

South Africa as an Agricultural Producer in a Water and Capital Constrained Economy

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GOSA Symposium

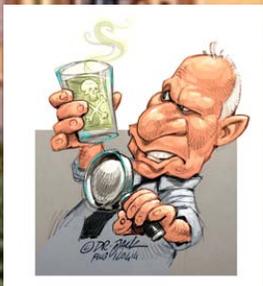
Club Mykonos, Somerset West: 19th March 2019





We are witnessing **systemic failure of key organs of state** – mostly at the municipal level – and this is driving a **new generation of risks** not yet fully comprehended by executive decision-makers, but the insurance industry is waking up, so they are becoming **drivers of change** through policy prescriptions.

Fire in Braamfontein 19 April 2017 exacerbated by water supply problems

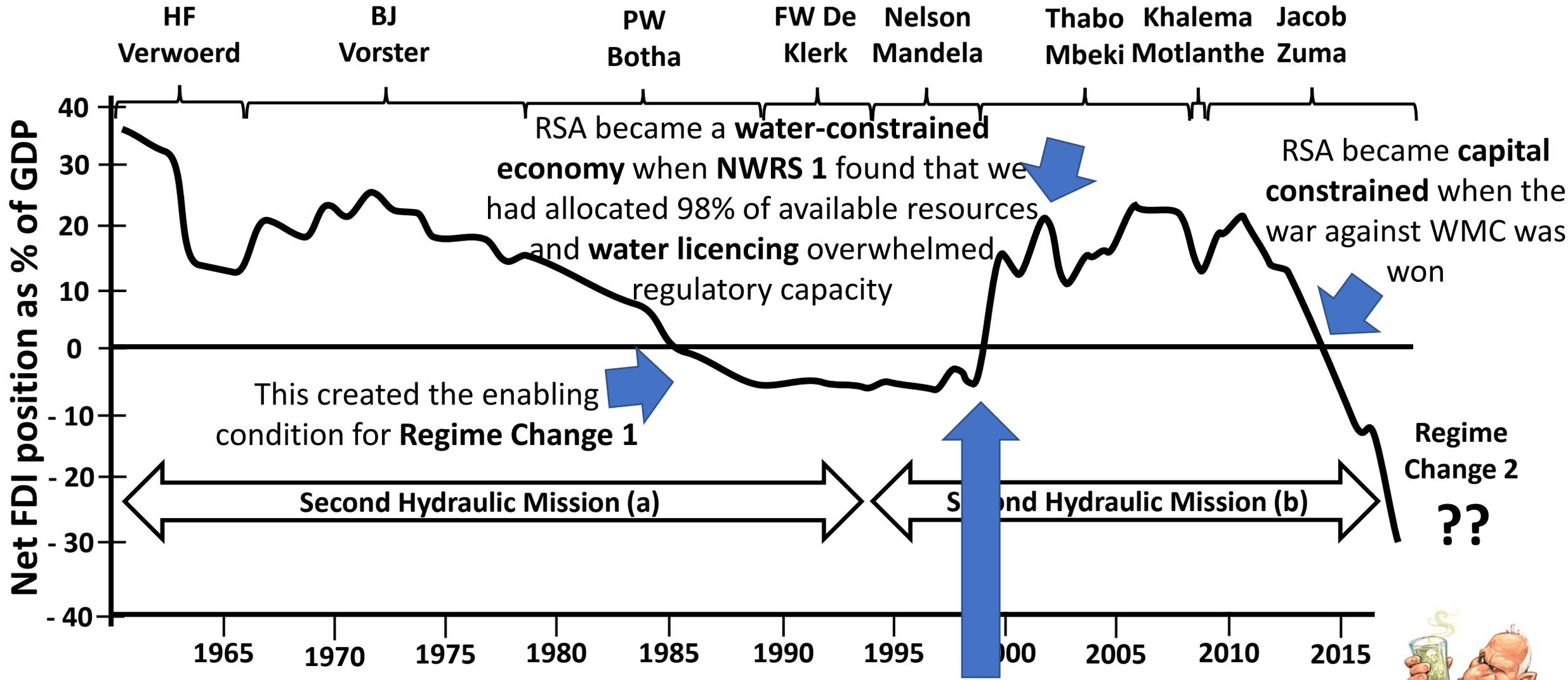


The Key Theme

- You need to understand the **changing landscape of risk**.
- By understanding **core drivers** appropriate mitigation measures can be implemented.
- Failure to understand the fundamental drivers results in the use of **inappropriate instruments** exacerbating the problem.



