ARTIFICIAL INTELLIGENCE AND WATER

Since time immemorial (or at least since South Africa's move into the industrial era), the availability of water has been the pivot around which much of the country's sustainability has been focused.

Water has never been taken for granted in South Africa – when will it rain, where will it rain? Is El Nino on the cards for another bout of drought? The role played by topography in the development of agriculture is crucial -the people followed the rain. In some areas the people's ability to derive water from the soil was a matter of life and death -and self-sufficiency depended on water, at least in the early stages of the country's development. South Africa is a dry country – it is not farming friendly. Only around 12% of the country's total surface is arable, and soils are generally poor. Notwithstanding this, the country's peoples have never gone hungry - the country's commercial farming sector has never failed to put food on the table, even today with a population at over 65 million (estimated).

Since 1994 many other elements have entered the water fray - wastage, pollution, who pays and who doesn't pay. Who owns what water and why? Today's parlous water situation in what was once the golden city of Africa - Johannesburg – goes back to soon after the elections of 1994 when the ANC came to power. The Water Services Act of 1997 imposed cost recovery and commercialisation as operating principles. The provision of water was via the country's municipalities – in other words, people wherever they were living had to pay for water. But with the passage of the ANC's Municipal Systems Act 0f 2000, all municipal water departments were shut down and pre-paid meters were established in poor black working class areas, as well as in the rest of Johannesburg. Many of these meters were ripped out by residents.

The result today is a shambles of frightening proportions regarding the provision of water to South Africa's largest city. It is the city's worst crisis: at the heart of the crisis is the lack of investment in regular maintenance and infrastructural development in water, sanitation and sewerage services.

ARTIFICIAL INTELLIGENCE.

A recent paper (AI 2027) was published on fictional scenarios where AI is projected into our future, complete with possible outcomes. One outcome of AI in the field of water provision in a future South Africa was presaged on one critical barrier not even AI can overcome – the absence of water.

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This AI 2027 paper required some fanciful projections and future scenarios based on seemingly limitless data centre capacities. A data centre, according to AI knowledge aggregation tools (Grok, ChatGPT, et al) requires vast amounts of water to cool the tremendous heat generated from these computers . A potential sevenfold increase in the world's water consumption by 2050 is projected by the AI. The projection is somewhat simplistic and indicative of AI's shortcomings, when reality and common sense trump linear thought and projections made by computers.

FARM WATER

Current water consumption and the impact on sustained use and replenishment for farms were entered into Grok. A marked increase in population growth and the concomitant increase in water consumption show increased water usage in advanced economies – 70% for agriculture, 20% for industry and 10% for domestic use. All rough estimates were produced by Grok after it scanned the world's on -line data sources.
The projected stress of limited water availability is not factored into the AI 2027 paper's assumptions regarding data centre growth.

SCARCITY

When water becomes scarce enough to demand urgent action, humans will re-evaluate their relationship with data cooling centres requiring astronomical cooling capacities. Farming operations won't rapidly adjust to water restrictions imposed due to increased data centre requirements. Data centres will have to use cooling systems that do not restrict food production. The needs pyramid places food security above computing needs, and society will accordingly need to weigh the benefits of data manipulation against the needs for sustained food supplies.

Amazon Web Services (AWS) has published efforts aimed at returning more water than their data centres consume – this seemingly impossible task being achieved through the use of recycled waste water. Cape Town municipality teamed up with AWS to employ arborists tasked with removing water-hungry invasive species from catchment areas. In 2018 Cape Town came perilously close to Day Zero where the taps would have run dry due to water shortages and drought conditions. The World Resources Institute (WRI.org) estimates South Africa's water demand will surge163% by 2050.

AI PREDICTIONS OR WAIT AND SEE?

South African farming productivity for 2025 (mordorintelligence.com) contributes 2-3% of GDP but crucially, it supports around 800 000 persons, thus affecting food security and rural economies. Importantly, South Africa's unusual conditions such as farmers continually facing foot and mouth disease epidemics because of the lack of vaccines (a factor of an incompetent government), land reform uncertainties and infrastructure inefficiencies make predictions impossible. There are other factors making precise predictions dodgy - 2.5 million hectares of state-acquired land distributed to black owners remains under-utilized – this means that 25% of all freehold farmland is owned by black farmers, while 95% of farming output is produced by white farmers.

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Grok says that 2500 black beneficiaries have, since 1994, not produced in excess of 10% of South Africa's food output. (Here AI has taken various factors into consideration, where the "figures tell the story" narrative has been softened.) An Agricultural Research Council finding highlighted a 70% failure rate amongst redistributed farms. (The failure figure is actually much higher.) Yet the South African government is still insistent on redistributing 30% of the remaining farms by 2030.

AI is a wonderful tool, but it must be used intelligently. It scans the world for information which in essence has been collected by other people. The aggregation of figures in maize production for example doesn't lend itself easily to interpretation. The facts are there for all to see. But when it comes to politics, the behaviour of politicians all over the world is not in many cases predictable, thus making it difficult to predict non-scientific futures or to even assess current situations where historical context is not even considered. While AI will be a trusted servant, what it delivers must be assessed by including elements which may originate from sources biased one way or another.

AI is an extraordinary addition to our lives, but it is to serve us, not control us.

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