The
South African
Agricultural
Baseline

2010

BUREAU FOR FOOD AND AGRICULTURAL POLICY

Bureau for Food and Agricultural Policy

BFAP

BFAP TEAM

University of Pretoria

Ferdinand Meyer
Hester Vermeulen
Marlene Labuschagne
Mariam Mapila
Mmatlou Kalaba
Nura Parastaran
Stefan van Zyl
Tinashe Kapuya
Yemane Gebrehiwet
Johann Kirsten
Dalene Flynn
Divan van der Westhuizen

University of Stellenbosch

Jan Lombard
Lulama Ndibongo Traub
Nick Vink
Willem Hoffmann
Johan van Rooyen

Department of Agriculture, Western Cape

Bongiswa Matoti
Cecilia Punt
Dirk Troskie

Others

Christoph Knye	BFAP Consultant
Holger Matthey	FAO
Jeanette de Beer	ABSA
Julian Binfield	FAPRI
Patrick Westhoff	FAPRI
Sakkie van Zyl	BFAP Consultant
Sanri Reynolds	BFAP Consultant
Thomas Funke	SA Canegrowers

ACKNOWLEDGEMENTS

ACKNOWLEDGEMENTS

FOREWORD

The Bureau for Food and Agricultural Policy (BFAP) was established in 2004 with the dual purpose of facilitating decision making in the South African agricultural sector and developing capacity to increase the analytical and research skills available to the sector. BFAP is housed as an independent program within the Department of Agricultural Economics, Extension and Rural Development at the University of Pretoria, the Department of Agricultural Economics at the University of Stellenbosch, and the Directorate of Agricultural Economics at the Provincial Department of Agriculture, Western Cape. BFAP is the first of its kind in South Africa and has become a valuable resource to government, agribusiness and farmers by providing analyses of future policy and market scenarios and measuring their impact on farm and firm profitability. BFAP acknowledges and appreciates the tremendous insight of numerous industry specialists over the past years. Although their comments and suggestions are taken into consideration, BFAP's own views are presented in the baseline publication. Finally, BFAP expresses its sincere appreciation to the Food and Agricultural Policy Research Institute (FAPRI) at the University of Missouri and its staff, who have transferred many skills to BFAP members, and who have provided outlooks on world commodity markets over the past six years.

FOREWORD

TABLE OF CONTENTS

CONTEXT AND PURPOSE OF THE BASELINE

The BFAP baseline 2010 presents an outlook of South African agricultural production, consumption, prices and trade for the period 2010 to 2019. This outlook is based on assumptions about a range of economic, technological, environmental, political, institutional, and social factors. The outlook is generated by the BFAP sector model, which is an econometric, recursive, partial equilibrium model. For each commodity, the important components of supply and demand are identified and equilibrium established in each market by means of balance sheet principles where demand equals supply. A number of critical assumptions have to be made for baseline projections. One of the most important assumptions is that average weather conditions will prevail in South Africa and around the world: therefore yields grow constantly over the baseline as technology improves. Assumptions with respect to the outlook of macroeconomic conditions are based on a combination of projections developed by the OECD, IMF and Global Insight. Baseline projections for world commodity markets are taken from an updated version of the FAPRI 2009 US and World Agricultural Outlook. Once the critical assumptions are introduced in the model, the outlook for all commodities is simulated within a closed system of equations. This implies that, for example, any shocks in the grain sector are transmitted to the livestock sector and the biofuels sector, and vice versa.

The 2008 baseline projections were published when crude oil, grain and oilseed prices surged to new record highs. Although a general slowdown in global economic growth was anticipated and most agricultural commodity prices were projected to decrease in 2009 and 2010, the speed and the severity with which world economic conditions deteriorated and commodity prices decreased, particularly between August 2008 and January 2009, was underestimated in the 2008 Baseline. Yet, in the 2009 baseline the results indicated that despite the global economic turmoil and the plunge in commodity markets, most agricultural commodity prices were trading at higher levels than seen prior to the surge in global and domestic prices that started in 2006. In other words, agricultural commodity markets had shifted to a new equilibrium with higher average prices and a wider variation in prices.

This year's baseline takes the latest trends, policies and market information into consideration and is constructed in such a way that the decision maker can form a picture of the new equilibrium in agricultural markets. It is published at a time when uncertainty exists around short-run price movements as well as market conditions over the next five to ten years. Given this uncertainty, the baseline projections should be interpreted as one possible scenario that could unfold where temporary factors (e.g. weather issues) play out over the short run and permanent factors (e.g. biofuels policies) cause structural shifts in agricultural commodity markets over the long run. This baseline therefore, serves as a benchmark against which alternative exogenous shocks as well as alternative policies (such as a tariff) can be measured and understood. In addition, the baseline serves as an early-warning system to inform role players in the agricultural industry about the potential effect of long term structural changes on agricultural commodity markets, such as the impact of the sharp increase in input costs on supply response.

To summarize, the baseline does NOT constitute a forecast, but rather a benchmark of what COULD happen under a particular set of assumptions. Inherent uncertainties, including policy changes, weather, and other market variations ensure that the future is highly unlikely to match baseline projections. Recognizing this fact, BFAP incorporates scenario planning and risk analyses in the process of attempting to understand the underlying risks and uncertainties of agricultural markets. Scenarios and risk analyses are, however, not published in the baseline, but only prepared as confidential reports for individual clients. The BFAP Baseline 2010 should be regarded as only one of the tools in the decision-making process of the agricultural sector, and other sources of information, experience, and planning and decision making techniques have to be taken into consideration.

EXECUTIVE SUMMARY AND IMPLICATIONS

The macroeconomic environment underlying the commodity projections that are presented in this report has in recent years experienced dramatic changes, entering the deepest recession since 1930 towards the end of 2008 before showing the first signs of recovery in late 2009. Economic growth has not been consistent with the recovery in the United States and the European Union characterised by stagnant and hesitant growth and the recovery in the large developing countries by faster more confident growth. While the consistent growth in the developing world is helping to fuel the world economic recovery, investors are concerned about the levels of sovereign debt in the developed world, especially in some of the European member states. However, in general the outlook of the underlying global macroeconomic environment is more positive in this Baseline than in the 2009 Baseline. The strong growth of the developing countries also supports the South African economy and real per capita gross domestic product (GDP) is projected to reach a growth rate of 5.2% in 2019.

The first important implication for the South African agricultural industry of a more positive outlook about the world economy is that oil prices are expected to increase faster over the period of the outlook to reach $94/barrel in 2019. Compared to the 2009 Baseline, a more gradual depreciation in the exchange rate is anticipated in the 2010 Baseline. This change is supported by a relatively high level of confidence of investors in developing countries.

Although the agricultural industry has shown more resilience to the economic downturn than most other industries, the demand for most agricultural goods, producer prices have declined rapidly and as a consequence real net farming income has declined. In 2009, real net farming income of the South African agricultural industry declined by 12% and a further decline of 14% is projected for 2010. Compared to the previous Baseline, the outlook of real net farm income is slightly more bearish over the next four years as the general recovery in commodity prices is dampened by the relative strength of the exchange rate and due to the fact that the impact of significant economic growth will take time to filter through commodity markets. An average annual growth rate in real net farm income of 2.8% is projected over the outlook period.

The total area under field crops is projected to decline by more than 200 000 hectares in 2011 on the back of deteriorating profit margins as well as increasing pressure on cash flow positions of many farmers caused by the low producer prices in the 2010 season. A relative switch in summer crop plantings is projected for 2011 with total maize plantings declining by 20 percent and sunflower and soybean plantings increasing by 57 percent and 15 percent respectively. Slightly more sorghum will also be planted due to favourable prices relative to maize. Although the area planted to wheat is projected to decline by 13 percent in 2010, the anticipated decline in maize plantings in the summer rainfall area during 2011 will provide more fallow land for wheat plantings in 2011. Wheat plantings in the winter rainfall area will increase only marginally during 2011. The total area under field crops is projected to recover partially in 2012 and then remain relatively stagnant over the outlook period as the increases in commodity prices are not large enough to provide sufficient incentives for the total area to expand. Yet, within the total area relative switches between the various field crops are expected with yellow maize and soybean plantings increasing at the expense of white maize and sunflowers. These relative shifts are driven by long-run demand patterns and the level of parity prices. For example the demand for maize in the feed industry is projected to increase by 38 percent, whereas the demand for maize in the food industry is projected to decline by 5 percent by 2019.

Although the agricultural industry will face ongoing adjustments over the short run due to the period of peak prices that was followed by a deep recession, specific fundamental long term trends that are tied to a growing economy are expected to strengthen. These trends will not only have the most significant impact on income sensitive products like meat, dairy, wine and fruits but also on the consumption of staples like maize meal, bread and potatoes over the next decade. Products that feature attributes associated with prominent consumer food trends like health, indulgence and convenience are likely to experience the fastest growth in demand. Over the next decade a relative shift in staple food away from maize to bread, pastas, potatoes and rice will occur with the demand for potatoes and wheat based products growing by 23 and 19 percent respectively, while a decline of 5 percent is anticipated in the consumption of maize meal. The total demand for meat is projected to grow by 24 percent, with a 44 percent increase in the demand for chicken meat

leading the way. By 2019 South Africans will consume 2.1 million tons of chicken meat which is 600 000 more than actual consumption in 2009. The demand for fresh milk and dairy products is expected to increase by 13 percent to reach 2.8 million tons by 2019.

Although the domestic demand for fruits and wine will be higher over the next decade, in most cases these increases will be overshadowed by the projected increases in exports. The growth in exports is supported by the gradual recovery of world markets, especially that of large developing nations where the increase in income levels will boost the consumption of income sensitive products. For example, whereas the domestic demand for wine is projected to grow by only 5 percent, exports will grow by 19 percent over the next decade. Similarly, only 2000 tons (6 percent) more table grapes will be consumed locally by 2019, yet exports will grow by 28 000 tons (13 percent). Pear exports are also projected to increase by 12 percent compared to a stagnant domestic market where almost no increase in consumption is anticipated. The outlook for the demand for fresh apples is an exception with domestic demand expected to increase by 16 percent whereas the average annual exports remain relatively unchanged over the next decade. These figures should be put in context as 2009 was an exceptional year in terms of both average yield and to a lesser extent pack-out, leading to the export volume in 2009 being the second highest in history. Nevertheless growth in the local market is supported by high informal trading activity, more so for apples compared to the other fruit kinds considered. This can be explained by the fact that apples are less perishable than grapes, reducing the cost and risk of carry-over stocks for the trader. From a consumer point of view apples are usually ready-to-eat, whereas pears need some storage to provide a delightful eating experience. The fact that apples can be stored over a long period of time also influences South Africa's export markets in the Northern hemisphere since apples can be stored and marketed out of the production season. In response to an increase in the total demand (domestic plus exports), total area under table grapes, apples and pears is projected to increase by 5.4 percent by 2019, while total area under wine grapes is projected to increase by 3.2%. Apple area is expected to show the fastest growth with an increase of 6.4 percent.

