

SOME FEATURES OF SOUTH AFRICAN AGRICULTURE

Prof N Vink

Department of Agricultural Economics

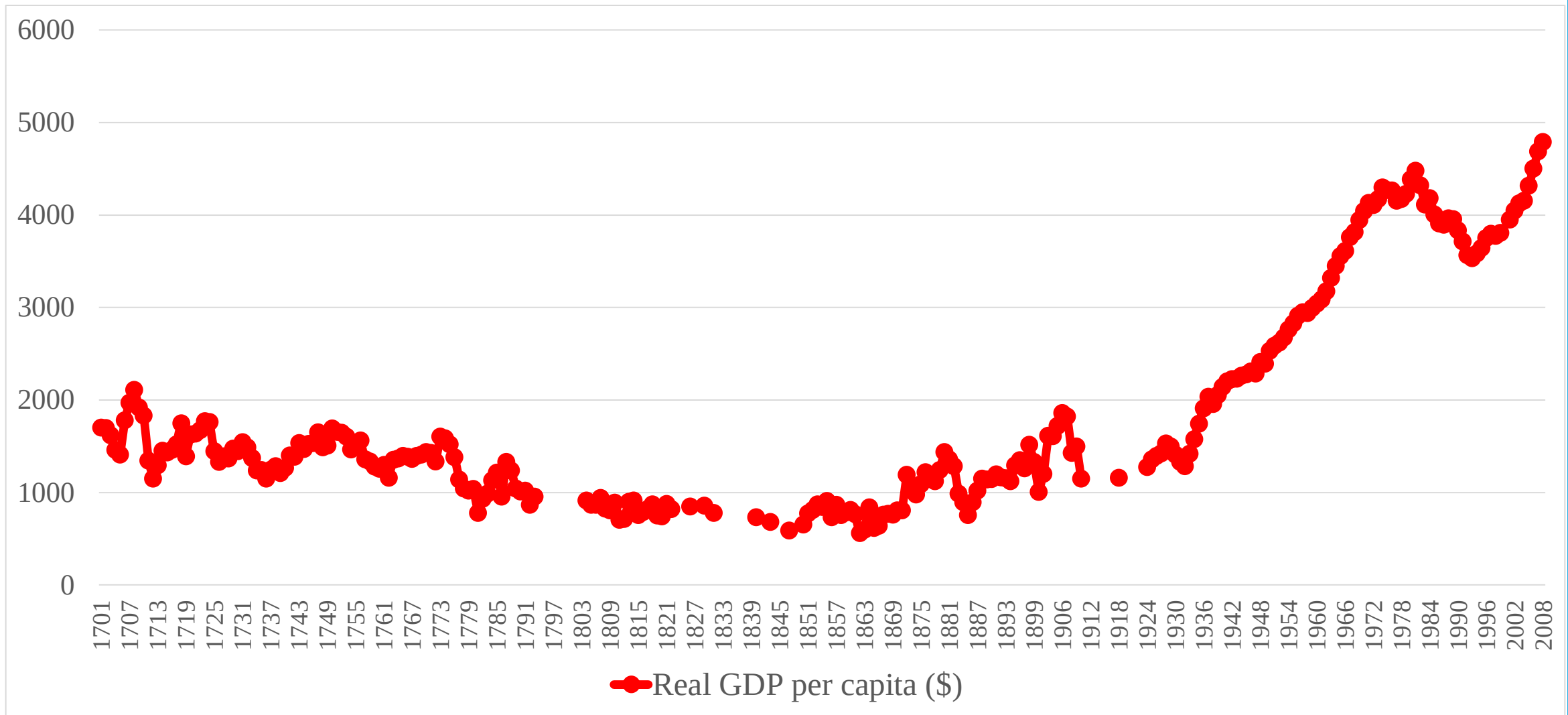
nv@sun.ac.za

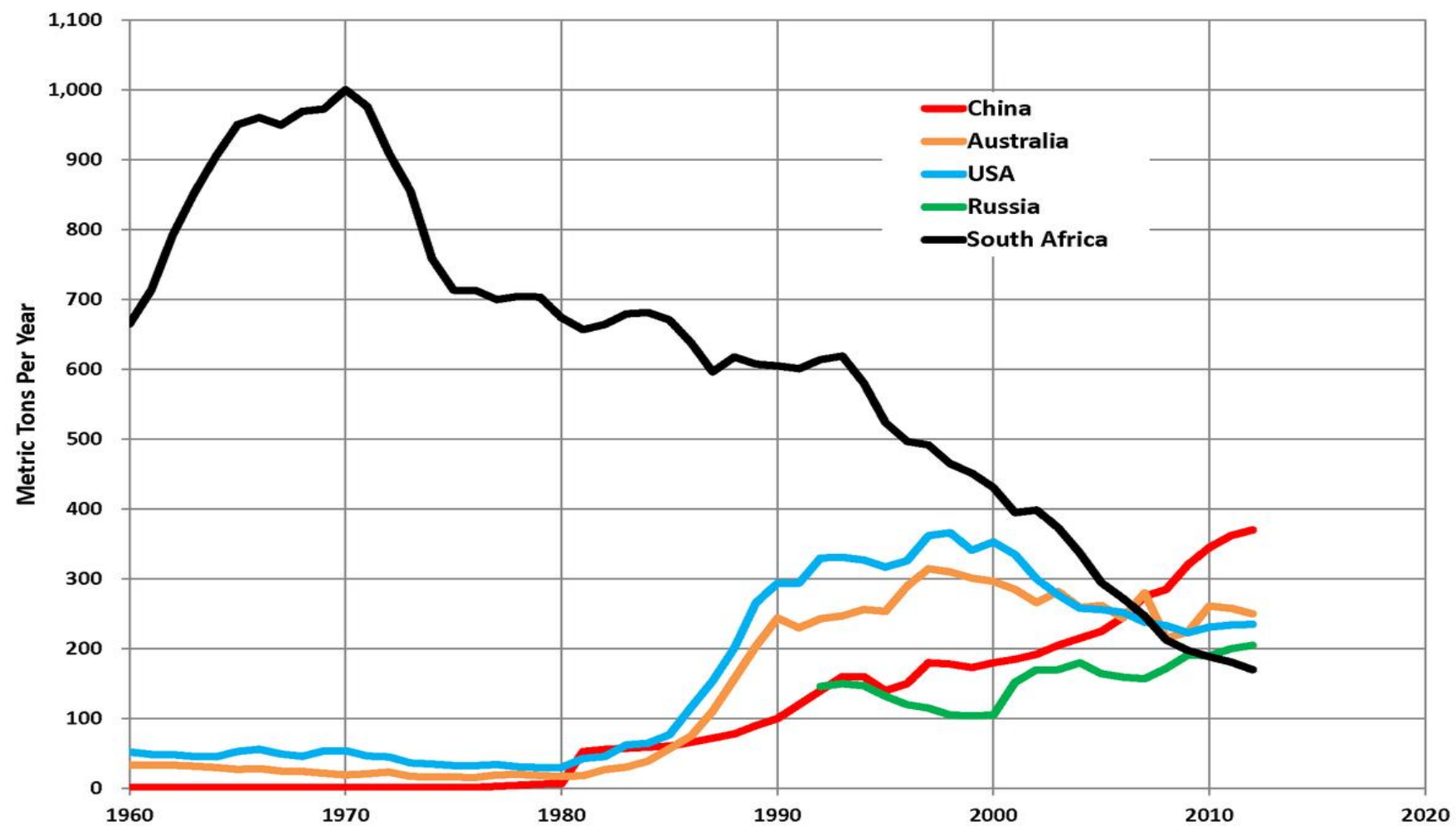
Scenario planning

- Economic: The end of the gold(en) era
- Social: Demographics
- Natural: What is drought?
- Technical: New technology and the NDP
- Political/Institutional: Dealing with uncertainty