The Big Picture - A Water and Capital Constrained Economy



Redrawn from Economists.co.za

The **National Water Act (1998)** nationalized water and mandated the National Water Resource Strategy



Back to Basics - Fundamental Facts

This is the **Big Story**

Croc West & Marico – Surplus of 335 mcm by 2025 i.t.o. High Scenario (sewage return flow)

Upper Vaal – Deficit of 764 mcm by 2025 i.t.o. High Scenario (Reverse Osmosis & recycling as solution)

Mvoti – Umzimkulu – Deficit of 788 mcm by 2025 i t.o. High Scenario (Desalination & recycling as solution)

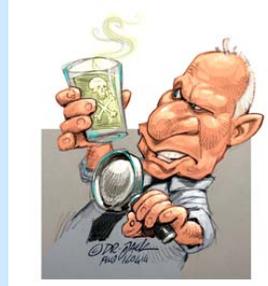
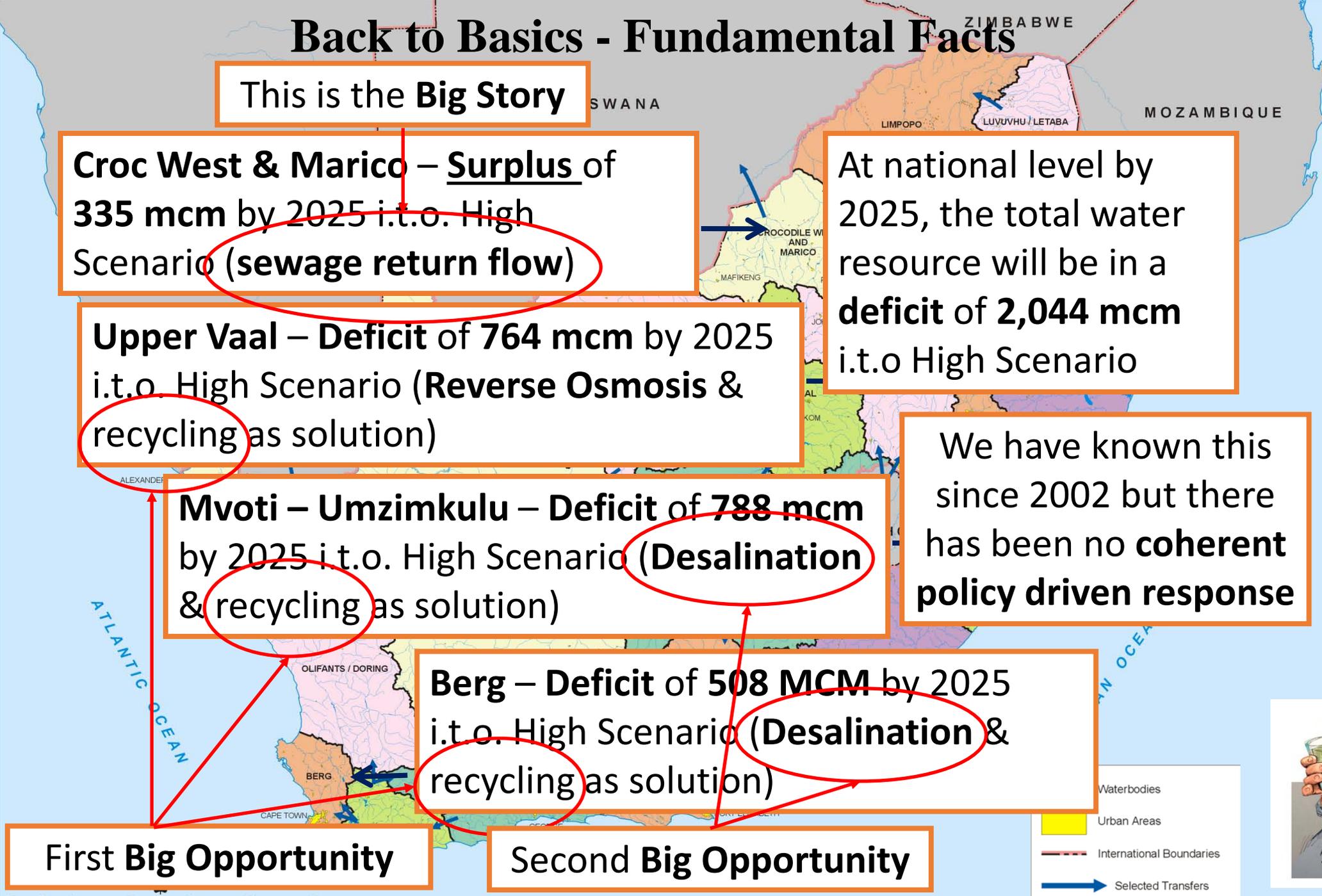
Berg – Deficit of 508 MCM by 2025 i.t.o. High Scenario (Desalination & recycling as solution)

