

# SUSTAINABLE AGRICULTURE FOR A BETTER ECONOMY: POLICY PLANNING AND PUBLIC FINANCING

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TIPS FORUM 2017

INDUSTRIALISATION AND SUSTAINABLE GROWTH

# OUTLINE...

- Introduction
  - Trends in agriculture
  - Agriculture at household level
- Review
- Strategic points in agriculture
- Policy Planning and Funding
  - Planning
  - Funding
- Conclusions and Recommendations

# Introduction

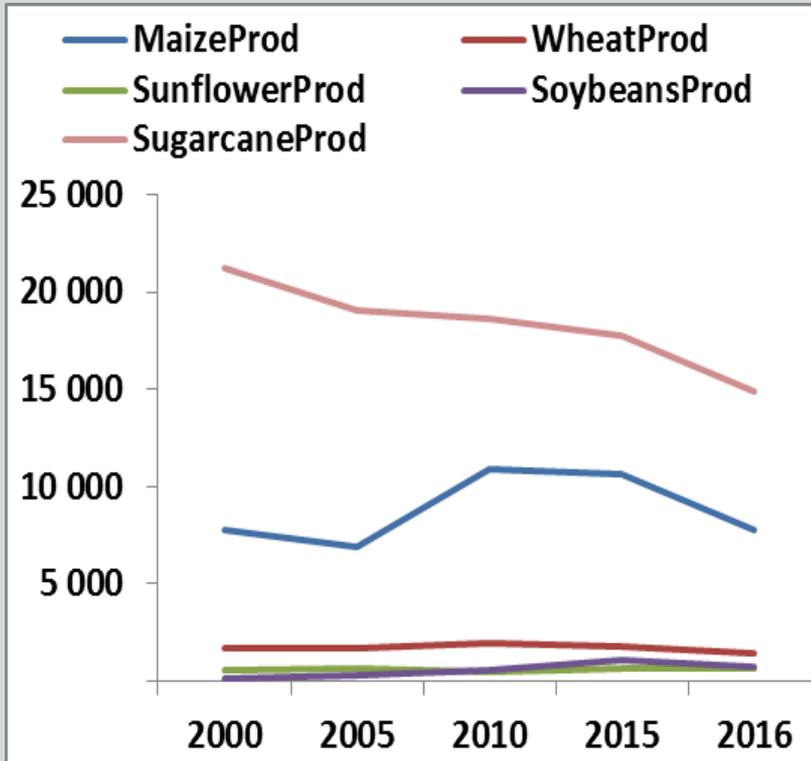
- Developing economies (SA) - require an efficient agriculture sector
- Connects various industries of the economy – upstream/downstream
  - Chemical, transport, energy, technology, hospitality, finance, etc.
- Contributes enormously to
  - employment
  - economic growth
  - food security
  - international trade and export income

# Introduction cont....

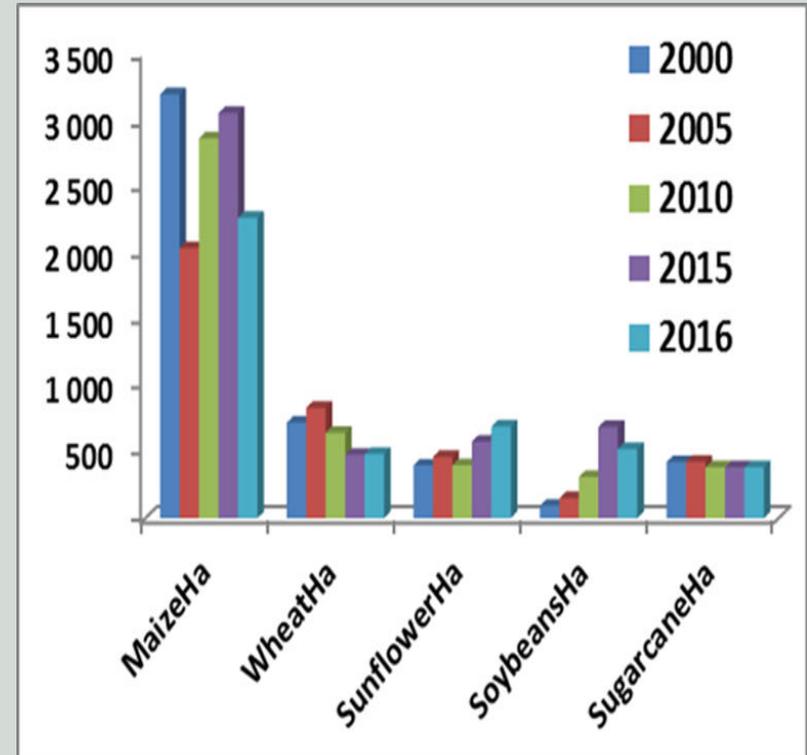
- However,
- Agriculture productivity - declining due to adverse weather patterns
- FAO (United Nations) –
  - food security, sustainable development and poverty eradication threatened by climate change
  - agriculture needs to radically evolve, adapt and adopt new productive ways to remain sustainable
- Concerted effort in planning and financing