The economic environment

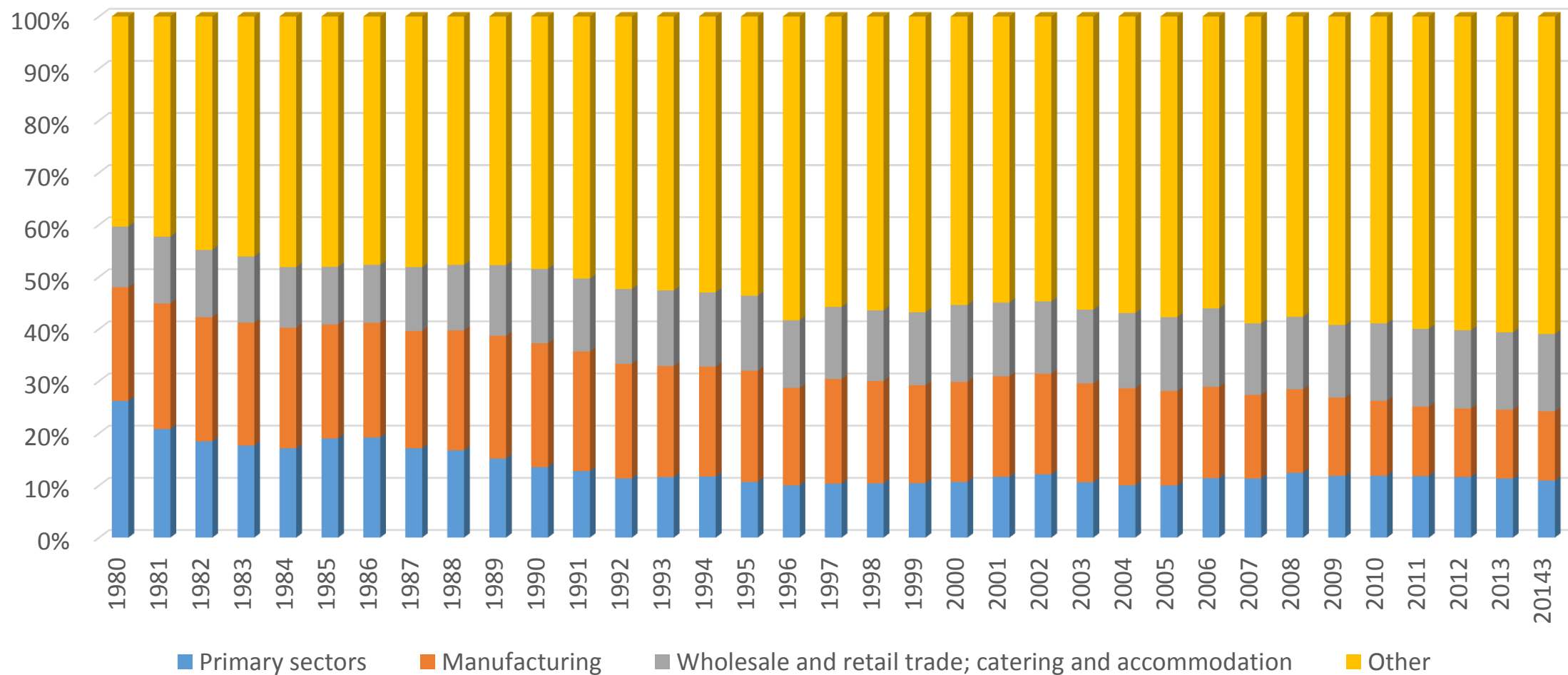
Economic growth in South Africa



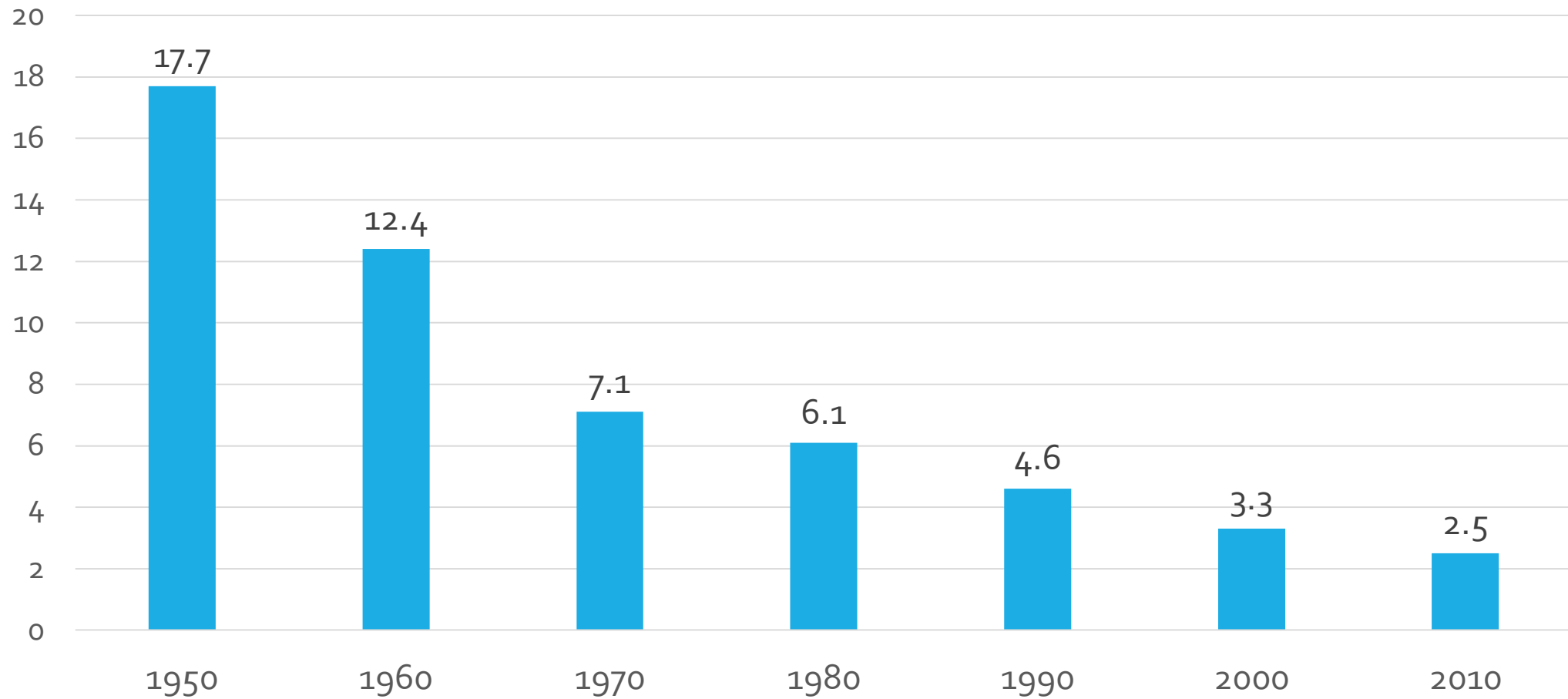


The economy is changing rapidly

Sector shares in GDP

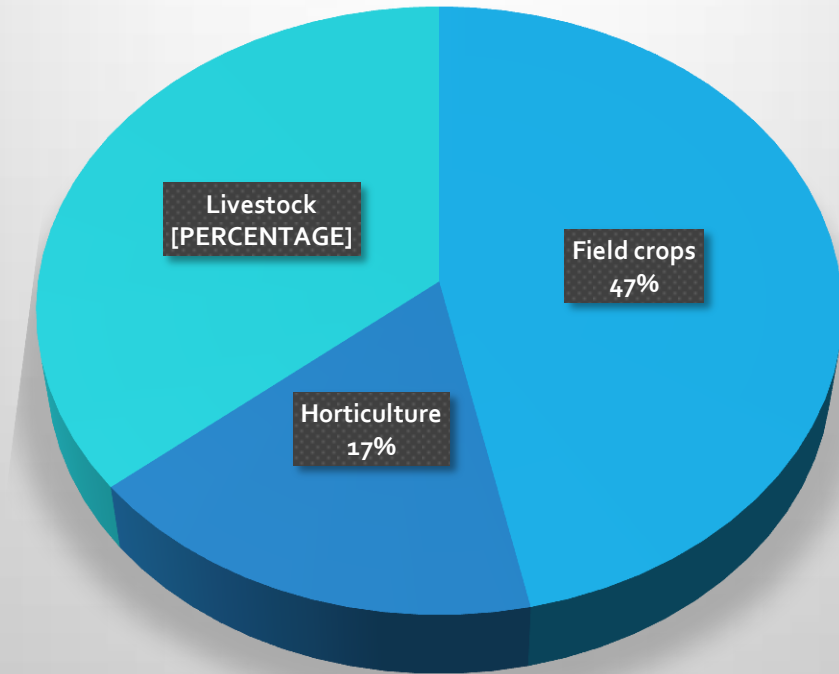


How big is agriculture?

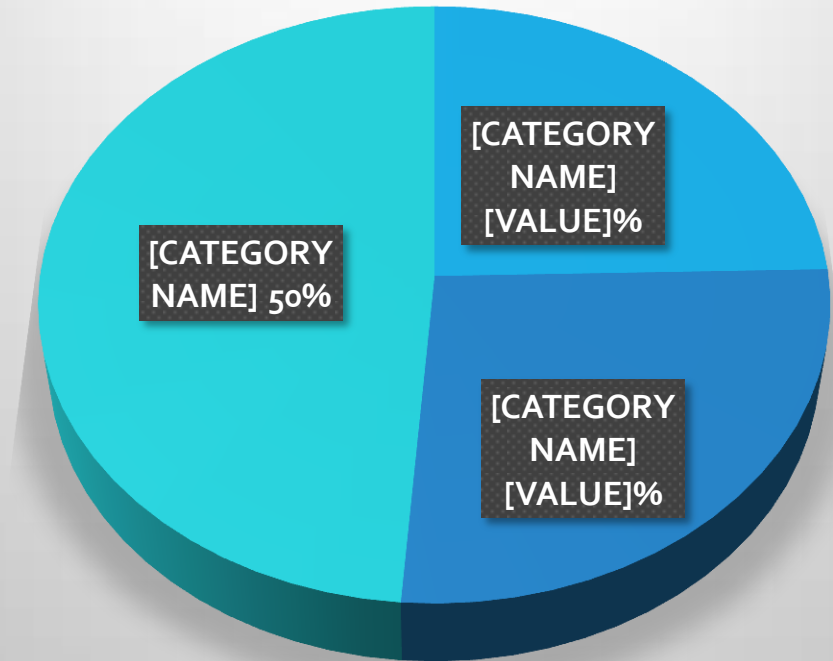


The composition of production

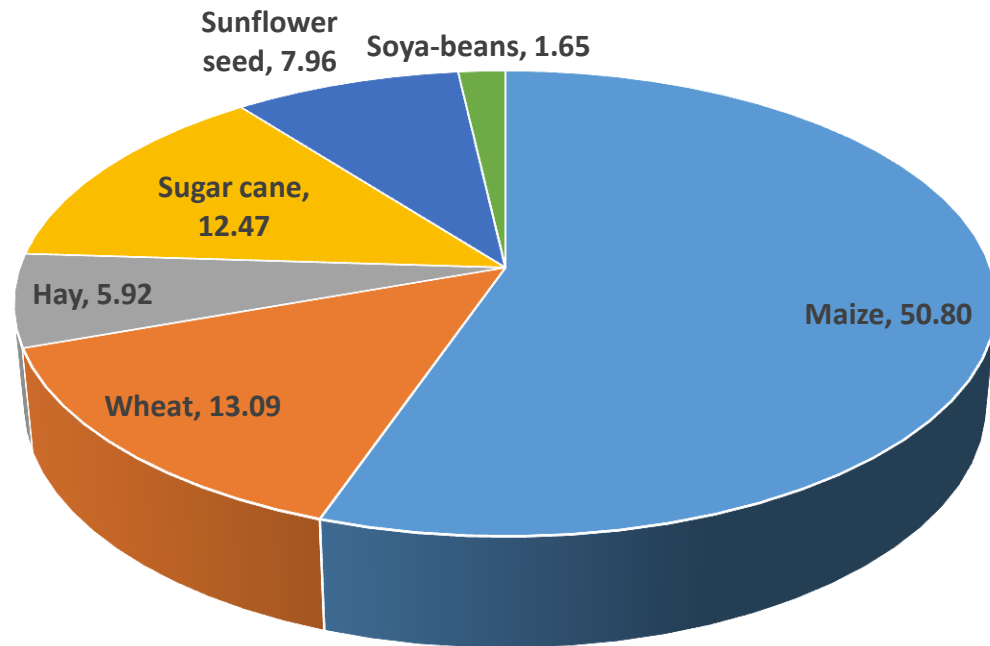
1970/71



2014/15

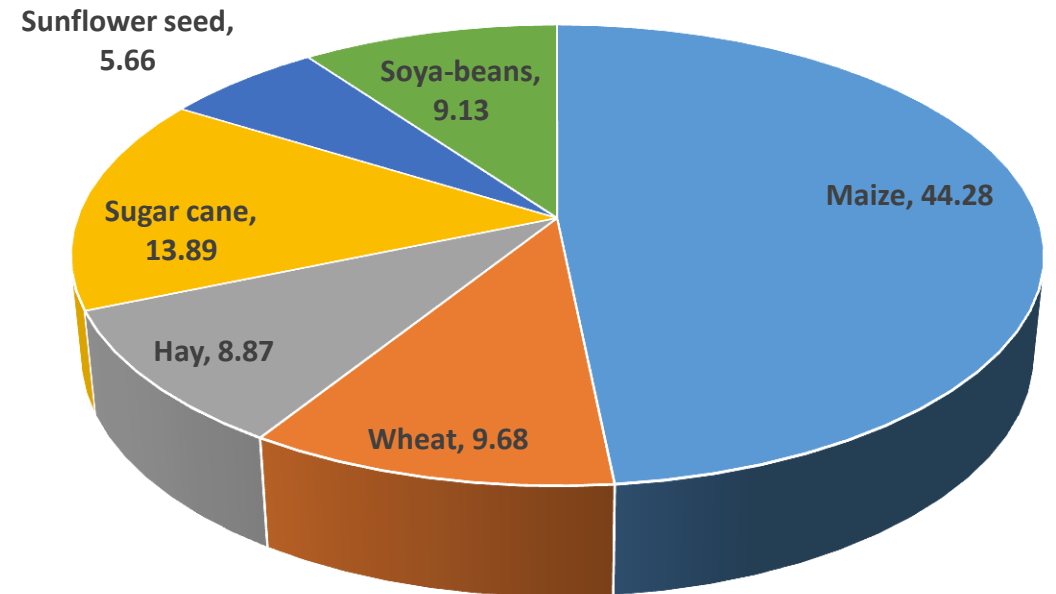


2001/02



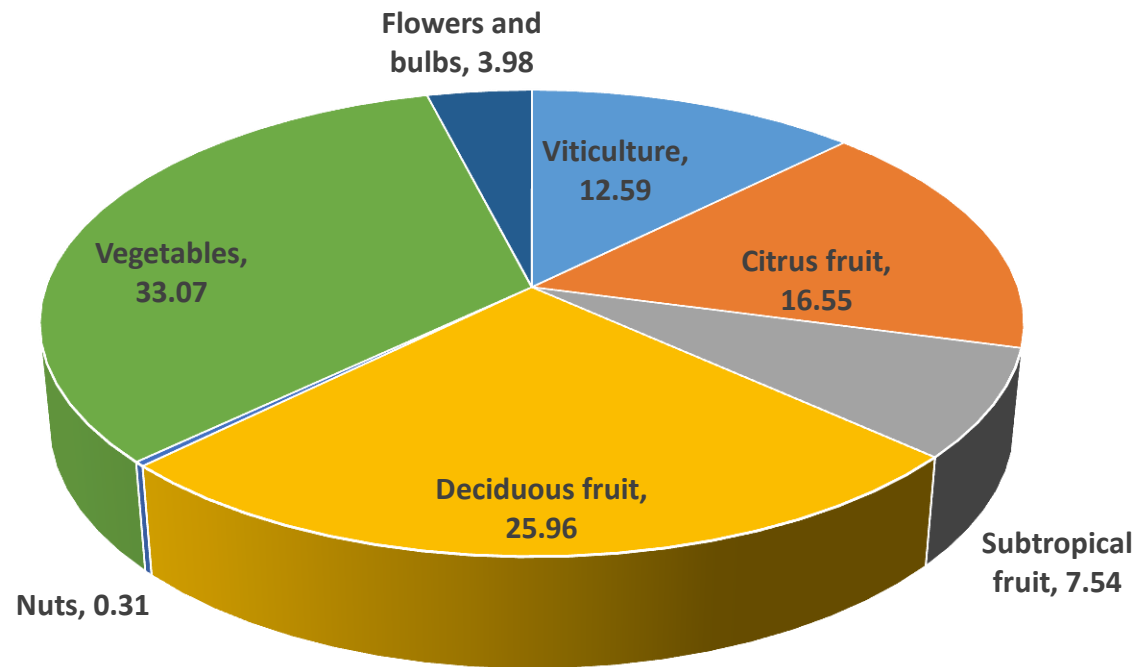
■ Maize ■ Wheat ■ Hay ■ Sugar cane ■ Sunflower seed ■ Soya-beans

2014/15



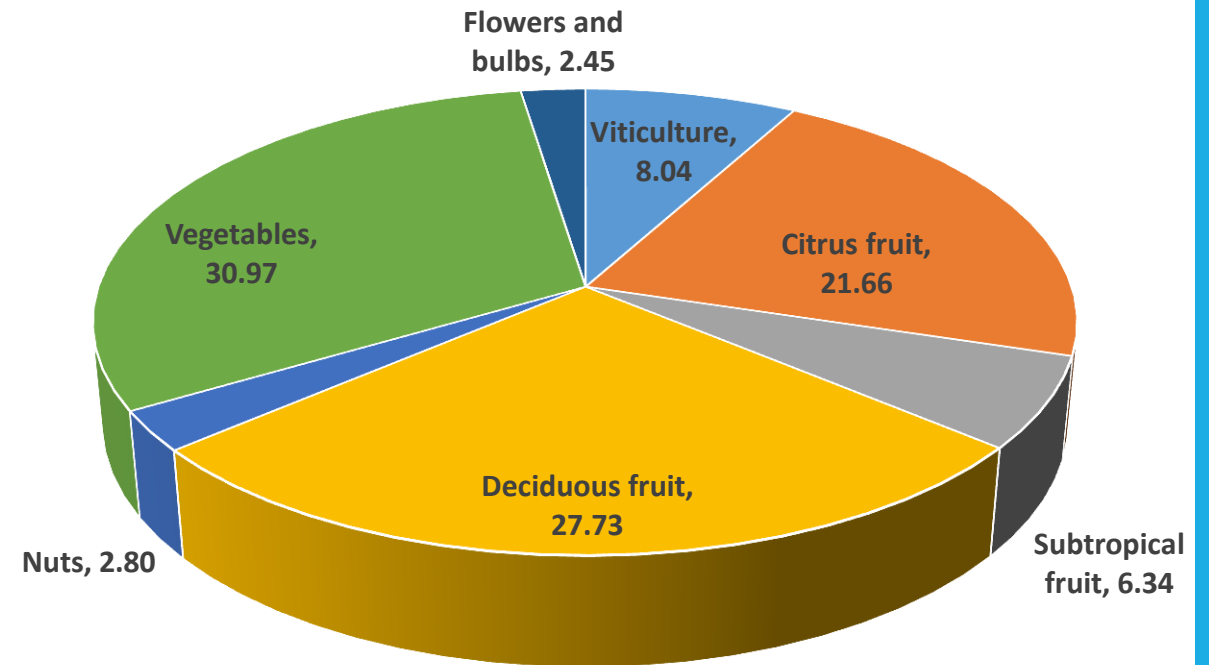
■ Maize ■ Wheat ■ Hay ■ Sugar cane ■ Sunflower seed ■ Soya-beans

