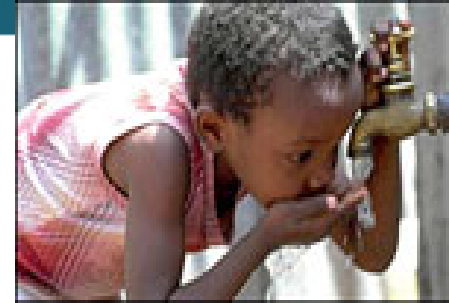




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National Climate Change response Dialogue 2014

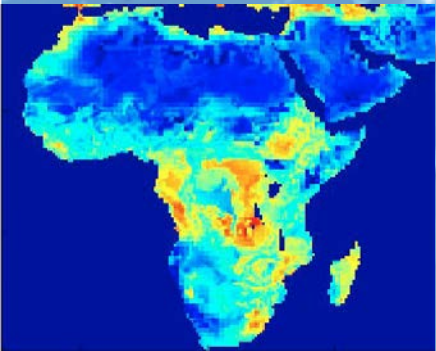
Water scenarios for 2050 and beyond under a changing climate

10-13 November 2014

Presented by:

DDG Water Planning & Information Management

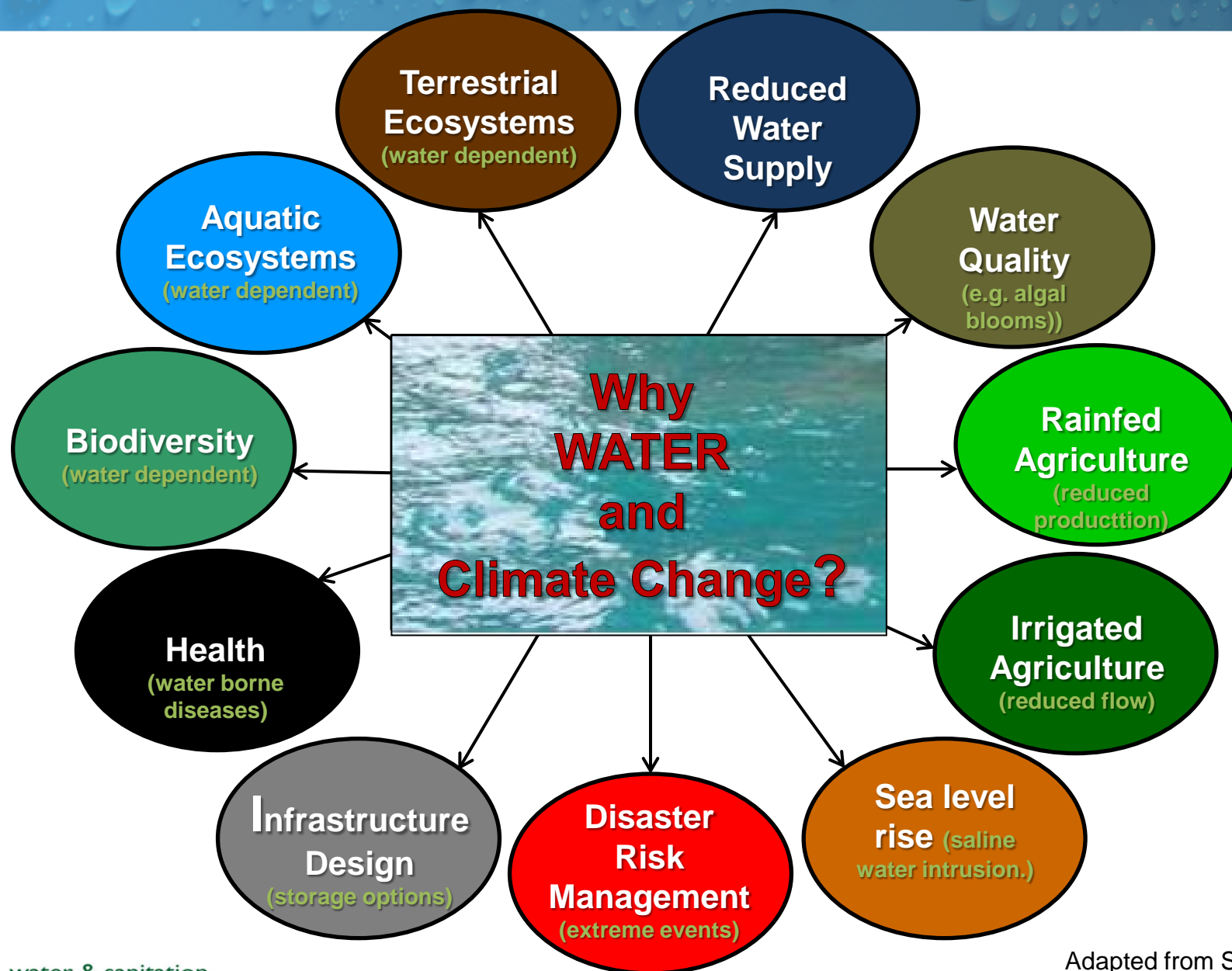
Dept of Water and Sanitation



Layout of Presentation

- Water and climate
- National rainfall and evaporation (natural state)
- Water resource mix
- Water allocation per economic sector
- Global temperature thresholds (tipping points)
- Water scenarios 2050 and beyond
- Strategic alignment of the Climate Change Adaptation Strategy for Water
- Adaptation measures
- Concluding remarks