# Trends

Production: Selected commodities (t)



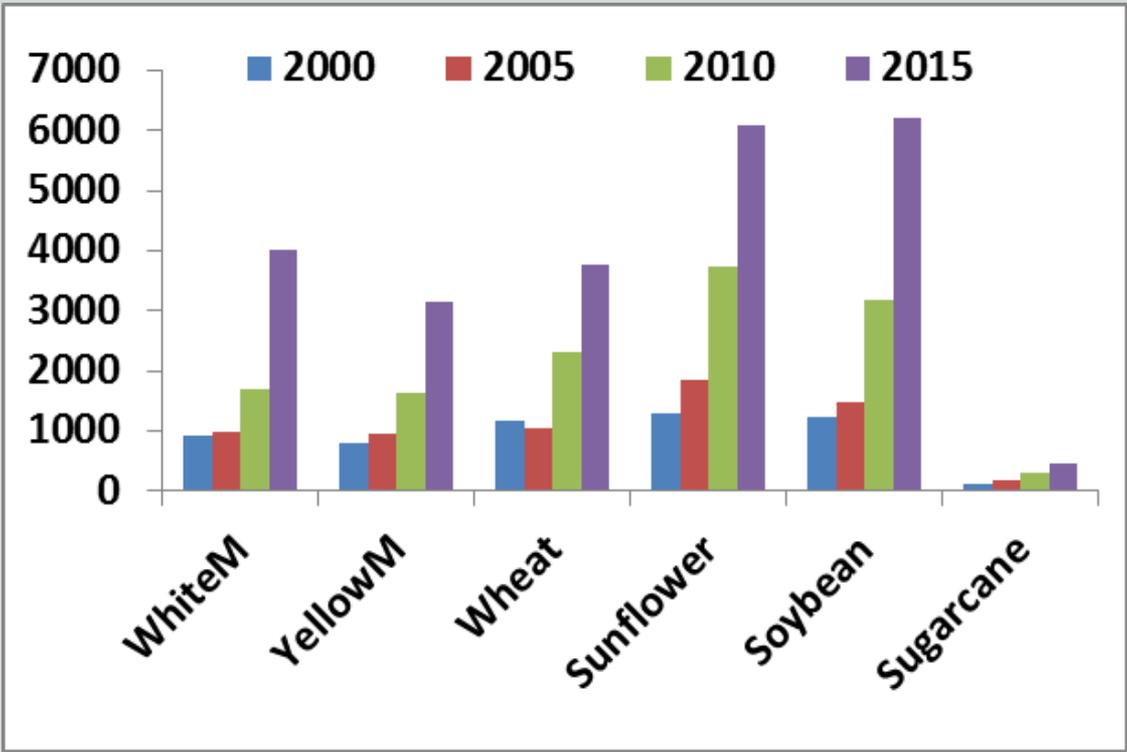
Hectares: Selected commodities (ha)



Source: DAFF

# Trends cont....

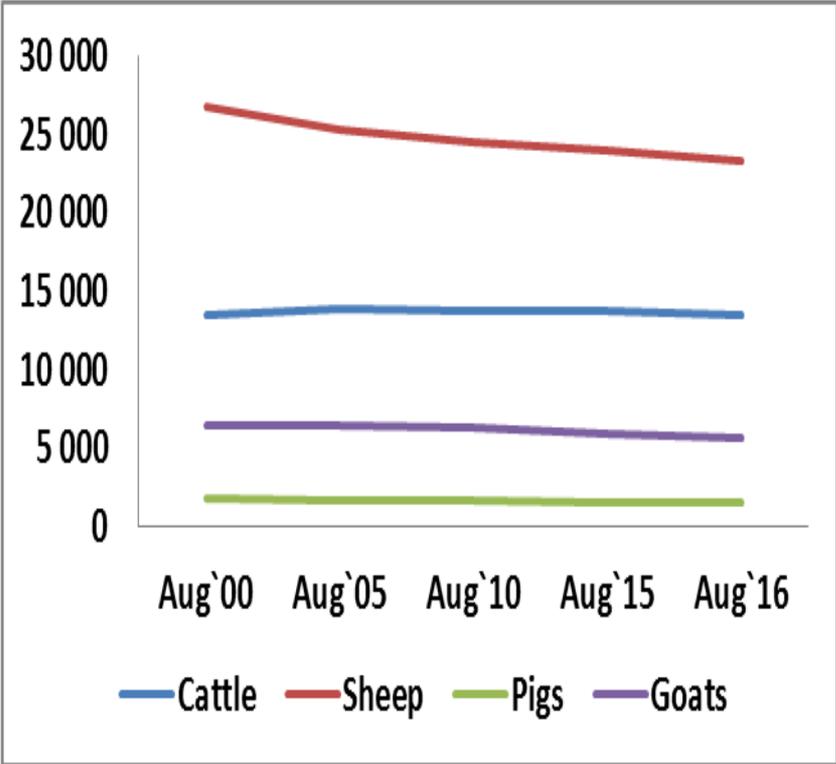
Prices: Selected commodities (R/t)