2001/02



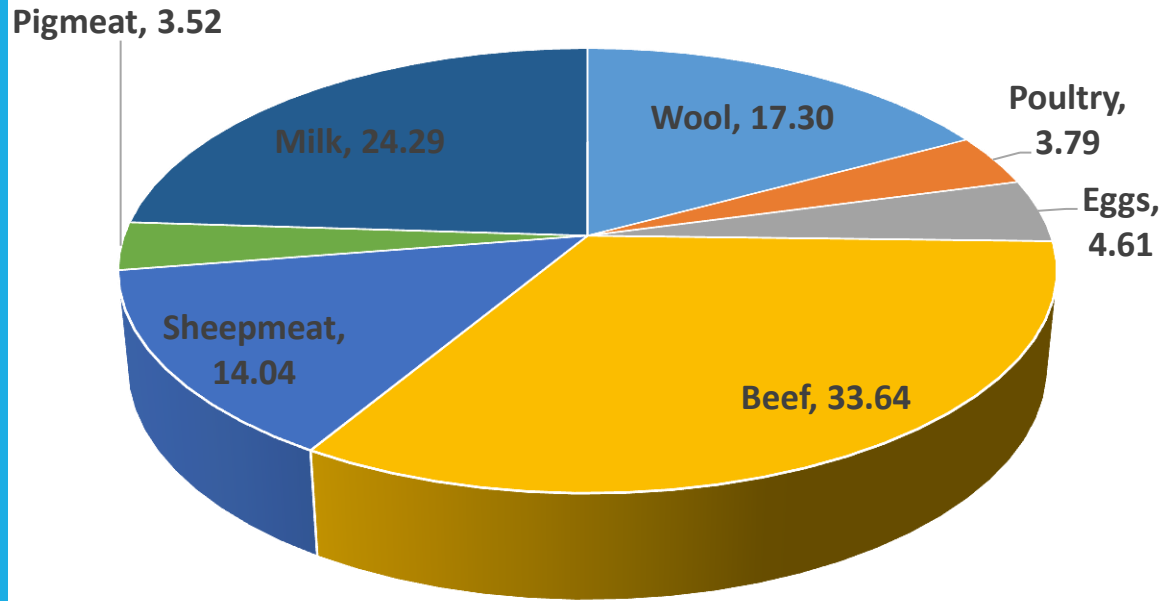
- Viticulture
- Subtropical fruit
- Nuts
- Flowers and bulbs
- Citrus fruit
- Deciduous fruit
- Vegetables

2014/15



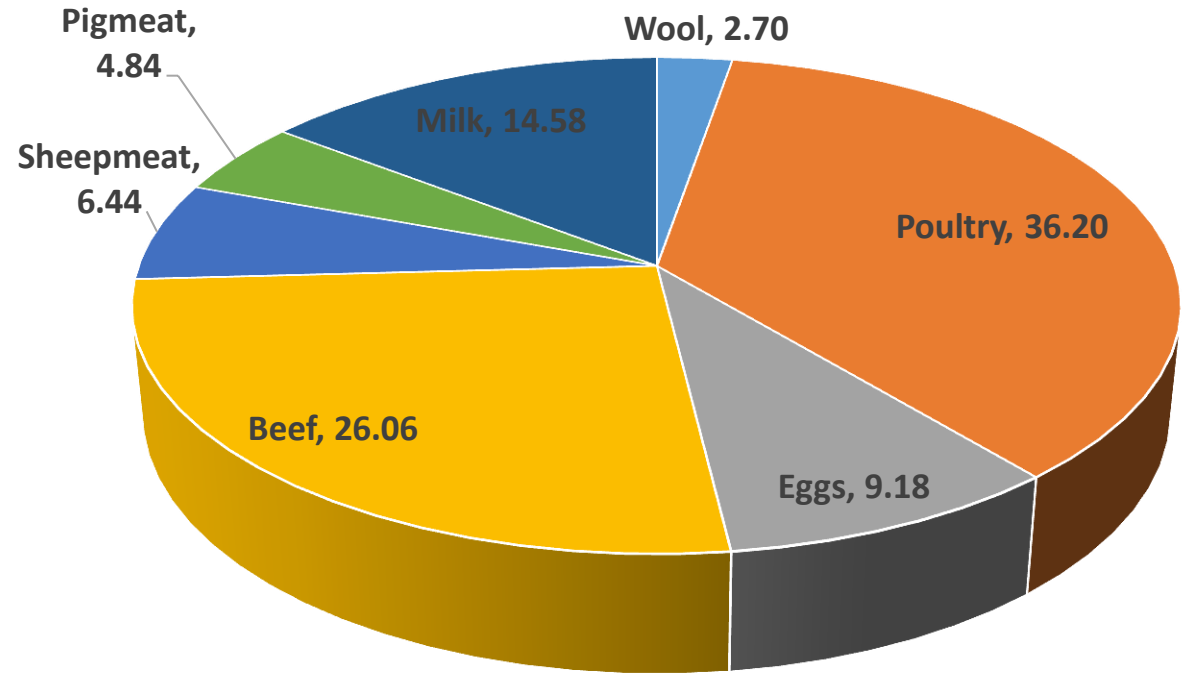
- Viticulture
- Subtropical fruit
- Nuts
- Flowers and bulbs
- Citrus fruit
- Deciduous fruit
- Vegetables

1961/62



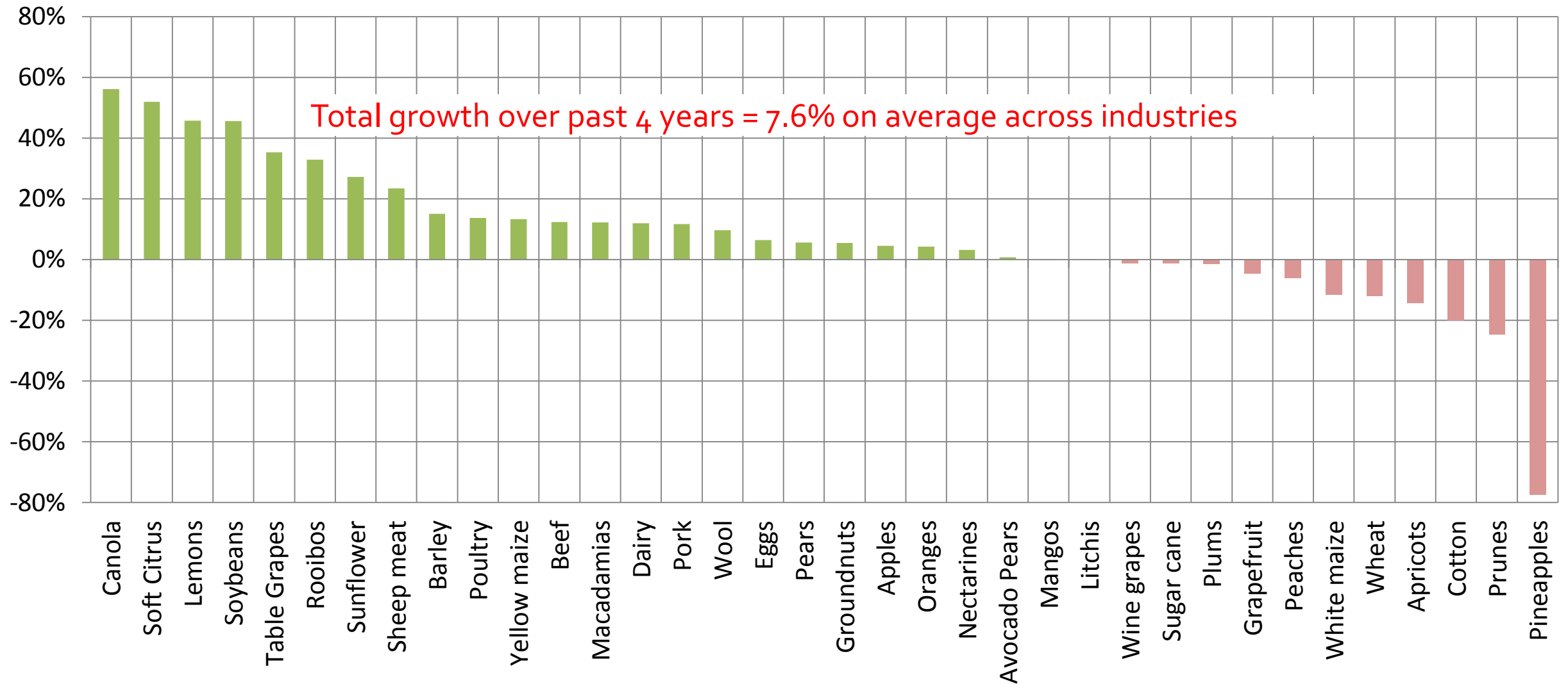
■ Wool
■ Beef
■ Milk
■ Poultry
■ Sheepmeat
■ Pigmeat
■ Eggs

2014/15



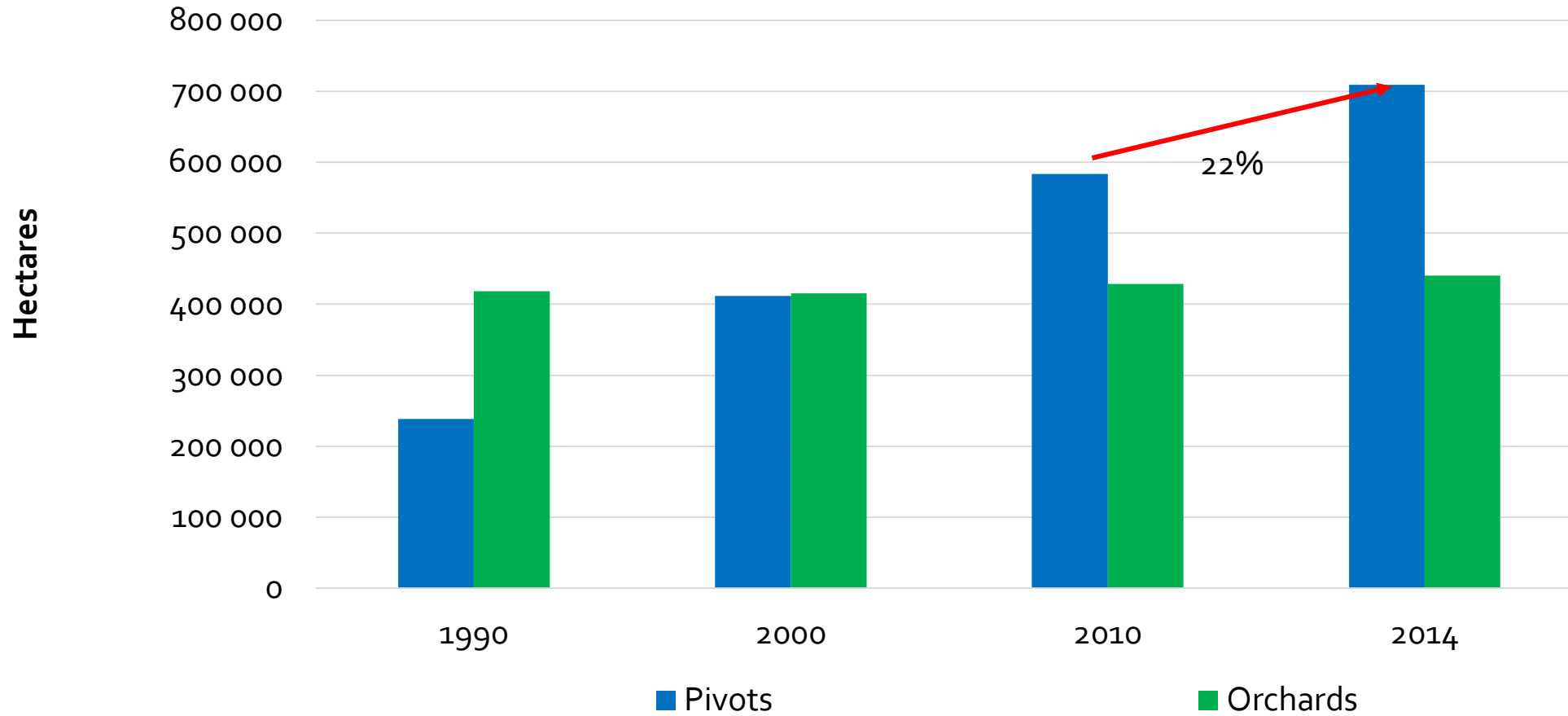
■ Wool
■ Poultry
■ Eggs
■ Beef
■ Sheepmeat
■ Pigmeat
■ Milk

Agricultural production growth: 2011-2015



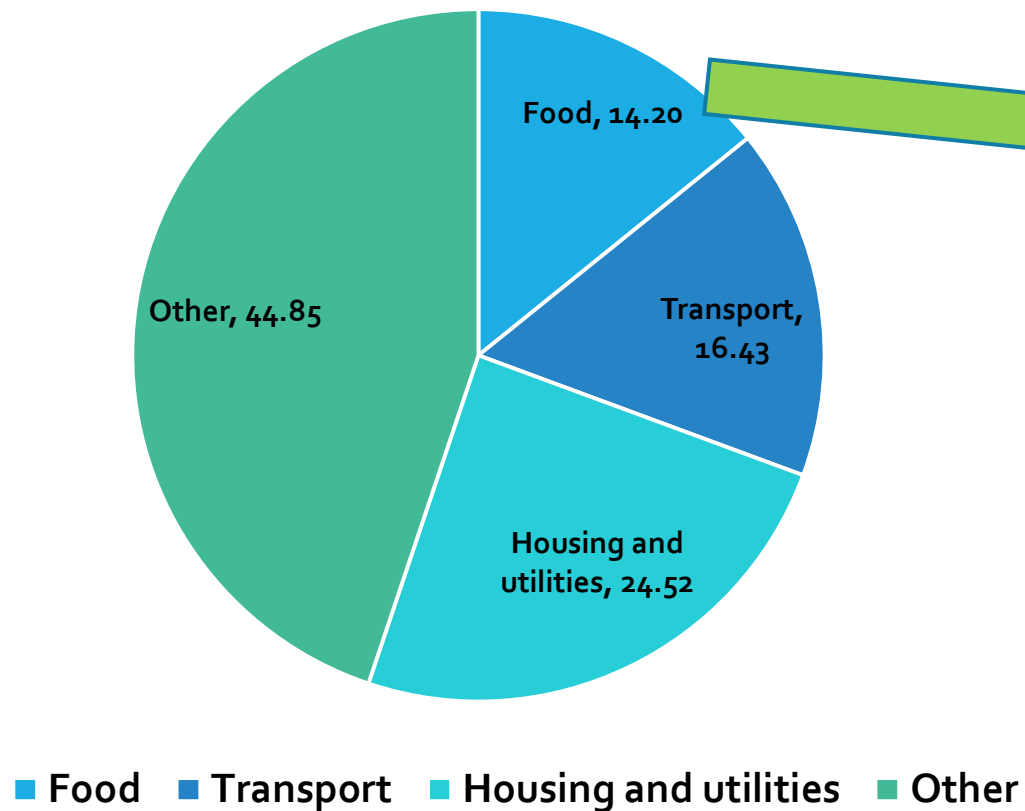
Expansion in irrigation

South Africa Field Cropped Boundaries (Excl. Sugarcane)

