POSITIONING MUNICIPALITIES AS DRIVERS AND ADOPTERS OF TECHNOLOGICAL AND INNOVATIVE SOLUTIONS CESA INFRASTRUCTURE INDABA 10 MARCH 2023





VISION

An association that leads innovation through cutting-edge, quality and sustainable service delivery to our member municipalities for better services to communities.

MISSION

To be consultative, informed, mandated, credible and accountable in protecting the interests of our members and acting as a catalyst for a developmental local government.

VALUES

Response

Being quick and flexible in responding to member needs.

Excellence

Serving members with pride __and_excellence. .

Innovative

Exploring new ways of doing things and providing members with fresh and unconventional services.

Dynamic

Being flexible and adapting to change to service members effectively and efficiently.



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ENVISAGED DIGITAL FUTURE



Connected Infrastructure

Smart infrastructure that "talks in

Smart infrastructure that "talks to us". i.e. ability to monitor water infrastructure, water quality, tampering and vandalism – in real-time

02 Connected Citizens

Using digital platforms to listen and engage citizens. Being where the citizen is and being accessible through multiple channels

Connected Workforce

Using technology for recruitment, productivity, mobility and training

Smart Homes and Buildings

Use of technology for improved service offering, efficient energy and water use

Paperless Administration

Further entrenching the "new normal" by adopting tools for simplicity, traceability, and transparency – and Smart records

Smarter Services

06

Embedding technology in every single service offering: waste collection, community safety.

Revenue-enhancing digital services

Hyper-automation

The use of new technologies, such as robotics, to automate high-volume repeatable tasks. Useful for compliance and governance

Integrated Processes

08

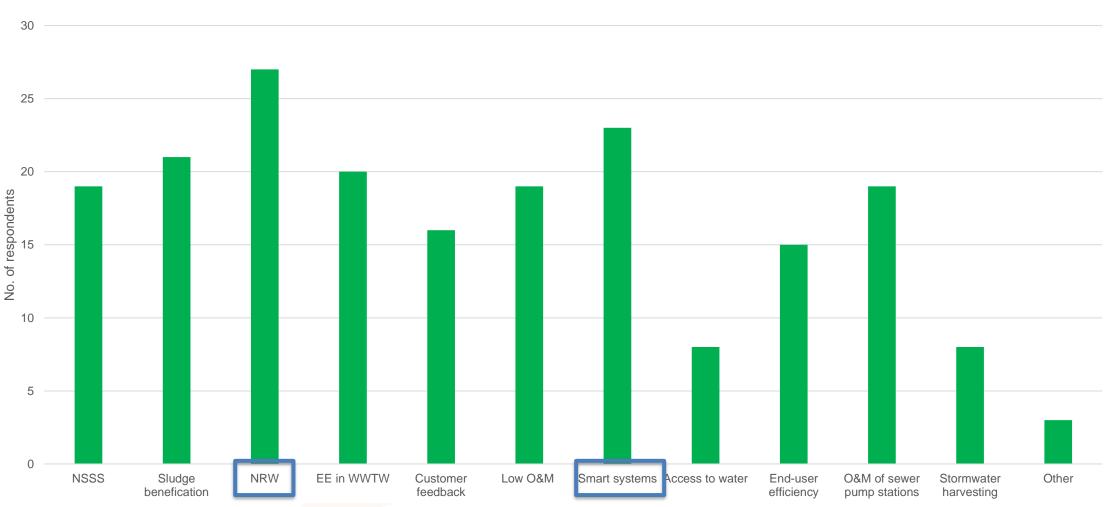
Technology as a means to eliminate waste, duplication and redundancies – and accelerate process outputs

Data-Driven LG

Using data analytics to empower to municipalities with the right intelligence for decision making, and planning; Catering for data sharing across the sector

Municipal Technological and Innovation Needs (Survey Responses)





INFRASTRUCTURE REPORT CARD





Water





Supply in the major urban areas



Supply for all other areas

South Africa has an average rainfall of 465 mm, which is half the world average, and water scarcity is a serious threat. The national bulk water resources infrastructure system includes dams, abstraction works and water transfer schemes. Although ageing and in need of more maintenance, the system has been reasonably effective in meeting demand. There have been no major structural, mechanical or electrical failures.

Dam safety reports have not been published since 2016/17. It is therefore unclear whether all major dams conform to safety regulations, or if all the electrical-mechanical components for operation of the dams are in sound working order.

The quality and reliability of water supply systems continue to decline in small towns and rural areas. In some urban areas the water supply systems have been operated at full capacity and will not be able to meet growing demands unless proactive measures are taken to decrease consumption, refurbish critical components of the systems, and expedite key bulk water augmentation projects that have been delayed.

In 2022 the Department of Water and Sanitation rated 34% of 1 186 water supply systems as being at high to critical risk of failure. Regarding water quality, just 40% of systems achieved microbiological compliance and only 23% chemical compliance. Slightly less than 41% of treated water is lost to leaks and illegal connections. Spending on repair, maintenance and rehabilitation of water supply systems remains inadequate. Damage due to increased theft, vandalism and service delivery protests diverts funding from maintenance and expansion budgets, exacerbating the problem. Given this, as well as continually growing consumption, supply reliability is decreasing.



Sanitation (including wastewater)



For major urban areas



Access to improved sanitation (flush toilets and on-site sanitation) has increased from 61.7% of households in 2002 to 84.1% in 2021.