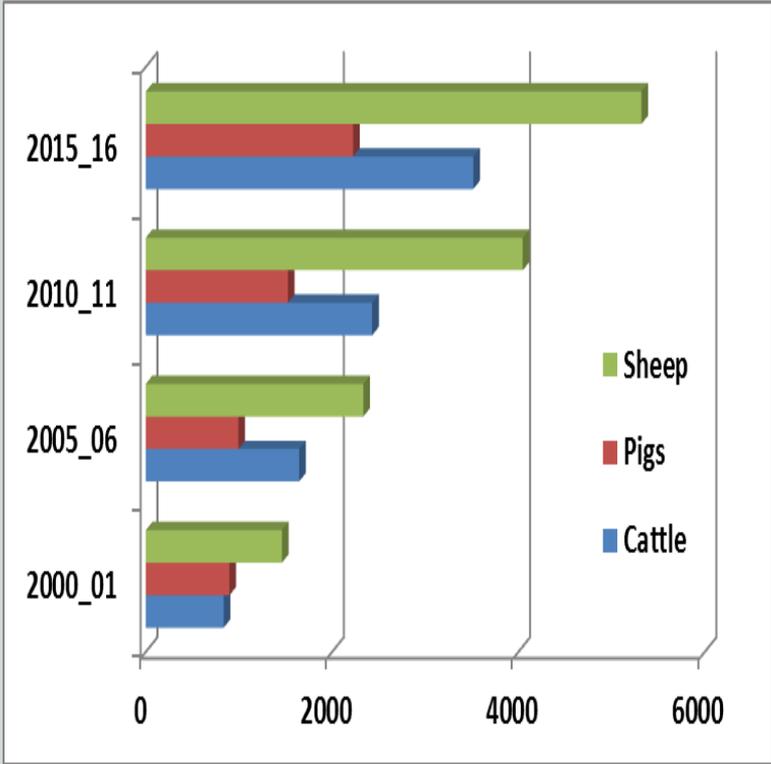
Source: DAFF

# Trends cont....

Numbers: Selected Livestock (mill)



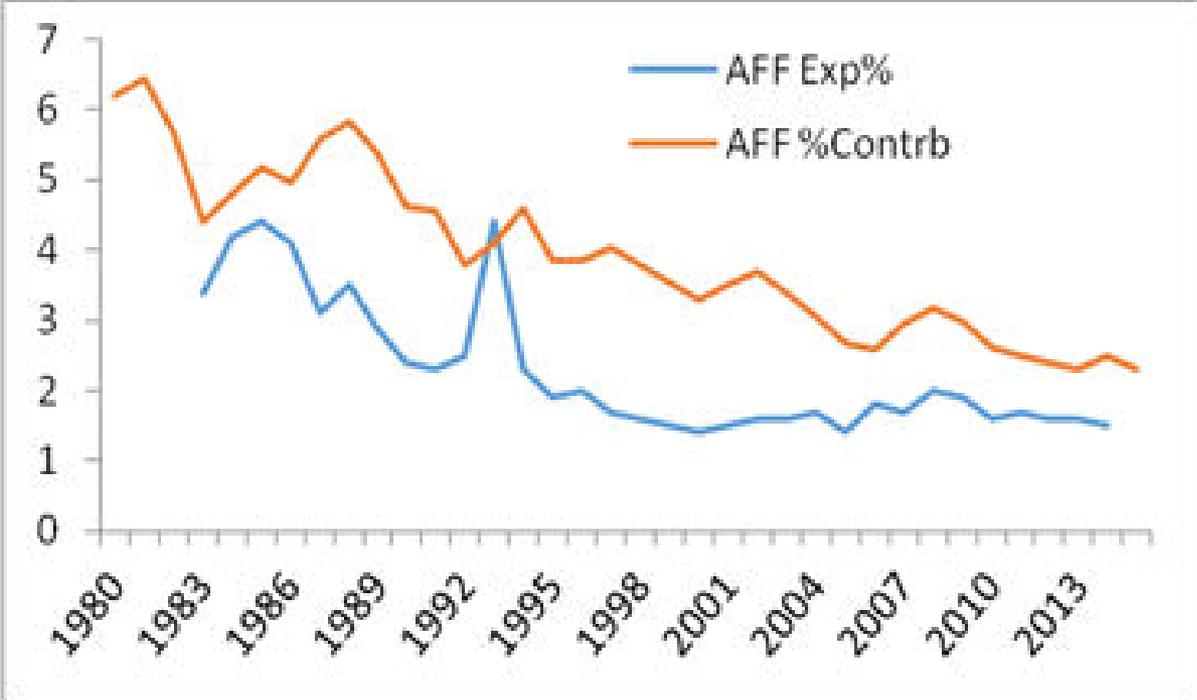
Prices: Selected Livestock (c/kg)



