SANCID 2014

"Water, food and energy in the 21st Century"

Joe Stevens

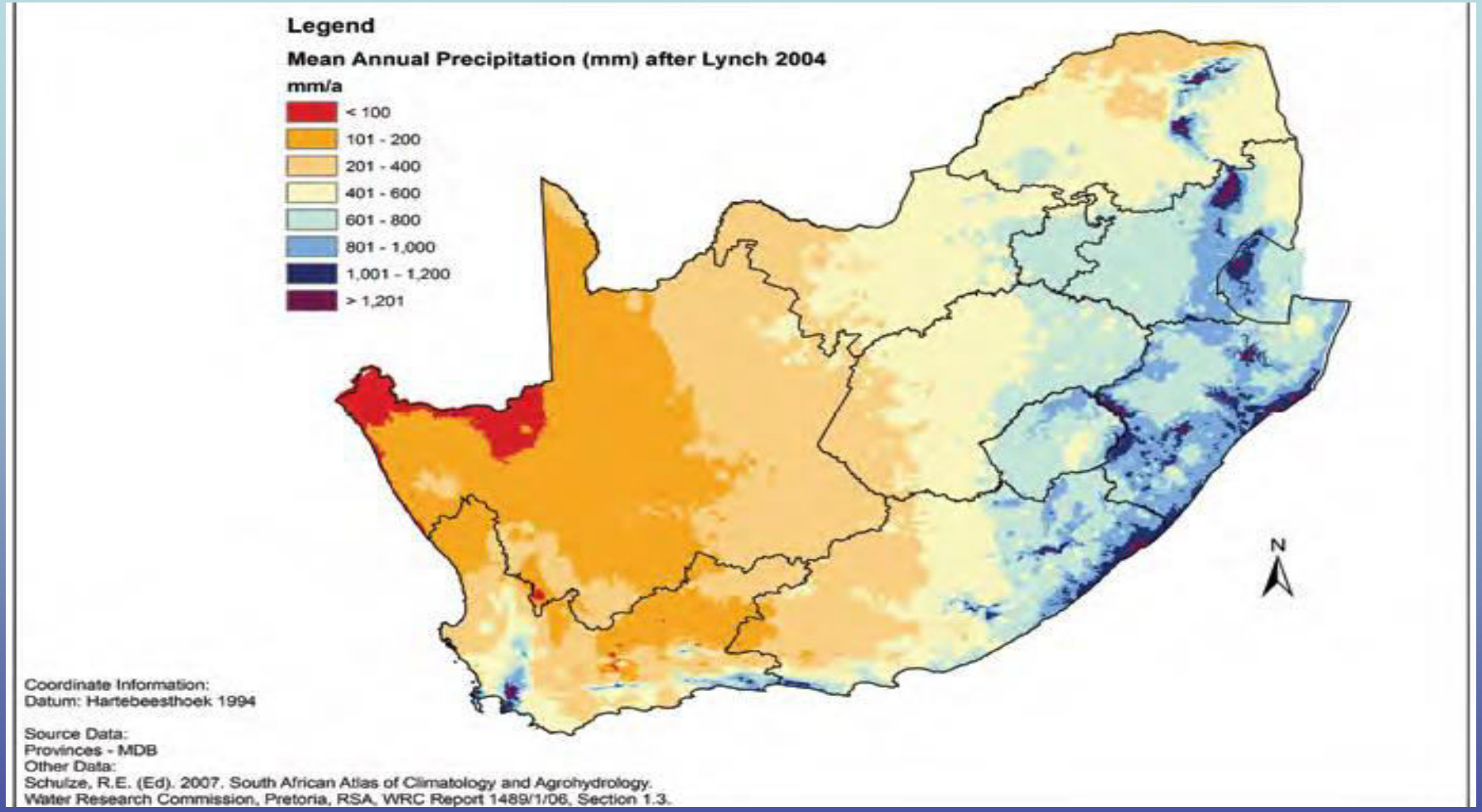
SANCID

- On behalf of the SANCID Organising Committee – great pleasure to welcome you at Glenburn Lodge, Gauteng
- SANCID celebrates 21 years of excellence since a very humble and small start in 1993
- Since the inauguration of SANCID to ICID (1992)- we have experienced great achievements within the international irrigation and drainage arena:
  - Water Save Awards (5)
  - Vice Presidents of ICID (2)
  - Members serving on ICID working committees the last 21 years
  - Best performing national committee of ICID(2013)

