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Sector Commentary

Water Challenges in South Africa:

Scarcity, Quality, and the Path to Sustainability

By David D. Mosaka, 23 June 2023

South Africa is a water-scarce country due to its low average annual rainfall and the uneven distribution of surface and groundwater, influenced by its climate and geography. In fact, it is ranked as the 30th most water-scarce country globally.

Water Quantity and Quality in South Africa

The deterioration of water quality is a pressing concern that requires urgent attention. The decline in water quality poses a significant threat and demands considerable focus. It has led to the outbreak of waterborne diseases like cholera in areas such as Hammanskraal, Kimberly, and the Vaal region, resulting in loss of lives. Furthermore, the state of wastewater treatment in South Africa is alarming.

Water security is not dependent solely on availability but also on quality. The quality of the country's water resources has deteriorated in recent years due to increased pollution from industries, urbanisation, afforestation, mining, agriculture, and power generation. This situation is exacerbated by outdated and inadequate infrastructure for water and sewage treatment plants, a lack of skilled operators, and the impact of climate change.

Strict adherence to the specifications outlined in the South African National Standards (SANS) 241 is paramount to guaranteeing the safety of domestic water supplies. These standards, in alignment with international guidelines for drinking water quality, play a vital role in ensuring the safety and integrity of the water.

Current and Projected Water Usage in South Africa

As of 2023, the total water requirements in South Africa amount to 13 974 million cubic metres. However, these demands are expected to increase in the coming years, with projections indicating a rise to 17 559 million cubic metres by 2030 and further to 18 500 million cubic metres by 2040.

The Agriculture sector is the biggest consumer, accounting for 59% of water usage in South Africa, followed by municipal water usage at 25.1%. Arguably, the Agricultural

sector is also the least efficient user of water among all sectors, as it utilises nearly 60% of the available water. Consequently, it can be proposed that addressing water shortages could involve transferring water from the agriculture sector to other sectors of the economy that use water more efficiently. However, such reallocation must be carefully balanced, considering trade-offs, particularly regarding food security requirements and the sector's growth and investment prospects.

Table 1: Current and Projected water requirements in South Africa, 2023 & 2030

	Current Water Use (2023)		Projected Water Use (2030)	
	Mm^3	Percentages	Mm^3	Percentages
Agriculture (irrigation and livestock & watering)	8 245	59.0%	9 700	55.2%
Municipal (industries, commerce, urban and rural domestic)	3 507	25.1%	5 800	33.0%
Strategic Power Generation	307	2.2%	430	2.4%
Mining and Bulk industrial	797	5.7%	1 017	5.8%
International Obligations	601	4.3%	178	1.0%
Afforestation	517	3.7%	434	2.5%
Total	13 974	100.0%	175 59	100.0%

Source: Author's calculations based on data from National Water Resources Planning – NWRP

South Africa's high per-capita water usage rates are influenced, in part, by significant levels of non-revenue water. Non-revenue water refers to water that is unaccounted for, primarily due to physical leaks in South Africa. Additionally, the country heavily relies on water-intensive coal-fired power plants for electricity. Moreover, there is an excessive dependence on surface water, with inadequate utilisation of other resources like groundwater.

Access to water is vital for the socio-economic development and livelihoods of communities across South Africa. Water availability plays a critical role in ensuring food and energy security and fostering economic growth. However, South Africa is far from achieving water security, as the demand for this precious resource already exceeds the available supply.

South Africa's water infrastructure, with an average age of 39 years, faces the effects of ageing, both internally and externally. Inadequate maintenance and insufficient capital renewal have further contributed to its deterioration.

The water sector in South Africa is also plagued by several illegal water users who fail to comply with the terms of their water use licenses, thus violating the provisions of the National Water Act. Another pressing challenge is the issue of acid mining drainage (AMD), which is not limited to the Witwatersrand area but also affects other regions of South Africa, including the Mpumalanga and KZN coalfields, as well as the Northern Cape's Okiep copper district. Urgent action is needed to address these issues and prevent potential crises while stabilising the situation.

Transformation

Transformation is crucial in three key areas: ensuring equitable utilisation of water for productive purposes, establishing representative governance of water, and guaranteeing access to adequate water and sanitation services for all. However, it is essential that any government policy interventions and regulations concerning water licensing and redistribution do not compromise the assurance of water supply to strategic sectors like Commercial Agriculture. Such measures should not have a negative impact on food security and the sustainability of commercial agriculture in South Africa.

Funding Water Infrastructure

Water is crucial for economic development, job creation, and livelihoods. As a nation, we must explore ways to enhance the viability of the water sector and reverse the current negative trends. The domestic investor community is interested in investing in water infrastructure in South Africa, including utilising long-term savings for financing. This presents a win-win situation for our country as it improves water access while also supporting pension funds. However, realising this opportunity is unlikely unless water is priced correctly, and water revenue collections are increased.

The private sector already plays a significant role in the national water sector. They contribute to financing projects implemented by entities like the Trans-Caledon Tunnel Authority, Water Boards, and various municipalities. The private sector is involved as implementers of water concessions in Mbombela and iLembe, as well as operating several municipal water assets.

According to economic theory, achieving “economic efficiency” means allocating resources in a way that maximises the production of goods and services for society. The key lesson from economic literature is that prices in every sector of the economy should reflect the underlying cost structure to enhance efficiency and increase social welfare. Financial sustainability in the water sector specifically refers to having sufficient revenues to cover operation and maintenance (O&M) costs and capital costs. O&M costs can be funded, but many municipalities in South Africa face a major financial problem due to inadequate collection of service charges, largely caused by widespread non-payment.

The projected gap between water requirements and supply is driven by factors such as low tariffs, insufficient cost recovery, over-consumption, inefficient use, wastage, leakage, inappropriate infrastructure choices (such as water-borne sanitation in a water-scarce

country), inadequate planning and implementation, as well as population and economic growth. If the degradation of aquatic ecosystems (including wetlands), poor land use practices, and high levels of water pollution persist, water availability and raw water quality will further decline. In South Africa, green bonds can be considered among other funding options for water development infrastructure. Green bonds are designed to raise funds specifically for climate and environmental projects, including addressing water supply shortages. These bonds are usually backed by the issuing entity's balance sheet, making them carry the same credit rating as other debt obligations of the issuer. Water infrastructure poses the greatest financing challenge in developing countries as it is part of public infrastructure.

When governments and sub-sovereign entities enter the bond market, they subject themselves to the scrutiny of credit rating agencies. Credit ratings enhance the transparency of sub-sovereign finance, allow for peer comparisons, and create market discipline for local officials and politicians.

Municipalities can also explore bond pooling as a means to finance water infrastructure. Bond pooling involves multiple municipalities, usually small- or medium-sized, collaborating to issue a single bond, with the proceeds distributed among them. This approach reduces transaction costs, which could otherwise be prohibitive, and strengthens the bond's quality by providing a collective guarantee for repayment.

Call to Action: Addressing South Africa's Water Challenges for a Sustainable and Resilient Future

South Africa needs to urgently tackle its water challenges to ensure sustainable development, safeguard public health, and protect the future of the country. All citizens and stakeholders, including the government, must collaborate in securing this invaluable resource and building a resilient nation that can effectively manage its water needs.

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