

# Water efficiency in the agri-processing sector in South Africa: practices, challenges and opportunities

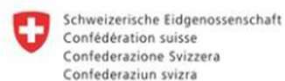
**AGRICULTURAL WATER  
MANAGEMENT SCENARIOS  
FOR SA - 2035**

Grain Building  
Pretoria  
25 March 2018

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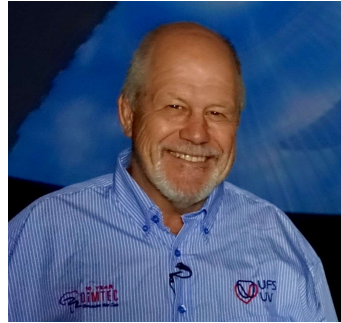
# KEY THEME

- **Water is an economic enabler** and can be central to the **New Dawn** as part of the recovery plan.
- 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.
- Solutions proposed by DWS is insufficient to reconcile the gap between supply and demand to 2035 (WRC, 2018)



- To develop agricultural water management scenarios for SA
- Drivers of change grouped into 10 clusters
  - 1) Human
  - 2) Social
  - 3) Cultural
  - 4) Political
  - 5) Economical
  - 6) Natural
  - 7) Infrastructure
  - 8) Technology
  - 9) Organisational
  - 10) Institutional