SANCID

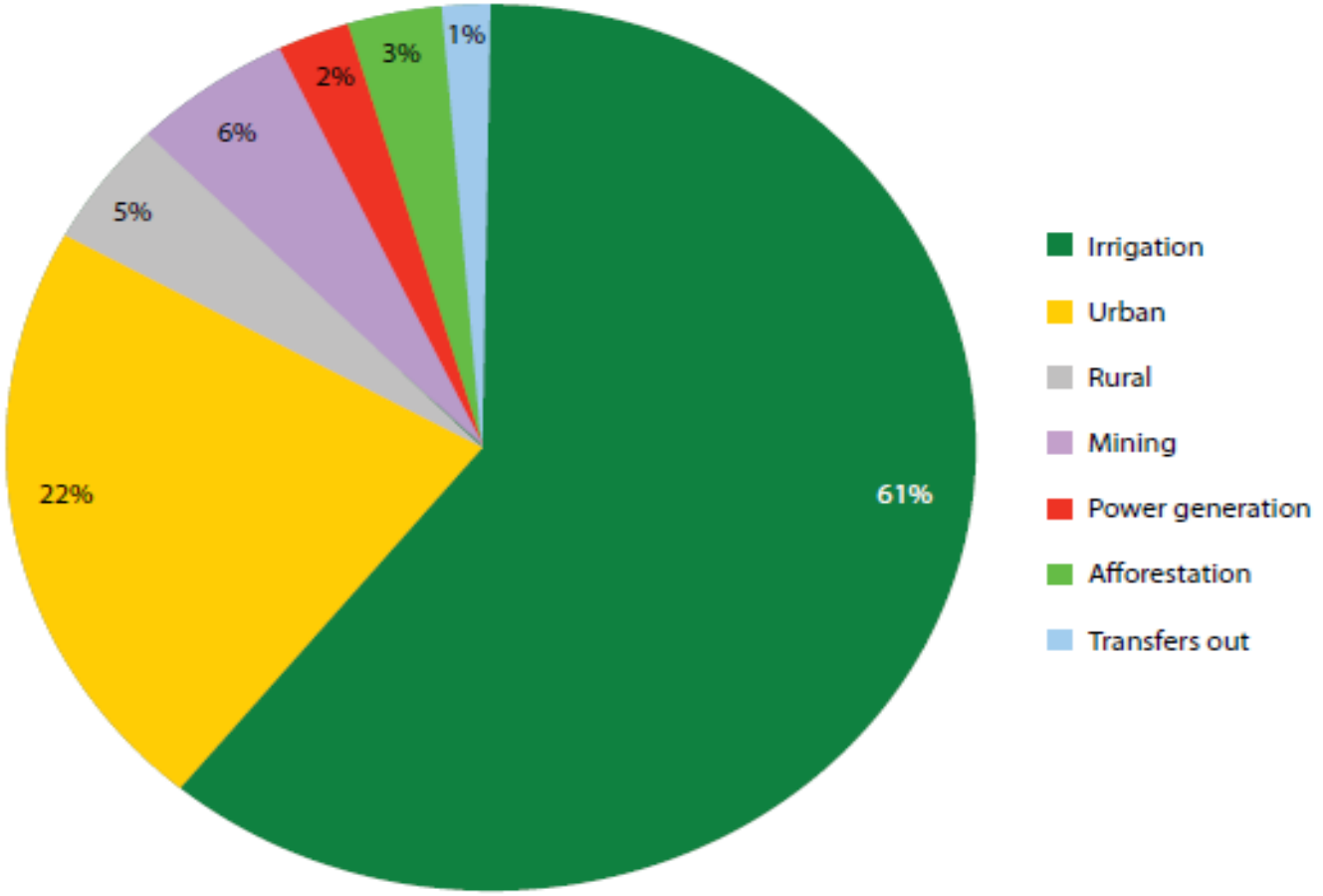
"Water, food and energy in the 21st Century"

South Africa : water scarce country



Water demand in South Africa

Current water demands in SA

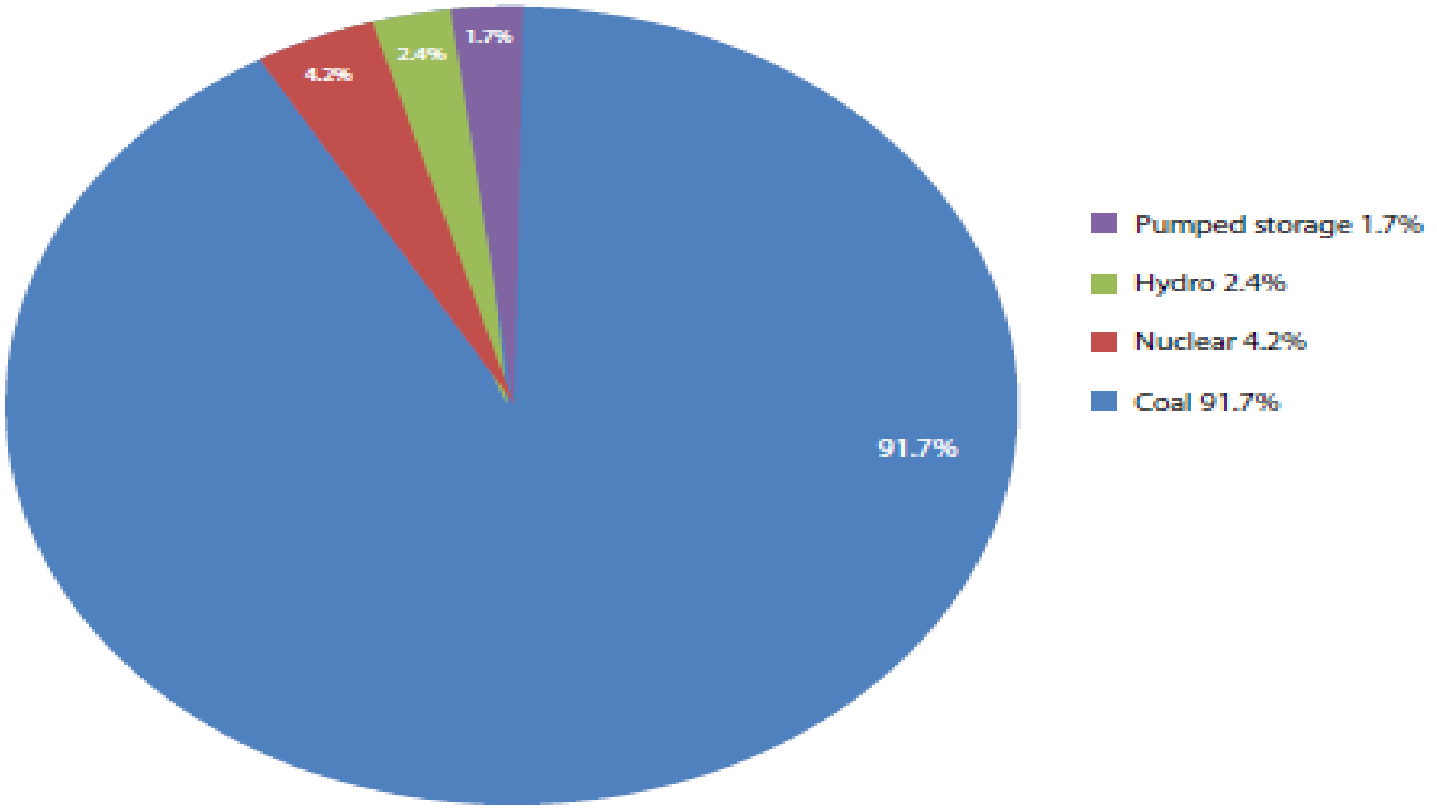


Source: DWAF (2013)

