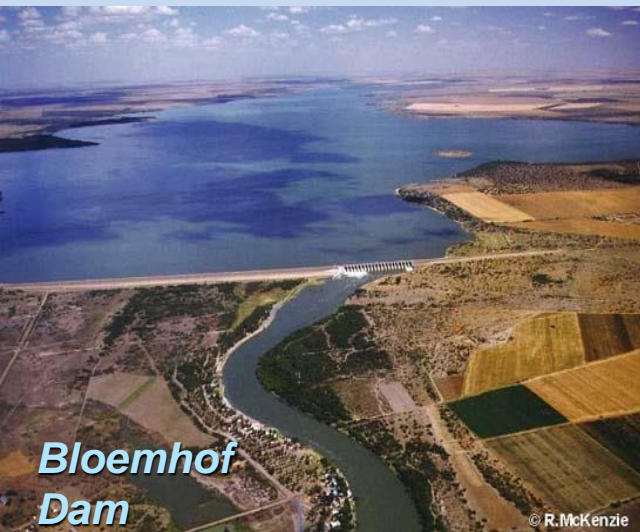


Transitioning South Africa to a Climate Resilient Society: A Water Sector Perspective

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What Should be in Place to Deliver Enhanced Climate Resilience in the South African Water Sector? 1

1. An Appreciation of the Significance/Uniqueness of Water

- It is a binding element through inter-linkages with agriculture, health, energy, DRM
- It has a spatial “memory” (integrating upstream > downstream)
- It has a temporal “memory” with multiple lags (pervious > impervious)
- It is a bifurcated system with a mainstem & major/minor tributaries
- The natural hydrological system has been completely modified / damaged
 - In-channel by mega-, meso- and micro dams and IBTs
 - Off-channel by land use changes (agriculture, urban, mining), reticulation systems etc, with impacts of these often skewed by political engineering of past & present
- SA’s rivers are transboundary (water from, to, between countries)
- Mis-management resulting in degradation, e.g. AIPs, dysfunctional WWTWs, water quality (physical, chemical, biological)

What Should be in Place to Deliver Enhanced Climate Resilience in the South African Water Sector? 2

2. An Appreciation that with Climate Change...

- ALL ISSUES on SLIDE 1 are still relevant, many even more so than now
- Water is the primary means through which CC will impact people, environments and economies
- Every catchment is unique – no “one size fits all” re. CC effects, CC strategies and CC mainstreaming
- Any changes in rainfall are amplified in changes in runoff, especially changes from design rainfall to design runoff
- Different management challenges arise in the landscape vs the channel vs the eco systems (wetlands, estuaries) of the catchment
- There will be regional “winners” and “losers” re. water
- Different components of the HC have different sensitivities to CC, e.g. groundwater recharge > surface flows > evaporation
- Safety and sizing of hydraulic structures will need re-assessment, remembering they are expensive, have a long design life and are essentially irreversible
- Water temperature increases have more severe consequences than air temperature rise, e.g. water borne diseases, power cooling, eutrophication, water purification, ecological integrity

What Should be in Place to Deliver Enhanced Climate Resilience in the South African Water Sector? 3

3. So, What Should be in Place?

- Implementation of existing legislation/policies
 - NWA & its 6 aims (protect, utilise, develop, conserve, manage, control)
 - NWRS2 & updates (> 150 CC entries, 42 pages, own section)
 - NDP (flexibility of sector to respond, co-ordinated research)
- Maintaining our current strengths re. resilience to climate
 - Storage infrastructure
 - Hydroclimatic monitoring networks (in decline, but in revival?)
 - State-of-the art hydrological research, both fundamental and applied, in service of the NWA and NWRS, through WRC & other funding
- Reducing the gap between science and practice; speeding up the “trickle down” of research findings to decision makers
- Application of latest findings
- Improved water demand management
- Functionality and retrofitting of existing infrastructure
- Mainstreaming CC into catchment level decisions

Given the Above Features/Interventions that will Enhance Climate Resilience, What can be Monitored to Determine if they are in Place and are Having the Desired Outcomes?

Monitor the following ...

- Has institutional memory been re-built?
- Have observational networks been upgraded?
- Have latest findings on CC been taken up?
- Has output of water skilled graduates increased?
- Are young graduates in DWS being adequately mentored?
- Have non-revenue water losses (of 37%) been reduced?
- Have uncertainties in CC outputs been reduced?
- Has water governance improved? Dysfunctionality decreased?
- Has decision making become more flexible and robust?
- Has more cross-sectoral cooperation occurred?
- Is adaptive management happening (learning by doing)?
- Has a shift taken place from a 'concrete infrastructure' paradigm to a more ecological infrastructure one?