# PROJECT TEAM



Andries  
Jordaan



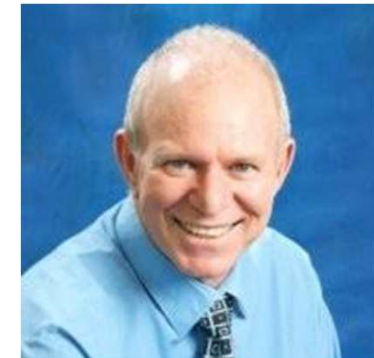
Sue  
Walker

Abiodun  
Ogundeji



Chantell Illbury

Athony  
Turton



Annie  
Hagan

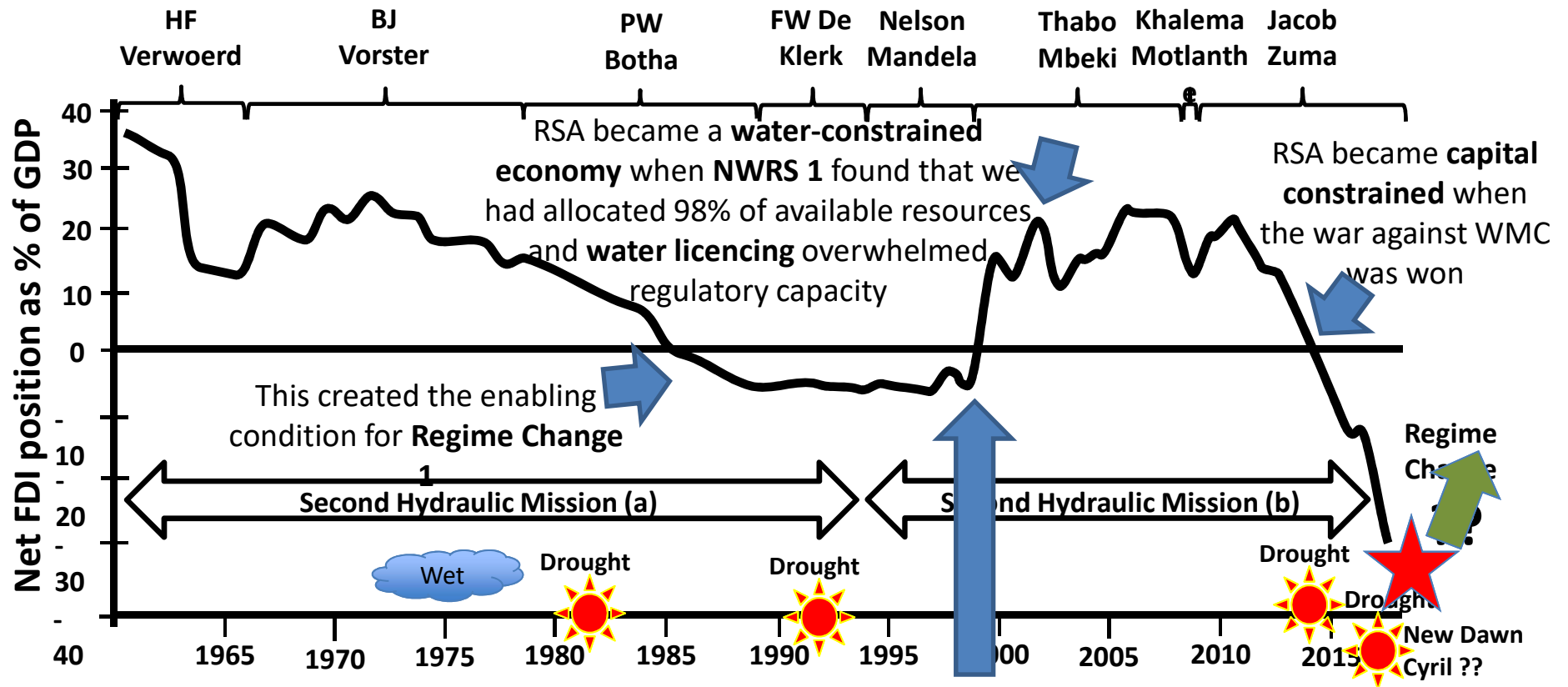


Germie van Coppenhagen

Yong  
Sebastian  
Nyam



# The Big Picture - A Water and Capital Constrained Economy

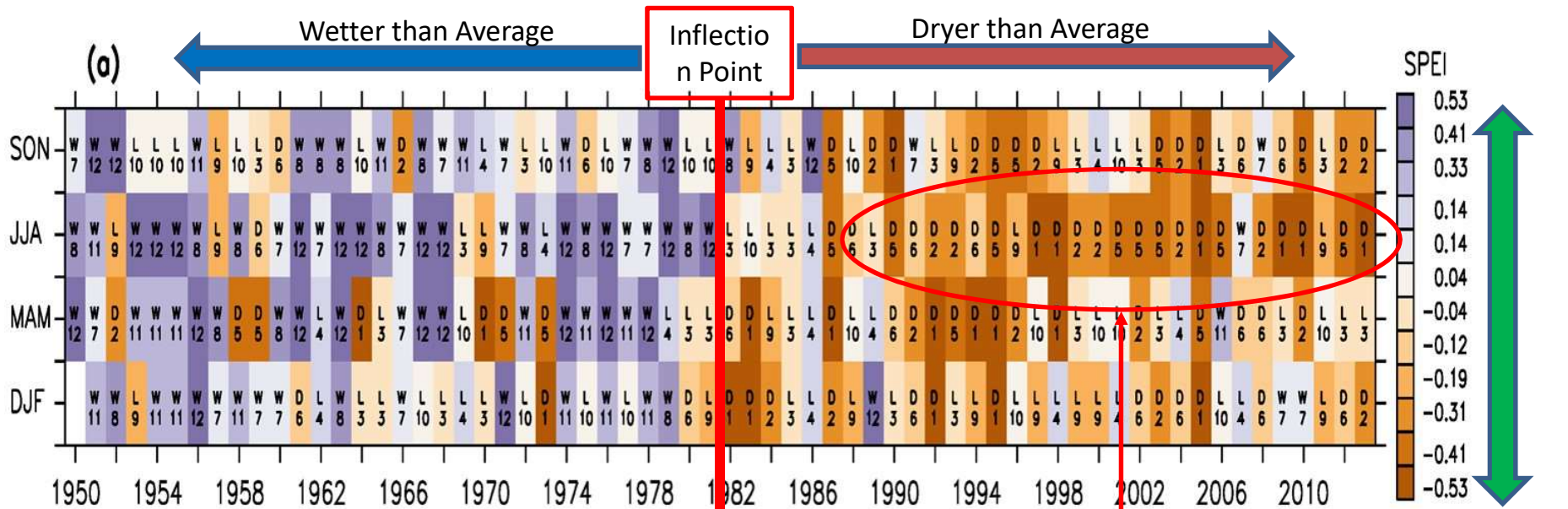


Redrawn from Economists.co.za

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



# Changing rainfall patterns



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

Winter rainfall areas particularly hard hit

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

© WRC Project No. 2317/1/18 Report No. K5/2317 Pretoria: Water Research Commission



# RESEARCH METHODOLOGY

- Literature
- GCRP-AFRICAP scenario workshop
- GLOBEDROUGHT – UNU-EHS Project
- DAFF/DWS/NDMC Workshop
- Political thinkers
- AGRISA WORKSHOP
- NAFU WORKSHOP
- AFASA WORKSHOP
- National stakeholder symposium
  - 44 ppl; 10 organizations
  - Gov & private sector
- Expert discussions