Water and Climate Change



Adapted from Schulze, 2013

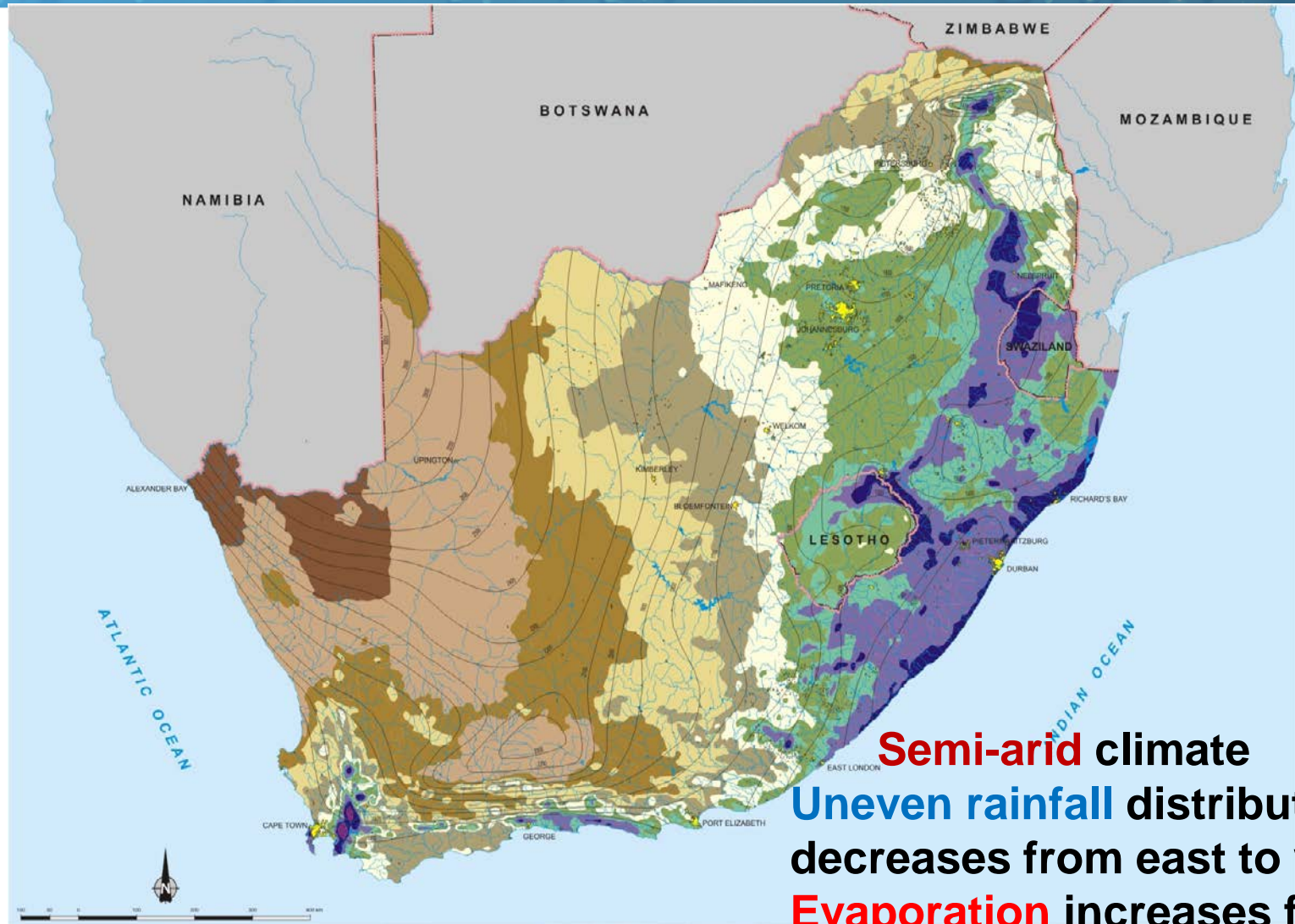


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WATER IS LIFE - RESPECT IT, CONSERVE IT, ENJOY IT.

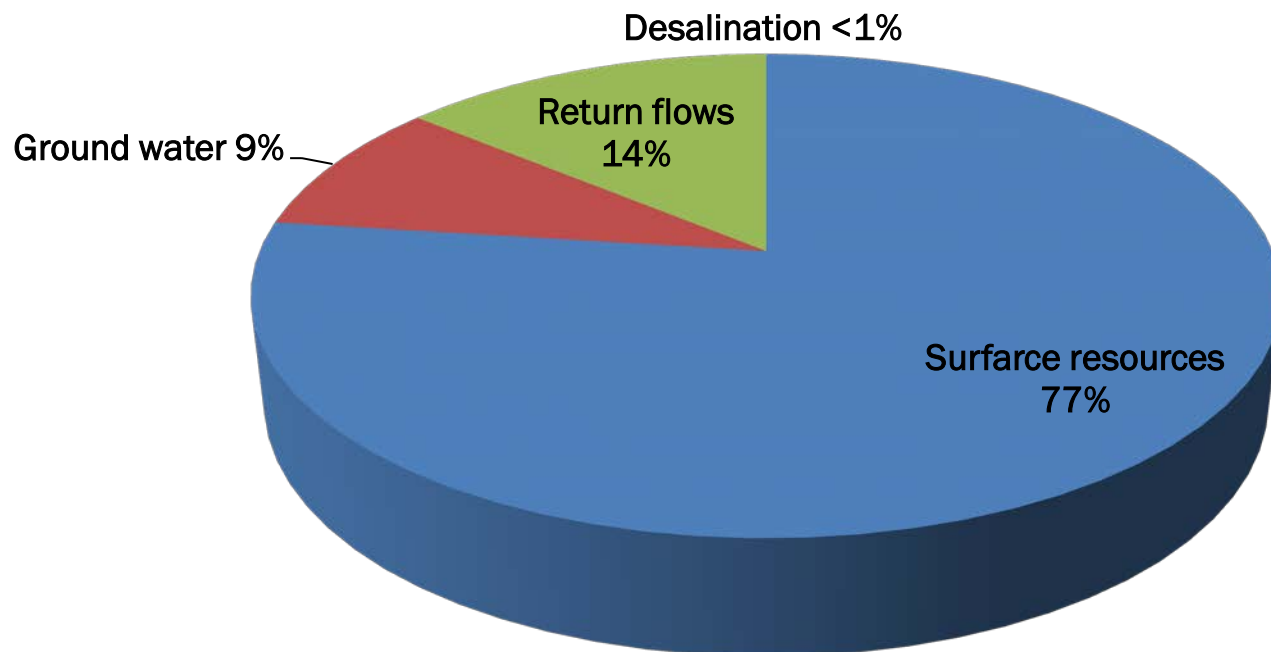
National Rainfall and Evaporation



Semi-arid climate
Uneven rainfall distribution -
decreases from east to west
Evaporation increases from
east to west

Current water resources mix

Water use at 98% assurance level



This water mix to be altered by **increased use of currently under-utilized water sources such as**