At national level by 2025, the total water resource will be in a **deficit of 2,044 mcm** i.t.o High Scenario

We have known this since 2002 but there has been no **coherent policy driven response**

First Big Opportunity

Second Big Opportunity





This is a **national disaster** with significant implications across all sectors – but solutions and capital are available if only **government** will give **policy certainty**.

The **Vaal River** is becoming highly eutrophic

The **main driver is sewage return flow**

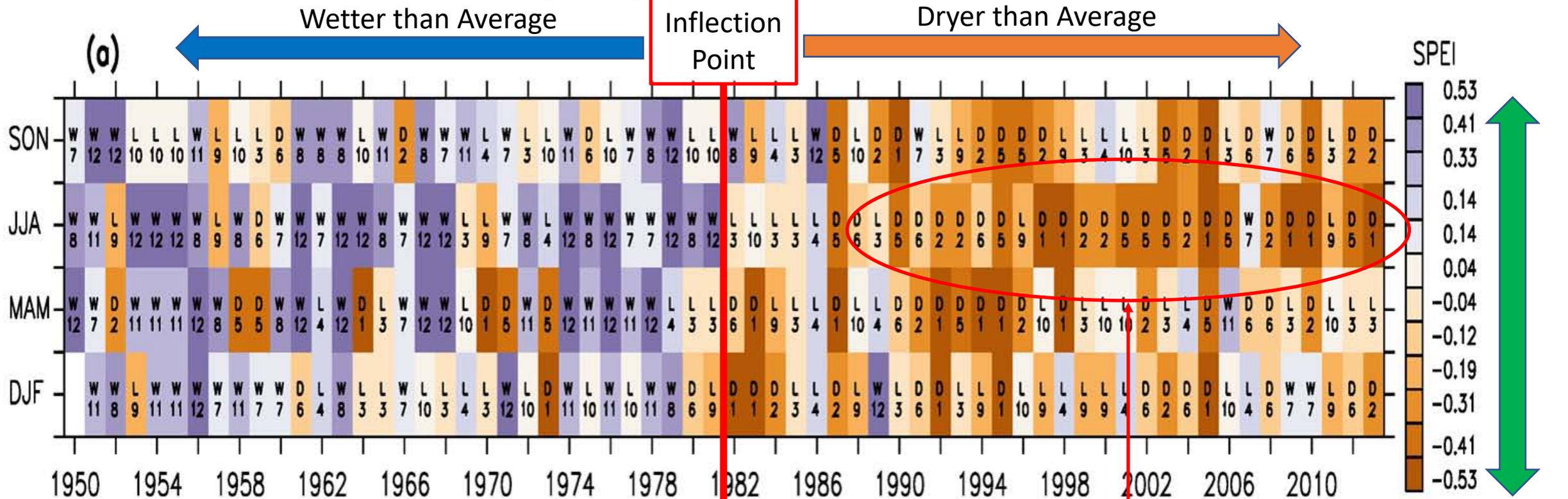
At national level we generate over **5 billion litres of sewage** daily of which **4.3 billion litres** are returned to rivers inadequately untreated

