivity, utilities can implement this framework to enhance water quality monitoring and forecasting. The model also aligns with national and global goals for smart water management and climate resilience, making it a sustainable, forward-looking approach to urban water utility operations.

References: N/A

Title: In-House Developed Tank Level Monitoring System***Solution Type: New Innovation | Year: 2024-02******Received Award: No | Original Innovation: Yes******Patented Innovation: No******Author:******Kennedy Kitindah******Kennedy Kitindah*****Innovation Description:**

The IoT Innovative solution integrates ultrasonic sensors with LoRa (Long Range) technology for real-time monitoring of water tank levels in water distribution systems. Ultrasonic sensors measure water levels, transmitting data through LoRa networks. The Server is integrated to the ERP system and SMS portal where data is accessed by authorized users.

This solution provides actionable insights into water production, transmission, storage and distribution.

Problem Solved

Water utilities face numerous challenges in efficiently managing water supply, production, and distribution. One significant issue is

the inability to accurately monitor water levels across large, distributed networks, often leading to reservoir overflows and water shortages. Inaccurate data and delayed interventions result in wastages, increased non-revenue water, and poor customer satisfaction. Additionally, unauthorized usage, leaks, and poor distribution planning further exacerbate the problem. Most WSPs rely on manual readings and monitoring of integral processes which are most often inaccurate or basic sensors with limited communication capabilities. These systems are typically inefficient, fail to provide real-time data, and are not capable of supporting widespread, remote monitoring. As a result, the utilities struggle with poor water distribution,

overproduction, inconsistent supply and high non-revenue water, making it difficult to meet growing demand and ensure service reliability.

Kisumu Water & Sanitation Company Ltd is among such utilities that have been struggling with high Non-Revenue water despite instituting many reduction strategies. With 75% physical losses encountered, reservoir overflows contributed significantly to this despite staffs assigned for monitoring and management for the twelve (12) tanks. Automated Tank level monitoring system was introduced not only to detect and respond to potential overflows by providing real-time data but also to efficiently manage and plan production and distribution.

Uniqueness

The integration of ultrasonic sensors which are non-intrusive with LoRa technology using an open-source server provides a unique, affordable and highly effective solution to water reservoir challenges. Ultrasonic sensors are used to measure water levels in tanks by emitting high-frequency sound waves and analyzing the return signal. The data is then sent to a gateway which communicates with the server where its processed and analyzed. To enable access to data, the servers are integrated to the KIWASCO's ERP and SMS Portal systems for decision making and corrective actions. This enables accurate, continuous monitoring of reservoir water levels, ensuring receipt of real-time data without the need for manual reading. LoRa allows data from the sensors to be transmitted over large distances to gateways, with one gateway covering a radius of up to 5km even in remote or dispersed locations where other transmission modes or logistics would be expensive or unsustainable. By integrating this system with KIWASCO's centralized management and ERP system, the solution ensures that the data from 12 reservoir tanks are processed and analyzed in real-time, providing insights into water levels and supply-demand balances. This allows for proactive monitoring and

immediate interventions when issues arise thereby improving efficiency, sustainability, service reliability and reducing non-revenue water.

End Users

Kisumu Water & sanitation Company – Directly uses the system in the 12 reservoir tanks within its service area to optimize distribution and manage and adjust production schedules depending on the demand as guided by levels. Ultimately, KIWASCO customers who benefit from improved water supply, distribution, and service reliability, are indirect end users.

Impact

The impact of this innovation is transformative for Kisumu Water & Sanitation Company in Non-revenue water management. The real-time and predictive data has mitigated overflows, thereby reducing Physical losses from a high of 75% to current 60%. The use of the system has additionally lowered the production volumes from a daily average of 35,000m³ to 33,000m³ since production is currently adjusted depending on reservoir levels hence lowering production cost. The ability to dynamically adjust water distribution ensures that the right amount of water reaches the right areas at the right time, improving service reliability and customer

satisfaction.