## CERTAINTIES

- Climate extremes
- Globalization
- Population growth
- Migration
- Urbanization
- Insufficient water infrastructure
- Globally 4<sup>th</sup> industrial revolution

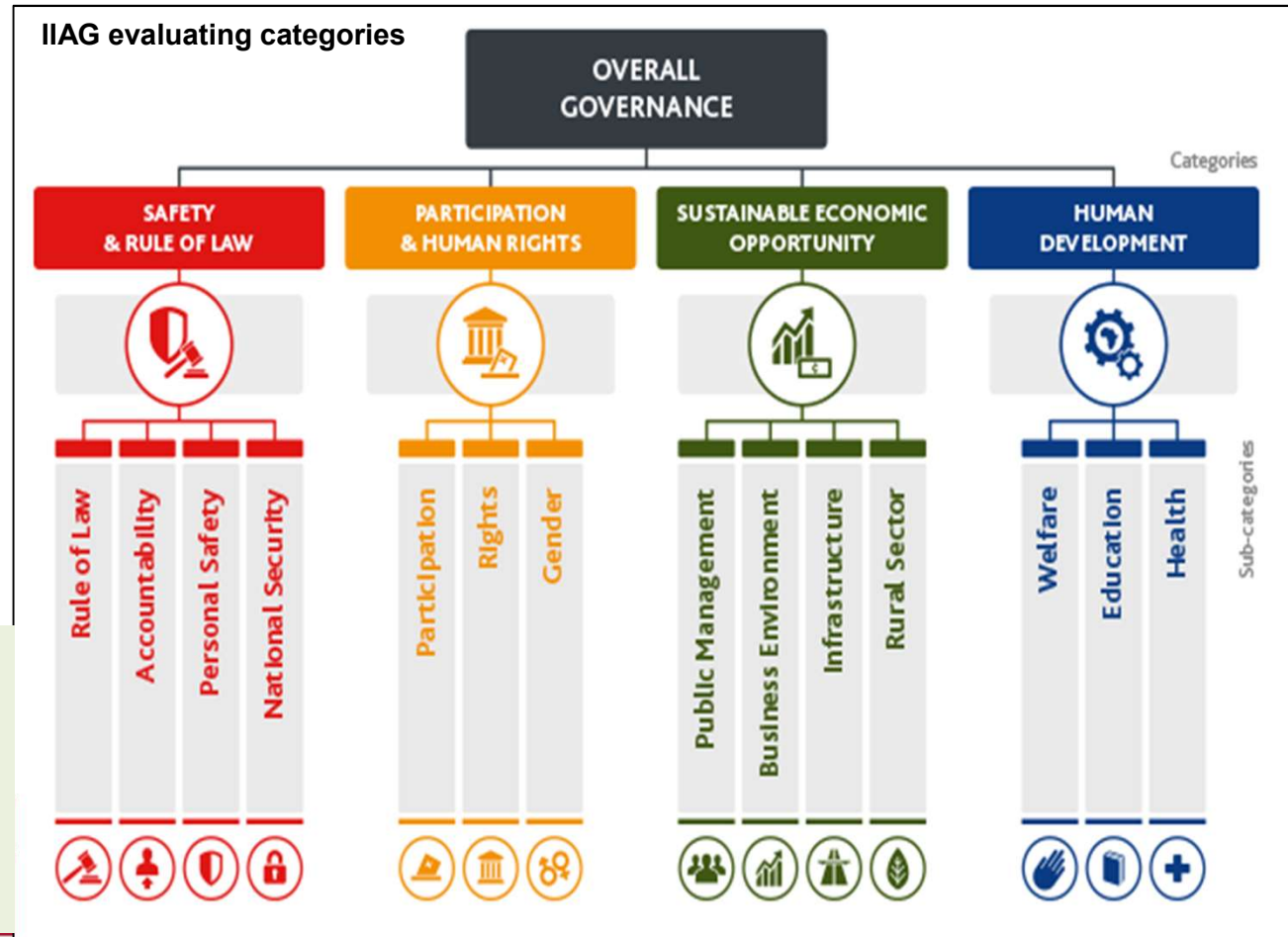
## UNCERTAINTIES

- Elections 2019
- Governance
- Education
- Leadership
- Innovative thinking
- Technology
- 4<sup>th</sup> industrial revolution impact
- Economic growth
- Gini coefficient increase
- Land issue
- Education
- Safety and security
- Lawlessness



# VULNERABILITIES

## IBRAHIM INDEX OF AFRICAN GOVERNANCE (IIAG)




Mauritius	81,4	1
Seychells	73,4	2
Botswana	72,7	3
Namibia	71,2	5
SA	70,1	6

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Confederazione Svizzera  
Confederaziun svizra