Source: DAFF

# Trends cont....

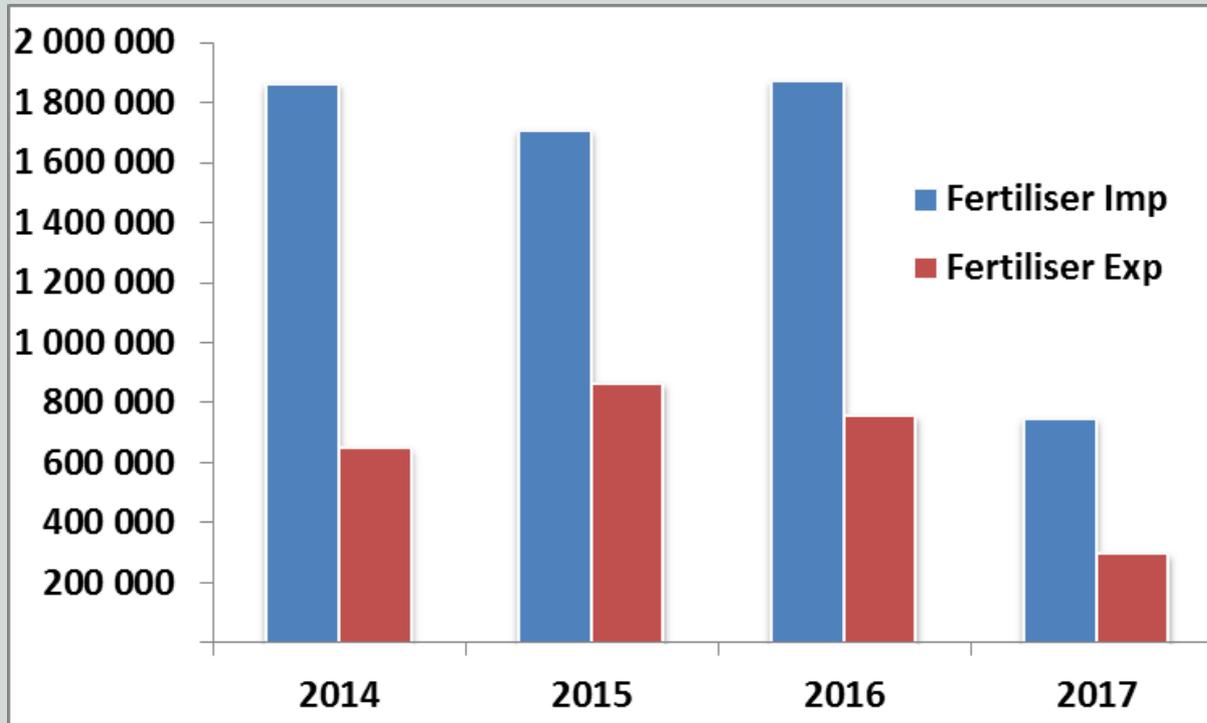
Agriculture as % of state exp; % contribution to GDP (CP)



Source: AFF % Expenditure – SARB; AFF % Contribution - DAFF

# Trends cont....

## Fertiliser exports and imports (tons)

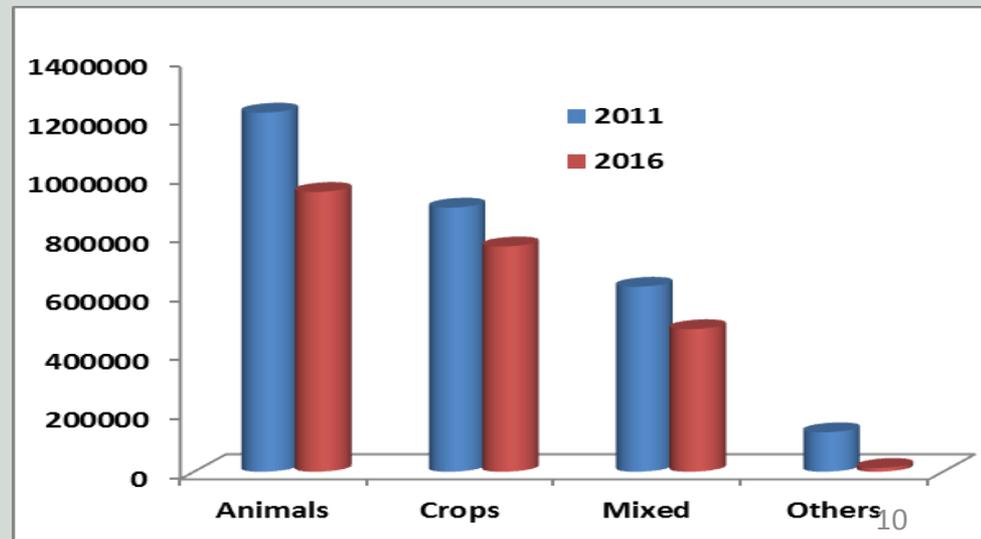
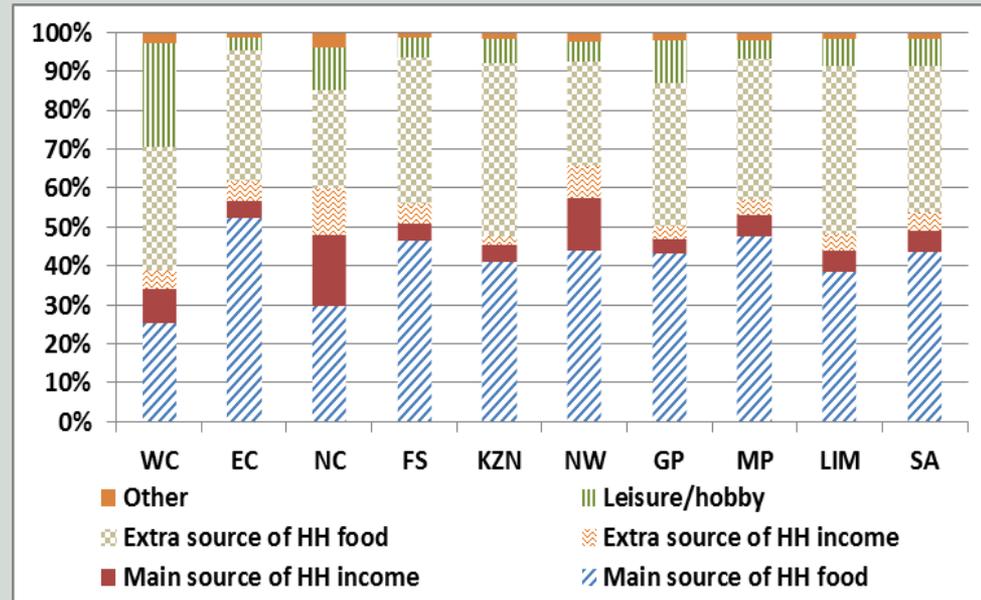