In terms of the balance of trade for agricultural products it is projected that the imports of most of the basic food staples, meat and dairy products will increase and exports will decrease. For example, whereas the total value of exports of maize and sugar exceeded the total value of imports of wheat and rice in 2009, this relationship is expected to be the opposite by 2019 where the value of imports of wheat and rice will exceed the value of exports of sugar and maize by a significant margin. The opposite trend is projected for wine, fruits and some of the oilseeds where the increase in the value of exports is projected to outpace the increase in the value of imports.

Under the assumptions of this Baseline, it is evident that for many food products growth in demand outstrips growth in supply over the long run. This trend is largely driven by the relative slow increase in commodity prices, compared to the increasing costs of production, which dampens the growth of real net farming income, causing producers to be more risk averse and taking some of the marginal land out of production. Apart from increases in typical production costs like seed, fertilizer and fuel, expenses related to electricity and labour will also increase rapidly over the next few years. For example, electricity's share of total production costs of maize under irrigation is projected to increase from 8 percent in 2009 to 20 percent by 2015.

Not withstanding the fact that for a number of agricultural commodities international stock levels have been replenished over the past three years, supply and demand are projected to be more closely balanced over the next decade. Large surplus maize stocks in South Africa will eventually erode as demand outpaces supply. With demand and supply closely matched price volatility will remain in the market as less leeway is left to absorb negative impacts of any exogenous shocks like weather issues. Volatility is also fuelled by speculative behaviour on stock markets. The recent spike in agricultural markets has significantly boosted the interest in the African continent with its large underdeveloped agricultural potential. The activities and involvement of countries like India and China, with an economic growth rate consistently above 5 percent and where a large part of the world population is living, are increasing at an astounding pace in the African continent. What is currently perceived as an appetite for hard commodities will likely turn into a very rapid demand for food as consumption patterns change with an increasing rate of urbanization. A deeper understanding of the behaviour of African food markets is imperative. Although the development of a framework of models is a logical step it is not without its own, unique set of challenges as many key drivers in agricultural markets in Africa cannot be captured in a model. This is why the development of an African Outlook is a gradual process where a certain body of basic market intelligence has to be established before the actual modelling process commences.

OVERVIEW

Introduction

The record rise of agricultural commodity prices during 2006-2008 spurred agricultural growth in South Africa. During this period, real agricultural GDP and net farming income showed annual growth rates of 15% and 40% respectively. The general decline in world commodity prices towards the end of 2008 and 2009, however, reversed this trend, and the sector's income and value added growth declined in 2009 and 2010. On average the baseline projects modest growth for the agricultural sector over the period 2011 to 2019 as a result of increasing commodity prices and economic recovery.

Real gross value of field crops

Two major spikes in the real gross value of field crops in South Africa have occurred over the past decade (Figure 1). The first was in 2002 when it increased by 45% on the back of a sharp depreciation in the Rand/ Dollar exchange rate, and the second between 2006 and 2008 when world commodity prices increased significantly. In general, outside of these two periods the income from field crops has shown little growth relative to the livestock and horticultural sectors. In fact, over the long run the share of income from field crops to the total agricultural income has declined significantly. In 1980 the share of field crops was 43% of total agricultural output, compared to 25% in 2009.

The fall in world commodity prices after 2008 and a decline in area planted reduced real gross income from field crops by 24% in 2009, while the continued decline in real commodity prices is expected to reduce real income from field crops by 15% in 2010. However, as commodity prices are projected to recover marginally from 2011 onwards, real gross income from field crops is projected to increase gradually, at an average annual growth rate of only 1%, from 2011 to 2019. This lower growth is mainly due to the sluggish growth in real commodity prices and area planted during the projection period. Thus, compared to the previous decade, the projection of real income from field crops does not show a significant change.
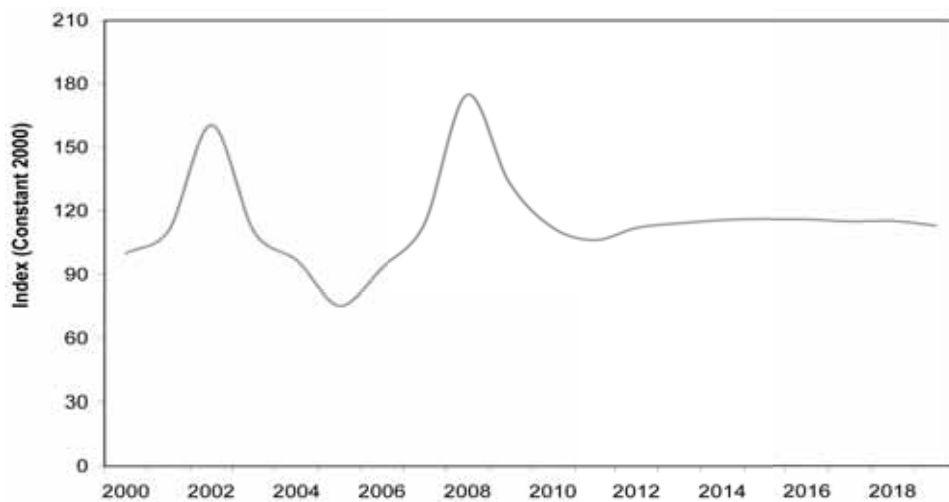

Figure 1: Real gross value of field crops

Real gross value of animal products

Income from animal products currently accounts for roughly 50% of the gross income of the total agricultural sector. Its share has grown due to rising domestic demand supported by the steady growth in real disposable income resulting in a shift in food consumption patterns from cereals to protein based

diets. Due to the projected rise in real disposable income, gross income from animal products is projected to continue its upward trend and achieve a 3.3% average annual growth rate from 2011 to 2019 (Figure 2).
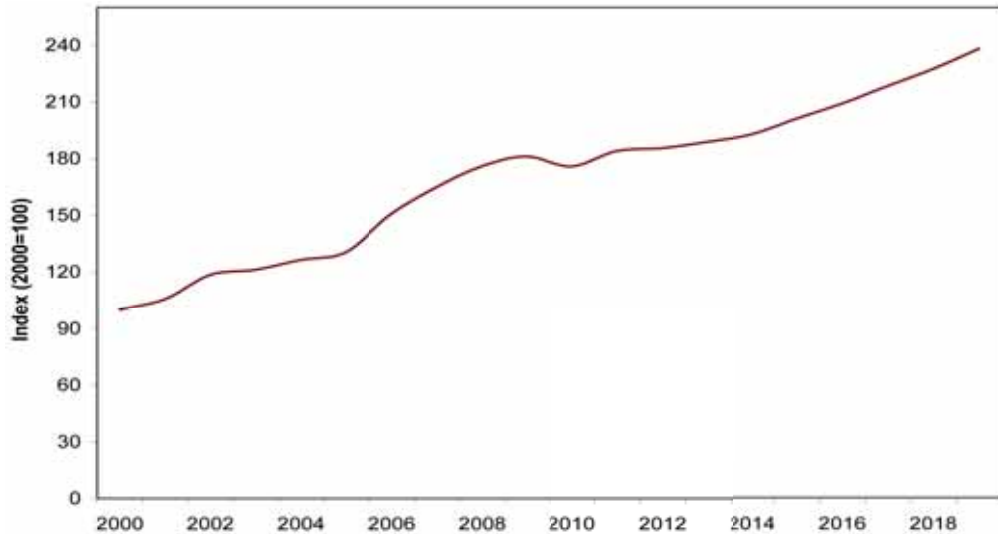
Figure 2: Real gross value of animal products

Real gross income of the agricultural sector

Following the trend in the field crops sector, the real gross income of the agricultural sector experienced a 34% increase during 2006-2008, resulting in a record increase of 51% over the 2005 level (Figure 3). After the decline in commodity prices and subdued economic growth due to the Great Recession, gross income decreased by 6% in 2009. A further decline of 7.6% is anticipated in 2010 as a result of declining and limited growth in output of field crops. However, the expected recovery in commodity prices as well as economic growth in 2011 is projected to reverse the trend and enhance the growth of gross income of the agricultural sector by an average of 2.5% annually from 2011 to 2019.

Figure 3: Real gross income of the agricultural sector

Real intermediate input expenditure

Real intermediate input expenditure refers to all purchased inputs that are used during the production season. These expenditures include fuel, fertiliser, feed, farm services and maintenance and repairs. In 2009, the sha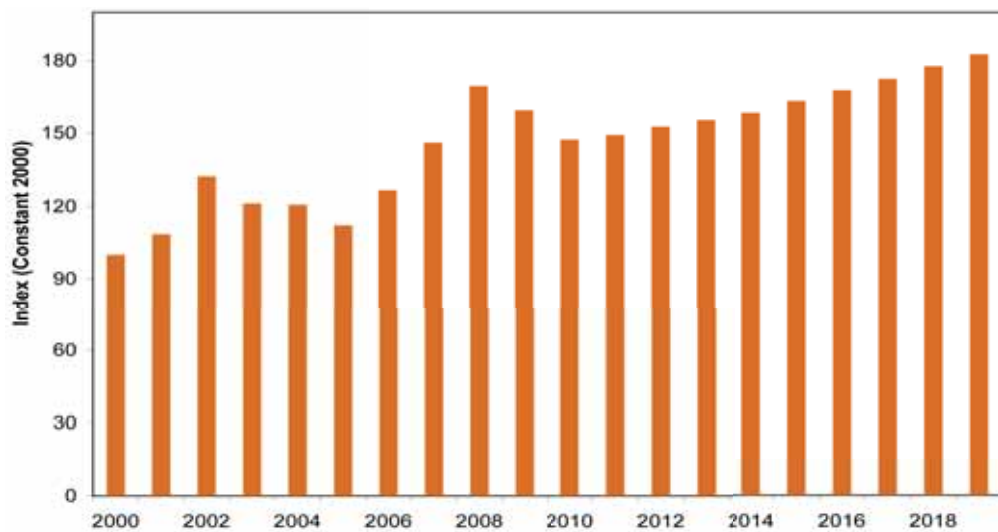re of feed (23%) was the highest followed by fuel (17%), farm services (11.5%), repairs and maintenance (9.85%) and fertiliser (8.5%). The share of fertiliser expenditure, which was the second highest before 1990, has been diminishing due to the declining trend in acreage under field crops. During the baseline period, the relative share of these expenditures is expected to be maintained.