This is an indication of **state failure** in multiple municipalities across all provinces

The **SANDF** has been **deployed** but lack skills, funds & mandate



Changing Rainfall Patterns



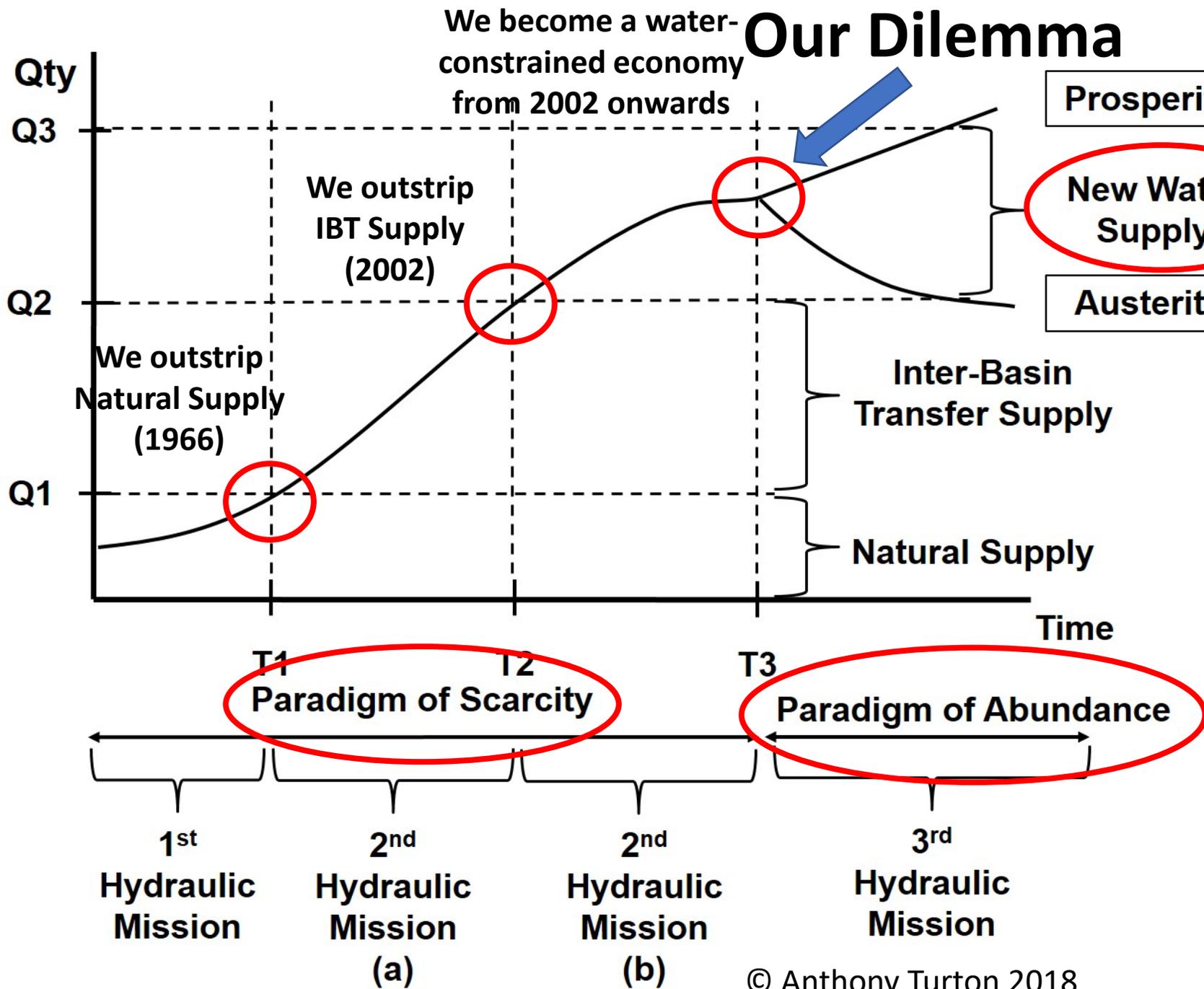
Inter-annual variation of drought for the period 1951-2013 reflecting drought patterns. (W = wet, L = low, D = dry)

