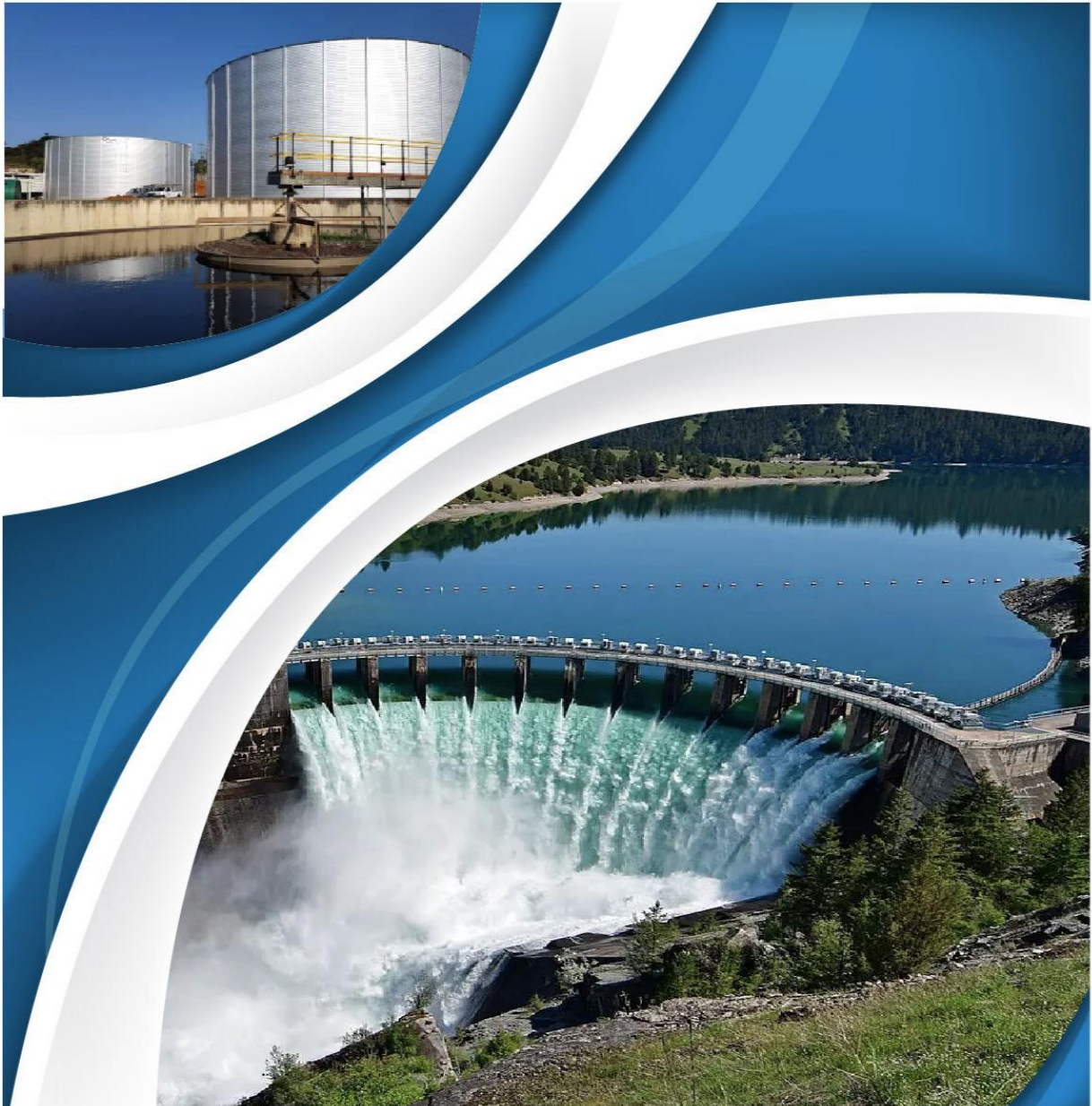


12

CONCLUSIONS



12 CONCLUSIONS

Key features that characterise water resources availability in South Africa are the following:

- South Africa is characterised by spatial variability in rainfall, with the east of the country lying in the summer rainfall zone with high rainfalls. In contrast, the country's west lies in an all-year-round or winter rainfall region that is semi-arid to arid.
- The seasonal variability in the country's climate influences water availability and storage dynamics.
- River systems (mostly through the surface water storage in large dams) are the common surface water expression of water availability in South Africa, with others being lakes, ponds, and pans.
- Aquifer (groundwater) storage is another expression of water availability in the country where an increased groundwater utilisation in the country's water mix has been observed due to the significant potential of the groundwater resources in adaptation to climatic-related stresses and augmenting conventional surface water supply systems.
- South Africa's water supply is dependent on Strategic Water Source Areas (SWSAs). SWSAs are defined as areas of land of national importance that either (a) supply relatively large quantities of mean annual surface water runoff compared to their size (b) have high groundwater recharge and high dependence, or (c) areas that meet both criteria (a) and (b). They include transboundary Water Source Areas that extend into Lesotho and Swaziland.
- South Africa is a water-scarce country. Water insecurity has become severe as almost 98% of the available freshwater resources are already allocated, and over 60% is used for crop production. Water availability is highly variable, determined by rainfall variability in the national territory.

The following features characterise water resource management in South Africa:

- The water sector institutional reform is ongoing; for the current outlook, the National Department of Water and Sanitation is the custodian of water resources with an obligation to perform water resource management functions. The water resource management functions are to be delegated to the six Catchment Management Agencies (CMAs), where two exist, and four are being established; this supports the principles of good governance, where water will be managed locally.
- At a local level, there are Water Services Institutions (WSI), which comprise Water Services Authorities (WSAs) that provide water services or outsource water services provisions to the private Water Services Providers (WSPs).

- The four new CMAs, namely Breede-Olifants CMA, Vaal-Orange CMA, Pongola-Mzimkulu CMA, Mzimvubu-Tsitsikamma CMA have been established, with three of the four CMAs already having interim CEO appointed.
- South Africa shares four international river basins, namely the Limpopo, Orange/Senqu, Inkomati, and Maputo, with six neighbouring countries, Botswana, Lesotho, Mozambique, Namibia, eSwatini, and Zimbabwe. These water resources are managed through shared watercourse institutions, commissions, and international agreements to promote international transboundary cooperation.
- The Department of Water and Sanitation has established monitoring networks (along rivers, dams, estuaries, eyes, canals, pipelines, groundwater aquifers, wetlands, and abandoned mines), monitoring programs, and information systems to ensure that water resource data is freely available and accessible.
- South Africa faces water, energy, and food insecurity; while the country is food secure at a national level, over 50% of households still face food insecurity, 98% of the country's water resources are already allocated, and the country currently faces instability in the energy sector (StatsSA, 2019).

Rainfall and Temperatures

South Africa experienced its hottest year since 1951 in 2024, with an annual mean temperature anomaly of 0.9 °C above the reference period. Average temperatures were consistent across the country, with temperatures in the lower teens dominating over the cooler southern to eastern escarpment and eastern Highveld. The highest average temperatures occurred over the traditionally warmer parts, including the Limpopo River Valley, Lowveld and north-eastern KZN, with values in the lower to mid-twenties dominating. Most parts of the country received below-average rainfall in total over the reporting period. Notable exceptions are the winter rainfall region, the southeastern parts of the Northern Cape, the southwestern Free State, and large parts of KwaZulu-Natal.

Drought

The Standardized Precipitation Index (SPI) for the two-year period ending in September 2024 reveals that drought was negligible, with only a few areas, including the Lower Orange and northeastern areas of the country, experiencing moderate drought conditions. The majority of the winter rainfall region experienced moderate to severe wet conditions during this two-year period, with moderately wet conditions prevailing along the southern escarpment extending to Lesotho.

Surface Dam Storage

As of the end of September 2024, the national dam levels were at 79.7% of Full Supply Capacity (FSC). This level is lower than that of the previous two hydrological years during the same reporting period when national storage levels exceeded 90% of FSC. As a result of the drier and warmer conditions observed this spring relative to 2023, the storage levels of the Vaal Dam and Gariep Dam also decreased by 39.5% and 16.8%, respectively. The dams that reached critical storage levels by the end of the reporting period were located in the Eastern Cape and Limpopo.

Trophic status

The ONEMP site assessment identified 78 sites of varying trophic status and eutrophication potential. The Rietvlei Dam and Hartbeespoort Dam were hypertrophic, whereas the Koster Dam and Olifantsnek Dam were mesotrophic, with low nutrient levels and reduced aquatic productivity. Twenty-six of the sixty-nine sites assessed for eutrophication potential demonstrated a high risk of eutrophication, which was an improvement over the previous year. Most eutrophication-related sites are in densely populated areas with overburdened sewage systems due to rapid population growth, inadequate infrastructure, and industrial activities.

