

## Water Infrastructure Asset Management: A Comparative Analysis of Three Urban Water Utilities in South Africa

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**Abstract :** Water and sanitation services in South Africa are characterized by both achievements and challenges. After the end of apartheid in 1994 the newly elected government faced the challenge of eradicating backlogs with respect to access to basic services, including water and sanitation. Capital investment made in the development of new water and sanitation infrastructure to provide basic services to previously disadvantaged communities has grown, to a certain extent, at the expense of investment in the operation and maintenance of new and existing infrastructure. Challenges resulting from aging infrastructure and poor plant performance highlight the need for investing in the maintenance, rehabilitation, and replacement of existing infrastructure to optimize the return on investment. Advanced water infrastructure asset management (IAM) is key to achieving adequate levels of service, particularly with regard to reliable and high quality drinking water supply, prevention of urban flooding, efficient use of natural resources and prevention of pollution and associated risks. Against this backdrop, this paper presents an appraisal of water and sanitation IAM systems in South Africa's three utilities, being metropolitan cities in the Gauteng Province. About a quarter of the national population lives in the three rapidly urbanizing cities of Johannesburg, Ekurhuleni and Tshwane, located in a semi-arid region. A literature review has been done and field visits to some of the utility facilities are being conducted. Semi-structured interviews will be conducted with the three utilities. The following critical factors are being analysed in terms of compliance with the national Water Services IAM Strategy (2011) and other applicable legislation: asset registers; capacity of assets; current and predicted demand; funding availability / budget allocations; plans: operation & maintenance, renewal & replacement, and risk management; no-drop status (non-revenue water levels); blue drop status (water quality); green drop status (effluent quality); and skills availability. Some of the key challenges identified in the literature review include: funding constraints, Skills shortage, and wastewater treatment plants operating beyond their design capacities. These challenges will be verified during field visits and research interviews. Gaps between literature and practice will be identified and relevant recommendations made if necessary. The objective of this study is to contribute to the resolution of the challenges brought about by the backlogs in the operation and maintenance of water and sanitation assets in the country in general, and in the three cities in particular, thus improving the sustainability thereof.

**Keywords :** asset management, backlogs, levels of service, sustainability, water and sanitation infrastructure

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