Demand-side management is inappropriate because there has been a **fundamental shift in supply**. Poor policy response damages the economy.

Winter rainfall areas particularly hard hit



Our Dilemma



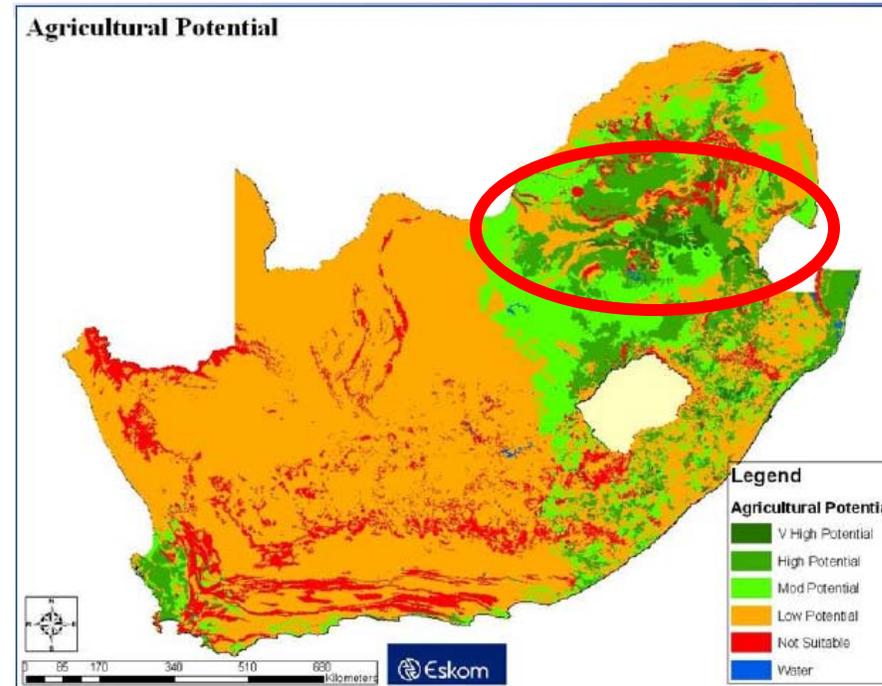
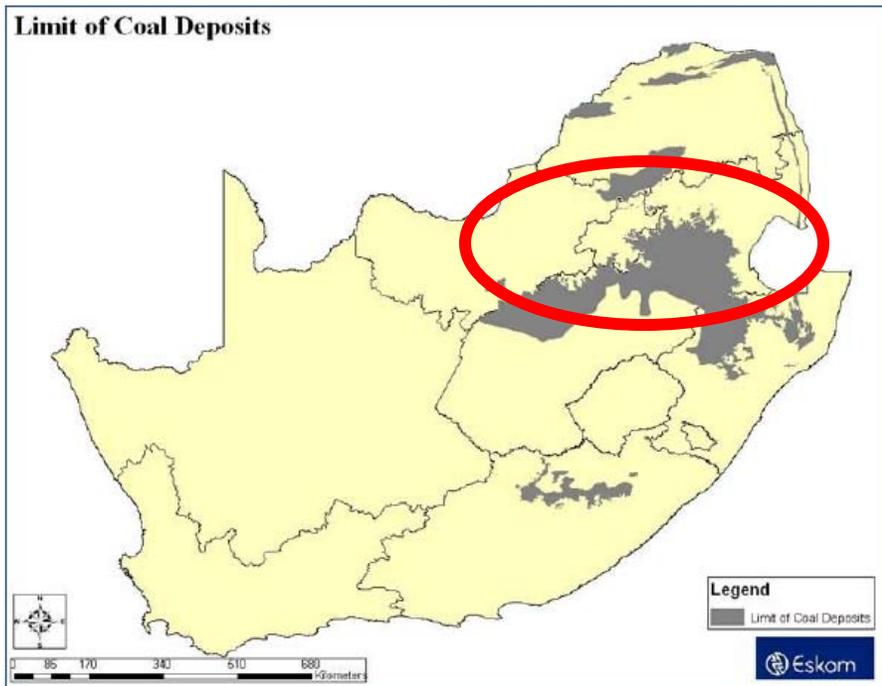
Water as a Flux
 ← Prosperity