Source: Fertilizer Association of Southern Africa

# Households

*Community Survey 2016 Agricultural Households, 2016*

- Eastern Cape, Limpopo, KwaZulu-Natal, Mpumalanga and Free State - high % agriculture households
- Agric HH (2011-2016) – **decline 19% due to drought in 2014/15 season**
- Agricultural activity - **main and extra source of household food**
- Livestock rearing - **ranking high, followed by crops**



# Reviews

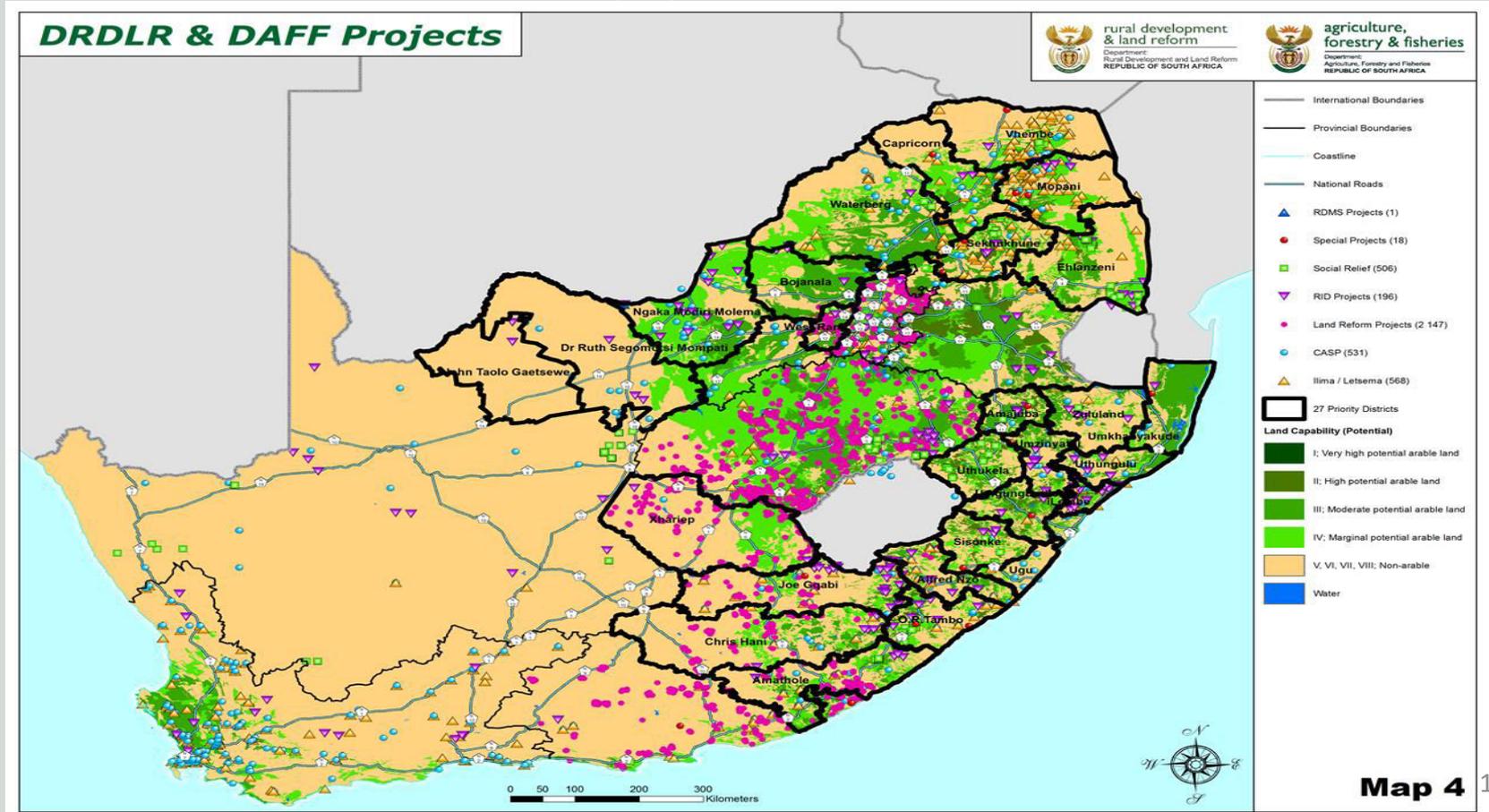
- Success in agriculture (ARC) –
  - effective application of innovations from the laboratories by scientists
  - interactive exchanges with farmers, **targeted focus on smallholder and resource poor enterprises**
- Tiffin and Irz (2006) –
  - find that growth in agricultural productivity is important to economic growth and development
  - Increased surplus of food, labour, raw materials, capital, and foreign exchange
  - Generating demand for industrial goods and services
- OECD (2015) –
  - reveals that where climate change is expected to be severe, food prices are most vulnerable among other commodities, negatively affecting poor households that are net food consumers