Overall, real intermediate input expenditure has increased over the past decade (Figure 4). A significant increase occurred in 2008, when fuel and fertiliser prices spiked. However, the subsequent decline in these prices contributed to the decline of intermediate input expenditure in 2009. The projected increase in fertilizer and oil prices, and the depreciation of the Rand over the long run will, however, contribute to a 2% average annual growth rate from 2011-2019.
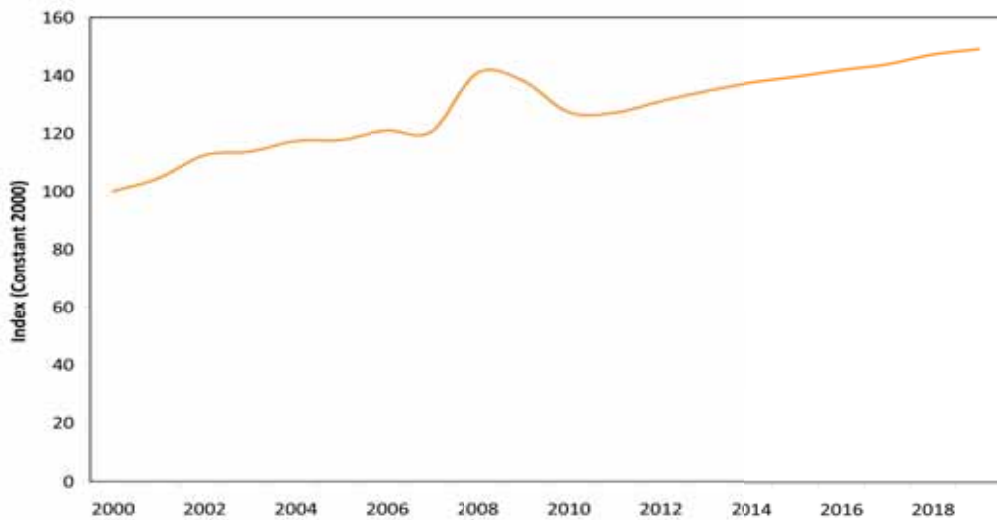
Figure 4: Real intermediate input expenditure

Real gross value added of the agricultural sector

The real gross value added of the agricultural sector (agriculture's contribution to GDP) reflects the contribution of the sector to the overall economy. It is computed as the difference between gross income (including own construction and change in livestock inventory) and intermediate input expenditure. The real gross value added typically follows the spikes of the real income from field crops and is supported by the income from animal products when commodity prices are under pressure.

The fall in gross agricultural income in 2009 reduced the value added by 8% and is projected to decline by a further 7% in 2010 following the trend of gross agricultural income (Figure 5). It is, however, projected to grow at an annual average rate of 3% from 2011-2019, largely driven by the increase in gross income from animal products. This growth rate is slower than the targeted growth rate of 6% by 2015 that is envisaged by SADC's Multi-country Agricultural Productivity Programme (SADC MAPP).
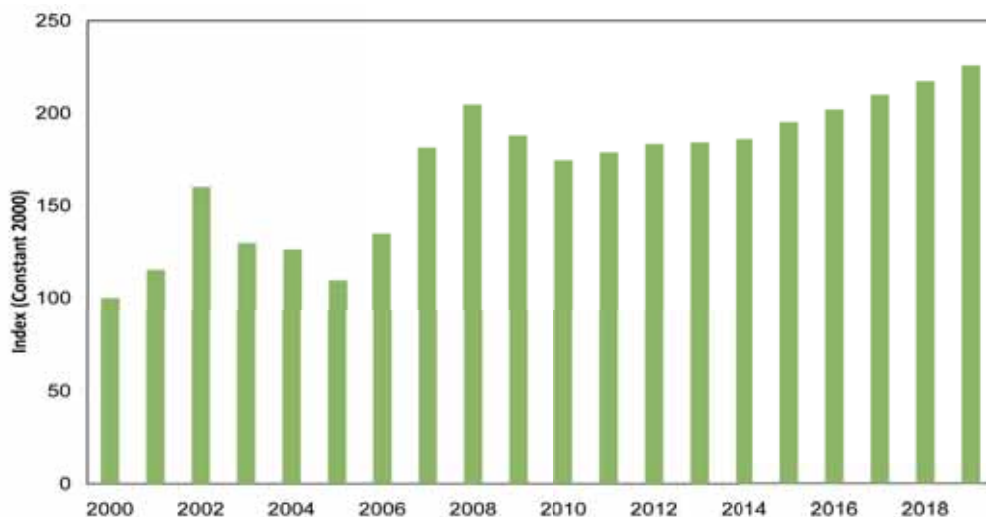
Figure 5: Real gross value added of agricultural sector

Real net farming income

Real net farming income refers to producer's real income after paying for rent, interest, and labour, and after making allowances for capital depreciation. Real net farming income increased rapidly over the period 2005 – 2008, reaching a peak in 2008, by which time it had grown by 155% from its 2005 level (Figure 6). Following the trend in gross income, real net farming income declined by 12% in 2009 and a further decline of 14% is expected for 2010. This corresponds to the outlook that was presented in the 2009 baseline. Yet, compared to the previous year's outlook, the outlook that is projected in this baseline is slightly more bearish over the next four years as the general recovery in commodity markets is adjusted downwards. Although an average annual growth rate of 2.8% is projected over the outlook period, significant growth is not expected until 2014 when the full recovery of the world economy has filtered through commodity markets and the pace of price increases picks up.
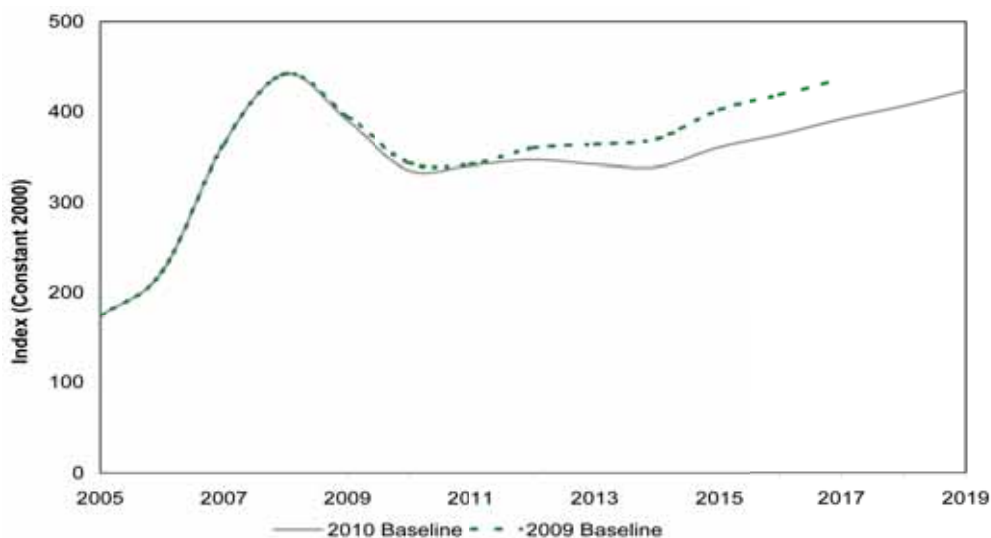
Figure 6: Real net farming income

Real agricultural debt

The trend in real agricultural debt typically follows the trend in real net farming income. Over the periods of rapid growth in real net farming income, debt levels are generally contained (2006-2008) and have even declined in the past (e.g. 2001 - 2002) (Figure 7). Over periods of stagnant growth in real net farming income (2003-2005), debt levels rose as producers struggled to manage their debt levels. With the outlook that is presented in this year's baseline, agricultural debt levels are projected to increase gradually as the growth in real net farming income is projected to slow. Yet, agricultural debt as a percentage of the total asset value of agriculture is projected to remain steady at below 25% during the projection period. Obviously this implies that the growth in the real asset value of agriculture is still expected to outpace the growth in real debt over the next decade.

Figure 7: Real agricultural debt

KEY BASELINE ASSUMPTIONS

Policies

The baseline assumes that current international as well as domestic agricultural policies will be maintained. In a global setting this assumes that all countries adhere to their bilateral and multilateral trade obligations, including their WTO commitments; an assumption under which the FAPRI baseline global commodity prices were simulated. On the domestic front, current policy is maintained. With the deregulation of agricultural markets in the mid-nineties all the non-tariff trade barriers and most direct subsidies to agriculture were replaced by tariff barriers. In the case of maize and wheat, variable import tariffs were introduced. The variable import tariff for wheat was replaced by a 2% ad valorem tariff in 2006. However, in December 2008 the original variable import levy system was re-introduced, and recently the reference price that triggers the variable import levy on wheat was adjusted upwards from $157/ton to $215/ton. Simple ad valorem tariffs are applied in the case of oilseeds. In the case of meat and dairy products, a combination of fixed rate tariffs and/or ad valorem tariffs are implemented. The projected tariff levels, as derived from the FAPRI projections of world commodity prices, are presented in the table below.

In the case of biofuels, the South African government published its industrial strategy in December 2007. This strategy has been incorporated into the model. However, a number of issues were not clearly addressed or explained in the industrial strategy and much uncertainty exists in the market regarding the production of biofuels

Macroeconomic assumptions

The baseline simulations are largely driven by the outlook for a number of key macroeconomic indicators. Projections for these indicators are based on information provided by the OECD, the IMF and Global Insight. In some cases further own adjustments and inputs by industry specialists have been used.