Sustainability

The innovation is highly sustainable due to its low-power, long-range capabilities, which minimize the environmental impact of traditional water monitoring systems. LoRa technology's low energy consumption ensures that sensors can operate for extended periods without frequent battery replacements, making it ideal for remote or difficult-to-access locations. This reduces the need for maintenance and operational disruptions, making the system both cost effective and environmentally friendly. Furthermore, the solution's modularity and scalability allow it to be easily replicated and adapted to other water utilities, regardless of their size or geographical constraints. The ability to use open-source servers greatly makes it cost-effective for both Urban Rural utilities. KIWASCO's success with this in-house developed solution sets a precedent that can be adopted and implemented by other utilities facing similar challenges at minimal cost without engaging external suppliers. Overall, this innovation is sustainable not only in terms of resource conservation but also in its ability to be replicated and scaled to improve water management across diverse contexts, contributing to global efforts to enhance water use efficiency and sustainability.

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Data Logging and Control of a Remote Inverter Using LoRa and Power Line Communication

K. A. Terashmila Lasagani, Tariq Iqbal, George K. Mann Energy and Power Engineering Vol.10 No.8, August 17, 2018 DOI: 10.4236/epe.2018.108022

<https://www.scirp.org/reference/referencespapers?referenceid=1864631#:~:text=Data%20Logging%20>

Tête-à-tête with the KenyaSan Award Winners

Bramwel Ouma: GIS Analyst.
Vanessa Akinyi: Ass GIS Analyst
Lillian Knight: Business Intelligence Analyst



Photo file: MD, Thomas Odongo presenting a trophy to the team during a ONE BEE meeting.

Congratulations! How did it feel to be recognized in the Innovation category during the KenyanSan Conference 2025?

Bramwel: It was a proud moment for us in terms of personal achievement and also an achievement for the company because we were able to fly our flag high.

Lilian: It was an exciting and humbling moment – a testament that every effort matter.

Vanessa: It was a great moment, having putting much effort in the project and also for the company.

What was the inspiration behind the development of the award-winning data-driven application?

Bramwel: Having interacted with the current ERP system, we became

curious to explore a more interactive system that could supplement and provide a proactive technology that would add insights to what we were doing especially on the fronts of being able to capture information in real-time on issues that arise from the onset of an activity within the water network.

Vanessa: It stemmed from an enthusiasm to create more visibility in our field operations by enhancing retrieval of reports and also being able to share the reports easily with the network teams for prompt decision making.

Lilian: The innovation was inspired by a need to solve a challenge that we as a company was facing and to improve efficiency.

Before the system invention, how was Non-Revenue Water data monitored or managed?

Vanessa: The company monitors Non-Revenue Data through CRM and also, through hard book records where the plumbers kept data of closed tasks, just before the development of the application. To fully digitize this process and be able to collect, analyze and share out informative data that can impact major decision on operations and maintenance within the company, the GIS team incorporated KOBO toolbox to supplement CRM. We have also been able to enhance accountability within the plumbers by making everyone responsible for each and every ticket assigned out.

What are the gaps within the CRM that this application currently addresses?

Bramwel:

- Spatially acquired data which was not there, as such, we are now able to analyze information spatially.
- On spot monitoring of leakage repairs- currently we are able to do that immediately the reports are on-boarded into the system progressively upto closure.
- The information from this innovation can now be easily integrated with CRM data to get more insights especially in terms of TAT and also analyze efficiency of works done.
- Further, we are able to get more intuitions on temporal data which is real time that spans over a range of period for better understanding and decision making.

Does the application influence complaint resolution compliance in any way?

Bramwel: With this system, we don't

really focus on complaint resolution. We only monitor the tickets from when they are assigned to the internal staff for action to when they are resolved. It focuses majorly on operational efficiency internally rather than externally. For resolution we can rely on the CRM system which captures the on boarding time through to when the tickets are closed. However, on our dashboard of analysis, the TAT has improved from 54% in 2023 to an average of 89% resolution compliance.

What type of data does the system analyse, and how is it integrated with field operations?