# Reviews

- Draft Climate Change Adaption and Mitigation Plan for the SA Agriculture and Forestry Sectors (2015) –
  - hot days are significantly increasing, while lower temperature days are declining
  - data on rainfall as well as data on runoff show a decreasing trend.
  - production and yield levels are found to be negatively affected by declining rainfall
  - forestry sector has seen increased frequencies in forest fires, pests and diseases that affect all forestry beneficiaries.
- Mendelsohn et al (1994) study on the US economy –
  - climate change produces complicated effects on agriculture, the effects being different per season and also nonlinear
  - study concludes that global warming is harmful when using a narrow definition of crops , while slightly beneficial (citrus belt, corn and wheat) when using an inclusive definition of crops for the US agriculture.
- Expected high heat stress – detrimental to livestock production (Nesamvuni et al., 2012; Archer van Garderen, 2011, DEA, 2011; DAFF, 2013)

# Strategic points

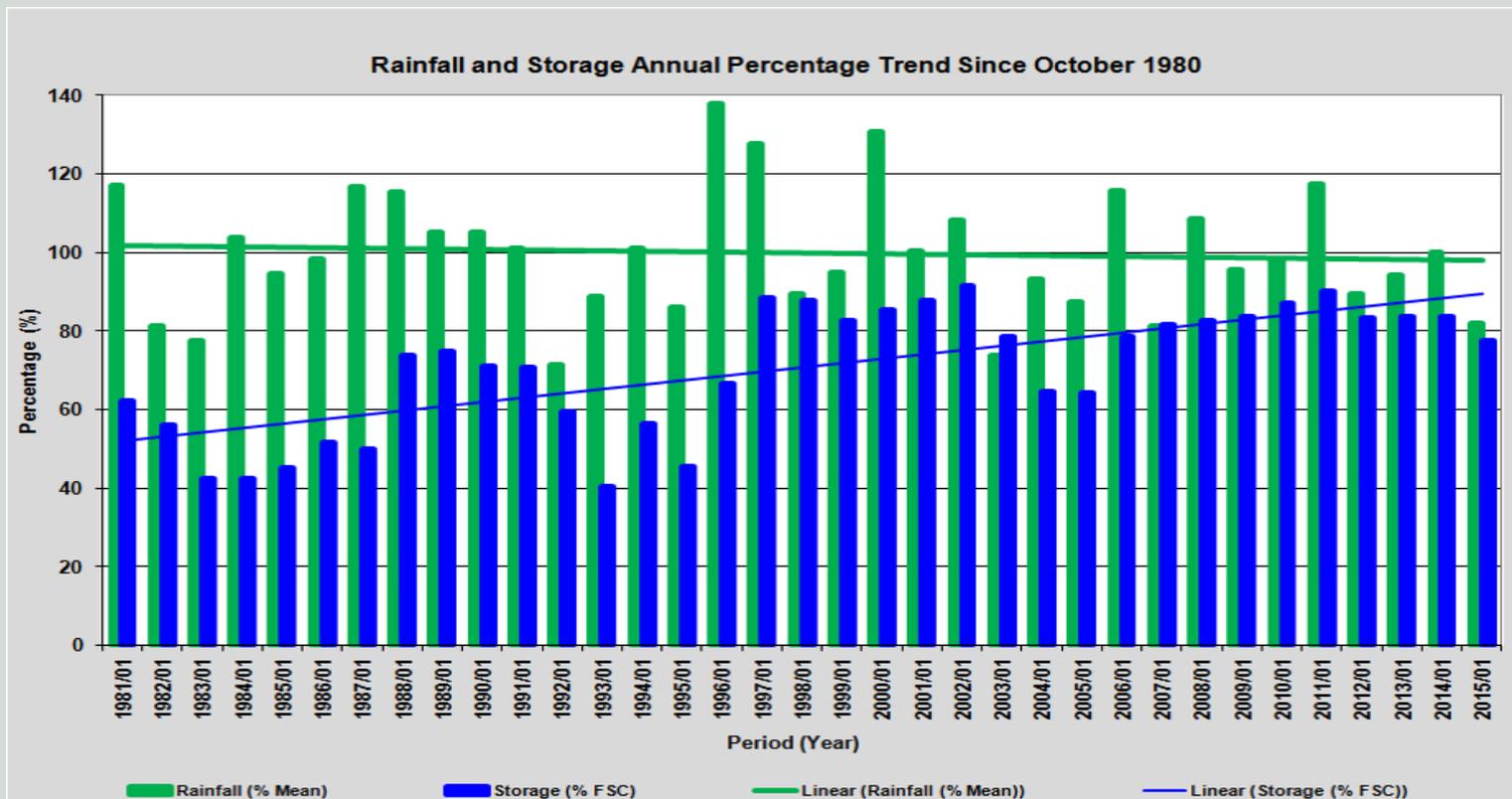
- **LAND COMPOSITION –**
  - 81% for agriculture and subsistence livelihoods
  - 69% of this agriculture land used for grazing, 11% is arable potential
  - Forestry less than 2% of the land and approximately
  - 12% reserved for conservation purposes