Table 1: Key policy assumptions

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
		R/ton					R/ton				
Maize tariff: ref. price = US$ 110	0	0	0	0	0	0	0	0	0	0	0
Wheat tariff: ref price = US$ 215	0	140	103	50	24	0	0	0	0	0	0
Sunflower seed tariff: 9.4% of fob	261	257	282	292	309	318	328	345	358	374	389
Sunflower cake tariff: 6.6% of fob	77	64	69	69	74	74	75	76	76	77	79
Sorghum tariff: 3% of fob	41	36	38	40	42	44	46	48	50	53	55
Soybean tariff: 8% of fob	274	214	205	227	237	249	261	271	282	295	308
Soybean cake tariff: 6.6% of fob	204	161	153	164	170	177	184	188	194	200	207
			Tons					tons			
Cheese, TRQ quantity	1199	1199	1199	1199	1199	1199	1199	1199	1199	1199	1199
Butter, TRQ quantity	1167	1167	1167	1167	1167	1167	1167	1167	1167	1167	1167
SMP, TRQ quantity	4470	4470	4470	4470	4470	4470	4470	4470	4470	4470	4470
WMP, TRQ quantity	213	213	213	213	213	213	213	213	213	213	213
		percentage					percentage				
Cheese, in-TRQ	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Butter, in-TRQ	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8
SMP, in-TRQ	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2
WMP, in-TRQ	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2
		c/kg					c/kg				
Cheese, above TRQ rate	500	500	500	500	500	500	500	500	500	500	500
Butter, above TRQ rate	500	500	500	500	500	500	500	500	500	500	500
SMP, above TRQ rate	450	450	450	450	450	450	450	450	450	450	450
WMP, above TRQ rate	450	450	450	450	450	450	450	450	450	450	450
Beef tariff: max(40%*fob,240c/kg)	684	600	681	728	764	799	826	854	882	912	944
Lamb tariff: max(40%* fob,200c/kg)	802	699	722	764	795	843	879	916	953	990	1029
Chicken tariff: 220c/kg	220	220	220	220	220	220	220	221	222	223	224
Pork tariff: max(15%* fob, 130c/kg)	140	130	143	152	154	158	162	166	176	187	198

KEY BASELINE ASSUMPTIONS

KEY BASELINE ASSUMPTIONS

Table 2: Key macro economic assumptions

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
						millions					
Total population of SA	47.8	48.0	48.1	48.3	48.5	48.7	49.0	49.3	49.5	49.9	50.2
					SA cents/Foreign currency						
Exchange rate (SA cents/US$)	866	752	784	819	852	885	914	944	975	1006	1039
Exchange rate (SA cents/Euro)	1155	1005	1090	1190	1246	1258	1306	1367	1430	1495	1563
					percentage change						
Real GDP per capita	-1.8	2.4	3.3	4.5	4.4	4.3	4.6	4.5	4.7	5.2	5.4
GDP deflator	9.6	7.3	4.7	5.0	6.2	5.6	6.2	6.0	5.6	5.7	5.7
					percentage						
Weighted interest rate	13.00	11.00	12.00	12.50	13.00	13.00	13.00	13.00	13.00	13.00	14.00
					US$/barrel						
Oil price: Refiner acquisition	59.4	71.0	75.3	77.4	81.1	84.2	87.9	91.2	93.5	94.9	94.2

SOUTH AFRICAN OUTLOOK

SUMMER GRAINS

Maize - global

A combination of a significant increase in supply and a slowdown in demand reduced global maize prices during 2009. However, the outlook for world maize prices is marked by a return to a new equilibrium at a significantly higher level than experienced over the past decade. Despite the projected increase in production, the projections for stocks point towards a tighter stocks-to-use ratio, as demand is expected to be stronger due to an increase in the feed and industrial use.

- The benchmark price of US maize (No. 2 Yellow, Gulf) is projected to reach $186 per ton in 2019. This is about 17% higher than the 2009 average and represents an increase of 0.7% per year (Figure 1).

- World maize production in 2019 is projected to be 19% higher than the average levels during 2007-2009. This production increase is driven by increasing acreage and improved yields.

- The projected 1.5% per annum increase in the utilisation of maize during 2010 to 2019 is lower compared to the past decade. This is largely due to slower growth in the use of maize for the production of bio-ethanol in the United States.

- The demand for maize in the food market will grow at the same rate as population.

- The growth in the demand for maize as animal feed is likely to exceed the growth rate achieved in the previous decade. This is driven by strong economic growth and changes in dietary preferences towards protein-based diets in emerging markets. According to the OECD-FAO Outlook, China alone will account for 40% of the world increase in feed utilisation of coarse grains over the projection period.
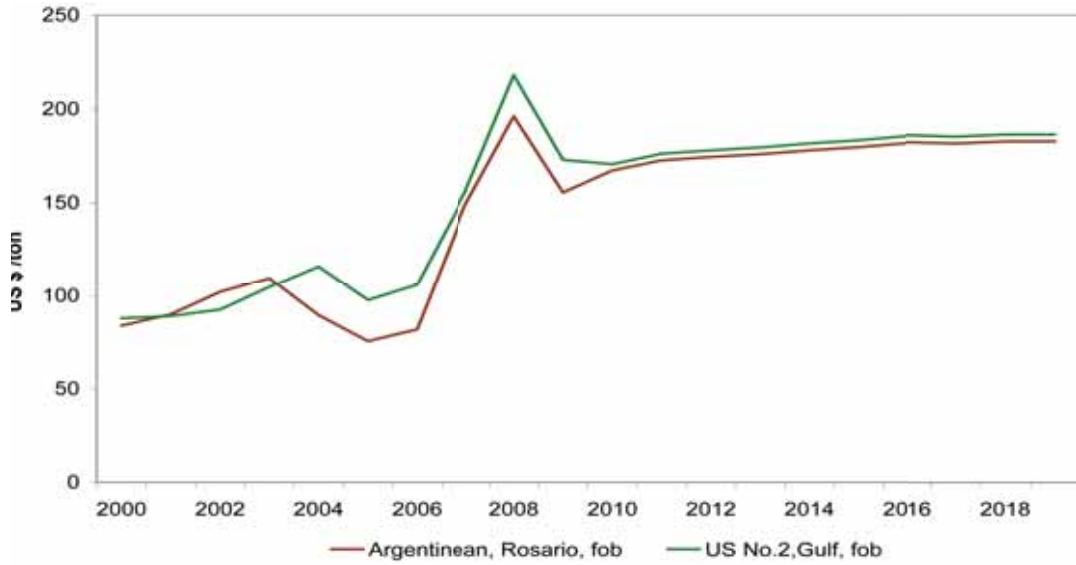
Figure 8: Yellow maize world price
Source: FAPRI BASELINE 2010

Maize - South Africa

Despite declining maize prices during 2009, maize producers increased white maize plantings by 15% and yellow maize plantings by 9% in 2010 to reach a total area planted of 2.72 million hectares. This increase in the area planted in 2010 was driven by the generally strong cash flow position of farmers due to good profits in the previous two years. Another contributing factor was the significant decline in fertilizer prices towards the end of 2009. The most recent estimates pegged the 2010 maize crop at 13.3 million tons, which is the second largest crop in the history of maize production in South Africa. This is also the third consecutive year in which supply will exceed domestic demand, which will boost the carry out stock levels.
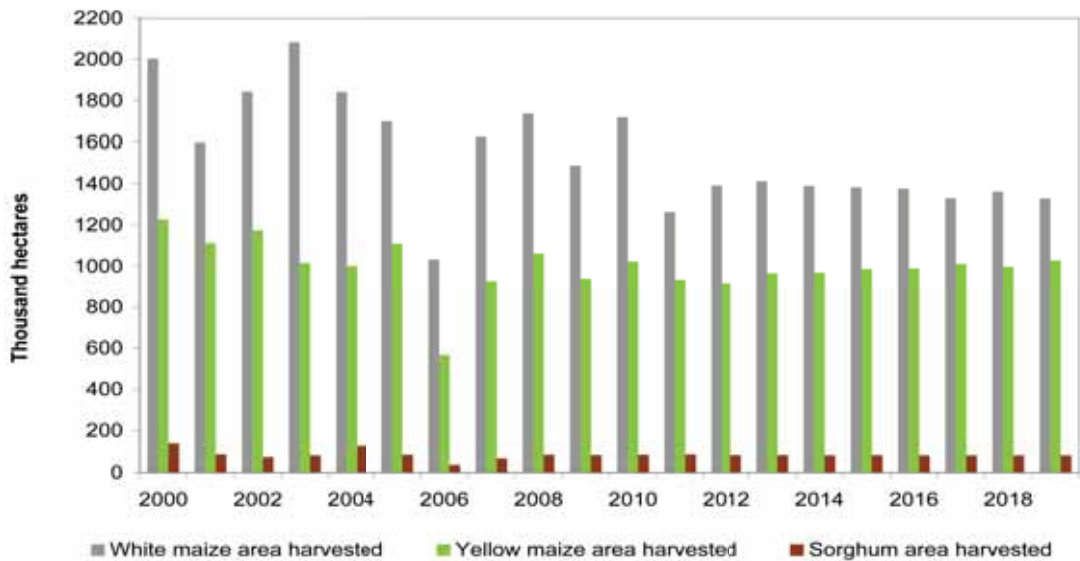

Figure 9: Summer grain area harvested

- Due to the large surplus of maize, local prices are projected to decline further during 2010 towards deep sea export parity levels. The average 2010 white maize price is projected at R1 091 per ton and that of yellow maize at R1 192 per ton. The average 2010 export parity price of white and of yellow maize is projected as R1 048 per ton and R 934 per ton, respectively (Figures 10 and 11).

- From 2011 towards the end of the baseline period, parity prices are projected to increase due to higher international prices and the anticipated depreciation of the Rand/Dollar exchange rate.

- At these projected prices, total 2010 maize exports are expected to reach 1.8 million tons. The level of exports is projected to be lower than last year as regional exports opportunities are limited by a much improved maize harvest in many African countries. For example, a 1 million ton surplus is projected for Zambia.

- The 2010 ending stocks of maize are projected at approximately 3.4 million tons and give rise to a projected stocks-to-use ratio of 34% at the end of the 2010 marketing season. The projected ending stocks are also the highest stock levels since the deregulation of the South African maize sector.

- Given the bearish outlook for 2010 maize prices, producers will reduce maize plantings during the coming season. White maize plantings are projected to decline by 27% to 1.26 million hectares while yellow maize plantings will decline by 9% to 933 000 hectares in 2011 (Figure 9).

- Total domestic maize consumption is projected to increase by 7% during 2010 to 10.4 million tons. Consumers are projected to substitute maize meal for preferred starches like rice, bread and potatoes as household income rises, resulting in lower per capita consumption of maize as human food over the baseline period. The demand for maize for human consumption is projected to decline over the baseline period at 0.4% per annum to 4.6 million tons in 2019.

- However, the demand for maize as animal feed is projected to increase rapidly at an annual average rate of 3.2% to reach a total consumption of 6.1 million tons in 2019 (Figure 12). The growth in feed demand will more than compensate for the decline in the demand for maize as food. Hence, the total domestic utilisation of maize at the end of the baseline period is projected as 11.1 million tons. The local use of maize as bio-ethanol feedstock is projected as 59 200 tons in 2019.

- Maize prices are expected to break slightly from export parity levels and trade at a constant margin above export parity over the period of the outlook as the area under production settles at approximately 2.35 million hectares (Figures 10 & 11). The area planted to white maize will peak at 1.4 million hectares in 2013. From 2014 onwards white maize plantings are projected to decline to 1.34 million hectares in 2019

- Despite the decline in the white maize acreage, South Africa is projected to remain a relatively large exporter of white maize over the baseline period, mainly due to the lower food demand (Figure 10). White maize exports are projected at 1.03 million tons in 2019, which represents a decline of 36% over 2010 (Figure 10).

- However, it is projected that South Africa will be a net importer of yellow maize from 2011 towards the end of the baseline period. This will be mostly consumed in the coastal areas as imported yellow maize becomes more favourably priced than maize transported from the central areas to the coast. This has been a trend for many years, especially yellow maize imports into the Western Cape out of Argentina.