- **groundwater, water reuse, desalination, rainwater and fog harvesting**

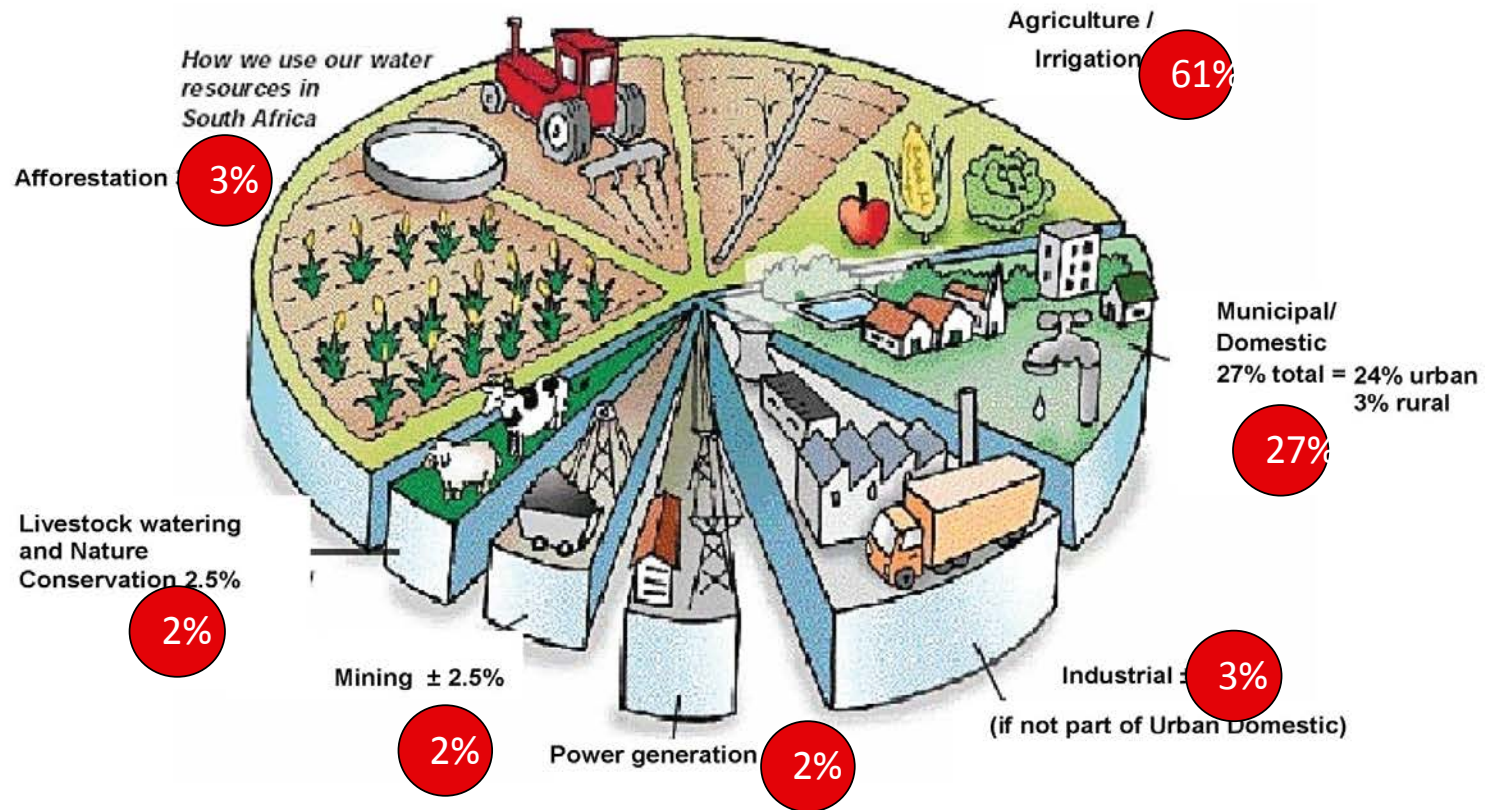


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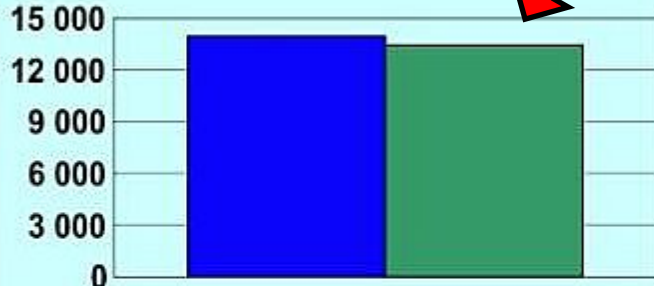
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Proportion of water allocation per economic sector