# Strategic points

- **WATER**

- Climate change impact on rain patterns - 2014/15 season
- Uneven rainfall distribution, with humid, subtropical conditions occurring in the east and dry desert conditions in the west
- about 50% of SA water for agricultural purposes (DEA, 2017)
- Lesotho Highlands Water Scheme - play an important role as South Africa has been importing water since the 1990's (vital source of water for the Gauteng).



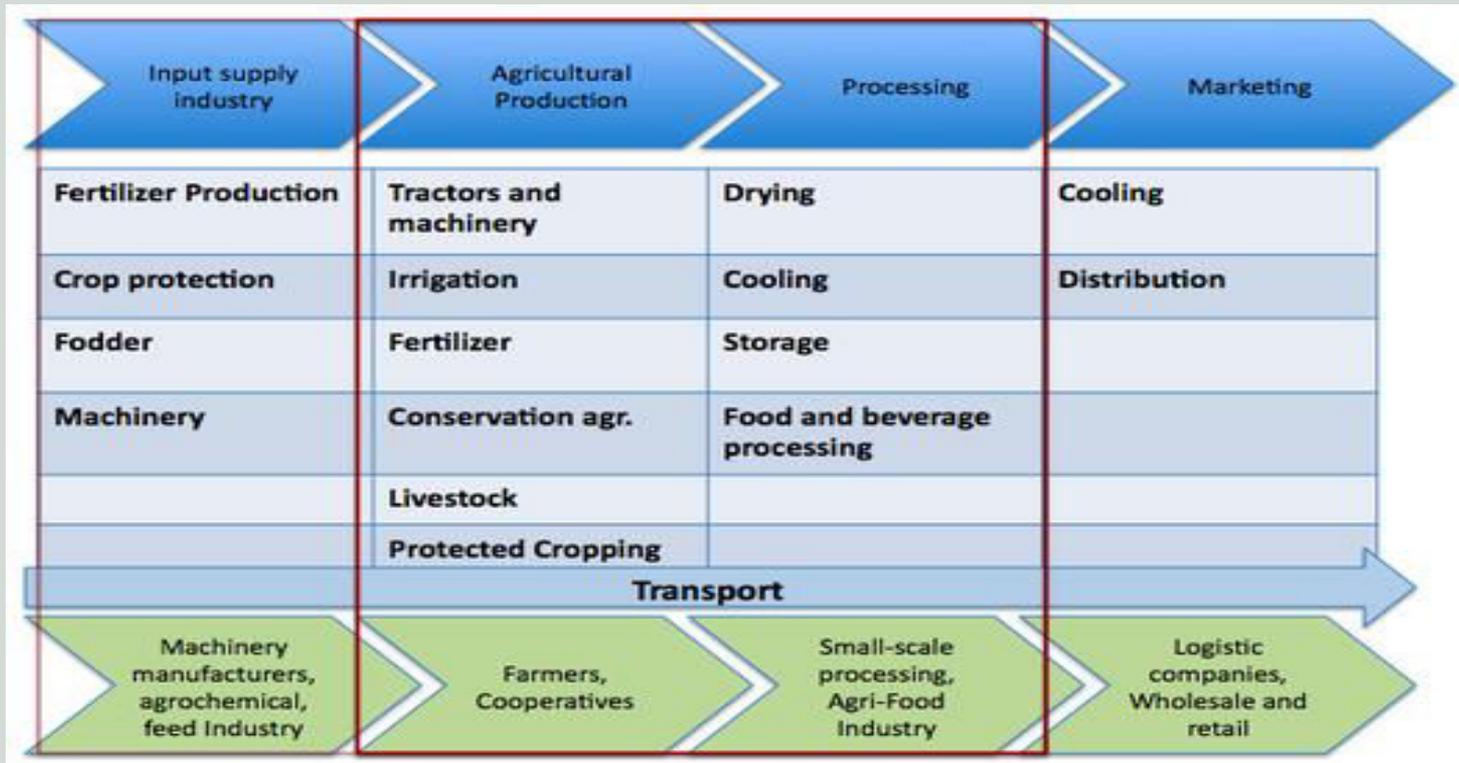
# Strategic points

- **PLANT AND ANIMAL BREEDS**
  - Plant and livestock breeding needs to continuously evolve
  - Pest and diseases, drought, high temperatures and soil degradation and fertiliser needs are constant threats to sustained production levels yields
  - changes in rainfall and temperature as well as pest and diseases pose a constant threat to animal production
- **ANIMAL FEEDS**
  - Animal feeds are a major factor in the daily performance in the sector
  - Feeds costs escalate in the seasons when lower rainfall and high temperatures have been recorded (contribution to sector income and employment)
- **FERTILIZERS**
  - High fertilizer imports as indicated in section above, mean costs associated with these impact highly on the performance of the sector

# Strategic points

- **ENERGY**

- Sustainable and successful agricultural sector - efficiently available supply of energy
- Sources of energy and the resulting costs associated with the types of energy determine efforts to pursue agricultural activities.



# Strategic points

- **PRODUCTION SYSTEMS**

- livestock and crop products that have developed strong resistance to adverse climatic conditions
- basis in new policy directive addressing rural food security and income generation

- **PROCESSING**

- Post-harvest losses are a major threat to food security – 10-40% (Africa Post Harvest Loss Index, 2014)
- Climate change may increase losses –
  - indigenous knowledge (drying, salting, crushing, pre-cooking)
  - modern technology based methods (extraction, canning, bottling, concentration) to reverse losses (DAFF.gov.za/Agro-processing Support, 2017)

# Planning and Funding

- The National Development Plan (NDP) - “2030 Vision” of an inclusive rural economy
- DAFF response - Agricultural Policy Action Plan (APAP)
  - align to NDP, NGP and MTSF
  - Assisted ARC, Land Bank, NAMC, OBP, PPECB and SA Veterinary Council.
- Planning mid-long term - embrace the potential negative effects of climate change
- Consultative meetings - DAFF collaboration with DRDLR
  - Eliminate duplicate in resources
  - Identified the constraints, challenges and gaps
  - Sector and transversal interventions
  - Operation Phakisa and Agri-parks
  - Commodity value chain mapping
- DRDLR – Agrarian Transformation System provide economic infrastructure (crop/livestock)

# Planning and Funding cont..

- APAP –
  - activities promoting CSA with systems on organic agriculture, agro-ecology and conservation agriculture.