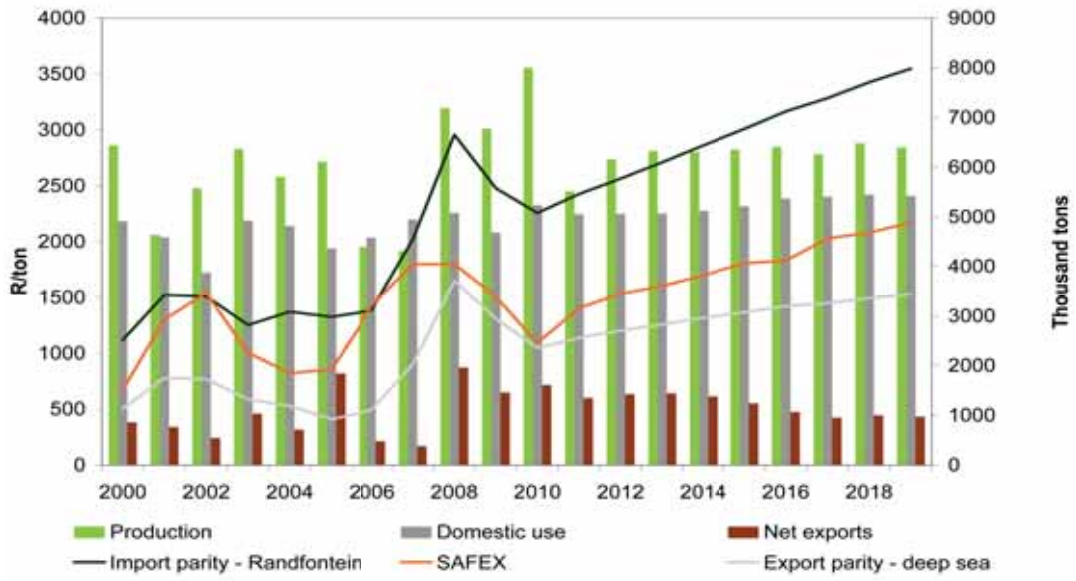SOUTH AFRICAN OUTLOOK • SUMMER GRAINS

Figure 10: White maize production, domestic use, net trade and price
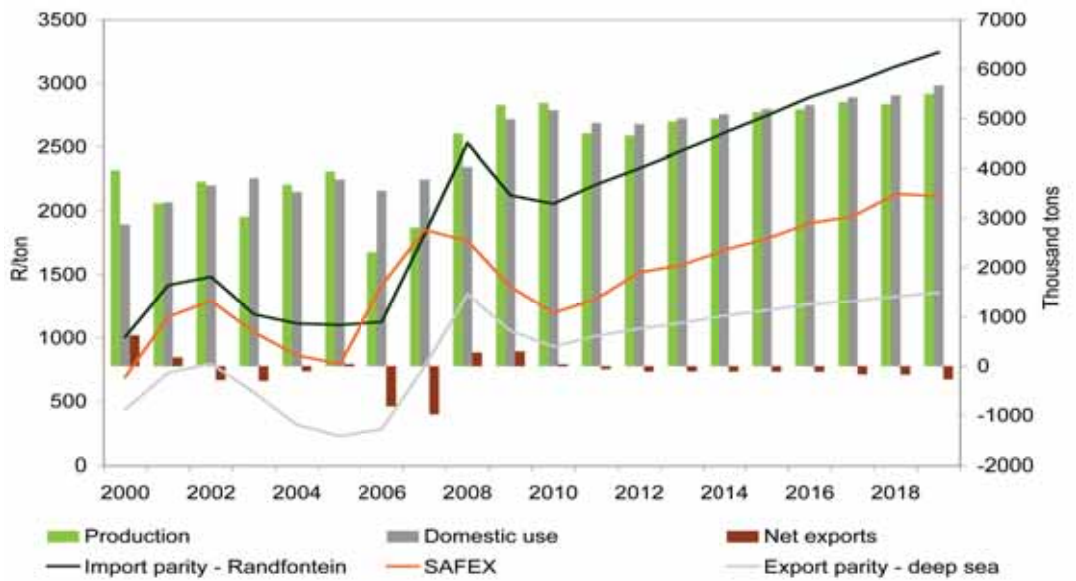

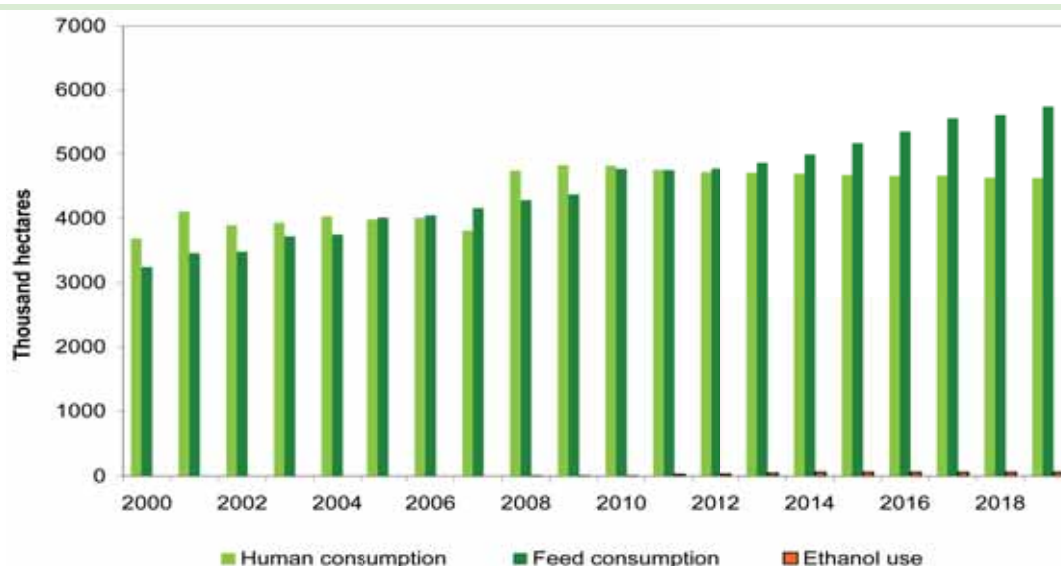Figure 11: Yellow maize production domestic use, net trade and prices

Figure 12: Total maize domestic use

Sorghum - South Africa

- Sorghum plantings increased by 1% to 86 600 hectares during 2010, but due to slightly lower yields the local sorghum crop is expected to decline to 268 000 tons, compared to the 276 500 tons in 2009 (Figure 13).
- The 2010 sorghum producer price is projected at R1 305/ton. From 2011, the price will increase steadily at an annual rate of 4.4% to R1 966 at the end of the baseline period as production and consumption are in relative balance and the sorghum prices is supported by higher maize prices over the long run.
- Despite the higher prices, a slight decrease in the acreage of sorghum is expected. Sorghum plantings of 83 300 hectares are projected in 2019. However, due to better yields domestic production is projected to remain relatively constant in the region of 270 000 to 275 000 tons.
- Sorghum is mainly consumed in the human food market and, as in the case of maize, consumers are projected to substitute sorghum based products with preferred products as household income increases. The baseline projection indicates a slight decline in domestic consumption from 205 000 tons in 2012 to 191 000 tons in 2019.
- As local production is projected to remain relatively constant while consumption is projected to decline over the same period, sorghum exports are expected to rise. Should the projected exports not be realised, ending stocks will rise and the producer price will decline.
- The 2010 sorghum producer price is projected at R 1 305/ton. From 2011, the price will increase steadily at an annual rate of 4.4% to R 1966 at the end of the baseline period.
- Despite the higher prices, a slight decrease in the acreage of sorghum is projected. Sorghum plantings of 83 300 hectares are projected in 2019. However, due to better yields, domestic production is projected to remain relative constant in the region of 270 000 to 275 000 tons.
- Sorghum is mainly consumed in the human food market and as in the case of maize, consumers are projected to substitute sorghum based products with higher valued products as household income increases. The baseline projection indicates a slight decline in domestic consumption from 205 000 tons in 2012 to 191 000 tons in 2019 due to lower per capita consumption of sorghum.
- As local production is projected to remain relatively constant while consumption is projected to decline over the same period, more sorghum will be needed to be exported to keep sorghum stocks at current levels. Should the projected exports not realise, ending stock will rise and the producer price will decline to force producers to plant less sorghum.
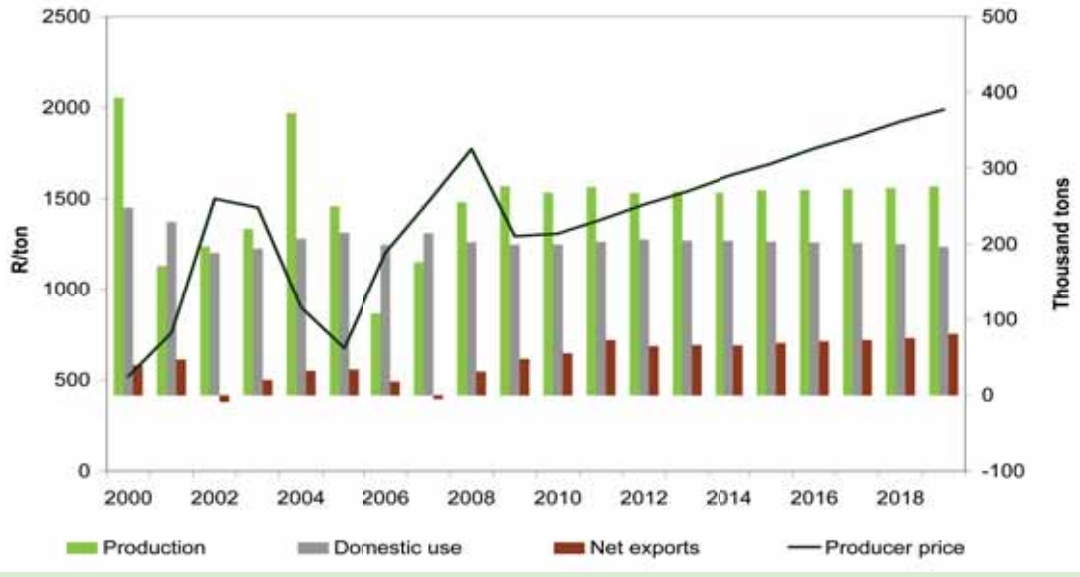
Figure 13: Sorghum production, domestic use, net trade and price

WINTER GRAINS

Wheat & barley - global

The above average wheat production in 2009 and higher world wheat inventories drove world prices lower during 2009. Projections show that this trend will continue until 2011 as world markets try to find a better balance between supply and demand. Despite the sharp decline, it seems like the world wheat price will find a new equilibrium at a higher level than before the price spike of 2007 and 2008. World wheat prices are projected to increase from 2012 towards the end of the baseline period in 2019.