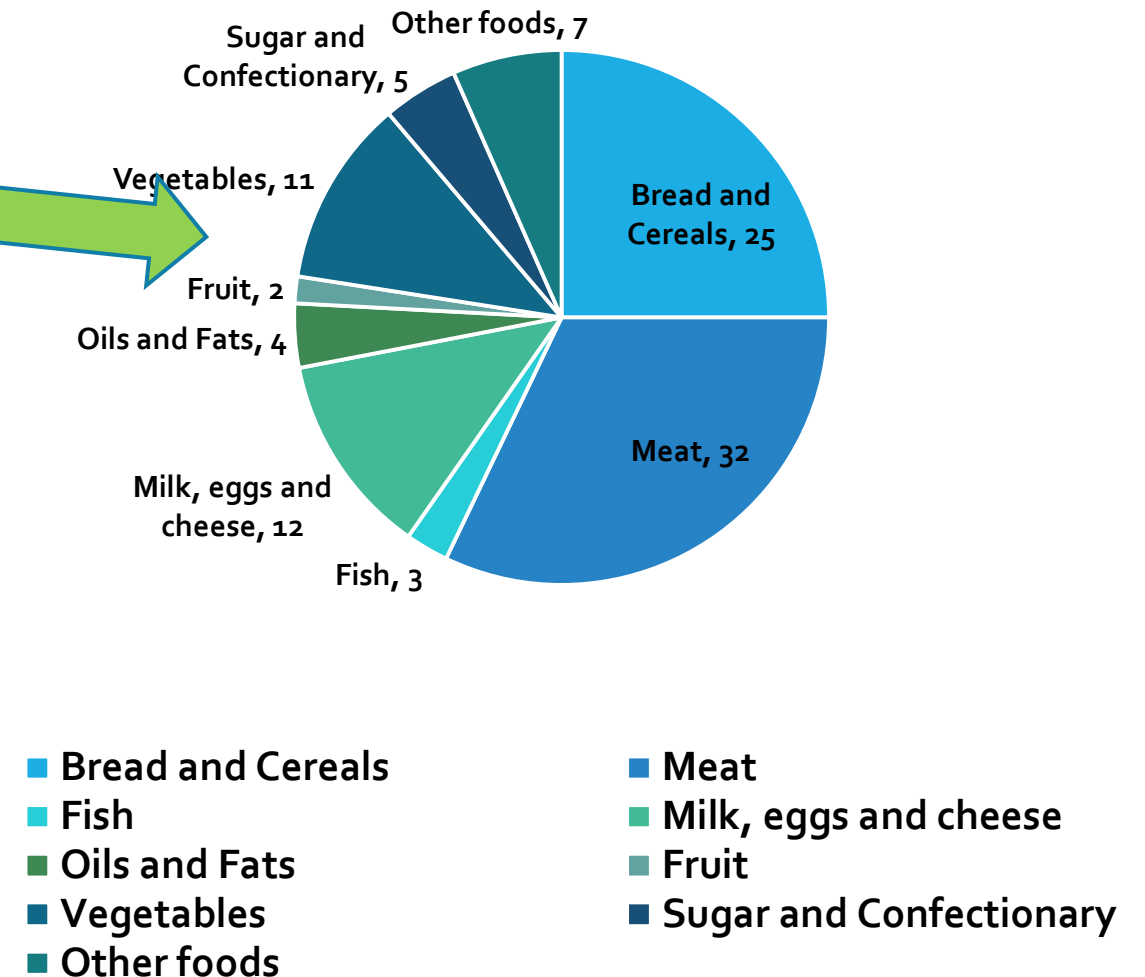


The food basket of the average South African

% Share of expenditure basket

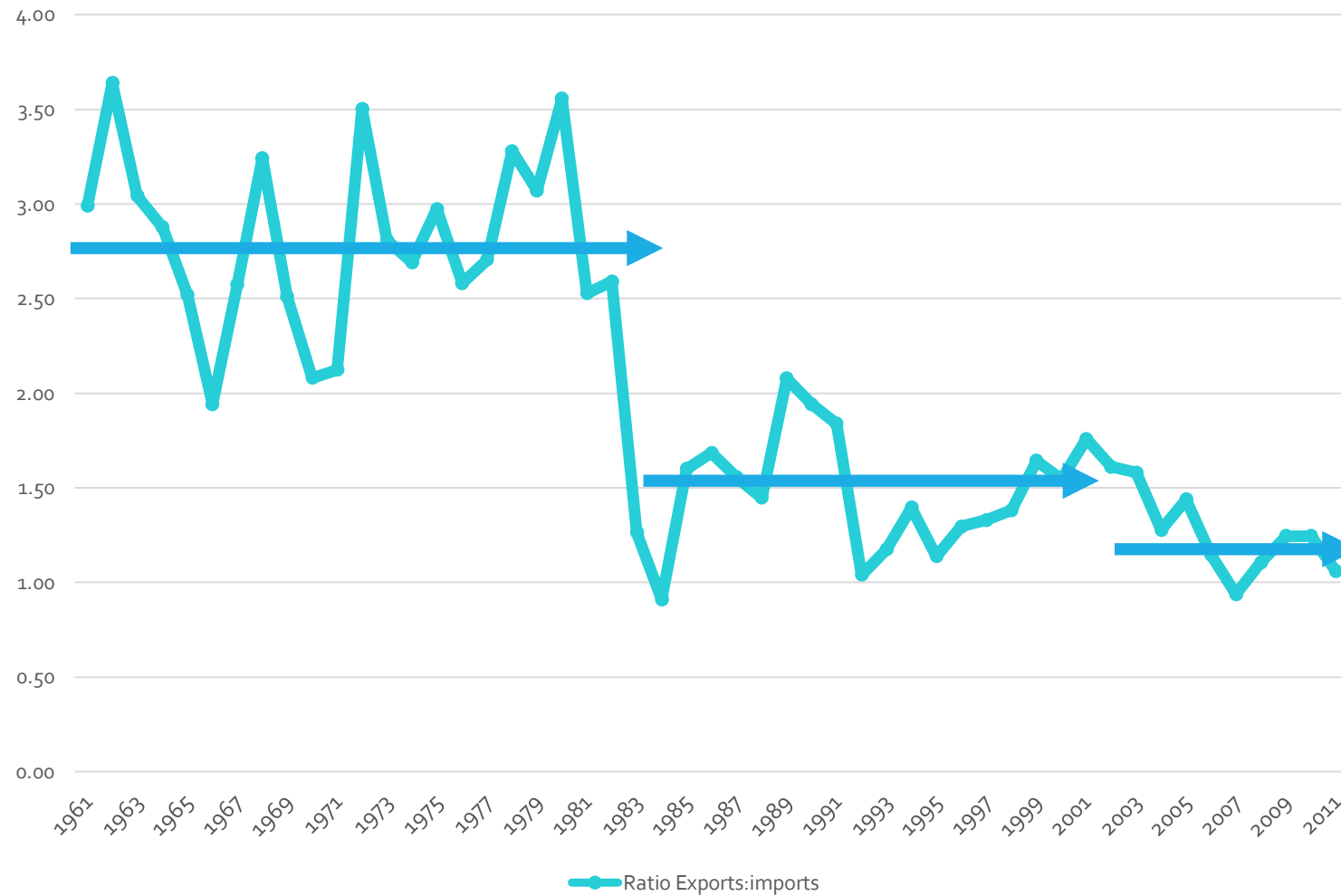


% Share of food basket

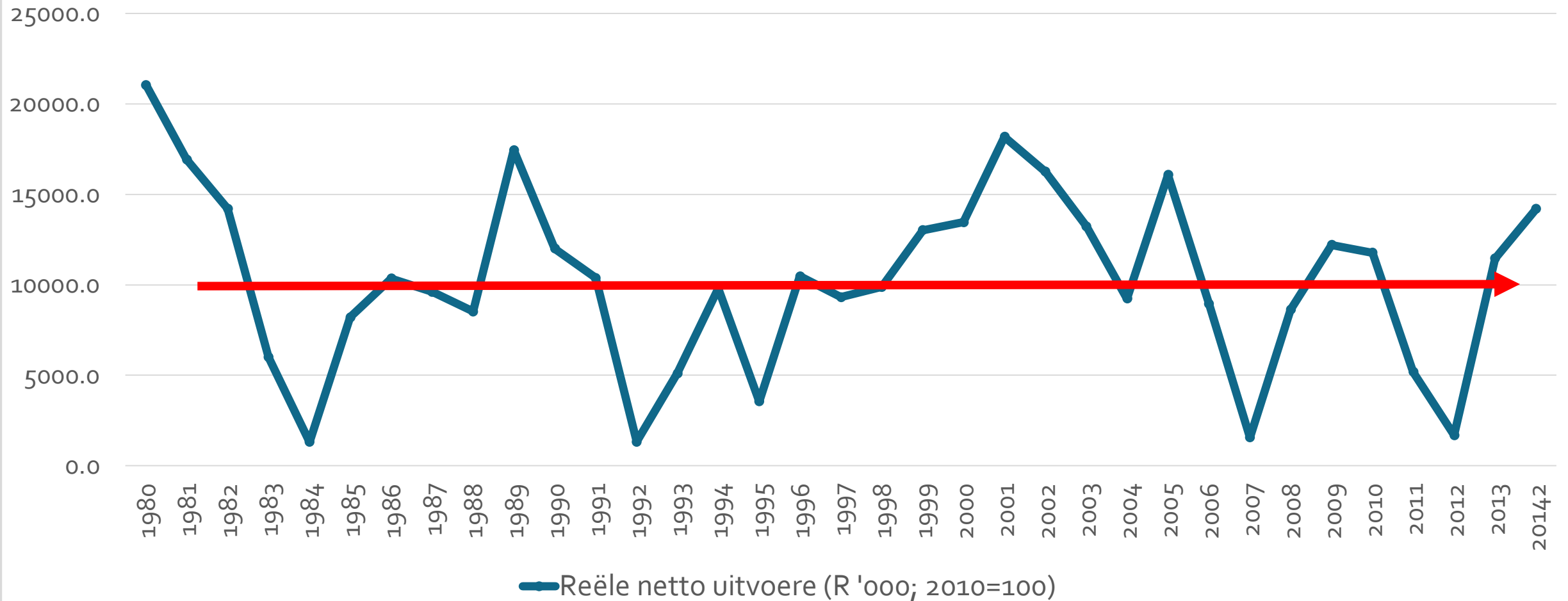


Source: StatsSA, CPI Brief (2015)