Water as a Stock
 ← Austerity

Reuse, recovery and recycling could be the foundation of an invigorated economy

For this we need **Policy Certainty**

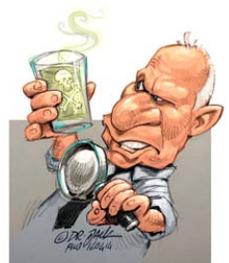




Fact # 1: Our coal deposits coincide with our best agricultural land and this means our energy addiction to coal is destroying our **national agricultural capacity because of AMD.**

Fact # 2: Acid rain causes pollen tube deformation in maize and thus threatens our **national food security.**

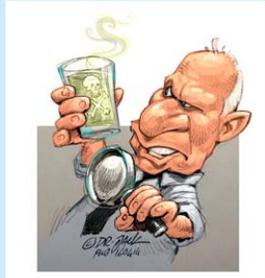
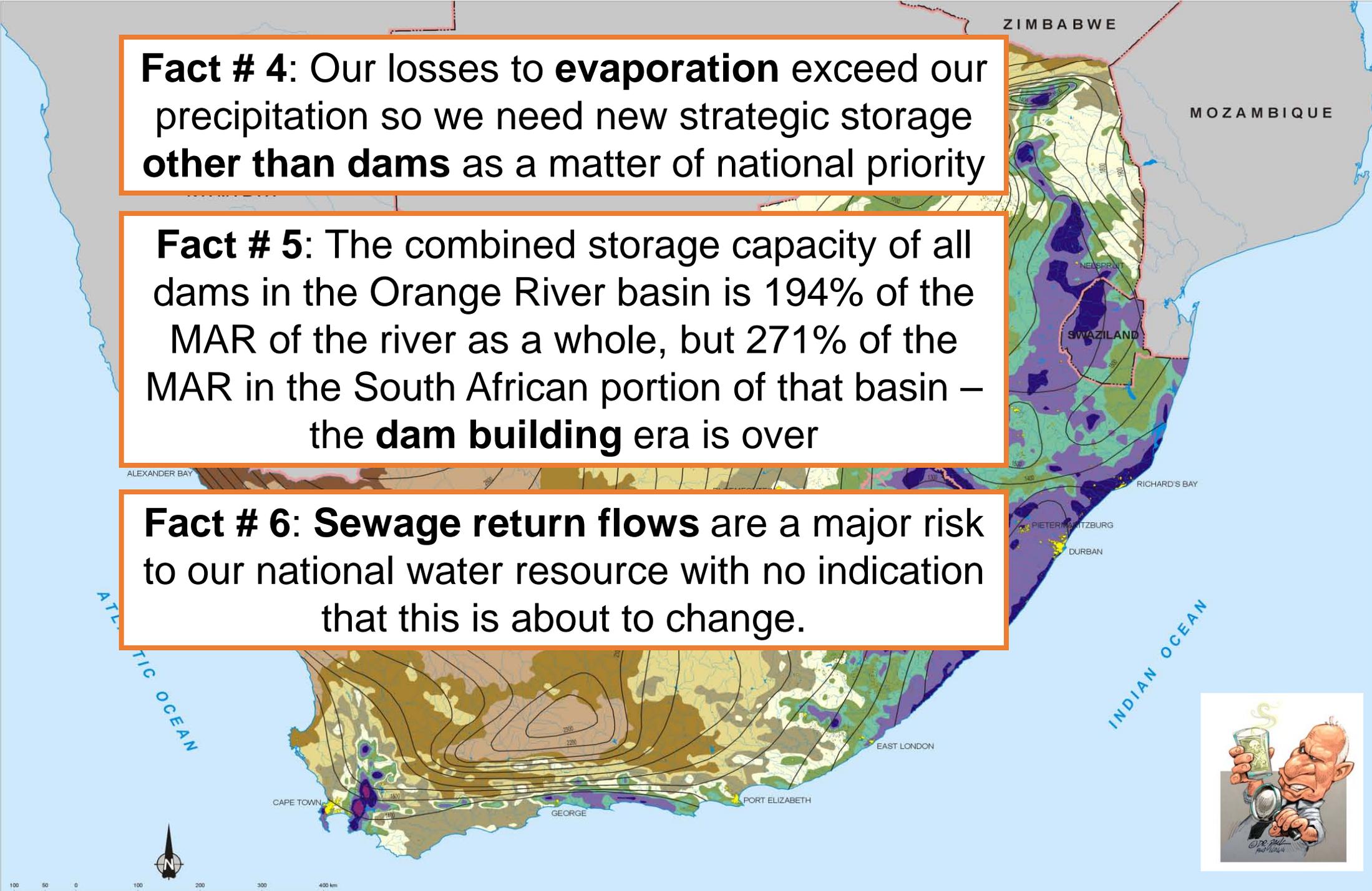
Fact # 3: The apical meristem of roots is damaged by acidification and this stunts plants **reducing yield.**