Vanessa: With this system, the plumber is able to share details such as pipe size, pipe material and the probable cause of the pipe leakage. They are able to capture and upload a picture of the before and after the repair work. Once a case has been reported into the system, the reports get automatically geo-tagged to mean you can trace the leakage to the location of occurrence. The system contains and process this type of data. Both quantitative and qualitative.

What is the contribution of this system into the staggering numbers of NRW?

Vanessa: Considering there's much that contributes to NRW other than physical losses, we haven't been keen to quantify, into a percentage, the system's direct contribution to the reduction index. However, the system is anchored to help in managing physical water losses and it is at the core of speed and quality repairs which is critical in the management of such losses. What we can report on, is the improvement in response of the plumbers to water leakages and bursts. This contributes to the resolution compliance of 89% as earlier alluded, that translates to an average of 5hrs:52mins in repair of leakages thus minimizing a range of loss time.

Bramwel: Apart from speed and quality of repairs, under the physical loss pillar, the system also contributes to asset management. After we integrate data from the system with GIS analytics, we are able to propose areas along the



Photo file: Ms, Lillian receiving her certificate during the award sessions

network that probably requires overhaul.

So far, we have proposed for overhaul of up to about 60Kilometers of water network that has been positively considered under the LVWATSAN project and will be focusing on replacement of some of the dilapidated water networks within the City. Further, the visibility that system provides enables us to act effectively on some of the repeat cases minimizing their re-occurrence. This is because, we are able to analyze the probable cause of each occurrence, that is then, shared with the network maintenance engineer to enable him come up with long term solutions.

These, of course significantly, contributes to the reduction of NRW. We are still optimistic to record more benefits of this system, especially when we shall be having more targeted interventions in terms of managing leak and burst repeat cases.

From a Business Intelligence Perspective, how would you justify the system contribution or impact into to the global business running of the company...

Bramwell: In terms of revenue, the system looks at the reduction of operation and maintenance cost which is a major sustainability factor in any water utility company. That includes, reduction of transport cost, repair material costs and the cost of human resource. When aligning the networks, we look in to the future to ascertain whether the existing networks are sustainable for the projected population increase. An assessment had been conducted and through that we have been able to come up with a water network model that will sustain the population for the next 20-years. This helps in long term planning for reliability and accessibility of our services.

Walk us through how real-time data processing has improved team decision-making on the ground.



Photo file: Vanessa receiving her certificate during the award sessions

Any measurable outcomes so far? How much reduction in response or turnaround time have you recorded since implementing the system?

Vanessa: The system is built on KOBO tool kit, that is a data collection toolkit. From the platform, we use a customized java script that pulls this data to google sheet which act as data source to Luka Studio; a business intelligence software that allows for building dynamic dashboards. After which, we customize our dashboard according to our analytical needs, and deploy it to the teams for use.

Teamwork seems to have played a major role in this success. How did each of you contribute to the project? And in your line of duty, how does the system influence or impact your day to day work delivery?

Bramwel: In terms of daily work it forms part of my key performance indicators, at GIS, we are tasked with role of ensuring that all processes within the company integrate the use of GIS application. I'm able to get the spatial data which I further analyze to add insights into the condition of the water network

which we are charged in maintaining digitally using the GIS system. My main contribution into the system development was the inception of the data collection system using KOBO.

Lillian: The system mainly analyzes and summarizes some of the key reports I'm mandated to work on a monthly, weekly or daily basis, of course, simplifying my work.

Vanessa: My work includes providing support for physical water losses. The system is designed to capture various components of a leaking pipe including, pipe size, the probable causes, and even quality of work that feeds into my reporting template, thus enhancing the insights and standard of my reports and also, the overall achievement of my goals. Personally, I customized the add-on and the dashboard, with the help from my supervisors and colleagues.

What were some of the biggest hurdles you faced during development and how did you overcome them?

Bramwel: Change management of the people took a center stage. Having been used to the CRM platform, staff had difficulties embracing the KOBO collect application and as a result, we could only receive between 20-100 reports in a month. They viewed it as an added responsibility. However, with time, they finally embraced the new mobile technology and now the plumbers can now reference on the application during appraisal to

provide evidence of their work. Our has been easy since they realized that the benefit is mutual, providing time stamp of their individual activities.