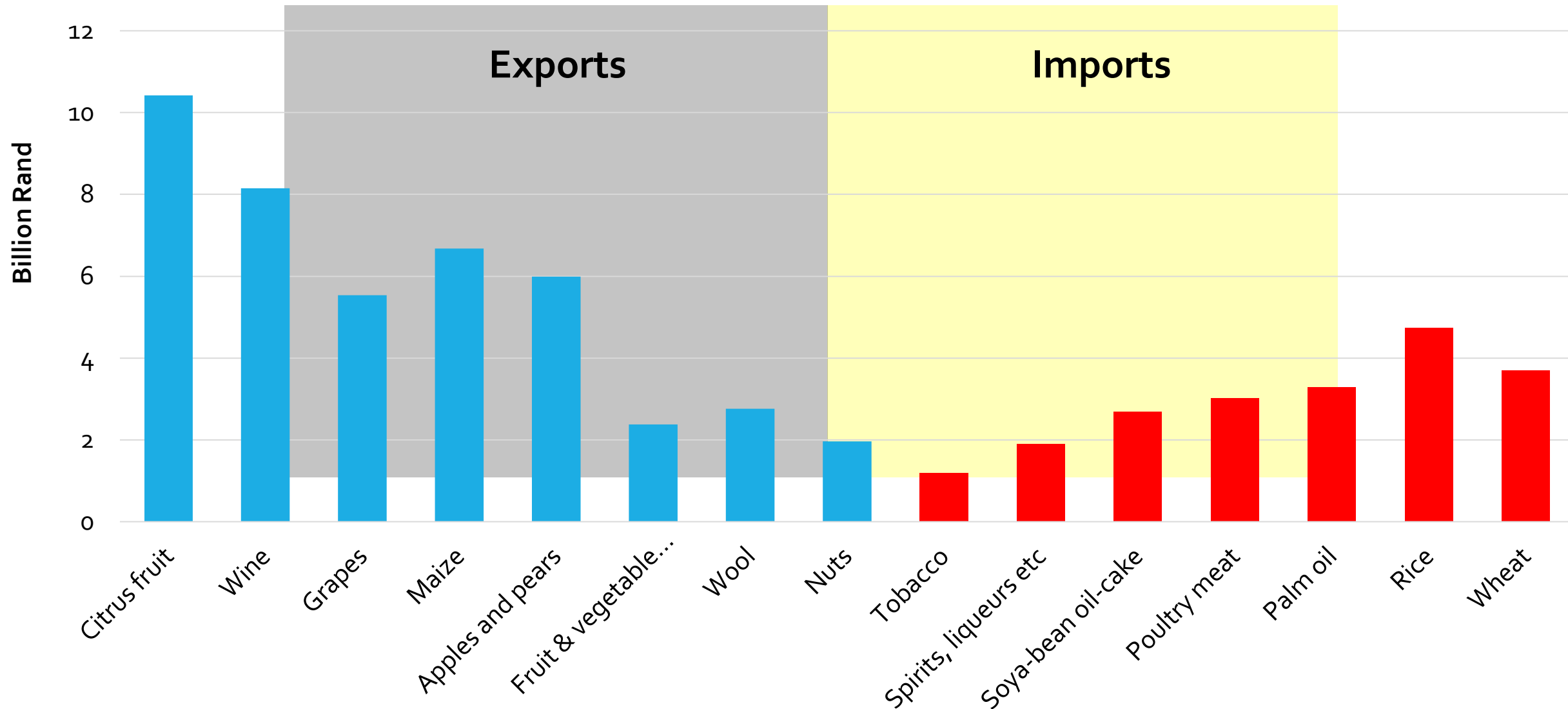
Ratio exports/imports by value



Real net agricultural exports

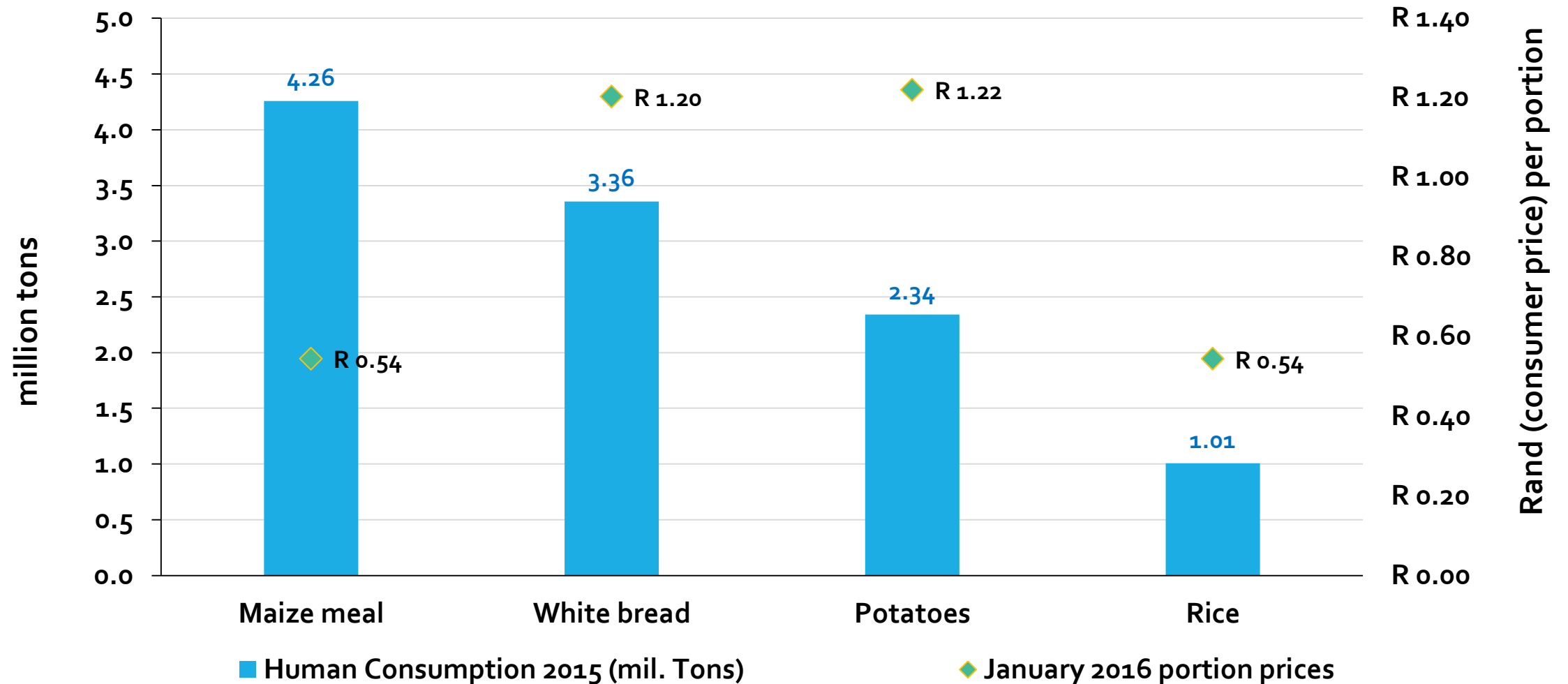


Net agricultural trade by value 2013/14

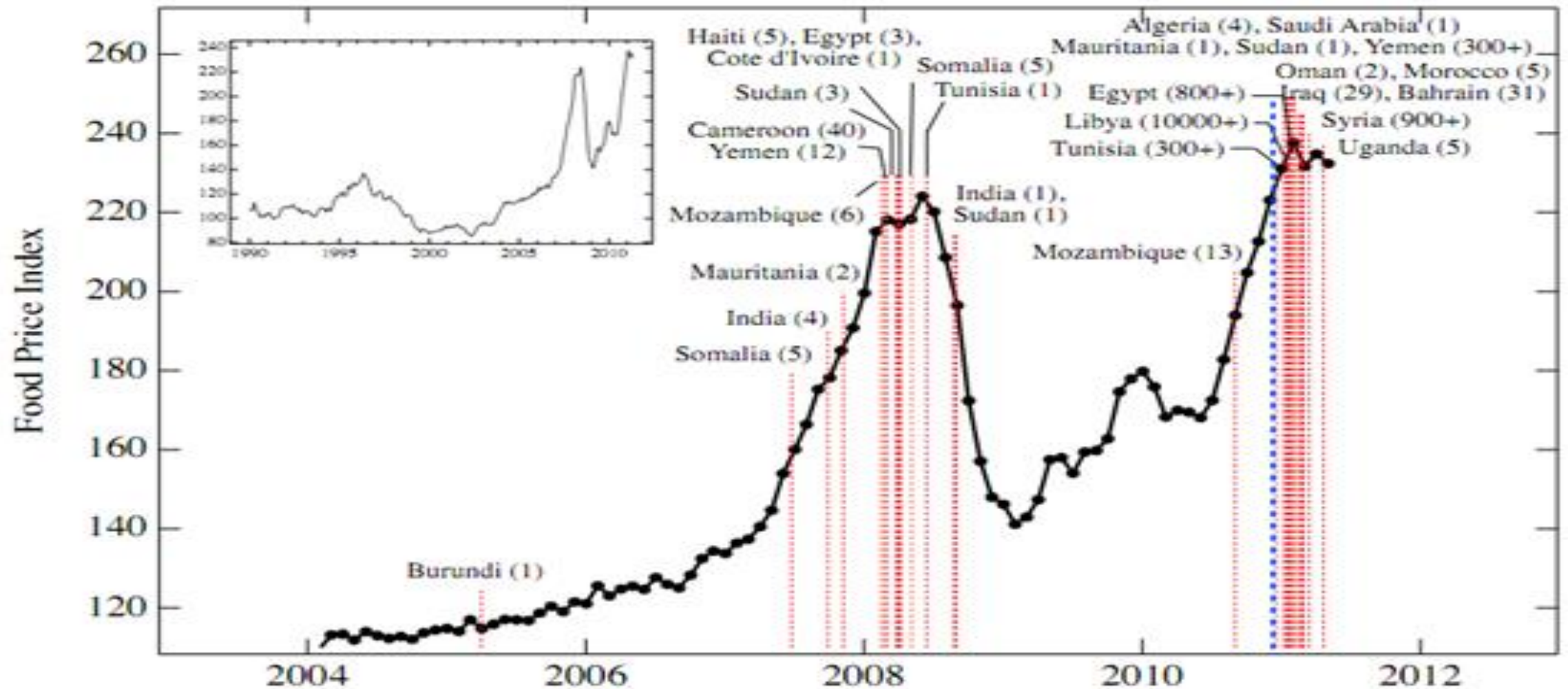


Staple food prices

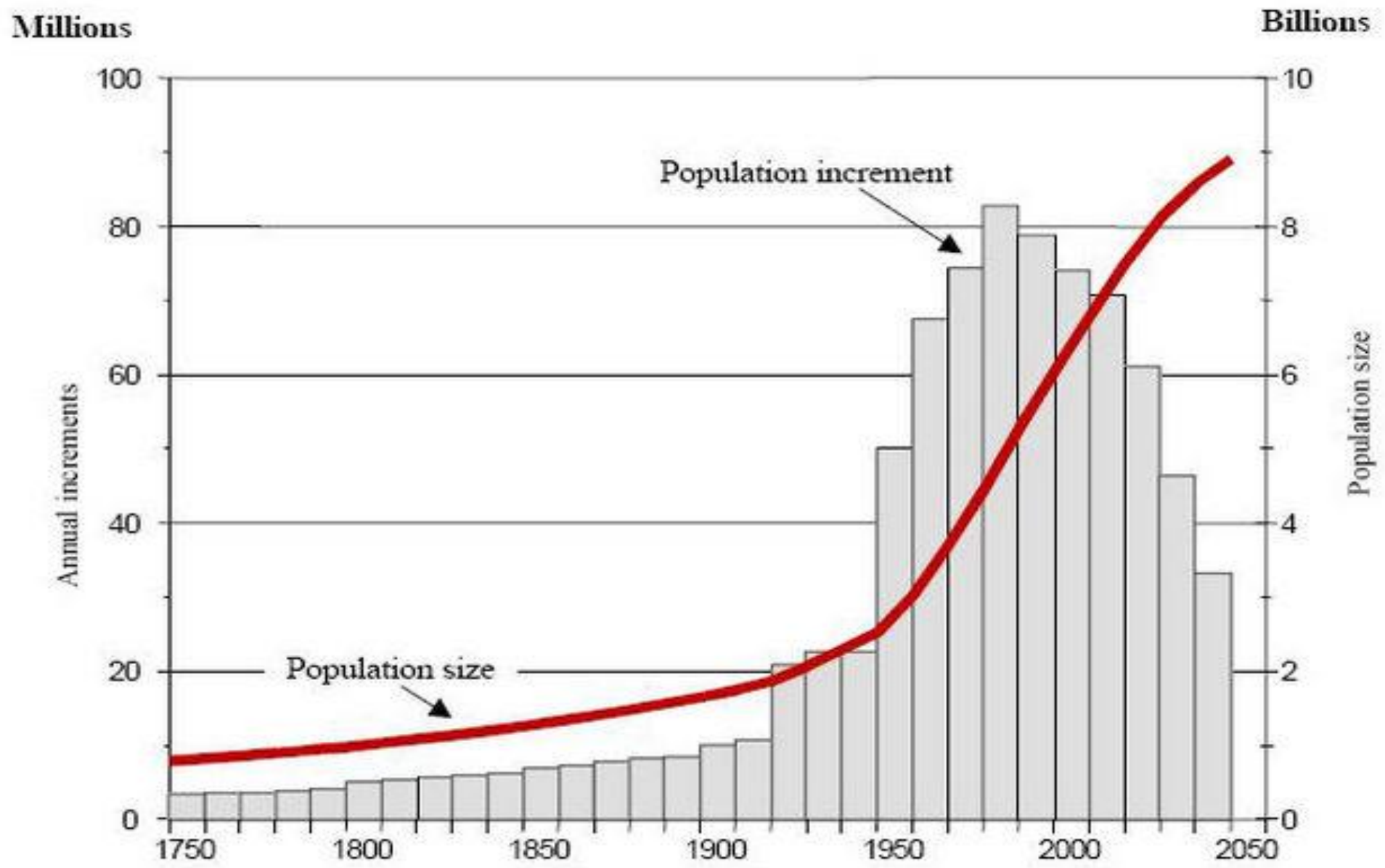
RSA human consumption (2015) vs. Portion cost per starch product