However, the quality of wastewater treatment is declining. In 2022 the Department of Water and Sanitation published the first Green Drop assessment of every wastewater system (excluding on-site sanitation) in nearly a decade. The results clearly indicate that standards have dropped during the period of slackened regulatory supervision. Of the greatest concern is the extent to which substandard final effluent is discharged, raising the risk of disease transmission to communities downstream.

Out of 995 sanitation systems, only 22 Green Drops were awarded, compared to 60 in 2013. Municipal systems rated to be in a critical state have increased from 29% to 39% over the same period.

Some 16% of households still do not have access to improved sanitation, but make use of simple pits, convenient open spaces or other ad hoc arrangements.



Waste collection in the major urban areas



Waste collection in other areas



Waste disposal in the major urban areas



The collection, processing and disposal of solid waste material is an important local government task.

A lack of solid waste collection services may lead to disease, blockage of drainage systems and a general unsanitary appearance of the urban and rural landscapes. There has been a slight reduction in the provision of refuse collection services in metropolitan and larger urban areas, while rural and smaller municipal areas have experienced a large increase in indiscriminate dumping. Significant differences in service levels were also noted between the nine provinces.

Less than 45% of general landfill sites for disposal of solid waste are estimated to be licensed, and there is insufficient planning or construction of urgently required landfill capacity in most areas of the country. The situation with hazardous waste landfill sites is somewhat better - these are mainly operated by the private sector.

Although there are good industry recycling efforts in some sectors (e.g. paper, glass and metals), there is limited progress in others (e.g. e-waste and tyres).

Excellent legislation and policy documents are in place; however there are still many challenges in the implementation and policing thereof.



Electricity



infrastructure В Eskom transmission



network

Eskom owns and operates 15 thermal coal power stations. Some of them are more than 50 years old and have been operated without sufficient maintenance and refurbishment. The consequent decline in energy availability has increased the severity of national grid loadshedding and forced greater usage of emergency diesel-powered open cycle gas turbines.

The condition of electricity generating infrastructure weighs heavily on the national economy. Peak demand for Eskom electricity, while fluctuating, has been on a slow decline over the last 10 years. Although influenced by the state of the economy, this is linked to the decline in the condition of Eskom infrastructure and the consequent increasing unreliability of Eskom supply. Increasing tariffs and the increasing availability of alternative sources of electricity are further influences.

The national transmission system consists of 33 000 km of high-voltage overhead lines and 446 power transformers. Although its average age is nearly 40 years, diligent refurbishment of switch gear, instrument transformers and power transformers have contained any deterioration in performance.

The Eskom distribution grid consists of 351 000 km of overhead lines, nearly 8 000 km of cables, and 391 000 power transformers. Performance is measured by the number of disruption events and their duration. Both indicators have

Given the paucity of data on municipal distribution networks, they have been excluded from the grading.

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5 YEAR OUTCOME: CUSTOMISED INNOVATIVE SOLUTIONS ANCHORED BY THESE PRIORITY AREAS AMONGTS OTHERS

.•	Advocate for Enabling Procurement Regime to incrementally implement innovative solutions in the provision of basic services, including Human Settlements and Community Safety
	☐ Procurement Research Project Underway to unearth an enabling environment to implement innovative solutions
	Advocate for current <u>capex</u> and <u>opex</u> funding instruments to facilitate the uptake of Innovative solutions in the provision of basic service including Human Settlements and Community Safety
	☐ <u>Promote</u> the use of Innovative solutions in Pre-Feasibility, Feasibility studies and in Technical Report(s) – <u>MIG R54.9BB</u>
	☐ Municipalities to <u>promote</u> the inclusion of adopted innovative solution(s) in water and sanitation infrastructure project(s) development and management (RBIG R22,9B and WISG R14,6B) – Municipalities
.	Strengthen partnership(s) with science and research institutions, universities, Municipalities – striving to explore partnerships on a continuous basis









MoU with CESA - to facilitate the uptake and scale up of innovative solutions

ACCESS TO TECHNOLOGY AND INNOVATION





Web based access and classification of proven technological and Innovative solutions



Technology Accelerator Programmes





Viability and Validation of Innovation for Service Delivery Programme



Science and Research Institutions









Partnering Municipalities in the implementation of the Viability and Validation of Innovation for Service Delivery Programme (VVISDP)



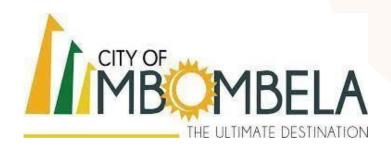


Load management and control.

•4 IR Electrical Infrastructure:

Fault passage & distance to fault indicators.

Supervisory Control & Data Acquisition (SCADA).







CCTV cameras to protect assets



Making Progress Possible. Together.

FBAE coupon system
Geyser Tag System

Renewable Energy technologies

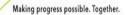




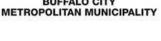


AT THE HEART OF IT ALL





















PARTNERS AND STAKEHOLDERS



water & sanitation

Department: Water and Sanitation REPUBLIC OF SOUTH AFRICA













X JAPAN WATER WORKS ASSOCIATION























Exploring a partnership with South African Photovoltaic Industry Association (SAPVIA)

POSSIBLE OPPORTUNITIES IN THE FOLLOWING SECTORS







TECHNOLOGY AND INNOVATION



Solid Waste





Finding Solutions
to Challenges Faced
by Municipalities
through next
generation
Technological
and Innovative
Solutions.



Community Safety

Theft and Vandalism of Infrastructure







Water and Sanitation

THANK YOU



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