Vanessa: As much as the reports are automatically geo-tagged within the system, accuracy in terms of the geo-location still a challenge, this because of poor location precision of some phones issued to plumbers. This then fails to give a full representation of the exact avocation of the leakages. Therefore, urge the company to acquire gadgets of good quality for the task that they are meant to perform to aid the plumber be able to do their jobs optimally.

How do you ensure the system remains scalable and adaptable to future operational needs?

Bramwel: The system looks into overall operational efficiency and with that, we look into advancing the application into a control system where we can visualize all the processes under one single dashboard and be able to make fast decisions. We also look into integrating other digitized activities within the company with the system in order to have a more consolidated operational dashboard for ease of monitoring NRW issues.

Vanessa: The major challenge is that we don't have software that brings these operations together, and so yes, that is our next front of focus; to have all these applications under one roof. The reason why we adopt open sources like KOBO collect, is because, of this challenge, and it is

limited one roll out process at a time. We believe the company will help us navigate this gap successfully, first by allowing us to integrate our system with the existing ERP or CRM in order to have a more detailed dashboard. Further, with the invention of this application, we are currently exploring insights on how to introduce predictive analysis; using the data collected to forecast the future. This would be a key sustainability forward step, necessary, for the continuity of KIWASCO.

Lastly, what message would you share with other young professionals in the water and sanitation space who are looking to innovate and make an impact

Vanessa: Just start and make use of the online resources, the free online courses that you adopt for self-development. Further, involve your seniors, consult in order to acquire more insights and directions you need during your journey.

Lilian: Keep challenging the norm and stay curious. The world is fast evolving and needs brilliant-minds keep being innovative, start small and never be afraid to start.

Bramwel: Most innovations start from the simplest of things that we are given as tasks to do. So, we should look into simplicity of providing solutions, consistency and crown it with ideas that can create great impacts in operations that we engage in as an organization or a community.



Photo file: Bramwel receiving his certificate during the award sessions

CELEBRATION OF LIFE



THE LATE EVANS MOSETI

It is with deep sorrow that we announce the passing on of Mr. Evans Moseti. Evans died on 20th May, 2025 while undergoing treatment at Maxcure Hospital. This was after along battle with Diabetes.

The company has lost a remarkable member of its team. Mr. Moseti was a dynamic and dynamite staff always exploring and adopting opportunities whenever they emerged. He was a team player , a peace maker and a distinct religious fellow of our team. Up to his demise, Evans served as technical plumber under water network maintenance where he had been attached for the past 15- years.

He is survived by 3 children and a wife. We extend our sincere and heartfelt condolences to his family, friends and colleagues during this trying time. We continue to celebrate a life well lived, and the impact he made in our lives. May God's perpetual light shine upon Evans and may his soul rest in eternal peace. Amen



Crossword Puzzle:

L	O	S	S	E	S	M	O	N	I	T	O	R	I	N	G
A	X	K	I	W	A	S	C	O	B	P	R	E	S	S	U
M	T	E	B	I	L	L	I	N	G	E	P	N	H	I	R
E	E	T	E	L	A	G	A	L	P	I	P	E	L	I	N
T	R	S	L	P	V	A	L	V	E	S	A	A	C	E	E
E	I	T	I	U	R	S	A	E	R	O	C	N	B	P	S
R	N	E	O	D	G	M	I	A	L	L	S	T	I	A	S
I	G	N	I	T	I	R	O	D	U	A	U	N	I	U	U
N	O	C	S	S	A	R	E	P	C	O	R	D	E	N	R
G	C	O	N	T	R	O	L	E	A	K	A	G	E	E	E
E	S	R	E	T	A	W	A	U	D	I	T	S	M	L	A

Words to Find:

ACROSS

1. LEAKAGE
2. METERING
3. REPAIRS
4. PRESSURE
5. ILLEGAL
6. MONITORING
7. BILLING
8. LOSSES
9. WATER

DOWN

1. AUDIT
2. VALVES
3. CONTROL
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