  - development of CSA framework
  - incentives for CSA practices (special focus on smallholder farmers)
  - produce more with the same amount of water by using more efficient irrigation methods & water demand management
  - Land-Care programme and irrigation strategy
  - policy levers for CSA - collaboration between national, provincial, local authorities
- Agriculture, Forestry and Fisheries/Aquaculture Research Forums - development of R&D model
- Several Sector Research Plans - Sector Innovation Funds (DST)
- Service level agreements - ARC (DAFF) and NRF (DST) that address issues of climate change

# Planning and Funding cont..

- Poultry Value Chain –
  - incentivising R&D for better yielding and resistant soybean and yellow maize seed varieties
- The Red Meat Value Chain –
  - targets new livestock breeds and better pesticides
- Wheat Value Chain –
  - R&D in new cultivars and the adaptation of conservation agriculture technologies to produce cultivars resistant to climatic changes
- CSA - adaptive capacity towards climate change for vulnerable communities
- Funding - climate-resilient development that is farmer driven, focusing on farmers, women and youth
- Strategic Framework –
  - incentive programmes to adopt best practices and strategies CSA
  - monitor the extend of adoption of CSA technologies

# Planning and Funding cont..

## Research outcomes

- Collaboration ARC and some African counterparts
  - new, drought tolerant maize cultivar (2014/15)
  - two wheat cultivars
  - six apple cultivars have been developed as part of breeding program to address the impact of climate change
  - R&D towards pests and diseases that affect crop and livestock.
- The National Plan for Conservation and Sustainable Use of Farm Animal Genetic Resources (DAFF)

# Conclusion/Recommendation

- Public planning – efforts are evident
- Public funding – finance model
- Sustainability in different contexts of the farming systems, sizes and outputs
  - in order to develop sector interventions and policy levers that will support specific, identified sustainability definitions
  - interventions owned at household level
- Need to address uncertainty around the climate change –
  - food security and income generation at this HH level
- Incentives to adopt techniques and methods along climate change
- The National Development Plan – increased irrigation
  - scarce rainfall (drought periods)
  - expected evaporation and high temperatures will lead to higher irrigation demand

# Conclusion/Recommendation

- Early warning systems –
  - understanding how to interpret and analyse the information produced by complex and sophisticated models
- Studies in the US - correlation between high carbon dioxide levels and some weeds (toxic)
  - threat to ecosystems, local studies needed
- State of soil in the country – not final
- Strengthen public-private partnerships

Thank you...