Eidgenössisches Departement für  
Wirtschaft, Bildung und Forschung WBF  
Staatssekretariat für Wirtschaft SECO

 **IFC** International  
Finance Corporation  
WORLD BANK GROUP  
Creating Markets, Creating Opportunities

 **agbiz**  
agricultural business chamber  
the way to prosperity

 **RG**  
resilience  
GLOBALE

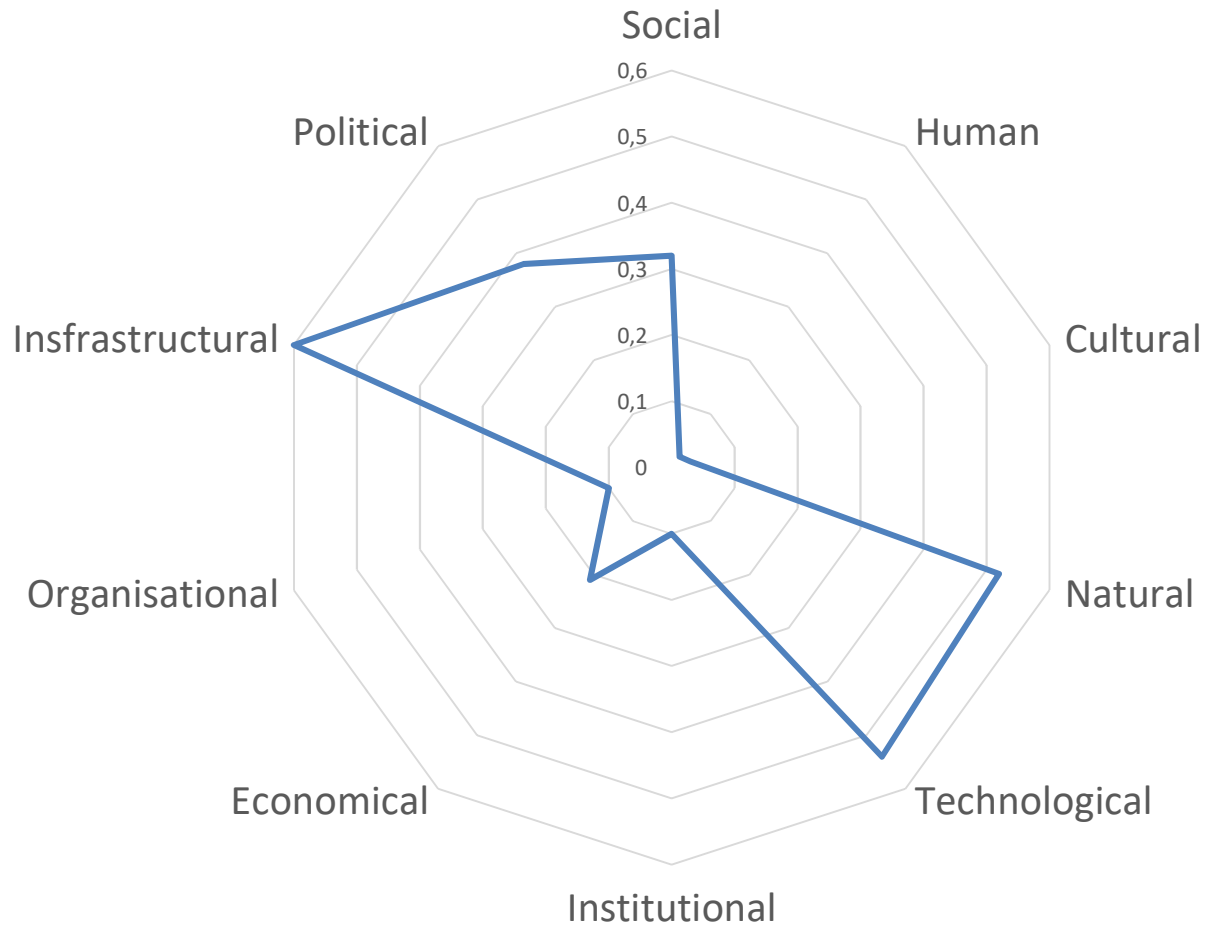
# IIAG LOW SCORING ISSUES - VULNERABLE

• Corruption and bureaucracy	57,1
• Diversion of Public funds 	34,7
• Corruption investigations	47,0
• Safety of the person 	19,3
• Police services	40,1
• Social unrest 	12,5
• Crime 	13,6
• Human trafficking	50,0
• Domestic armed conflict	50,0
• Violence by non-state actors	46,0
• Diversification 	36,8
• Budget Balance	48,1