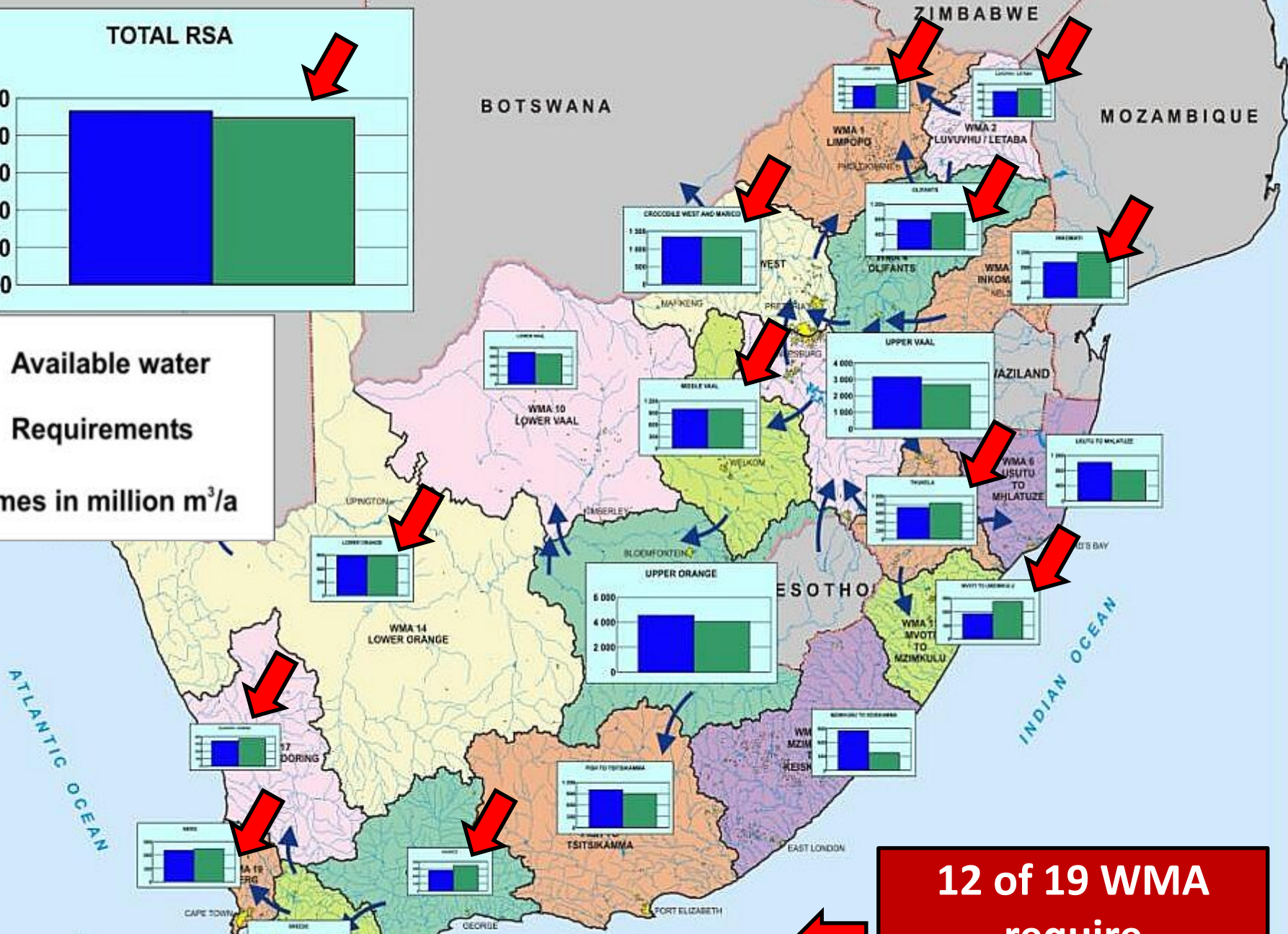


TOTAL RSA



■ Available water
■ Requirements

Volumes in million m³/a



12 of 19 WMA require intervention

Water Scenarios_DG of DWS

Reconciliation strategies

Assessment of water demand projections, in order to identify when supply constraints are likely to occur and what possible sources are available to meet the projected demands

In short :
what is available vs the demand



SCENARIOS



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Global temperature threshold (by science)

- ❑ A global temperature average (above pre-industrial levels) of 2°C is the threshold that if exceeded, climate change becomes dangerous.
- ✓ For South Africa, under high emission scenario significant warming of $5 - 8^{\circ}\text{C}$ over the interior is projected to increase (coastal areas - relatively cooler)
- ✓ However, through effective global mitigation regional warming could be halved to 2.5 to 3°C