- The average annual growth rate in world wheat production over the next decade is projected below 1% compared to an annual average growth rate of 1.3% in the previous decade.
- World wheat demand is projected to grow at 0.75% per annum over the outlook period, compared to 0.67% in the previous decade. This slight increase is driven by rising food consumption due to higher incomes and urbanisation in developing countries.
- Although industrial use of wheat is a relatively small portion of total consumption, it is expected to show the fastest growth, mainly due to the anticipated growth in bio-ethanol production from wheat in the EU.

Wheat - South Africa

During the past decade South Africa has experienced a significant decline in winter wheat plantings, mainly due to the deteriorating profitability of growing wheat. In 2000 approximately 1.0 million hectares were planted to wheat and it declined to 642 000 hectares in 2009 (Figure 15).
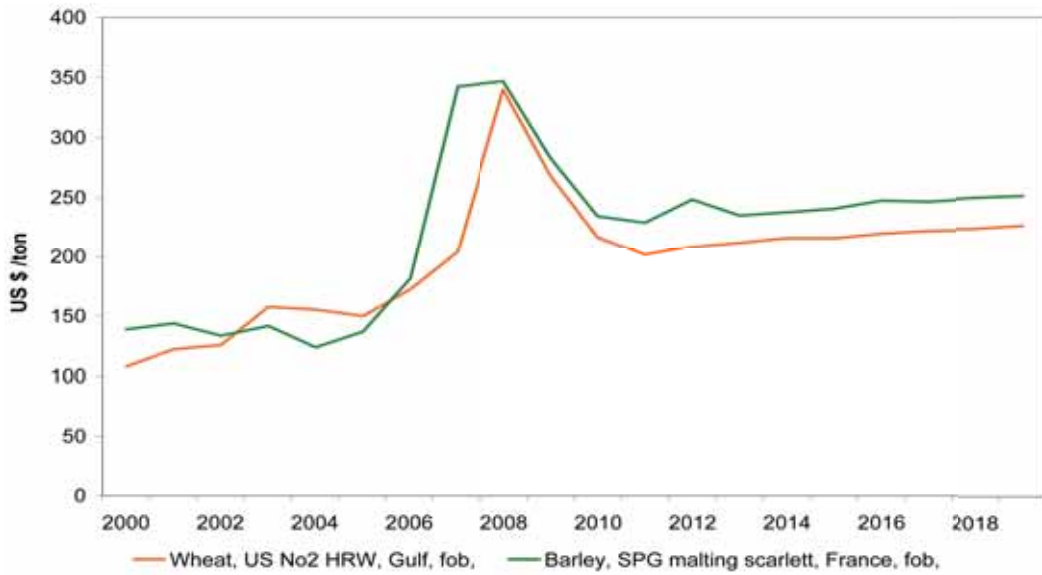
Figure 14: World prices for wheat and barley: 2000 to 2019
Source: FAPRI, Baseline 2010. **Note: Malting barley derived from feed barley, BFAP
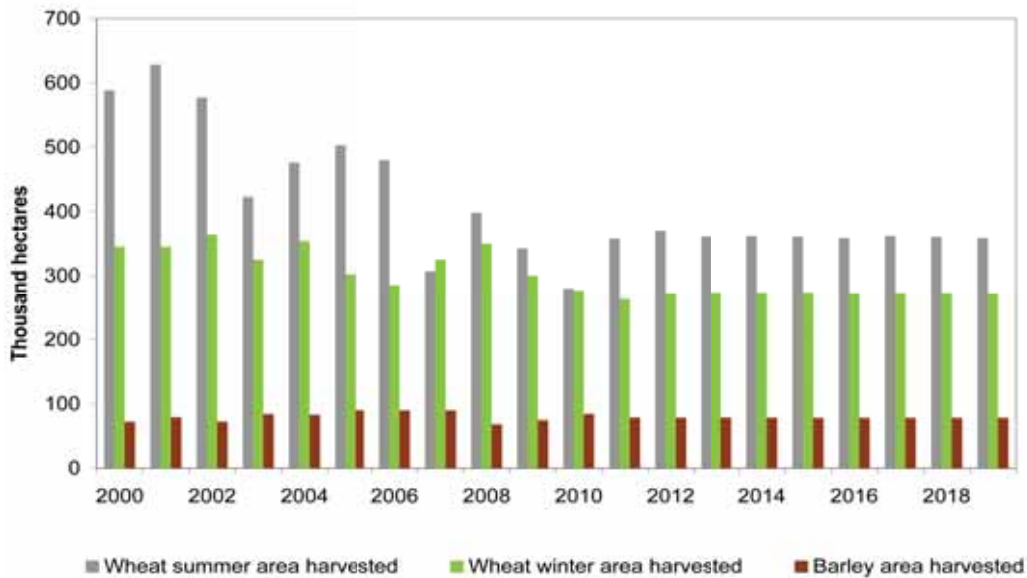

Figure 15: Winter grain area harvested

In 2009 wheat plantings in the summer rainfall area declined from 398 000 to 342 000 hectares while wheat in the winter rainfall area decreased by 500 000 hectares to 300 000 (Figure 8). Projections show that wheat plantings in both areas will decline further during 2010 as producers switch to other crops, enter into a fallow land rotational system and increase livestock production.

- Compared to 2009, the SAFEX wheat price is projected to decline by 9% to an annual average R2 229 during 2010 due to lower international prices and a stronger Rand. Due to lower prices the area under production is expected to decline in 2010 by approximately 13%. After 2010, the SAFEX wheat price

is projected to increase by 5.8% per annum to R3 768 per ton in 2019 due to a slight improvement in international prices and a projected depreciation in the exchange rate to R10.72 per US Dollar (Figure 16).

- Due to the projected 13% decline in wheat plantings, 2010 wheat production is projected to come in at 1.6 million tons, resulting in a shortfall of 1.3 million tons that will have to be imported.
- Due to the anticipated decline in maize plantings in the summer rainfall area during 2011, more fallow lands will be available for wheat in 2011. Wheat plantings in the winter rainfall area will increase only marginally during 2011.
- Despite the increase in the wheat price from 2012 onwards, the wheat acreage in both the summer and winter rainfall areas will remain relatively constant.
- South Africa will remain a net importer of wheat over the baseline period. Approximately 50% of the total domestic use will be imported at the end of the baseline period.
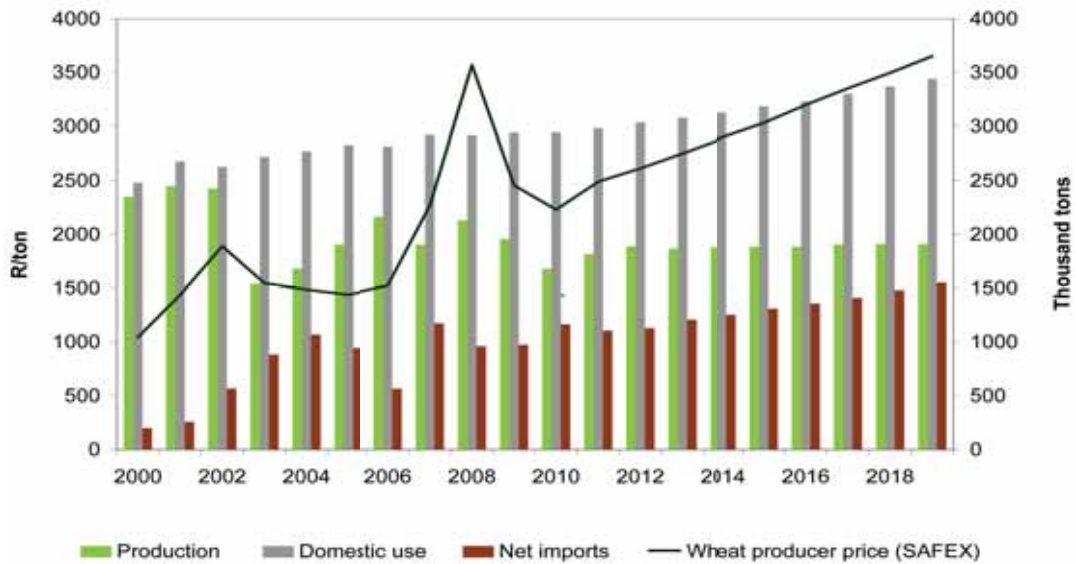

Figure 16: Wheat production, consumption, trade and price

Barley - South Africa

- Due to the projected decline in wheat plantings in 2010, barley acreage is expected to increase in 2010 to 84 000 ha and then stabilize at approximately 77 000 hectares during the baseline period. Only marginal increases in yields are projected, which brings the projected production in 2019 to 244 000 tons. The amount of barley that is produced locally is to a large extent capped by the malting capacity that drives demand.
- The annual average growth in consumption of approximately 2% is expected to outpace the growth in local production and by 2019 South Africa is expected to import 124 000 tons to satisfy the domestic demand.
- The local barley producer price is projected to decline to an average of R1 924 per ton in 2010, due to lower international prices and the stronger Rand, after which it will increase gradually over the baseline period as the exchange rate depreciates further (Figure 17). However, in real terms the barley producer price is expected to remain relatively constant, i.e. the price will not outpace the general rate of inflation.
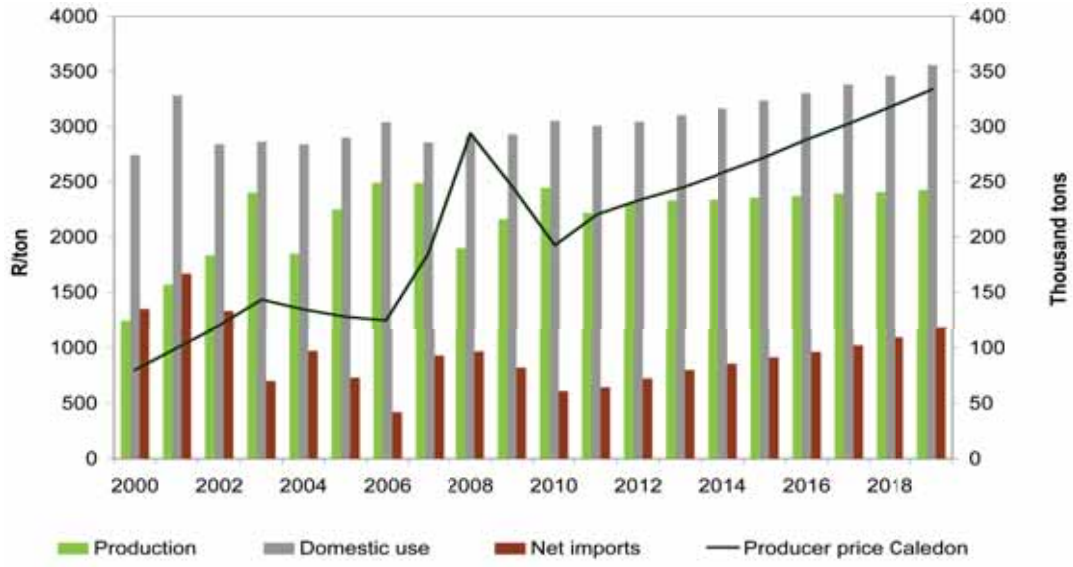
Figure 17: Barley production, consumption, trade and price

OILSEEDS

Oilseeds - global

The surge in oilseed prices in the first half of 2008 was followed by a sharp fall by the end of 2008 as concerns about tight world oilseed supply and demand subsided and the global economic crisis took effect on commodity prices. However, in 2009 oilseed prices increased, due to the concerns about the South American soybean crop as well as increasing demand as emerging economies continued on a path of steady growth. Similar to world cereal prices, oilseed prices are projected to trade at higher levels over the baseline period relative to price levels over the past decade.

