WASA Water Security in Africa Policy Brief: Interim findings in the face of the Super El Niño

Compiled from the input of 8 WASA collaborative projects including WASANet

The **2026 Super El Niño** is widely expected to pose significant threats to **water resource management in Southern Africa**, and latest scientific research provides insights into its potential severity and possible responses. While significant uncertainties remain, seasonal forecasts, issued in early October 2026 by the European Centre for Medium-Range Weather Forecasts (ECMWF), but adjusted to correct for past mistakes and scaled down to better represent the local climate by the **Co-HYDIM-SA project**, shows that transboundary basins in Southern Africa will most likely experience dry conditions with total rainfall in the next 6 months being about 33 %, 11 % and 29 % below normal with respect to the 1981–2025 reference period in the Upper Limpopo, Cunene and Cuvelai Basins, respectively. In the extreme case scenarios, the basins could even see a reduction of about 70 %, 57 % and 77 %, respectively.

Long-term integrated hydrological modelling by the **WaRisCo project** suggests that, under ongoing global warming, **peak surface runoff events in Durban could double** by the 2040s under 2 ºC of global warming. The probability of a **Day Zero drought for Gauteng** is projected **to increase** from about 10 % over the next decade as the 1.5 ºC level of global warming emerges, to 40–50 % in the 2040s under 2 ºC of global warming.

This situation demands a **comprehensive set of adaptation measures**. For instance:

- Namibia reports at least **34.5 million m^3 of municipal wastewater each year**, which could become a strategic resource for agriculture, industry and other non-potable uses **when treated to fit-for-purpose standards**. The **WaReNam project** combines pilot validation in Oshakati with the development of further reuse solutions. It has also screened 23 potential investment locations, identifying 12 locations for further consideration in cooperation with MAFWLR (Ministry of Agriculture, Fisheries, Water and Land Reform; Namibia), and is preparing research-based recommendations for a **national water reuse policy**.
- **Decentralized nature-based solutions** applied in the **NEU-Water project** convert otherwise unreliable stormwater and greywater streams into steady streams of usable water. These systems can be integrated into urban public spaces, **cost about half as much to operate** as conventional systems and can function with little or no electricity. These systems can **reduce the load on municipal water supply by 30 %**.
- The **mining sector in Southern Africa** has great economic relevance but heavily affects regional water balances. In major mining districts, mine dewatering and drainage account for **up to 350 million liters per day (MLD)** of contaminated water – a volume that presents a critical risk if discharged untreated, but a substantial opportunity for internal recycling in active operations. Projects like **MAMDIWAS** have adapted innovative methods to **reclaim and reuse these water volumes** by removing contaminants and recycling valuable salts.
- There are roughly 40 active mining operations in Namibia and 560 in South Africa. In addition to that, **roughly 250 abandoned exploration and mining sites can be found in Namibia and more than 6000 in South Africa**. The **WaMiSAR project** is developing concepts for sustainable and climate adapted water management in the mining sector including optimization measures

for the soil-water balance, with the aim of ensuring that efforts to revegetate mine residue deposits are sustainable.

- Finally, **semi-airborne electromagnetic exploration technologies** offer a promising solution for assessing groundwater bodies and identifying groundwater drilling sites. The **SeeKaquA project** demonstrates that this approach can **reduce groundwater exploration costs roughly by a factor of five** and **accelerate the process** compared to conventional methods.

To adapt to a rapidly warming climate, the research projects recommend urgent investments to:

- **Operate seamless hydrometeorological forecasting systems** to improve flood and drought prediction for surface reservoir management.
- **Improve the uptake of early warnings in Southern Africa,** through the development of trust between the scientific community, various layers of government and civil society.
- **Develop flood- and drought-adapted infrastructure** based on simulated impacts from integrated hydrological modelling.
- **Expand and enhance public wastewater reuse infrastructure** at scale, supported by enabling regulatory frameworks, institutional capacities and sustainable operation and financing models.
- **Accelerate internal water reuse** and **closed-loop process water management** in active **mining operations** to substitute freshwater intake, while developing stepwise strategies to **address legacy mine water at abandoned sites** in the long term.
- **Enhance sustainable groundwater resource utilization** by improving the understanding of shallow and deep aquifer systems.

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