- ✓ Hence in the case of South Africa, a 3°C threshold is reasonable for water scenarios

Temperature increase by **up to 3°C above current levels:**

Scenario 1:

- ✓ warmer and wetter with greater frequency of extreme rainfall events. (e.g. Eastern Cape)

Scenario 2:

- ✓ warmer and drier, with an increase in the frequency of drought events as well as less and intense rainfall events. (e.g. Western Cape)

Climate future scenarios up to 2050 and beyond

Scenario 3:

- ✓ hotter and wetter with substantially greater frequency of extreme rainfall events. (e.g. Central region – Vaal)

Scenario 4:

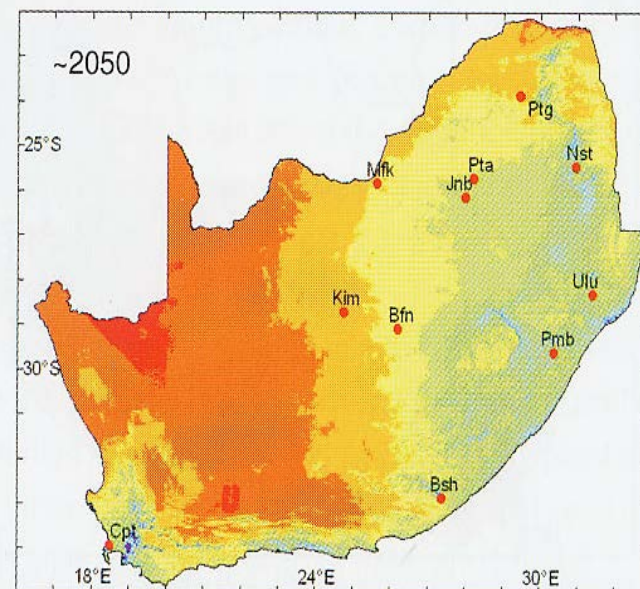
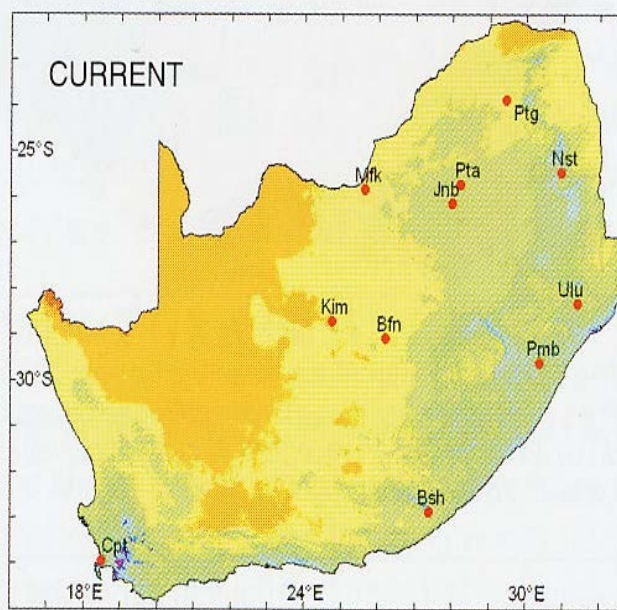
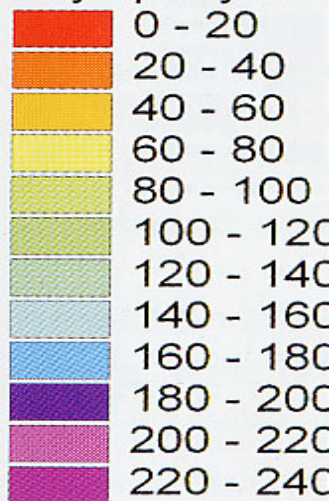
- ✓ hotter and drier, with a substantial increase in the frequency of drought events; as well as less and intense rainfall events (e.g. Northern area - Limpopo)