- The CIF price of EU sunflower seed is projected to increase from $364 per ton during 2009 to $468 per ton in 2019. Argentinean soybean prices are expected to trade softer for the next two seasons on the back of an all-time record harvest in 2010, yet prices will increase again beyond 2012. (Figure 18).
- World oilseed acreage and production are projected to increase by 10% and 30% respectively by 2019 relative to the 2007-09 average levels. Expected improvements in yields and technology as well as a solid price supported by consistent growth in demand are the main drivers for enhancing the relative profitability of oilseed production.
- With the projected increase in the global demand for vegetable oils and oilcake, oilseed crushing is projected to increase by approximately 2% per year until 2019. However, this is lower than the 3.8% per year achieved during the past decade.
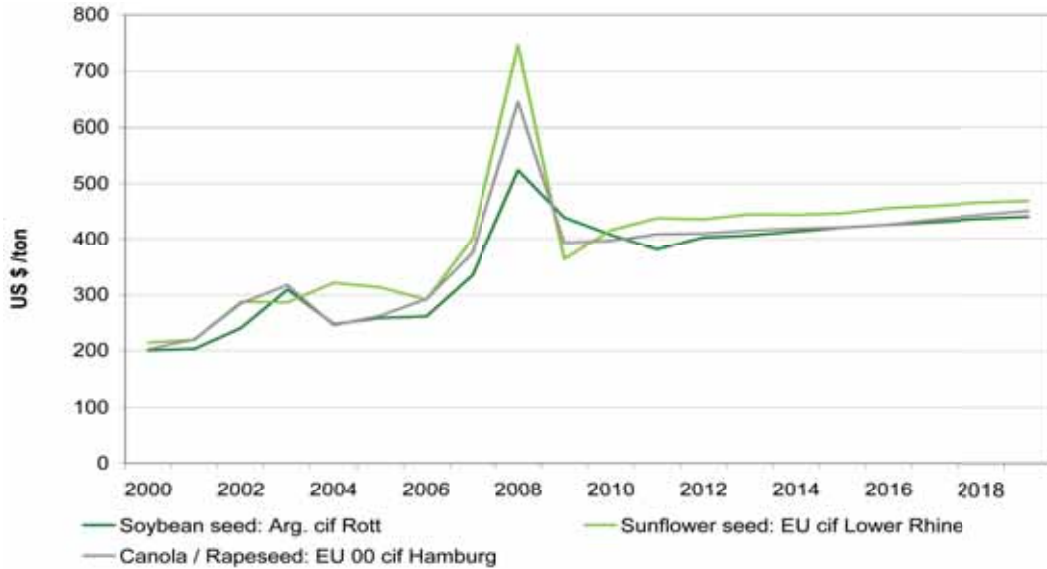
Figure 18: World oil seed prices
Source: FAPRI, Baseline2010

Oilseeds - South Africa

Sunflowers and soybeans are the major oilseeds produced locally, with canola only playing an important role as a rotation crop in the winter rainfall production region. Lower prices combined with difficult planting conditions in the main sunflower production area resulted in a 37% drop in sunflower seed plantings during 2010. The excellent soybean yield achieved during 2009 cushioned the effect of the lower soybean prices and producers increased soybean plantings to a record 312 000 hectares in 2010. Canola acreage remained relatively constant at around 35 000 to 36 000 hectares in 2009 and 2010 (Figure 19).

- Due to the relatively higher profitability of sunflower seed production compared to maize production, especially in the Western part of the Northwest province where the potential for maize production is significantly lower than in the Eastern part of the country, summer grain producers are expected to increase sunflower plantings by 58% (228 000ha) at the expense of maize during 2011. The area planted under sunflowers is thus projected to increase to 626 600 ha in 2011. Under normal weather conditions production is expected at 819 000 tons for 2011. As a consequence, sunflower plantings are projected to decline in 2012 and then settle around 520 000 ha towards the end of the baseline period (Figure 19).

- The sunflower seed price is expected to trade relatively close to import parity levels in 2010 at an annual average price of R3 487 per ton. Prices are projected to decline again in 2011 in response to the higher projected plantings, but during the rest of the baseline period the local sunflower seed price is projected to increase in line with higher international prices and the depreciation of the exchange rate (Figure 20).

- Domestic use of sunflower seed is projected to decline from 840 000 in 2009 to 680 000 tons in 2010 due to the lower local supply and the higher prices. For the remainder of the baseline period, the total domestic use is projected to be between 710 000 and 720 000 tons (Figure 20).

- As supply is expected to exceed domestic use, South Africa is projected to be a net exporter of sunflower seed over the baseline period.

- Due to the combination of lower international prices, a stronger Rand and a relatively large surplus during 2010, soybean prices are projected to remain under pressure and trade close to export parity levels. It is expected that lower domestic prices will make South African soybean exports attractive,

especially in markets where a price premium can be realised. It is projected that 110 400 tons will be exported in the 2010/2011 marketing season.

- Soybean prices are expected to increase over the baseline, mainly due to higher international prices and the projected depreciation of the exchange rate, which will cause parity prices to increase (Figure 21).
- Despite the lower soybean prices in 2010, it is projected that producers will increase soybean plantings by a further 44 000 ha. The expansion in soybean acreage is mainly driven by the relatively poorer profitability of maize production as well as lower input costs in the case of soybeans that can ease the pressure on the cash flow position of farmers (Figure 19).
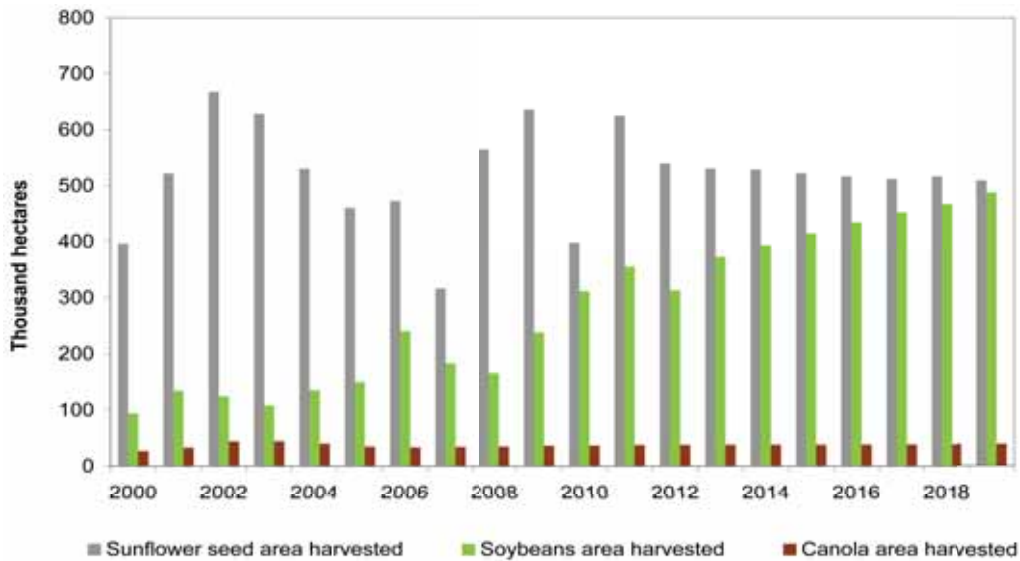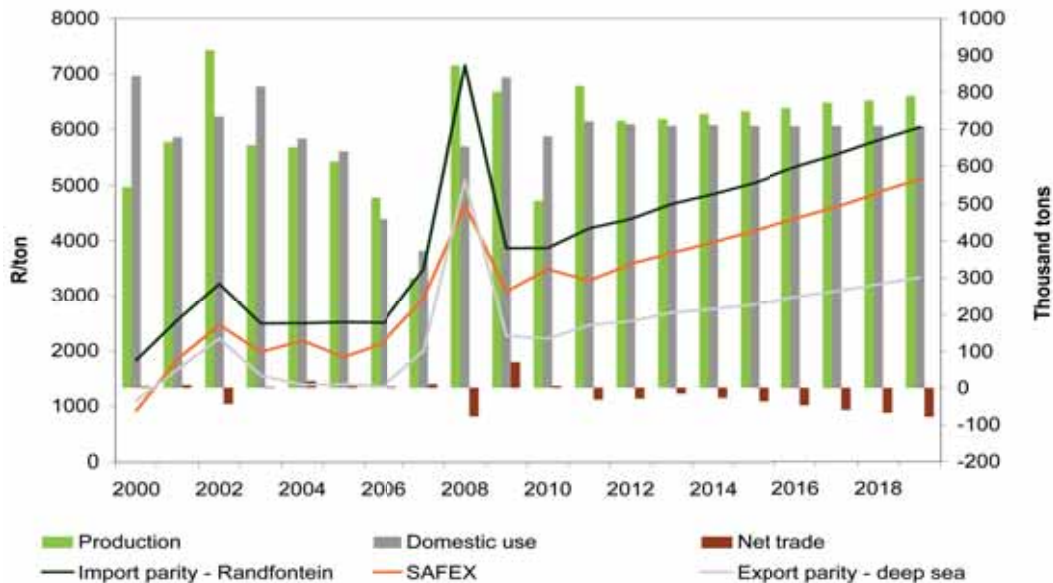