▶ Transparency of SOC's	50,0
▶ Investment climate	44,4
▶ Employment creation 	30,4
▶ Electricity infrastructure	39,3
▶ Water & sanitation services	55,9
▶ Agricultural support system	46,4
▶ Narrowing income gaps 	37,9
▶ Education provision	54,3
▶ Educational system 	12,3
▶ Tertiary education enrollment 	31,4
▶ Basic health services	55,1
▶ Public health campaigns	50,0

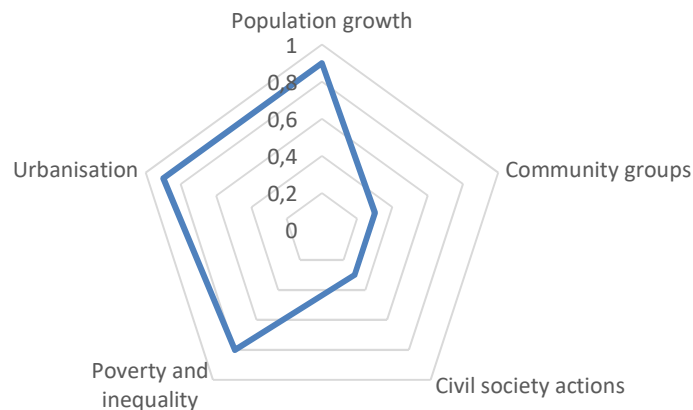
# CLUSTERS FOR CHANGE

Clusters

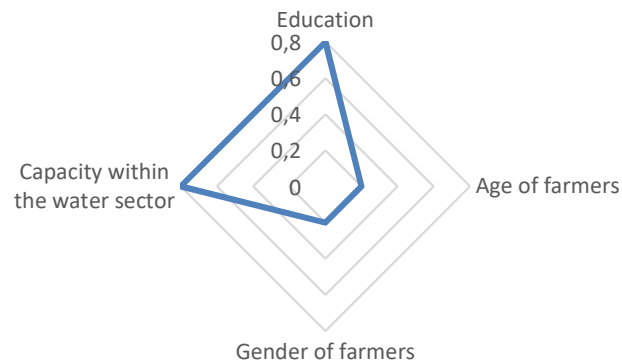


# DRIVERS FOR CHANGE

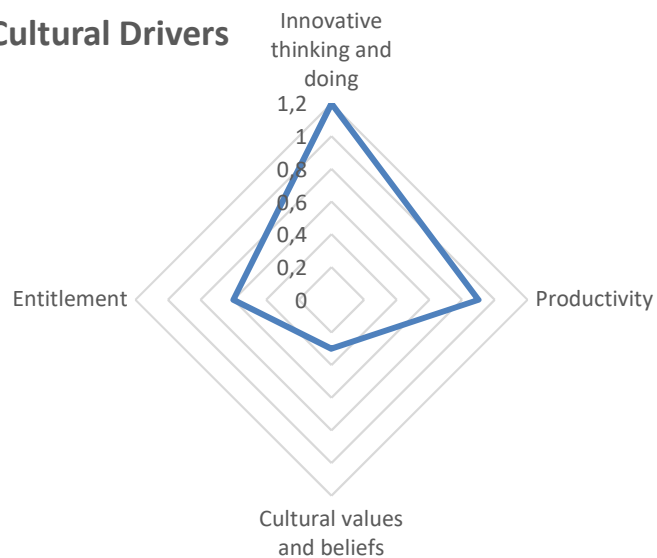
## Social Drivers



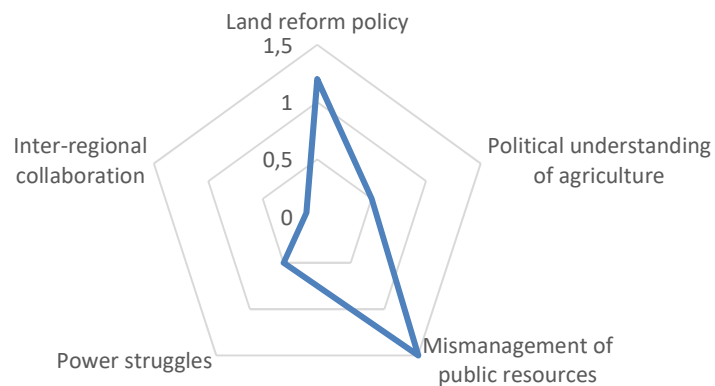
## Human Drivers



## Cultural Drivers

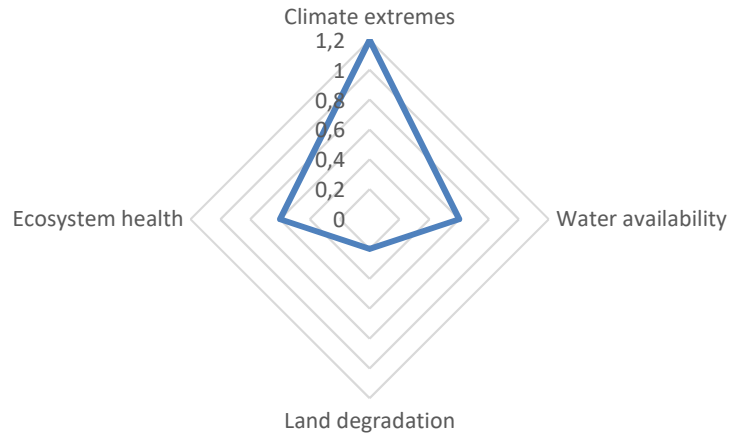


## Political Drivers

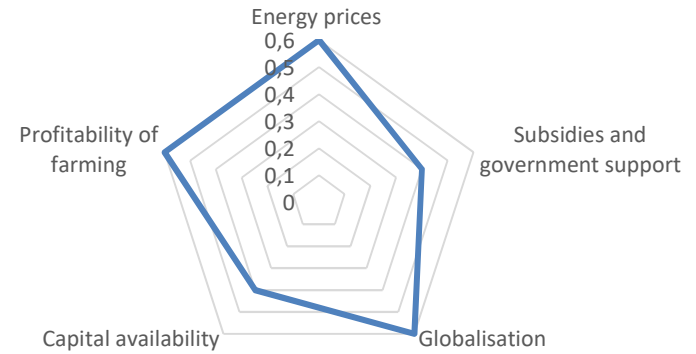


# DRIVERS FOR CHANGE

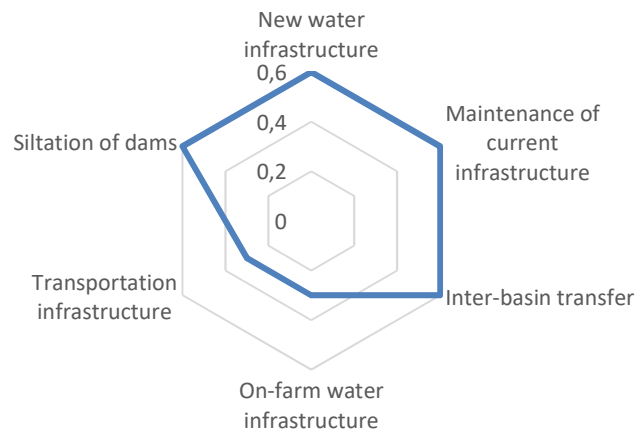
## Natural Drivers



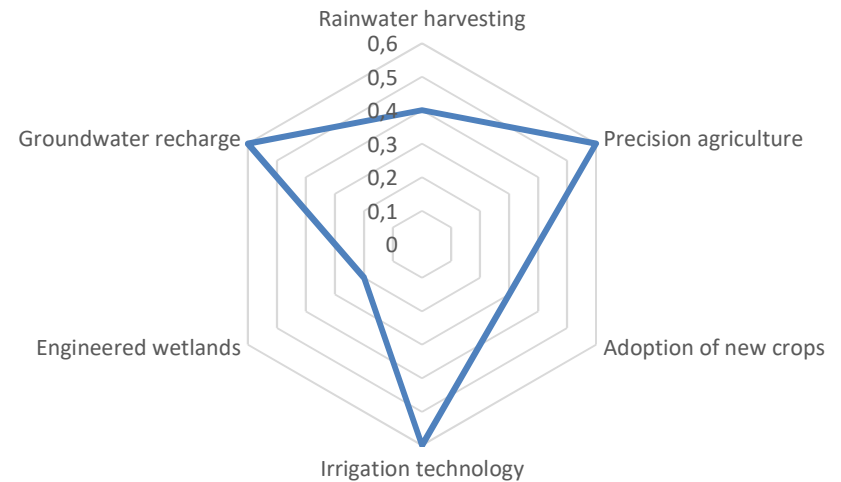
## Economic Drivers



## Infrastructural Drivers

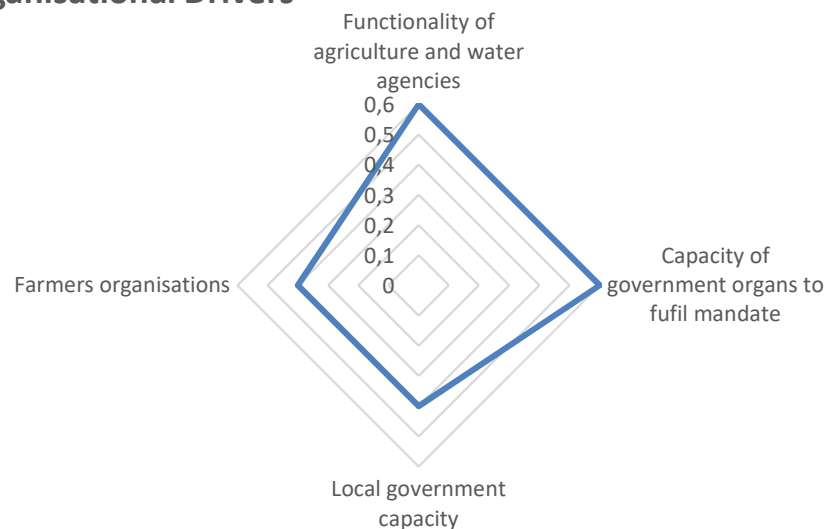