Climate models indicate that food security in South Africa could be impacted

The effect of global climate change on '**soil moisture days**' in South Africa (number of days when both soil moisture and temperature are suitable for plant growth)

Schulze, 2008

Favourable soil moisture Days per year



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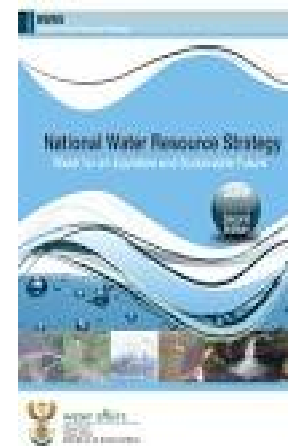
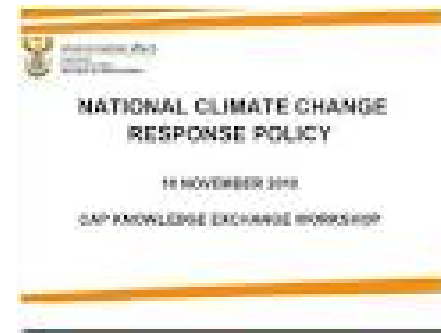
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STRATEGIC ALIGNMENT

The Dept developed a climate change adaptation strategy for water that is aligned to

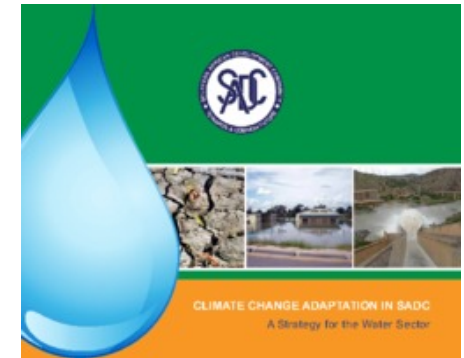
- **National Climate Change Response Policy (NCCRP)** recognises water as one the sectors that need immediate attention.
- **National Water Resources Strategy (NWRS-2)** – dedicated chapter on climate change



STRATEGIC ALIGNMENT

The climate change adaptation strategy for water is also informed by the:

- **Climate Change Adaptation in SADC - A Strategy for the Water Sector**
- **National Development Plan (NDP)** - recognises climate change as one of the 5 critical trends that will affect the development agenda in SA.



Adaptation measures ...

- Adaptation strategies include:
 - reviewing and updating hydrological analyses
 - Improving & **implementing** operating rules for reservoirs,
 - Review of monitoring networks,
 - improved data and information management
 - improvement of the early warning systems,
 - Infrastructure redesigns (e.g. dam spillways)
 - where feasible storing excess overland running water underground (artificial groundwater recharge)
 - rainwater harvesting;
 - Promotion of water conservation and demand management
 - Desiltation of dams

Concluding remarks

- South African climate is highly variable even under natural conditions – hence with climate change adaptation becomes crucial
- Mainstream climate change scenarios in water planning and management
- Drastic reduction of water demands is paramount without jeopardising human health and econ dev't

Concluding remarks

- Continuously review, refine and update strategies
- Adaptive management approach will be used to cater for uncertainties in model projections
- Ensuring alignment with the principles of the NWA (Efficiency, Sustainability and Equity)

Water is life, sanitation is dignity

Thank You