Primary energy mix supply in South Africa

- 67%: Coal
- 20%: Crude oil
- 13%: Nuclear, natural gas and rebnewable energy

Electricity capacity generation by energy source



Source: DoE (2010)

Electricity demand

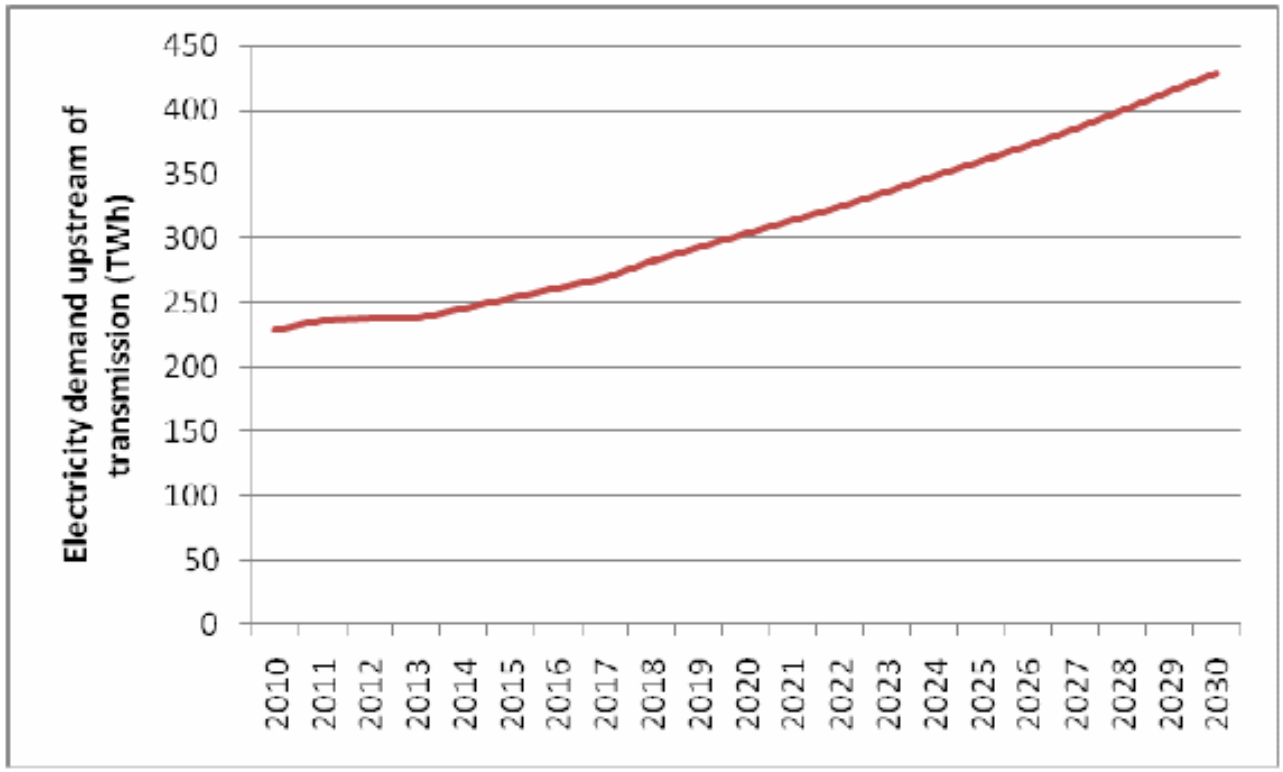
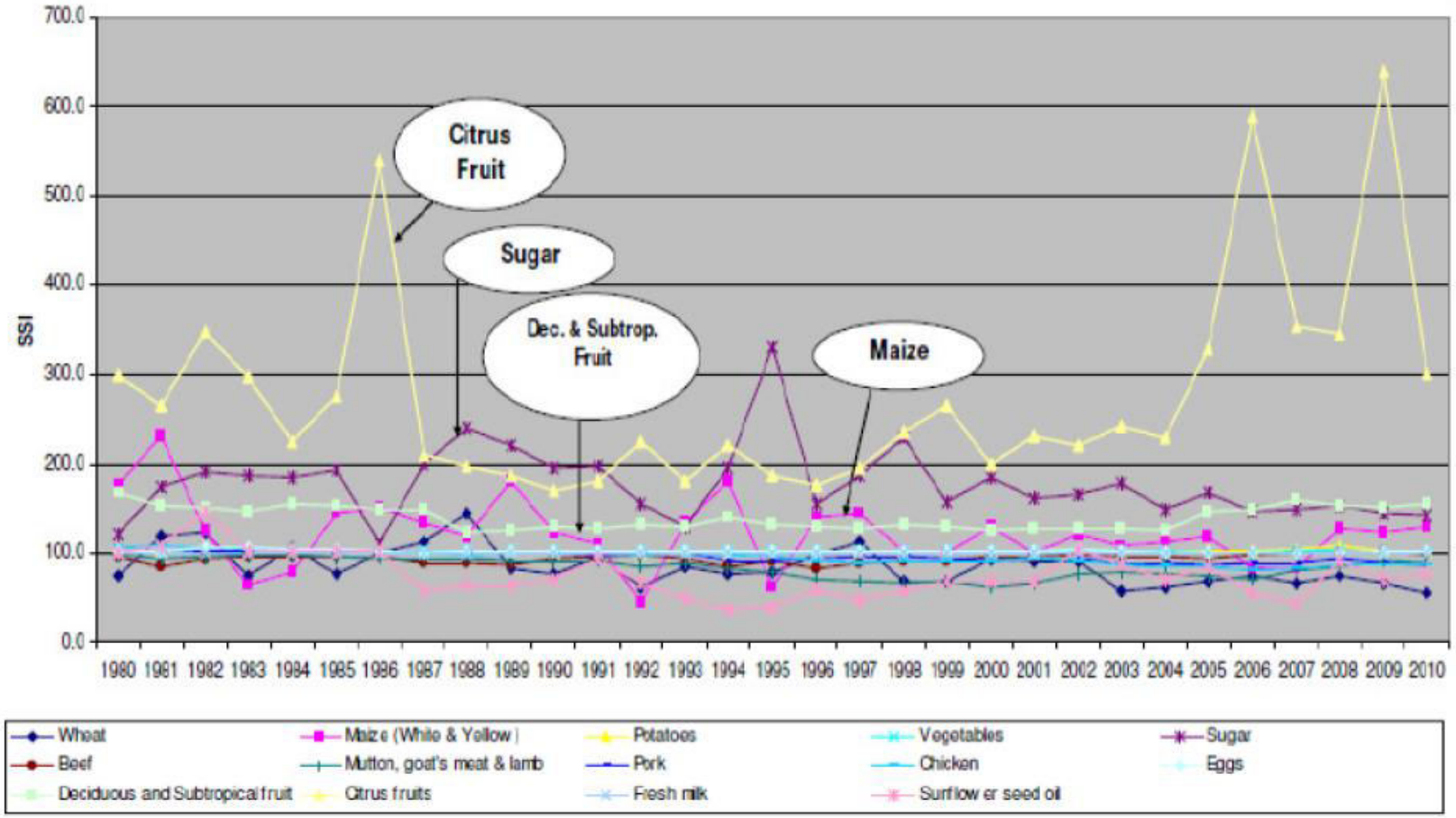