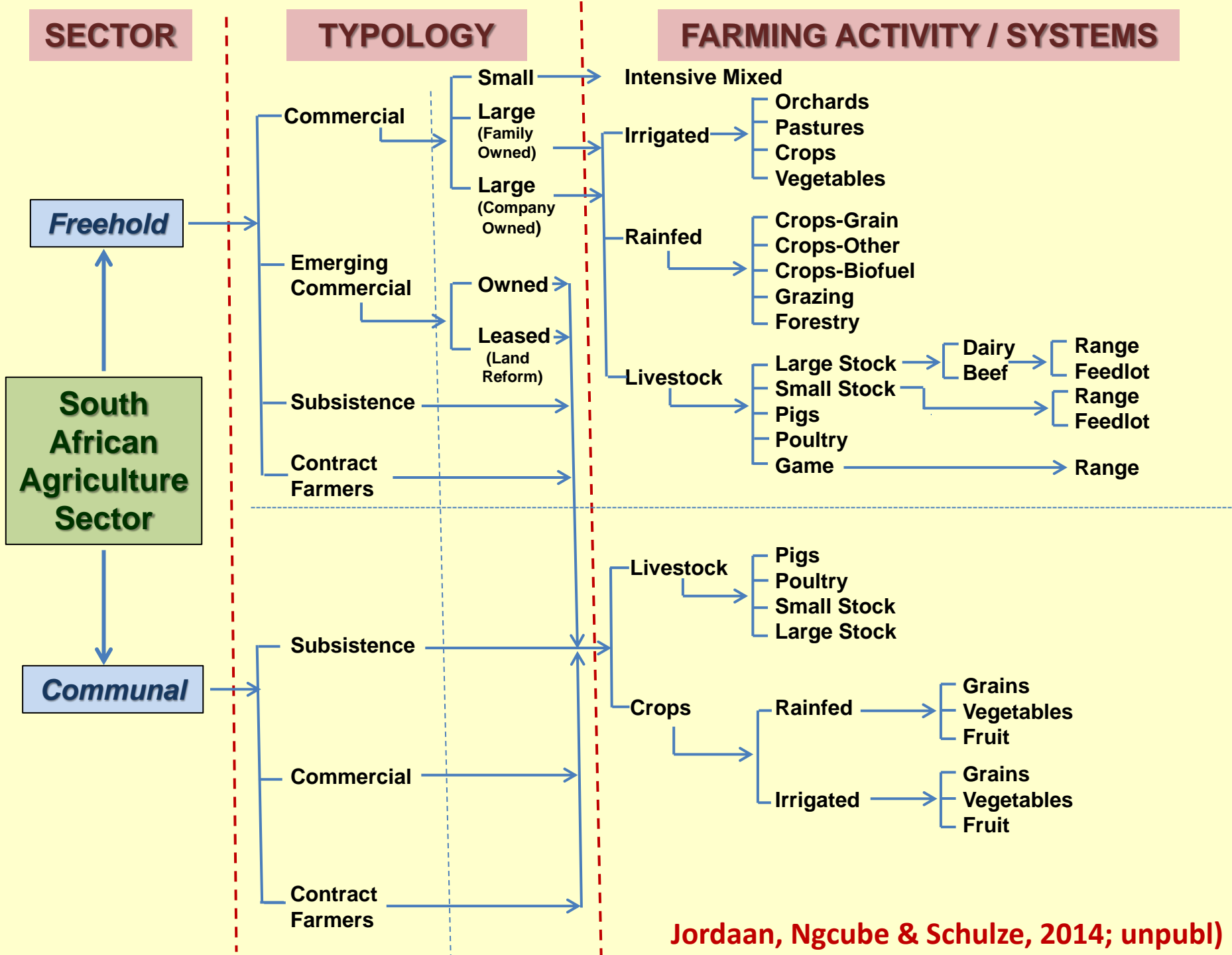
Transitioning South Africa to a Climate Resilient Society: An Agriculture Sector Perspective

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Photo 1



What Should be in Place to Deliver Enhanced Climate Resilience in the South African Agriculture Sector? 1

1. An Appreciation of Vulnerabilities & Challenges

- We have major climate, soils and terrain constraints
- Agriculture has a symbiotic relationship with water – dependence on water and impacts on water
- Hazards abound, e.g. fire, pests/diseases, alien invasive plants
- The crops for food vs for biofuels dilemma
- Lack of extension services
- Externalities (e.g. international market fluctuations) and lack of financial buffers (e.g. subsidies)
- Competition for land
- Competitiveness of products
- Cultural and traditional constraints
- Not farming by agro-ecological zones – concept of “working with climate” rather than “working against climate” and of CSA

What Should be in Place to Deliver Enhanced Climate Resilience in the South African Agriculture Sector? 2

2. An Appreciation of Present Sector Resilience to Climate

- Overall climatic diversity (summer, winter, all year rains; semi-desert to sub-humid areas, 14 Köppen climate zones)
- Considerable expertise within each agro-climatic zone
- Considerable local research on crops, soils etc
- High levels of professionalism in the commercial farming sector

3. An Appreciation of Where our Resilience is Weak

- We have a harsh agricultural climate – extremes, variability
- Reliance on overseas findings re. new crop varieties
- Growing crops in sub-optimal areas
- Many farmers are stuck in a poverty trap
- Farmers not heeding BMPs

What Should be in Place to Deliver Enhanced Climate Resilience in the South African Agriculture Sector? 3

3. So, What Should be in Place?

- Education on Climate Smart Agriculture and on crop specific adaptation strategies
- Identification of climatically vulnerable and climatically suitable areas for specific crops, now and into the future, and knowledge of climatic thresholds
- Financial buffers / incentives / subsidies
- An enabling environment by Government, science & markets (I & E)

Given the Above Features/Interventions that will Enhance Climate Resilience, What can be Monitored to Determine if they are in Place and are Having the Desired Outcomes?

- The effectiveness of extension services
- Compliance monitoring re. stewardship of the land (e.g. veld burning, irrigation efficiency, BMPs)
- Heeding Early Warning Systems, tailored to specific agricultural sectors