## Technological Drivers

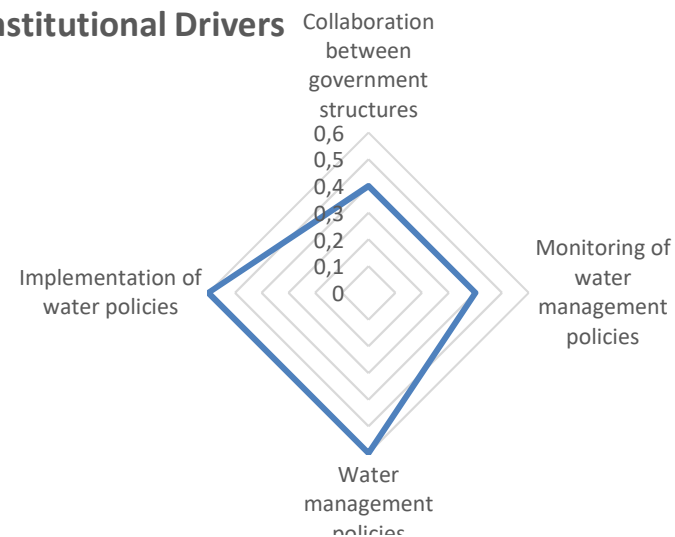


# DRIVERS FOR CHANGE

## Organisational Drivers



## Institutional Drivers



### Drivers > 1

- Mismanagement of public resources (1,5)
- Innovative thinking and doing (1,2)
- Land reform (1,2)
- Climate extremes (1,2)

### Drivers (0,8 – 1)

- Productivity attitude (cultural) (0,9)
- Poverty & Inequality (0,8)
- Education (0,8)
- Capacity to manage water sector (0,8)
- Population growth (0,8)
- Urbanisation (0,8)

# POTENTIAL SCENARIOS



## TRADITIONAL SCENARIO

- Centralised water management
- Centralised policies
- Dependency syndrome
- Strong entitlement
- Low productivity in agriculture
- Low levels of innovation
- Increased competition for water
- High water tariffs for agriculture
- Slow economic growth (<2%)
- Welfare state
- More small scale agriculture

POSITIVE

## BEST CASE SCENARIO

- Equal access to water
- Regional collaboration ito. water management
- Decentralised water management through WMA's
- Efficient water management authorities
- Strong enforcement of water user guidelines
- Strong economic growth (>5%)
- Application of principles of comparative advantage
- Innovative water infrastructure development
- Good collaboration between private sector and state
- SA participate in and benefit from 4<sup>th</sup> industrial revolution

NEGATIVE

Political will / leadership / governance

INNOVATION / TECHNOLOGY / EDUCATION / PRIVATE SECTOR

POSITIVE

- Negative economic growth (< - 5%)
- Hyper inflation
- Illegal land invasions
- Disinvestment in agriculture
- Food insecurity
- Poor small scale agricultural sector
- Loss of skills
- Increased levels of violent conflict also water conflict
- Commercial farmers relocate to other countries
- Food imports
- Delapidated water infrastructure
- Day zero for urban areas and agriculture during dry periods