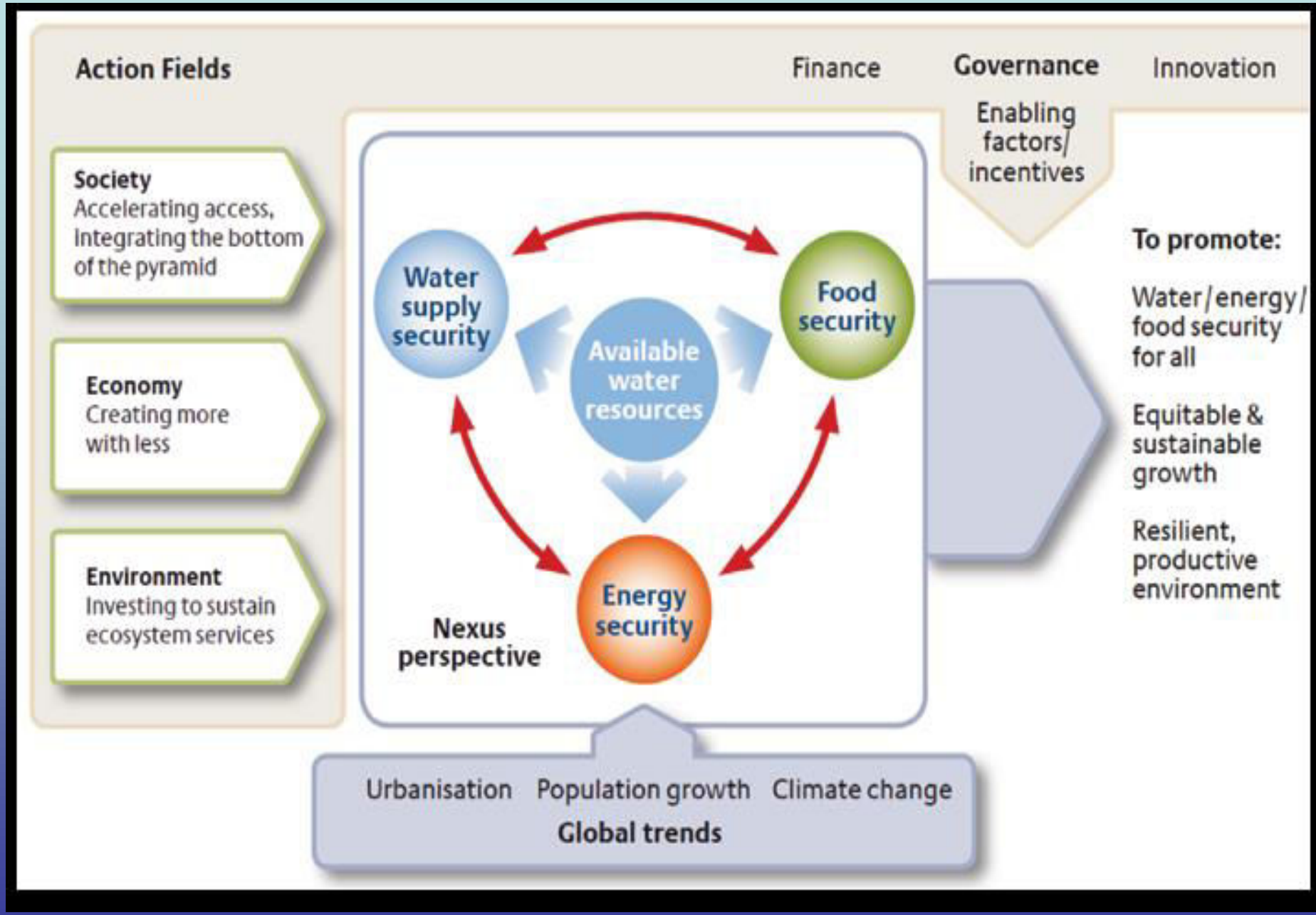
Figure 2: Electricity demand upstream of distribution projected for South Africa till 2030