Price of food - Riots

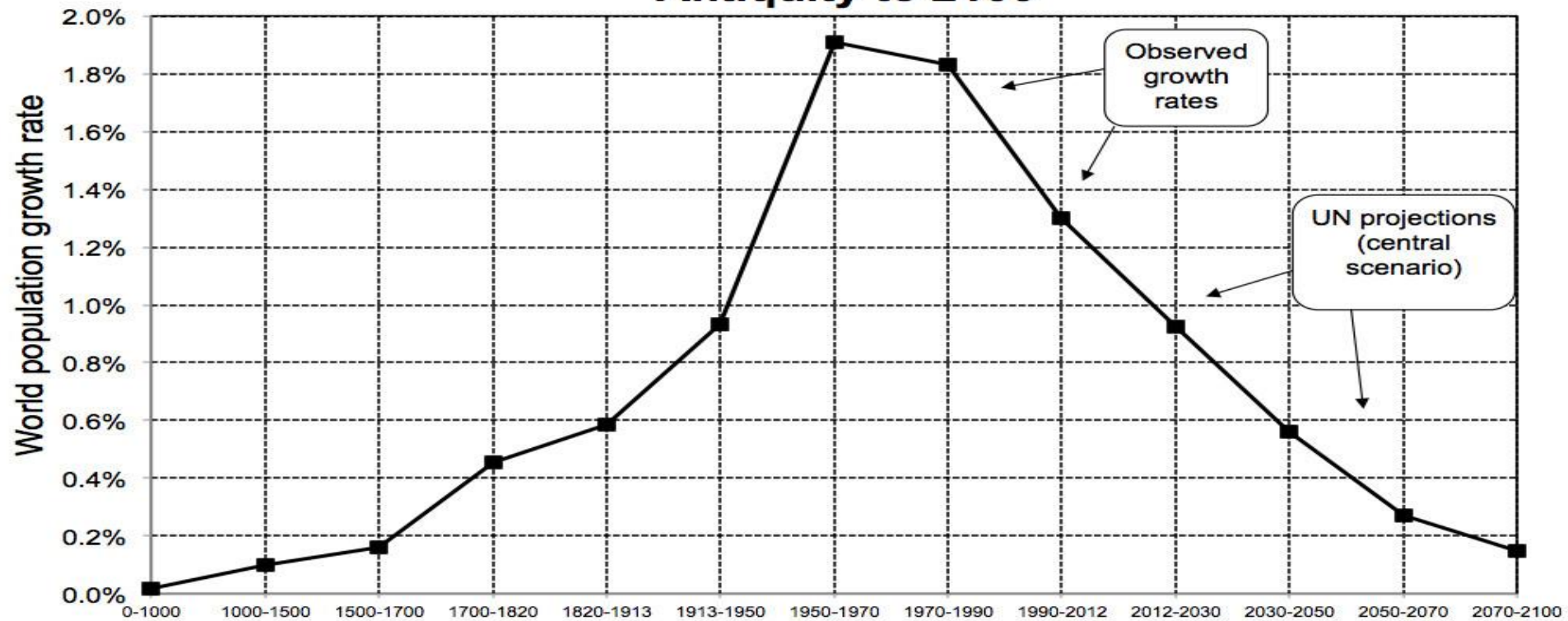


The social environment: demographics



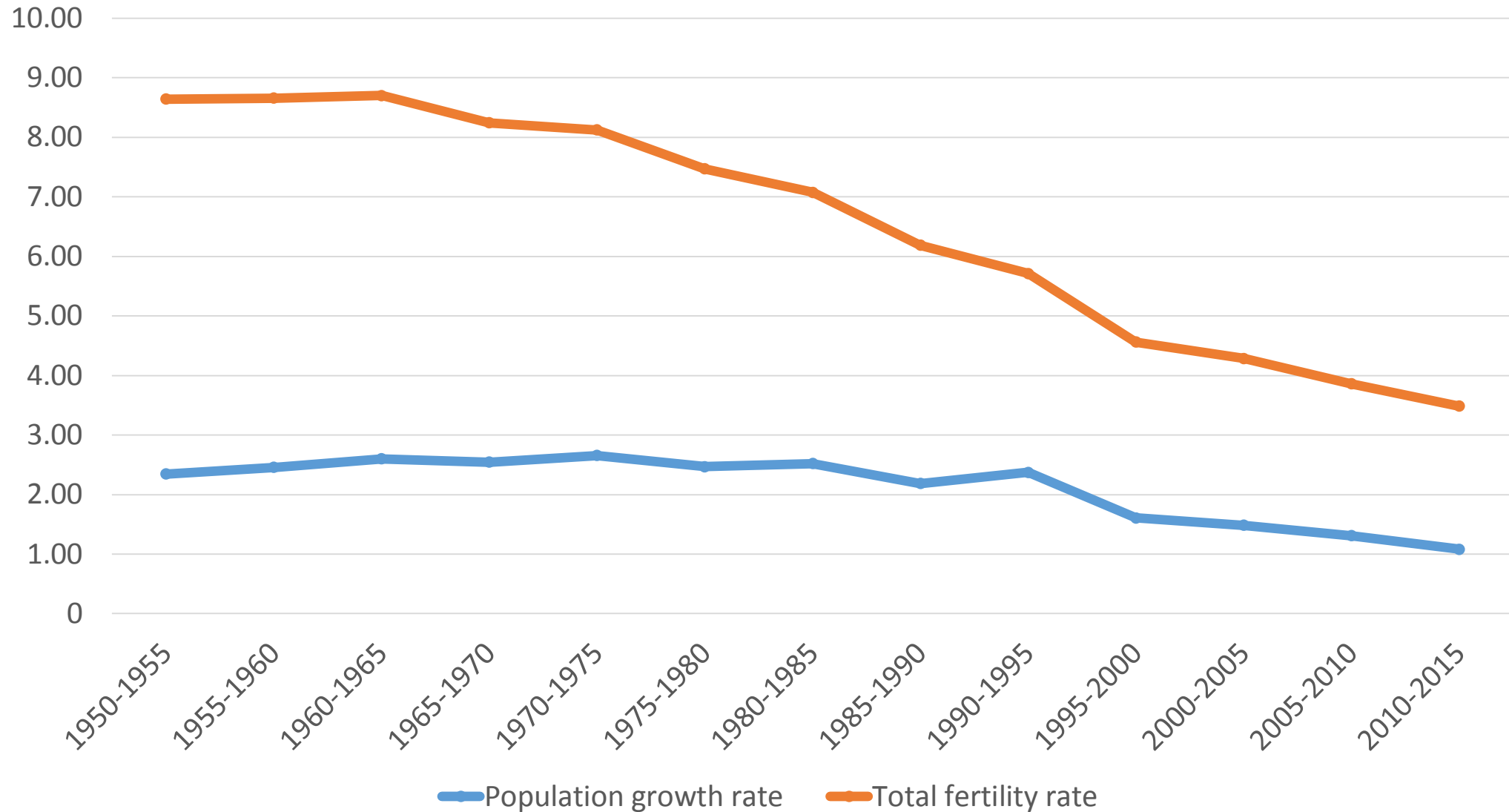
Population growth rate

Figure 2.2. The growth rate of world population from Antiquity to 2100



The growth rate of world population was above 1 percent per year from 1950 to 2012 and should return toward 0 percent by the end of the 21st century. Sources and series: see piketty.pse.ens.fr/capital21c.

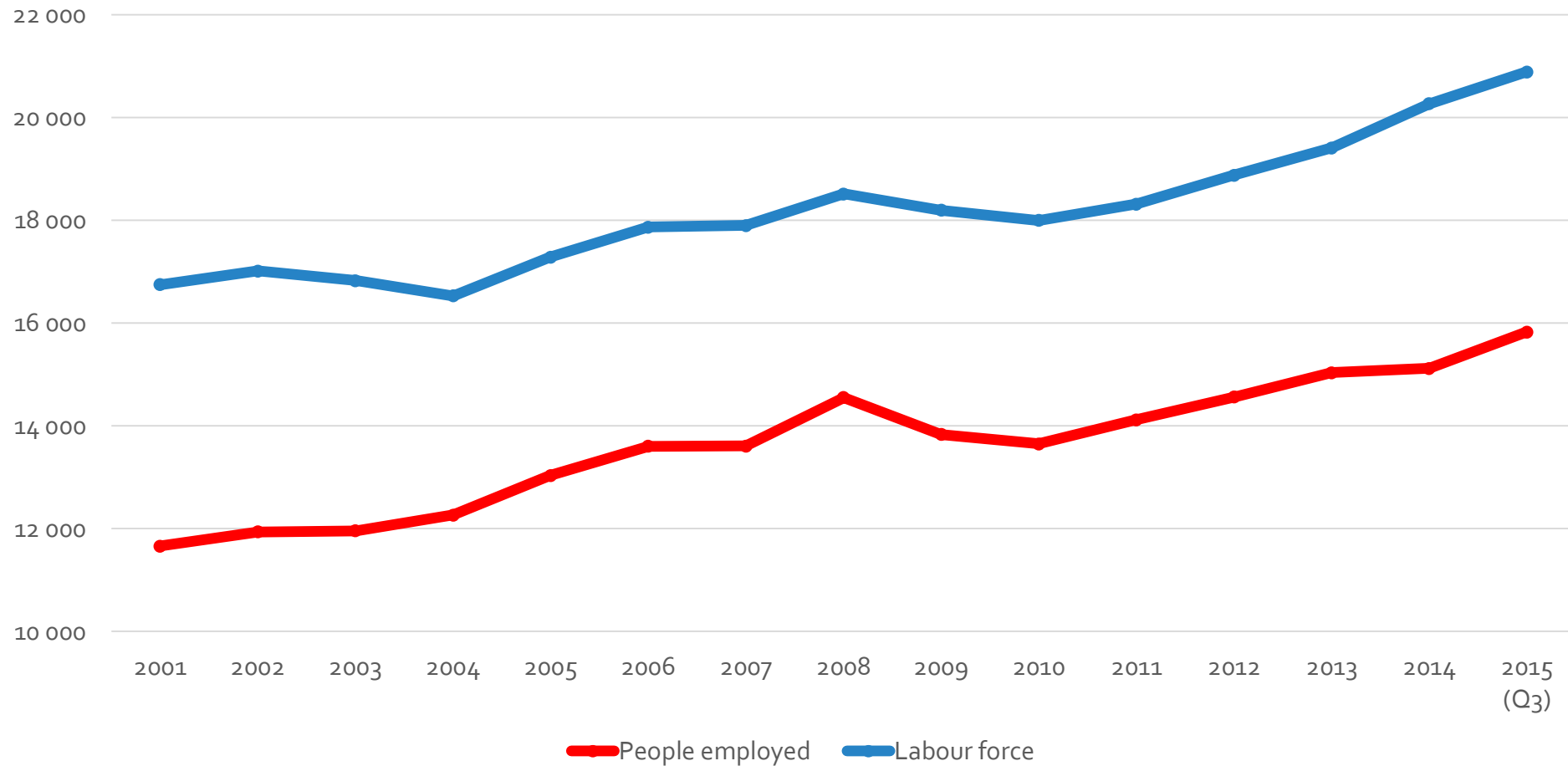
South Africa's population transition



How wrong can you be?

- In 1990 the Department of Health and Population Development estimated the SA population for 2050 as:
 - High growth scenario: 118.9 million
 - Low growth scenario: 94.4 million
- Current UN Population Program estimate: 63.4 million

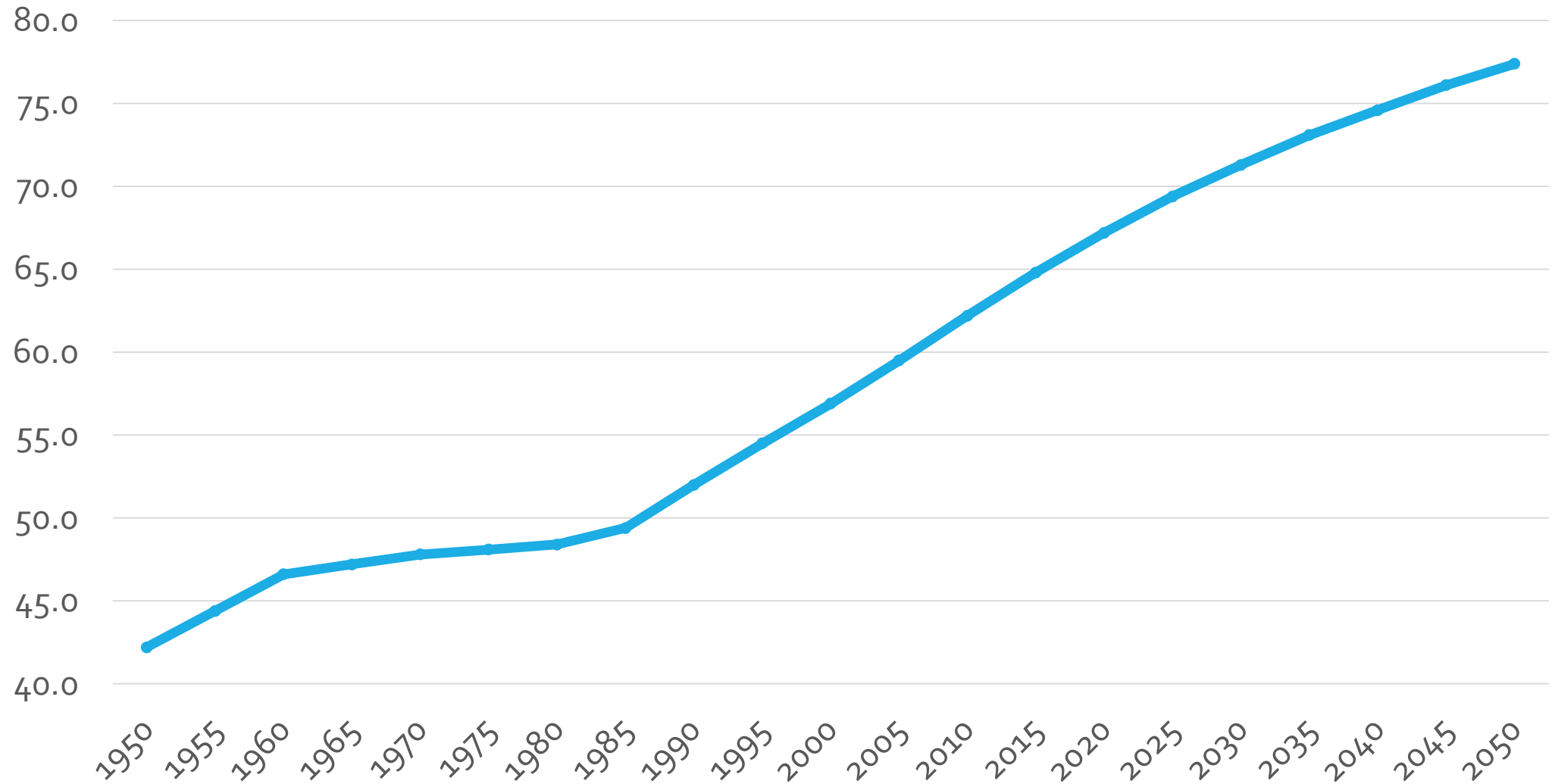
Population and employment



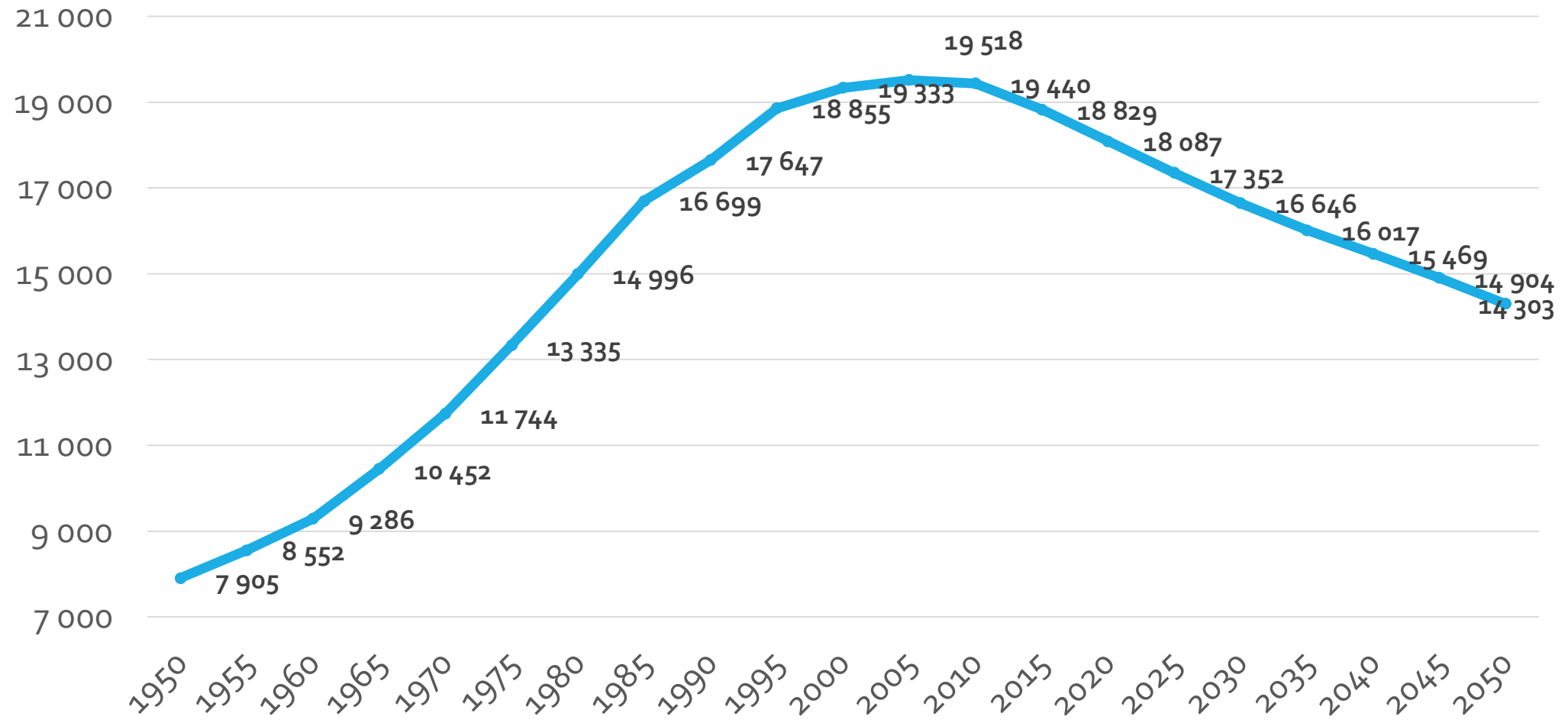
Skills profile

	1994		2014		Growth (1994-2014) (%)
	No (million)	%	No (million)	%	
Skilled	1.8	21	3.8	25	108
Semi-skilled	4.2	47	7.0	46	66
Low-skilled	2.9	32	4.3	29	49
Total	8.9	100	15	100	69