Microbial Pollution

An assessment of 75 hotspot sites in the country revealed that 70% were deemed unsafe for recreational activities, reflecting a 3% increase from the prior year. Furthermore, 48% of sites were classified as unsuitable for irrigating crops intended for direct consumption, presenting a significant risk of infection for those engaged in these practices. The detection of *E. coli* in water indicates recent faecal contamination, highlighting concerns regarding the efficacy of wastewater treatment and the potential inadequacy of pathogen removal or disinfection processes in treated water released into the river system.

River Ecological Status

The report indicates that moderately modified conditions have prevailed in the majority of the country's river systems, with 59% of sites classified accordingly in the current hydrological year. 18% of sites have shown an improvement in ecological conditions, whereas 23% experienced a decline in the current reporting period. Several sites within the Sabie, Komati, and Usuthu catchments have been classified as predominantly or almost entirely in a natural state.

Groundwater

As of September 2024, South Africa's average groundwater levels are normal but lower than those of 2023. Elevated concentrations of nitrate and fluoride are observed in the northern regions, specifically within the Limpopo-Olifants and Vaal-Orange Water Management Areas. Elevated salinity is noted in the Northern Cape and select

coastal regions, influenced by geological, geomorphological, and hydrological processes.

National Water Balance

The national water balance indicates a System Inputs Volume of 4.39 billion m³/a, with a water loss of 40.8% and a Non-Revenue Water (NRW) of 47.4%, as per the 2023 No Drop Watch Report. The COVID-19 pandemic and increased water demands resulted in the most significant increase in NRW and water losses in 2020/2021. DWS will implement the No Drop Progress Assessment Tool (PAT) during the 2025/26 financial year to provide a snapshot of the current state of WSI's WC/WDM business.

Ecological Infrastructure Rehabilitation

The ecological infrastructure rehabilitation initiatives aim to improve the condition and functionality of wetland ecosystems. DFFE has achieved notable advancements in wetland rehabilitation efforts in KwaZulu-Natal and Mpumalanga, restoring wetlands that human activities have historically degraded. DWS is also engaged in the restoration of a wetland along the Blesbokspruit River in collaboration with the City of Ekurhuleni and the Gauteng Department of Agriculture, Rural Development, and Environment (GDARDE).

Resource Protection

The Department has finalized and published the Water Resources Classes (WRCs) and the corresponding Resource Quality Objectives (RQOs) in various Water Management Areas (WMAs), with the Usuthu to uMhlathuze WMA study concluded in June 2024. The Department is currently left with the Orange River System (Upper and Lower Orange), Luvuvhu, Keiskamma, and Fish to Tsitsikama Catchments, where technical processes are ongoing.

Water-Energy-Food NEXUS

The connectedness of current challenges (climate change, environmental degradation, population growth, migration, and the emergence of novel infectious diseases) requires circular and transformative approaches that holistically address these cross-cutting challenges. Managing the intricate relationships between distinct but interconnected sectors through nexus planning has provided decision-support tools to formulate coherent strategies that drive resilience and sustainability. As a result, the Water-Energy-Food (WEF) nexus has gained increasing attention in the research and decision-making communities in recent years as a prominent integrated resource management approach.

Compliance Monitoring and Enforcement

In the last three years, DWS Enforcement Units have documented 583 cases of non-compliance, of which 141 pertain to water resource pollution control. The Department issued 119 notices and 46 directives, and it initiated 56 criminal cases against facility

operators. Eight cases have been resolved, with facility operators implementing corrective actions. Complaints predominantly originate from the agricultural sector (28%), local government municipalities (28%), commercial activities (5%), government sectors (1%), industrial sectors (9%), mining sectors (17%), and tourism sectors (5% and 2%).

Drinking water compliance

The drinking water quality assessment indicates that 70% of water supply systems have excellent compliance with chemical quality standards, whereas 4.2% demonstrate poor to critical compliance. 75% of water services authorities failed to meet SANS:241 microbial water quality compliance standards, while 20% attained excellent status. Seven (7) Water Service Authorities (WSAs) failed to submit drinking water quality data, impacting the national perspective. The Department will oversee and assist Water Service Authorities that fail to report or comply.

Sanitation Services

Over the past 21 years, South Africa has achieved significant improvements in sanitation access, with 83.3% of households having improved facilities, including 66% with flush toilets. Access to pit toilets with ventilation pipes is at 17%, and access to pit toilets without ventilation pipes is at 14%. To achieve Sustainable Development Goal 6.2, South Africa needs multi-sectoral partnerships and collaborations from the government, private sector, academic institutions, civil society, and communities. With only five years until 2030, WSAs must accelerate the transition to safely managed sanitation.