Food production in South Africa

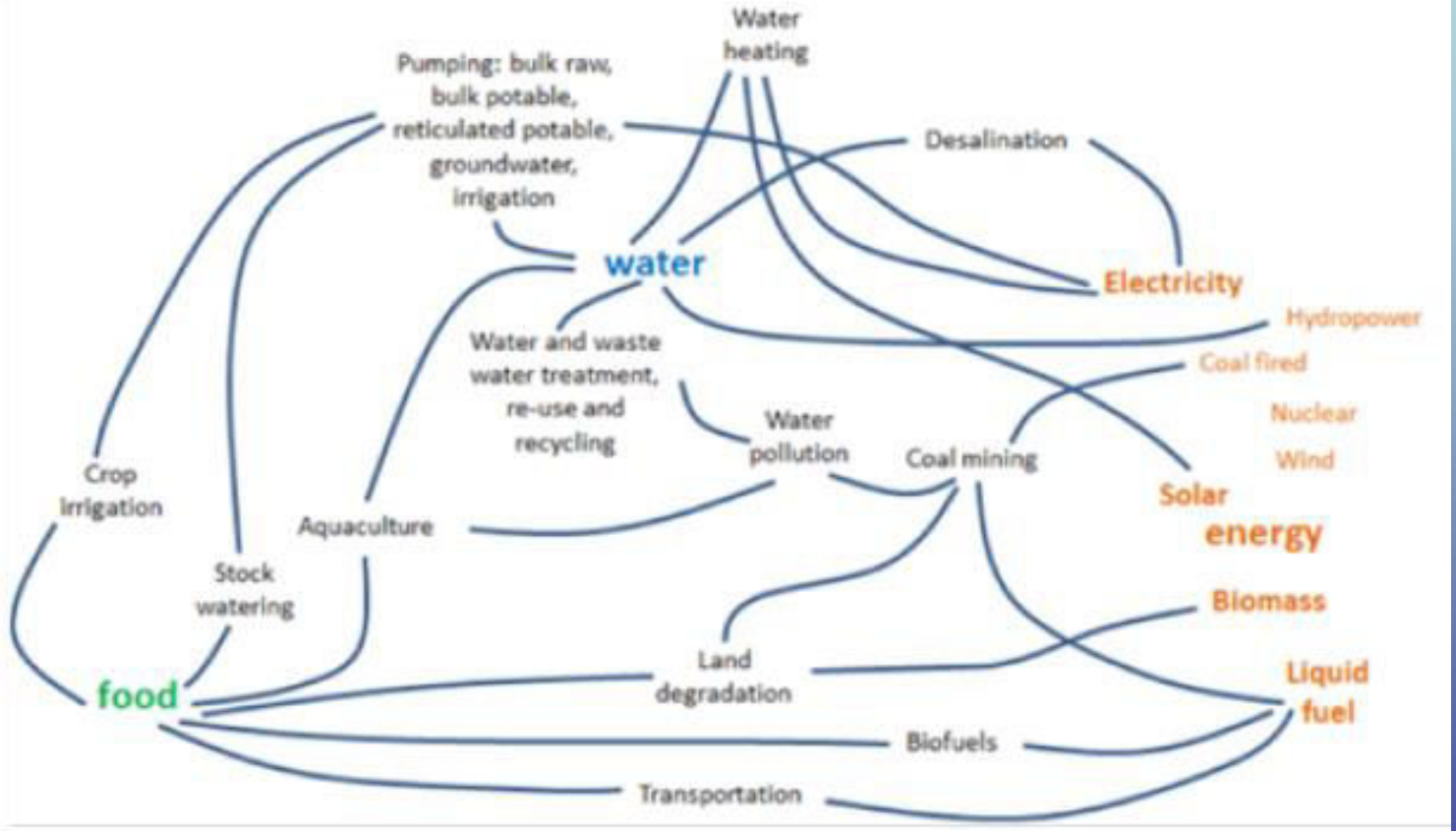
- Due to combination of climate and soil: only about 12% of the country is suitable for growing rain-fed crops of which about 3% of the land surface is considered *truly fertile*
- Result: most of land is used for grazing and livestock farming
- Changes over the last few decades:
  - an *increase in large-scale intensive farming* in high production areas and a shift from maize production to livestock production in marginal areas.
  - a shift from *low-value/high-volume products* for domestic consumption (wheat and milk) to *high-value export products* such as deciduous fruits, citrus and game
  - Growing export of SA fruit and citrus: more than half of which is *exported*.
  - Most of South Africa's irrigable land (about 1.2% of land surface) is already cultivated with some irrigation already taking place in marginal lands. About 1.5% of land is under irrigation, and this area produces 30% of the crops
  - South Africa is a net food exporter in an average year. Agricultural exports made up 5% of the country's total exports (2010)
  - While agriculture contributes a relatively small share of GDP, it brings in foreign exchange and is an important source of jobs (672000 (2013) and downstream value-adding in the manufacturing value chain.