% of population in urban areas



Annual rural population ('000)



Unemployment: young, black African, rural

SOUTH AFRICA UNEMPLOYMENT RATE



Employment in agriculture ('000)

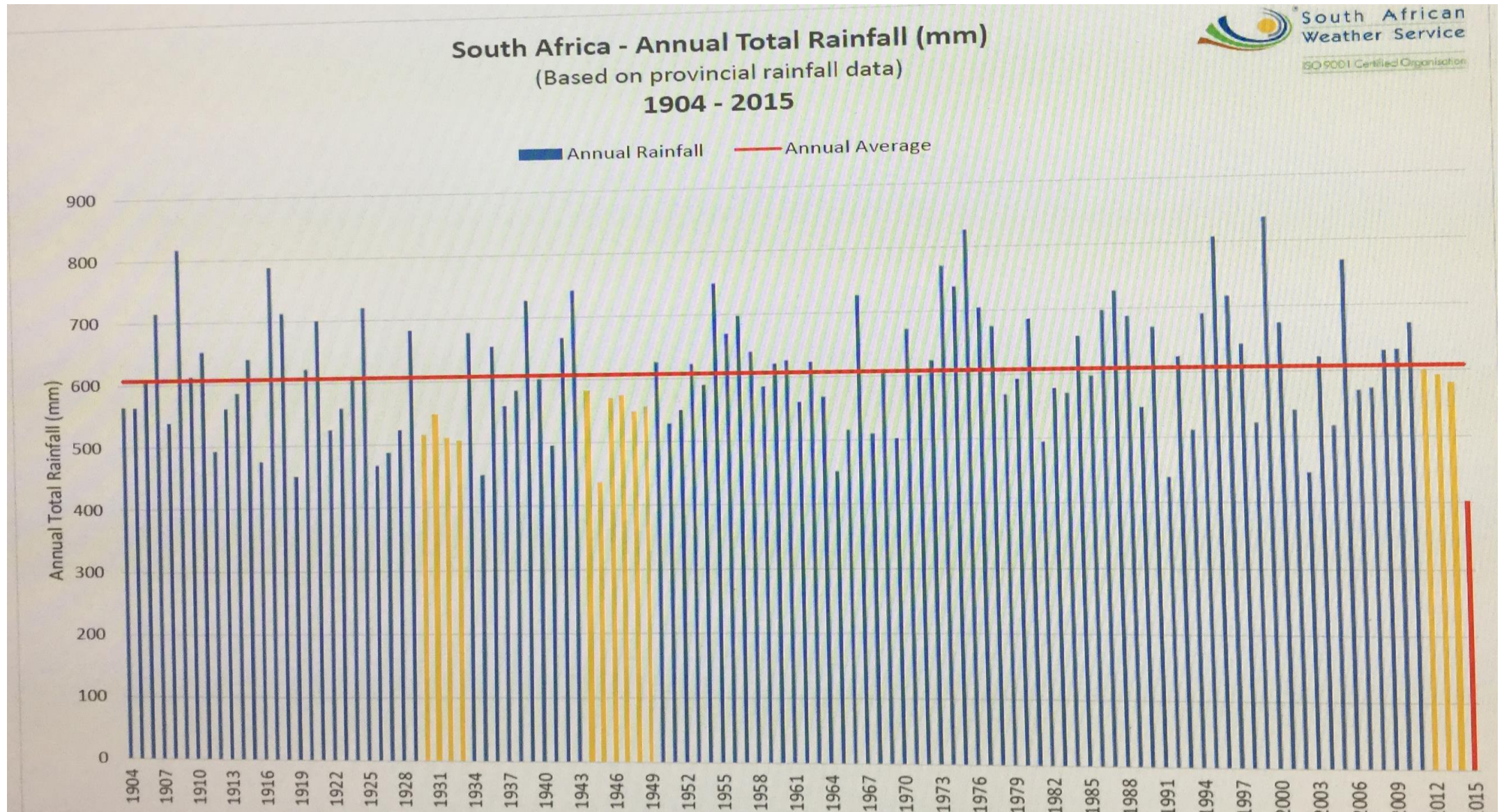


Employment (continued)

Sector	GDP share	Emp. Share
Agriculture	2.5%	4.6%
Mining	8.5%	2.3%
Manufacturing	12.5%	11%

The natural environment: drought

The long term average rainfall in South Africa



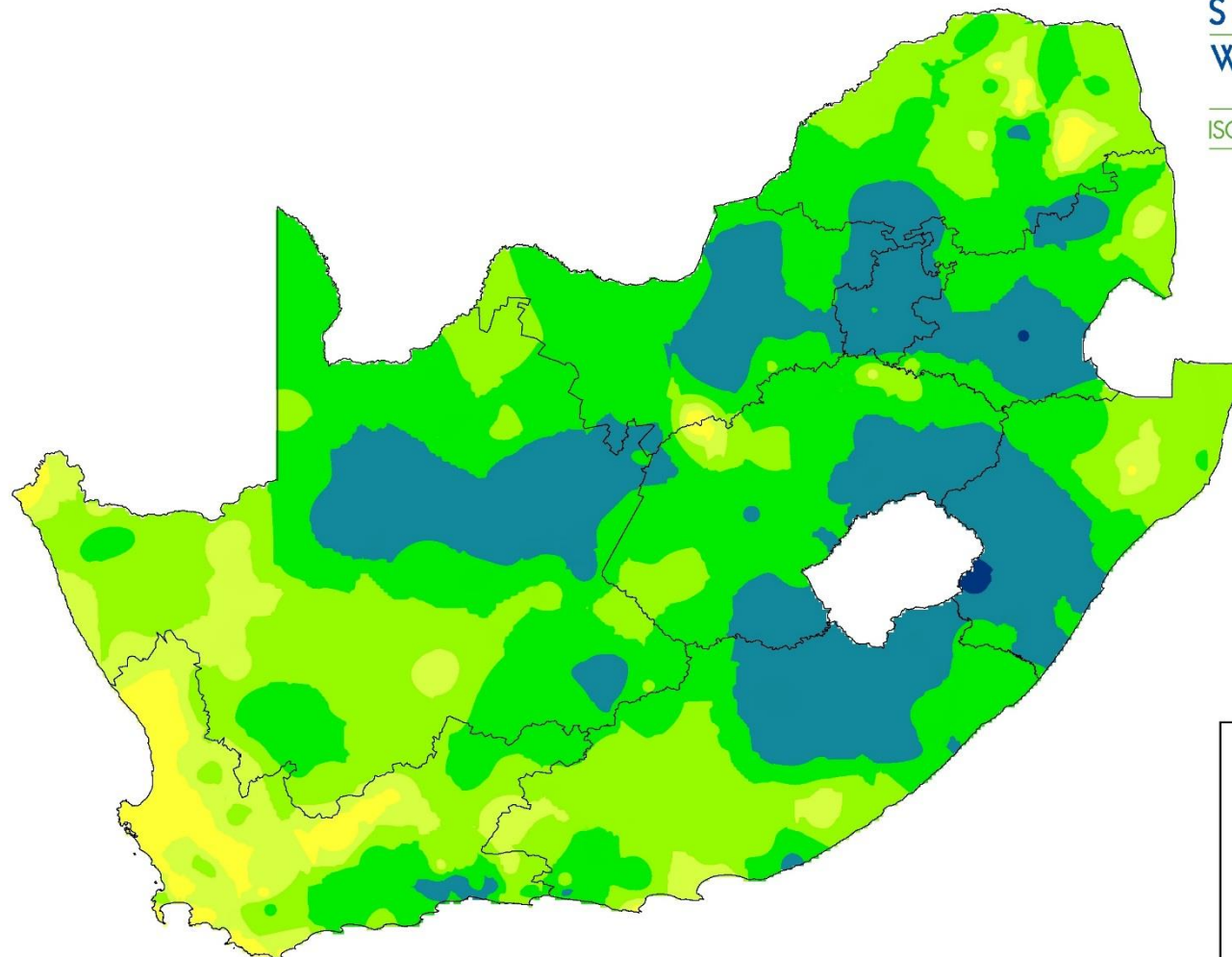
Rainfall (mm) for January 2016

(Based on preliminary data)

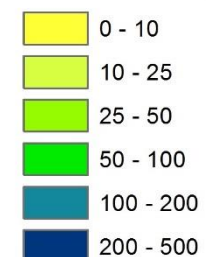


South African
Weather Service

ISO 9001 Certified Organisation



Rainfall (mm)



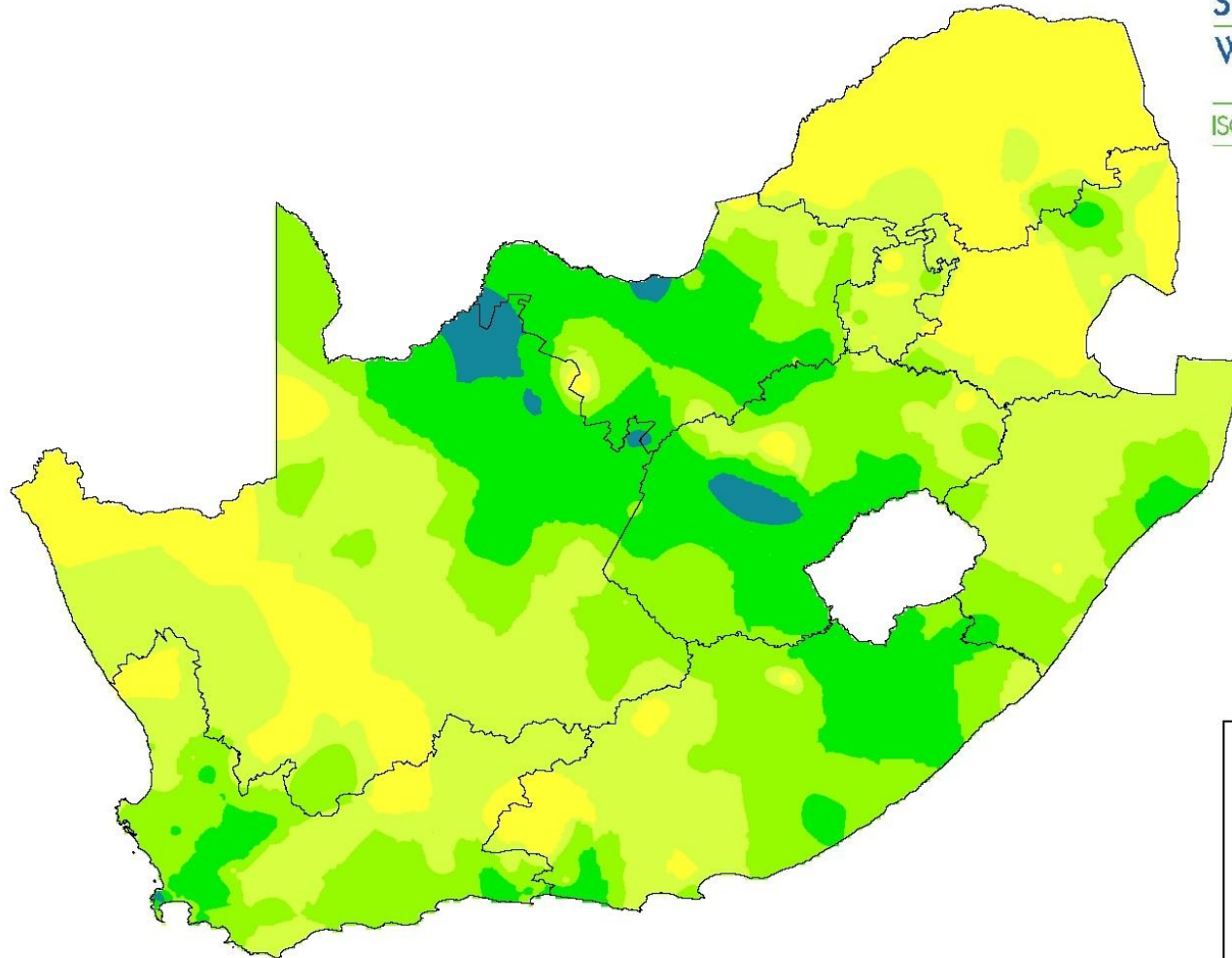
Rainfall (mm) for April 2016

(Based on preliminary data)

