

South Africa is failing to rise to its water challenges

By [Mike Muller](#)

20 Nov 2015

A country like South Africa, where rainfall is variable and unpredictable, has to plan for the worst. Specifically, it has to plan to manage the impacts of drought. For cities, present practice is to store enough water to supply the needs of each region during the worst conditions likely to occur in 50 years.



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To meet that target for the growing population of Gauteng, the country's economic hub, a new dam must be built. The site has been chosen, the [Polihali Dam](#), identified as Phase 2 of the [Lesotho Highlands Water Project](#).

As so often in South Africa, the problem is not the plan but the delays in its implementation. According to the original planning, the dam should be completed by 2018. Given slow progress, my understanding is that it is now not possible for it to deliver water before 2024.

So, for at least six years, there is a risk that the water needs of Gauteng, which contributes more than [one-third](#) of the country's GDP, will not be met reliably.

It only took a few days of hot weather in Johannesburg for two things to happen: suburban reservoirs ran dry, and residents panicked. City authorities introduced restrictions on watering gardens and washing cars, and residents reacted as though this had never happened before, which in fact it had.

The extreme weather can serve a useful purpose: it should focus the attention of people and policy makers on the deadline to build the new dam. If no action is taken, policy makers will have only themselves to blame when failure of another vital service disrupts people's lives, and the economy.

To understand why the Lesotho Project is so important, it is necessary to understand how droughts affect the country and what should be done about planning for water security in the face of drought.

Agricultural versus hydrological droughts

There is a difference between an [agricultural drought](#) and a [hydrological drought](#).

Agricultural drought occurs when limited rainfall reduces soil moisture and affects crop growth - which is already happening in five provinces. Hydrological drought is where a reduction in rainfall reduces the amount of water that flows into rivers and streams and into storage in dams and underground.

For farmers, three months of dry weather will ruin a year's rainfed crops. While perhaps half of the country is already affected by an agricultural drought, it is not yet suffering a hydrological drought - although one may have begun.

The role of El Niño

Hot dry Novembers are not unusual in South Africa, although this year has been on the extreme side. In Johannesburg, temperatures [reached](#) 36°, the hottest in 30 years. Similarly, the temperature at the Irene weather station in Tshwane north of Johannesburg was 36.6°, the highest in [40 years](#).

The current weather was predicted some months ago by the [South African Weather Service](#). Its June Seasonal Climate forecast reported that an "El Niño" phenomenon was developing in the Pacific Ocean. It [warned](#) that El Niño was associated with reduced rainfall and high temperatures in southern Africa.

The last El Niños of similar intensity happened in the 1981-82 and 1997-98 [seasons](#).

In South Africa, the first was associated with a [crippling drought](#) that saw widespread crop failures and severe water use restrictions across much of the inland areas. The second caused significant crop losses but far less impact on water supplies.

So the occurrence of an El Niño does not necessarily mean that there will be a major drought this time. It serves as a wake-up call to water managers and the community at large about the need to be prepared. And to speed up the construction of that dam.

The other weather pattern worth mentioning

South Africa potentially faces a very different set of weather challenges - massive floods - driven by a phenomenon with a much less catchy name: the [Indian Ocean Dipole](#). It is a measure of temperature differences in the Indian Ocean and is considered to be a good predictor of monsoon rains in India as well as of cyclones in the south west Indian Ocean.

Those cyclones are important because they have been responsible for some of South Africa's most extreme rainfall. They usually take place in the first few months of the year.

It's happened before. [Cyclone Domoina](#) caused devastation in KwaZulu/Natal in 1984 and in 2000 when [cyclone Eline](#) filled the dams of Limpopo and Mpumalanga.

Even if the full force of such storms doesn't reach the coast, it often causes rainfall as far inland as Gauteng. It was Eline that saw 500mm of rain fall in Levubu, Limpopo province in just three days and caused devastating floods in [southern](#)

[Mozambique](#).

So while El Niño spells dry weather, fluctuations in the Indian Ocean Dipole may signal more tropical storms. In that case we may see floods as well as drought.

Pressures at the local level

Given the electricity shortages in the country and what euphemistically became known as [load-shedding](#), many people have started to assume that long feared [water-shedding](#) had begun. The commentators who sought a more strategic view talked about an intense drought and the impacts of climate change. They were wrong.

In fact most of the problems over the past few weeks have occurred in the domain of municipal water supply management.

The suburban challenge for planners has been whether to invest in larger local distribution reservoirs to allow people to water their gardens regardless of how hot the weather gets. In Johannesburg 46% of household water supply is used for swimming pools and watering [gardens](#).

If they don't want to do this, municipalities have to improve their ability to persuade their citizens to use less water during times of stress. So far, they have singularly failed to do this.

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