National food self-sufficiency index (DAFF, 2009)



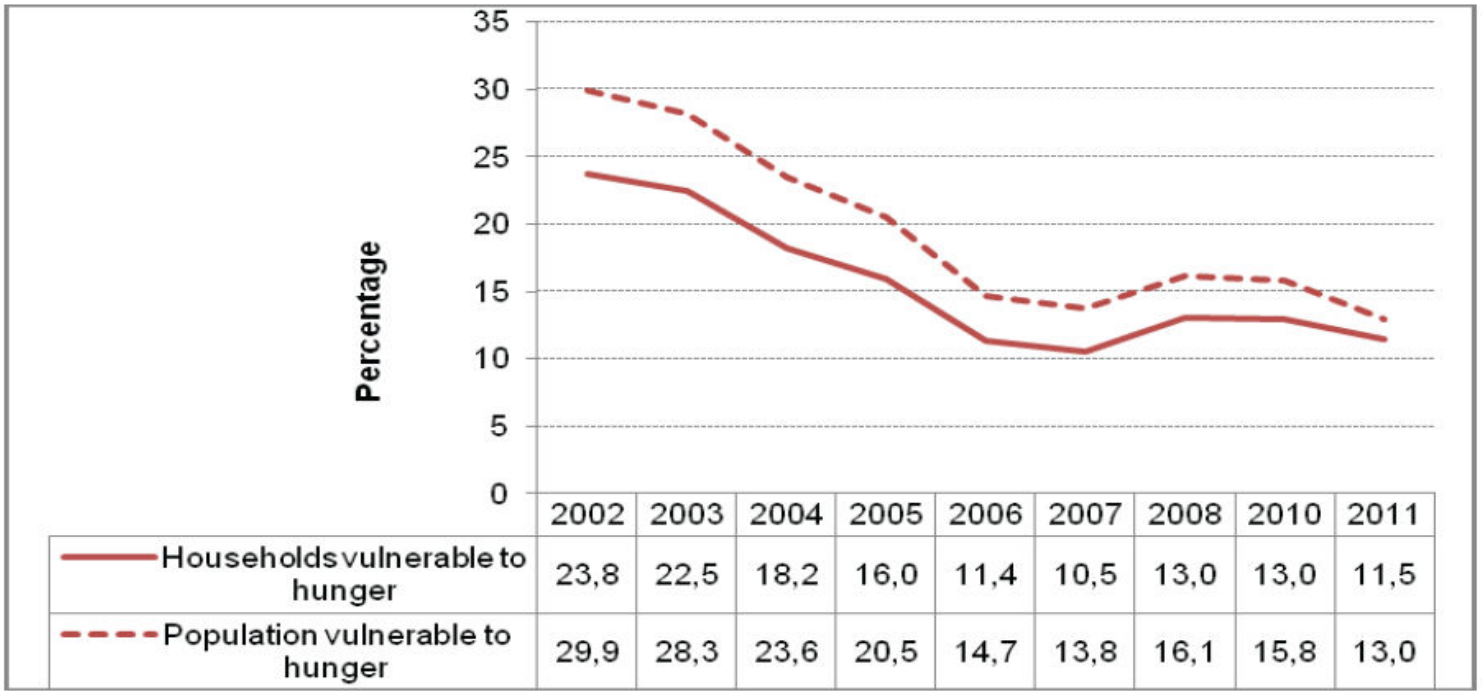

Action Fields
Finance
Governance
Innovation
Enabling factors/ incentives
Society
Accelerating access, Integrating the bottom of the pyramid
Economy
Creating more with less
Environment
Investing to sustain ecosystem services
Water supply security
Food security
Available water resources
Energy security
Nexus perspective
To promote:
Water/energy/ food security for all
Equitable & sustainable growth
Resilient, productive environment
Urbanisation
Population growth
Climate change
Global trends

Key relationships between water, food and energy in SA



Challenges in South Africa

Figure 5: Estimated percentage of households and persons vulnerable to hunger in South Africa