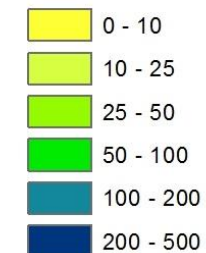


South African
Weather Service

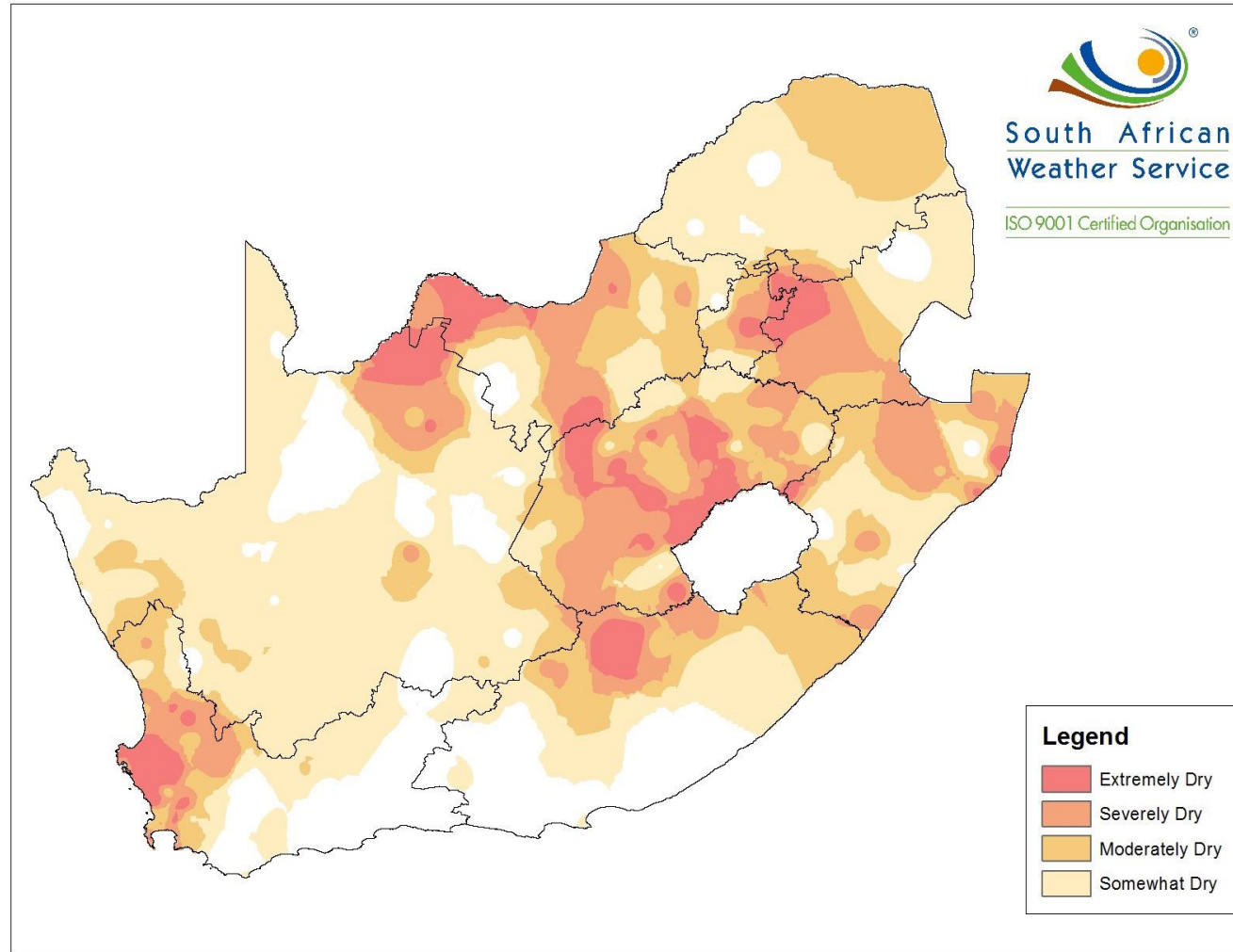
ISO 9001 Certified Organisation



Rainfall (mm)



Standardised Precipitation Index for February 2015 to January 2016



How big (small?) is the 2015/16 white maize harvest likely to be?

	Area planted	Output	Yield
CEC 27 Jan	1 995 150	7 438 250	3.73
CEC 25 Feb	1 965 000	7 255 750	3.69
CEC 30 March	1 946 750	7 065 275	3.63
CEC 26 April	1 946 750	7 065 275	3.63
CEC May	1 946 750	7 160 925	3.68
BFAP Scenario 2016	1 995 150	6 623 000	3.32
USDA Feb 2016	2 000 000	7 000 000	3.5

Last 35 years:

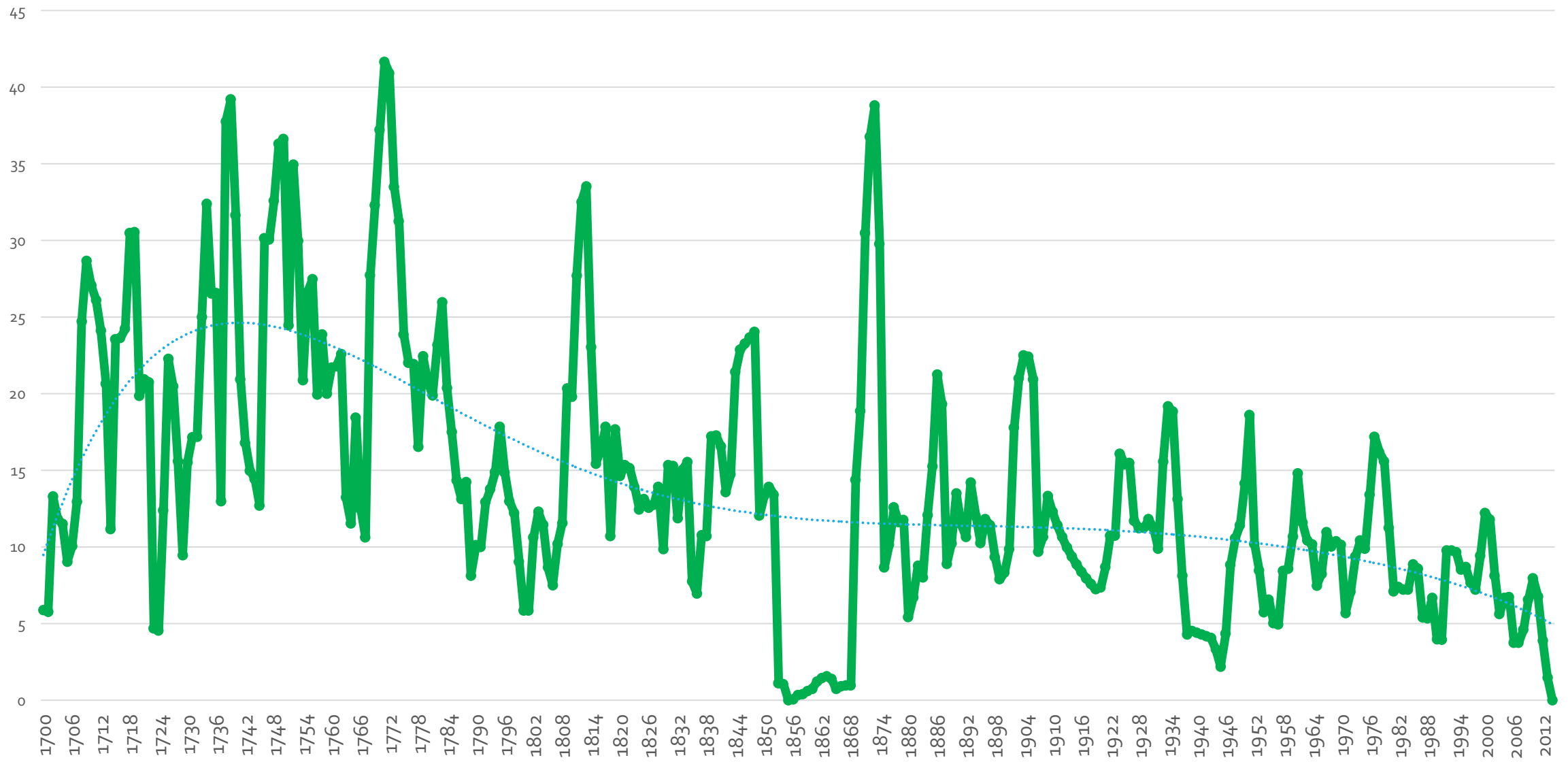
- Crop smaller than 6.62m tons?: 4 times
- Crop smaller than 7.5m tons? 6 times

Import requirements

Commodity	Import Requirement (1000 tons)		
	CEC Baseline	Reduced Yield Scenario	Landbouweekblad 5 February
White Maize	998	1 383	3 000
Yellow Maize	1 953	2 307	3 300
Soya Beans	223	299	600
Sunflower	42	134	
Wheat	1 753	1 753	2 000
TOTAL	4969	5876	8 900 + 2 000

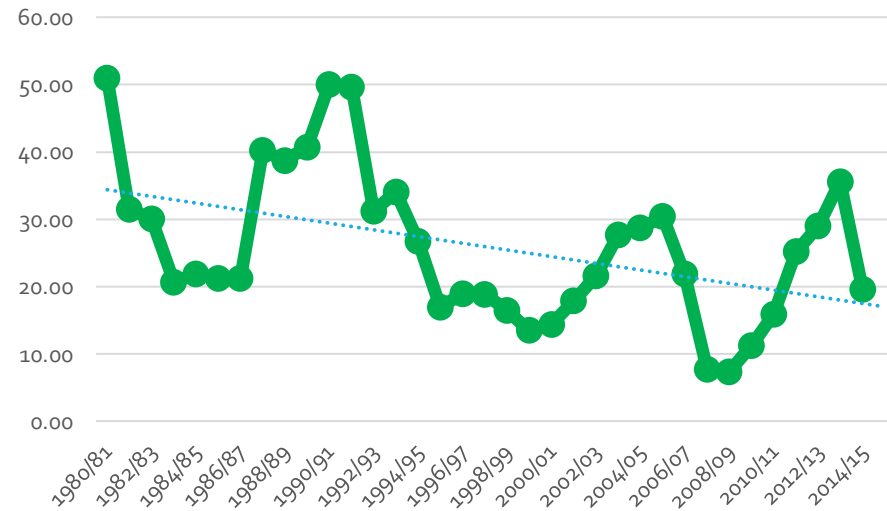
The technological environment

Variability in wine production

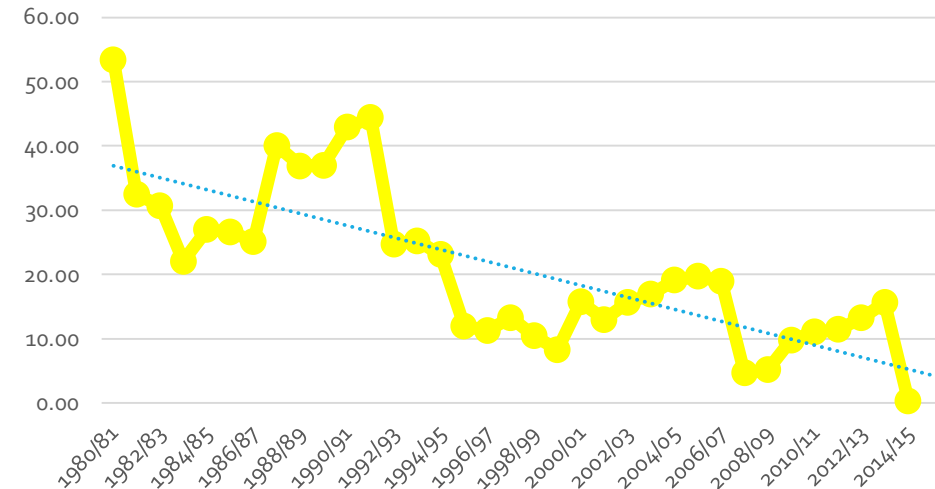


Variability in maize production

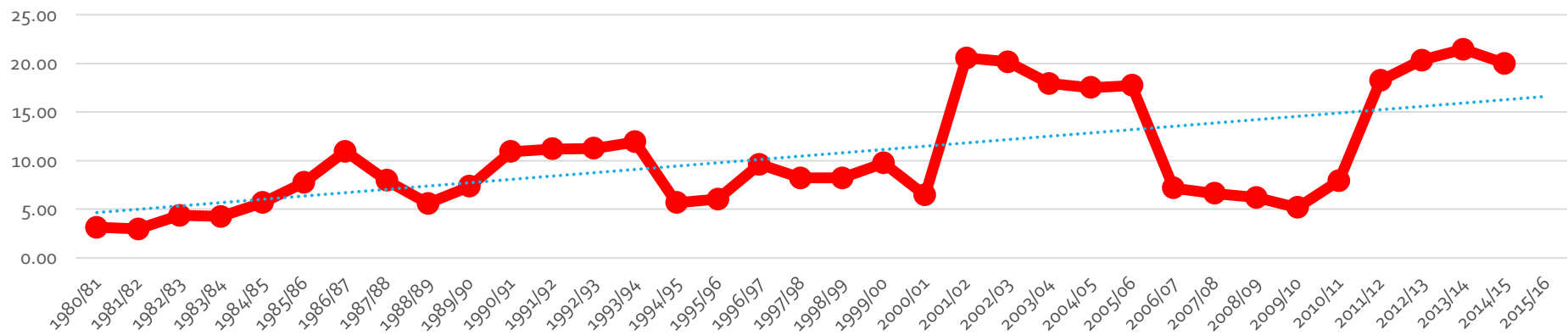
5 year moving average variation of maize production, South Africa, 1981-2016



5 year moving average variation of yield, South Africa, 1981-2016



5 year moving average variation of maize area planted, South Africa, 1981-2016



Which technologies?

- Animal health, welfare and food safety: precision farming: real time monitoring and management (livestock biometrics)
- **Biotech:** animal genetics and breeding, animal health, physiology of lactation and growth, animal nutrition, etc.
- In vitro meat
- **Information technology:** GPS
- **Rapid iteration selective breeding:** The next generation of selective breeding where the end-result is analysed quantitatively and improvements are suggested algorithmically. Already viable.

The political environment

- Fertilizer subsidies & voting behaviour: Political economy dimensions of input subsidy programs in Zambia

The rate of subsidization of South African agriculture