- Increased gap between haves & have nots
- Enclaves of wealth & expertise
- Poor enforcement of policies & law
- Unequal access to water
- Conflict about water use
- Medium economic growth driven by private sector (2% - 5%)
- Poor ZAR stimulates export
- Increased demand for water due to production of niche products
- Day zero for urban areas during dry periods (CT, PE, Gauteng)
- Only private sector benefit from 4<sup>th</sup> industrial revolution
- State centralise water management with poor results
- High water tariffs for agriculture

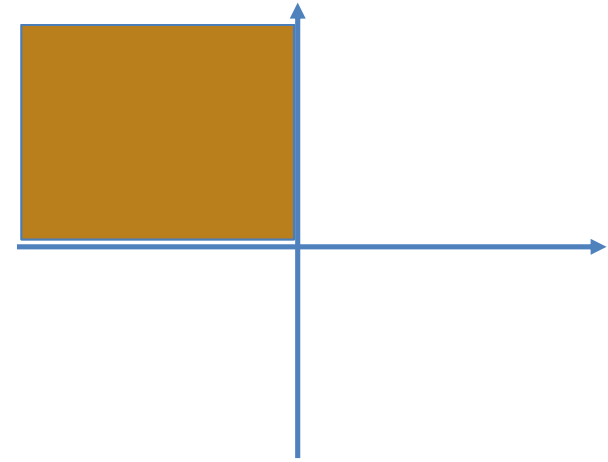
Chaos Z SCENARIO

NEGATIVE FRUSTRATION / POLARIZATION SCENARIO



# TRADITIONAL SCENARIO

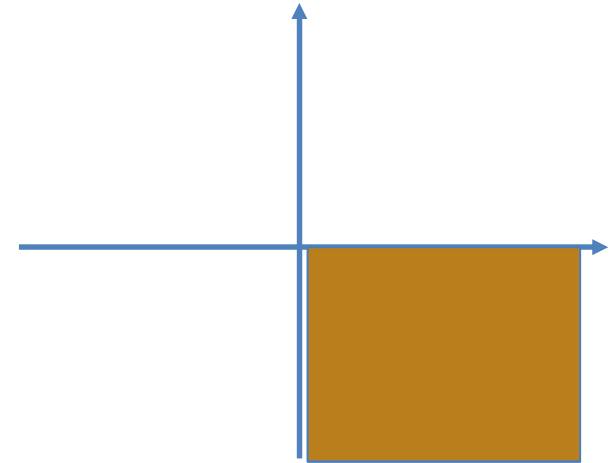
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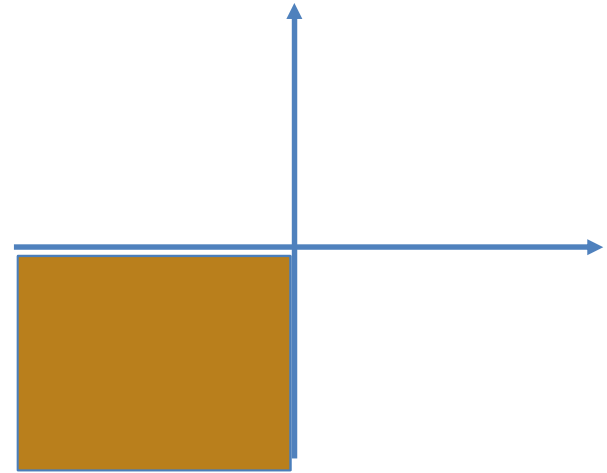
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# Z SCENARIO

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# BEST CASE (NEW DAWN) SCENARIO

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# CATEGORISATION 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 expropriation without compensation (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 – more day zero municipalities.
- When you **don't know what you don't know** you are highly vulnerable.



# CONCLUSIONS / SUMMARY

- South Africa became **water constrained** in 2002.
- And **capital constrained** in 2013.
- 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**.
- We see growing **water quality risks** for **human health** and **agric product exports**.
- **Water is an Economic Enabler** so it can be central to the **New Dawn**.



# WE CAN HAVE A NEW DAWN.....

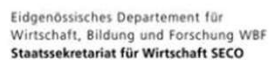
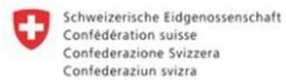
- Innovative thinking
- Positive attitude & perseverance (vasbyt)
- Collaboration between business and State
- De-politicise issues
- Build trust between farmers and Government
- We must succeed with sustainable land reform
- Scenarios for better understanding of water management issues



# Thank You

# Dankie

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