Fact # 4: Our losses to **evaporation** exceed our precipitation so we need new strategic storage **other than dams** as a matter of national priority

Fact # 5: The combined storage capacity of all dams in the Orange River basin is 194% of the MAR of the river as a whole, but 271% of the MAR in the South African portion of that basin – the **dam building** era is over

Fact # 6: **Sewage return flows** are a major risk to our national water resource with no indication that this is about to change.



Our Inconvenient Truths

- **1,085** water treatment systems for potable water
- **250** of these are in a poor condition
- **824** waste water treatment works for sewage
- **5,128 MI/d** treated by these WWTW's
- **836 MI/d** treated to safe discharge standards
- **4,292 MI/d** of partially treated (untreated) sewage discharged daily into rivers often upstream of potable water treatment systems
- Average of **18 MI/d** of point source decant of AMD
- **Sewage return flows are 238 times larger than point source gold-based AMD flows**
- **The State is the biggest single polluter of water**



Categorization of Strategic-Level Water Risks

- Failure to recognize the **shift in seasonal rainfall** and therefore a **fundamental change to the supply** means that **demand-sided management is inappropriate** and a destroyer of the economy.
- Failure to accept that **the national economy became water-constrained in 2002** – again we see the incorrect emphasis on demand management rather than augmentation of supply by means of **New Water** resources. **Absence of evidence-based policy reform**.
- Failure to grasp the **significance of capital flight from 2013** – again the incorrect emphasis on EWC that merely exacerbates the underlying problem.
- Failure to understand the **national security risk** of systemic failure of the state at municipal level – the **sewage crisis** is probably our single biggest risk.
- When you **don't know what you don't know** you are highly vulnerable.



Old Paradigm of Scarcity

New Paradigm of Abundance



Conclusions

- South Africa became **water constrained** in 2002.
- And **capital constrained** in 2013 (war on **White Monopoly Capital**).
- The **capacity of the State** to create appropriate incentives is limited.
- We are seeing **systemic failure** in the Water Sector.
- The **sewage crisis** is a significant and growing **national security risk**.
- **Deployment of the Army** is an indication of the systemic failure.
- **Day Zero** is an example of **inappropriate demand-sided solutions**.
- **Expropriation Without Compensation (EWC)** makes the agricultural sector uninvestable.
- **Migration of skills** to Mozambique, Zambia and Angola is significant
- Growing **water quality risks** for South African exporters to the EU.



**Thank
You**