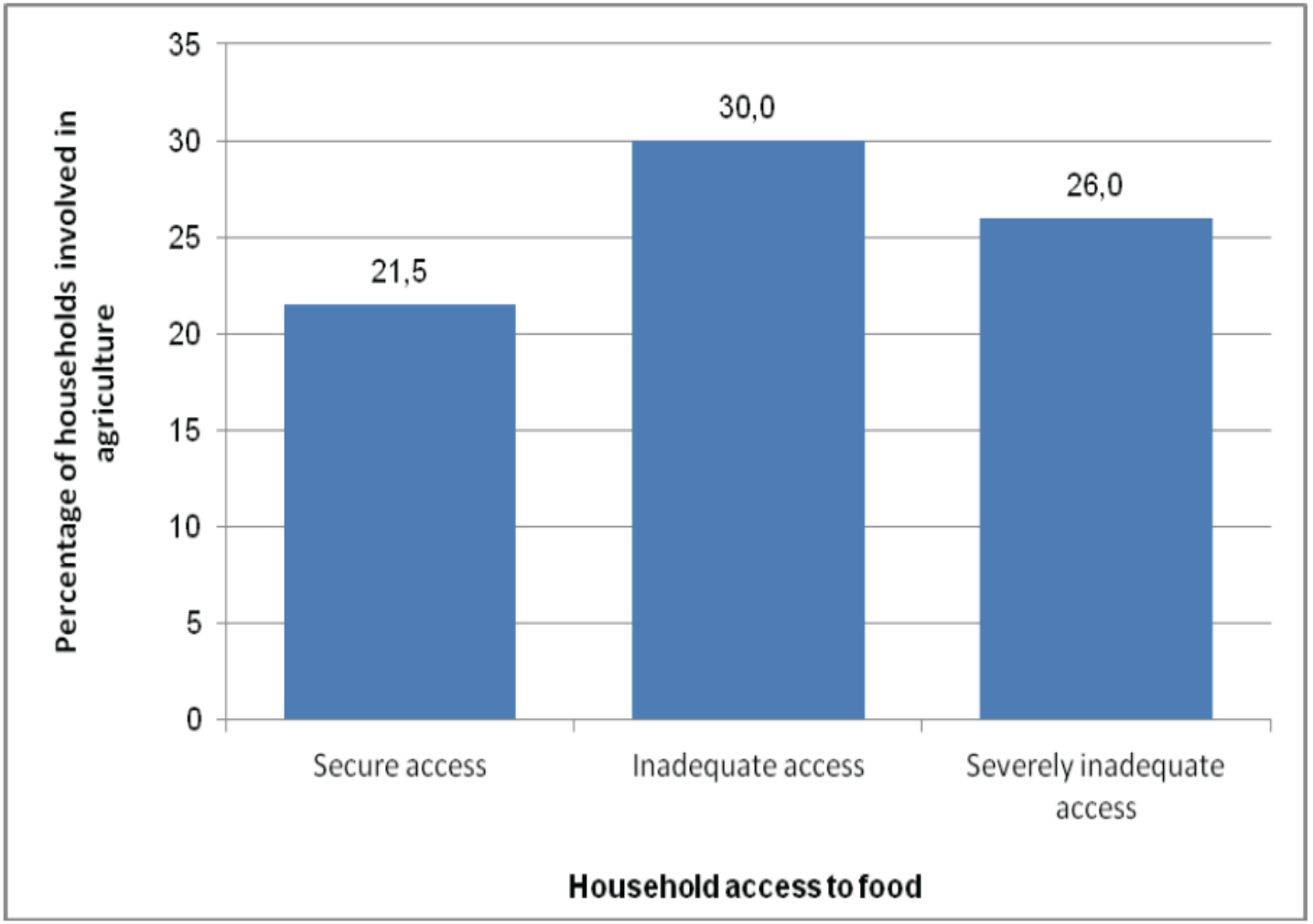


	2002	2003	2004	2005	2006	2007	2008	2010	2011
Households vulnerable to hunger	23,8	22,5	18,2	16,0	11,4	10,5	13,0	13,0	11,5
Population vulnerable to hunger	29,9	28,3	23,6	20,5	14,7	13,8	16,1	15,8	13,0

1. Possible crisis may be imminent in that affordable food draws to a close (food availability vs affordability)

General Household Survey 2011

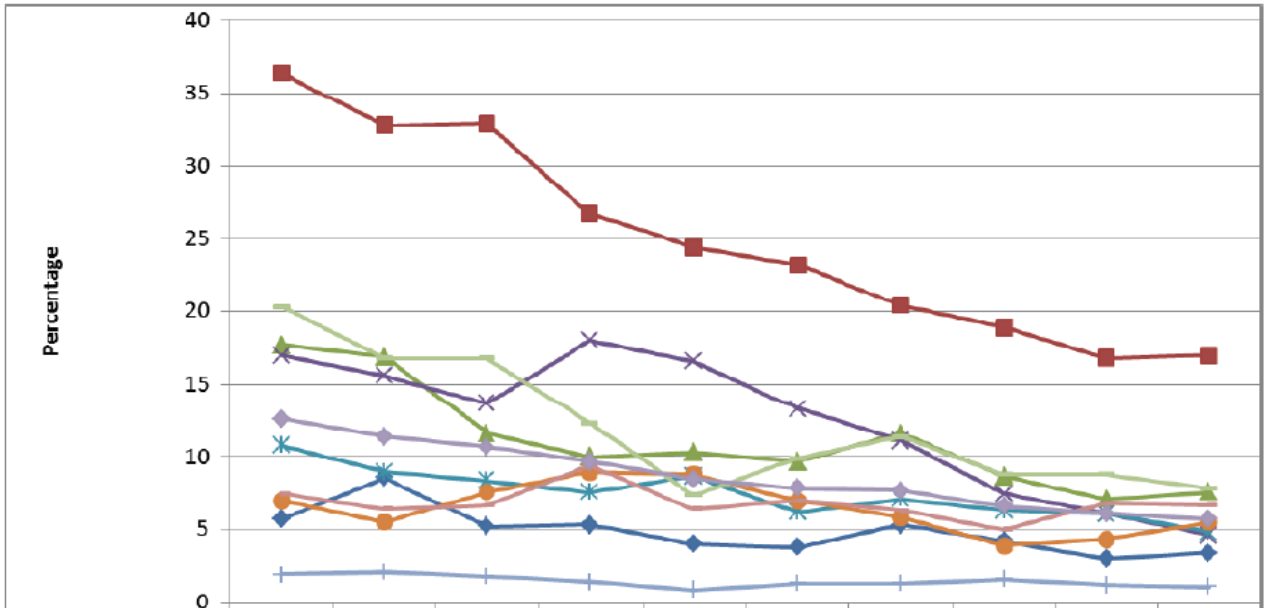
Figure 11: Household access to food by participation in agriculture, 2011



Challenges in South Africa

2. Pressure on land and water will continue to grow – population growth (52million)

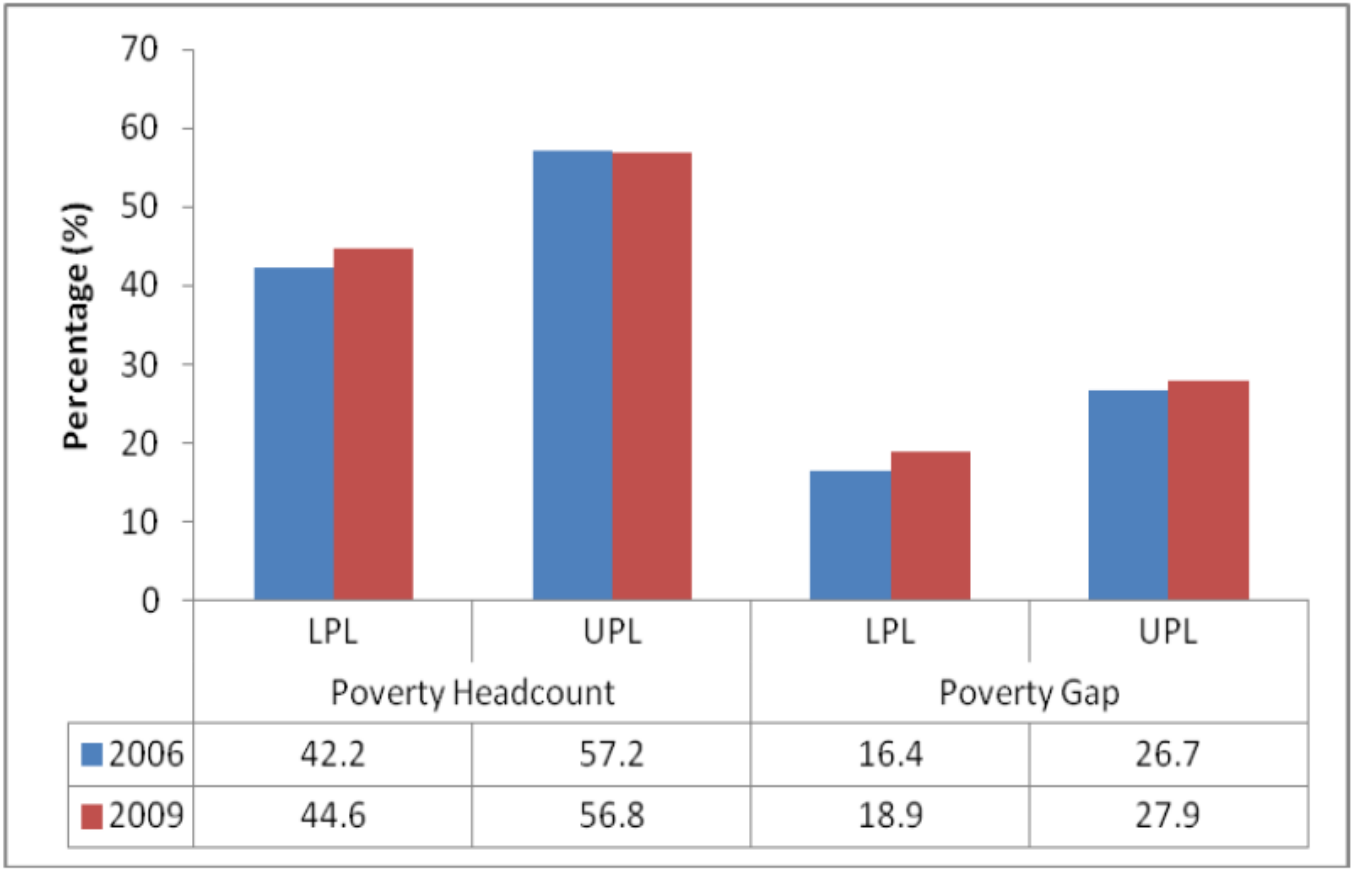
- changing of consumption patterns
- basic services (piped water, flushing toilets, etc)



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Western Cape	5,7	8,6	5,2	5,3	4,0	3,8	5,3	4,2	3,0	3,4
Eastern Cape	36,4	32,8	32,9	26,7	24,4	23,2	20,4	18,9	16,8	17,0
Northern Cape	17,7	16,9	11,6	10,0	10,3	9,7	11,6	8,7	7,1	7,6
Free State	17,0	15,6	13,7	18,0	16,6	13,3	11,1	7,5	6,1	4,6
KwaZulu-Natal	10,8	9,0	8,4	7,6	8,7	6,2	7,1	6,3	6,1	4,8
North West	7,0	5,5	7,6	9,0	8,8	7,0	5,8	3,9	4,3	5,5
Gauteng	1,9	2,1	1,8	1,4	0,9	1,3	1,3	1,6	1,2	1,1
Mpumalanga	7,5	6,4	6,7	9,4	6,4	7,0	6,3	5,0	6,8	6,7
Limpopo	20,3	16,8	16,8	12,3	7,4	9,9	11,4	8,8	8,8	7,9
South Africa	12,6	11,4	10,7	9,7	8,5	7,9	7,7	6,6	6,1	5,7

Figure 7.1 Percentage of households that have no toilet facility or were using a bucket toilet per province (2002-2011)

Consumer behaviour and trends



	Poverty Headcount		Poverty Gap	
	LPL	UPL	LPL	UPL
2006	42.2	57.2	16.4	26.7
2009	44.6	56.8	18.9	27.9

Source: Income and Expenditure Survey, 2005/2006; Living Conditions Survey, 2008/2009, Statistics South Africa

Resilience driven approach

- We cannot always accurately predict what the influence of change in population growth, climate change and consumer behaviour will be – therefore FLEXIBILITY required in design and implementation of food, energy and water systems
- Aim: to build a resilient economy in SA – which can benefit from and reinforce preservation of natural systems on which they depend
- How?
  - NDP :Vision 2030 and business strategies and need to be design implemented around resilience

Expectations

- 32 Scientific papers to be delivered
- Technical tour on Wednesday to :
  - Finlays: 23 ha flowers under cover, mainly exporting to UK and Europe
  - Rosaly Farming: 1200 ha vegetables under irrigation

Acknowledgement

- Conference organisers:
  - Riana Lombard from Riana Events
- Organising committee:
  - Chairperson: Puleng Mofokeng
  - Members: Michael vd Laan
    Sylvester Mpandeli
    Ashiel Jumman
    Joe Stevens