Figure 19: Oilseed area harvested

Figure 20: Sunflower seed production, domestic use, trade and prices

- From 2011 to 2019 soybean plantings are projected to increase at 6.1% per year to reach a total of more than 500 000 hectares at the end of the baseline period.
- An expansion in soybean acreage together with improved yields provides a total domestic production of approximately 1.1 million tons in 2019.
- According to the baseline forecast, South Africa is expected to remain a competitive exporter of soybeans into premium export markets and it is forecasted that by 2019, 168 000 tons of the local soybean crop will be exported (Figure 21).
- No major changes in the supply and demand situation of canola are projected over the baseline period and the local canola price will follow the trend of international prices in Rand value (Figure 22).
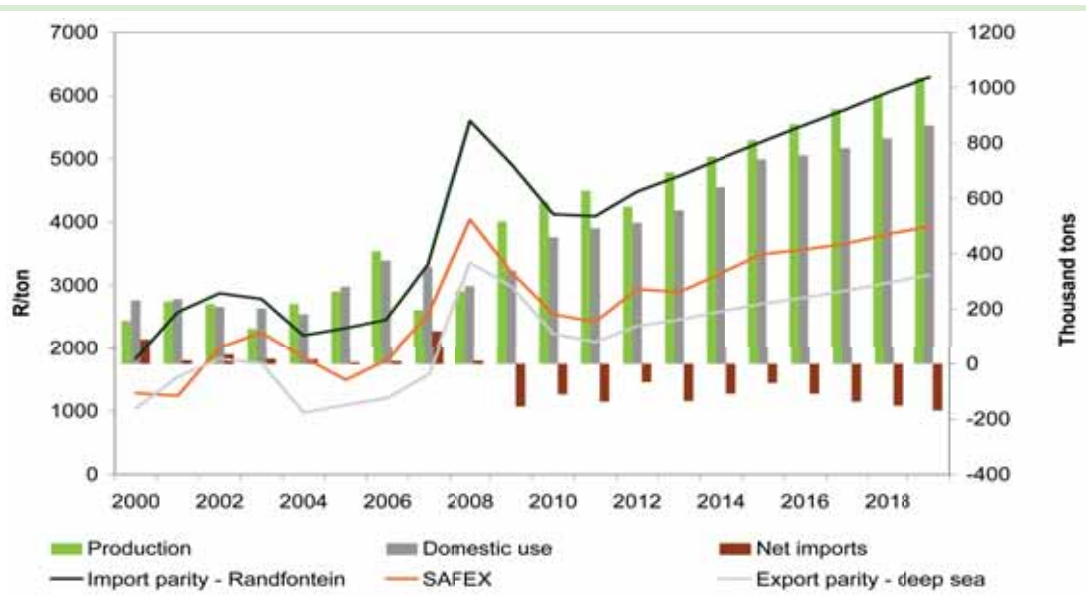

Figure 21: Soybean production, domestic use, net trade and prices
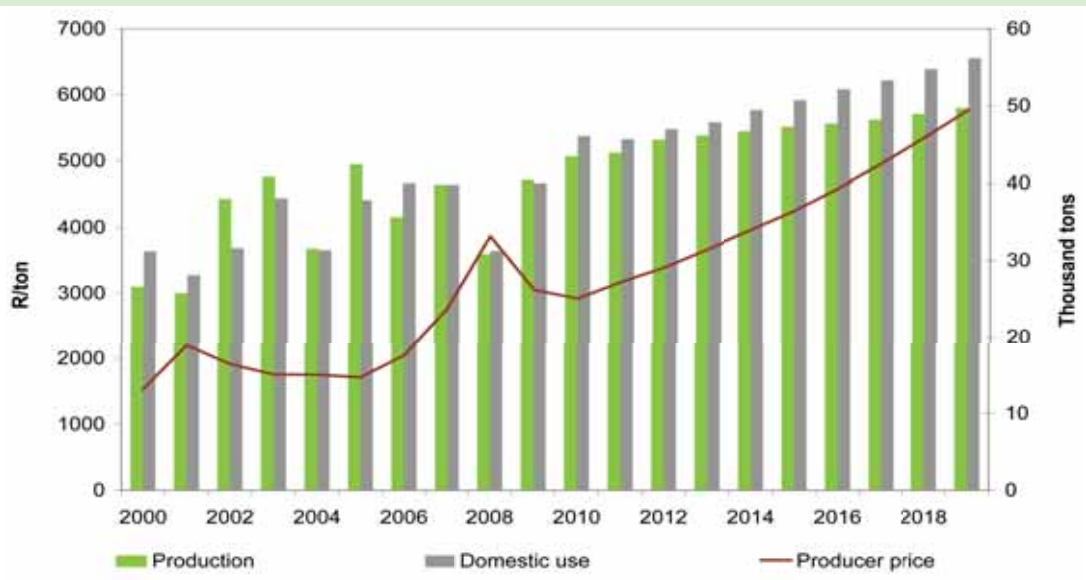
Figure 22: Canola production, domestic use, net trade and prices

OILCAKE

Oilcake - global

Global protein demand for animal feed is projected to increase by 25% over the baseline period as the global livestock industry grows. It is anticipated that most growth will come from developing countries, since the livestock industries in developed countries are relatively mature. Yet, this growth rate is still slower than the growth rate of the past decade as it is anticipated that the global livestock industry will intensify at a slower pace and better technology with respect to feed conversion will be adopted in developing nations (Figure 23).

Oilcake - South Africa

South Africa is a major importer of soybean oilcake, mostly from South America, as an additive to animal feed. Due to the importance of soybean oilcake, import parity is a key determinant of domestic prices, and as a consequence the demand for locally produced oilcakes.

- Approximately 400 000 tons of locally produced sunflower oilcake were consumed during 2009, as higher local production led to favourable prices and therefore substitution away from imported soybean oilcake.
- The local sunflower oilcake price decreased to R2 130 per ton in 2009 and it is projected to stay constant at these levels until the end of 2012 before it will start to increase again to reach R2 880 per ton in 2019 (Figure 24).
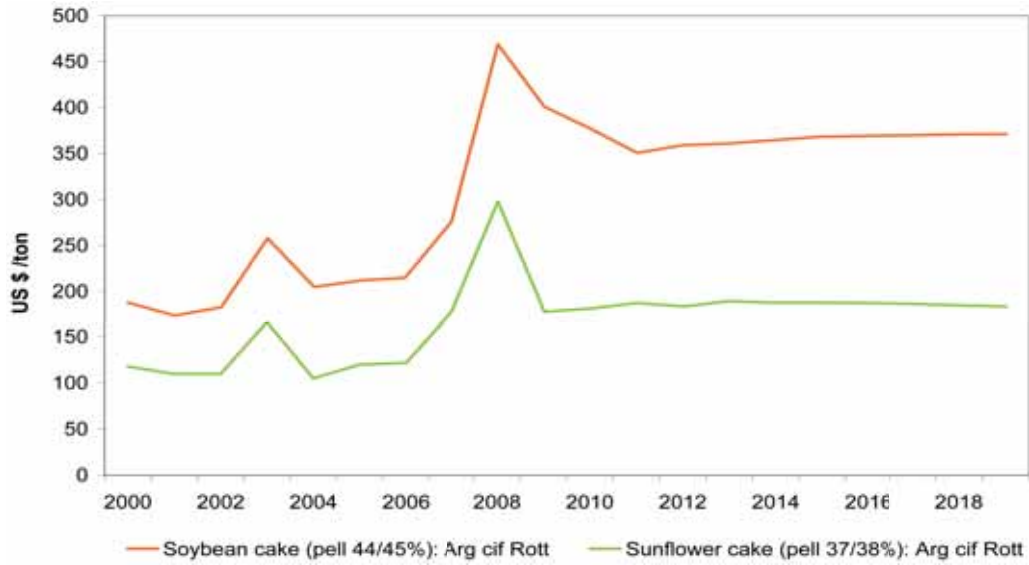
Figure 23: World price of soybean and sunflower oilcake
Source: FAPRI, Baseline 2010.

- Domestic use of sunflower oilcake will decrease slightly to 380 000 tons in 2012 before it will pick up again and increase to 440 000 tons at the end of the baseline period.
- Local sunflower oilcake production is projected to decline to approximately 300 000 tons in 2010 as less sunflower seed is projected to be crushed. As local sunflower production is projected to stay constant at around 300 000 tons during the baseline period, the projected increase in domestic use will have to be serviced by more imports (Figure 24).
- Due to the higher local supply of sunflower oilcake, and as a consequence relatively lower prices, soybean oilcake consumption declined during 2009. Yet, over the baseline soybean oilcake use is expected to increase to 1.6 million tons as the local livestock industry expands (Figure 25). The projected increase in consumption of soybean oilcake corresponds to an average annual growth rate of 5.6%.
- Imports of close to 1 million tons of soybean oilcake will be required by 2019 to supplement the shortfall in local production (Figure 25).
- Due to a projected decline in Argentinean prices, the local soybean oilcake price is projected to continue its downward trend until 2011 before it will rise again during the rest of the baseline period mainly because of the projected depreciation of the exchange rate (Figure 25).
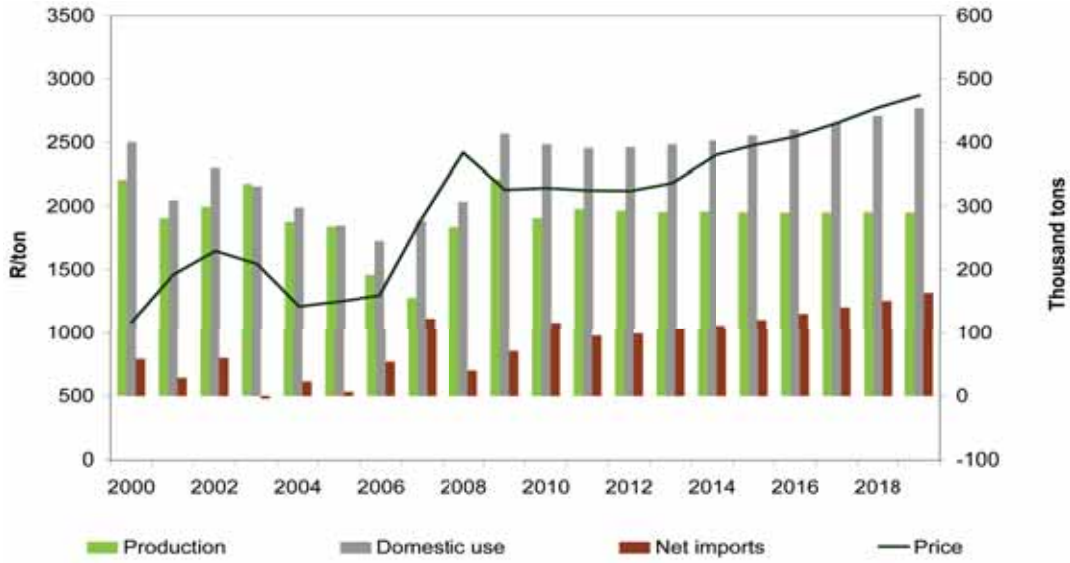
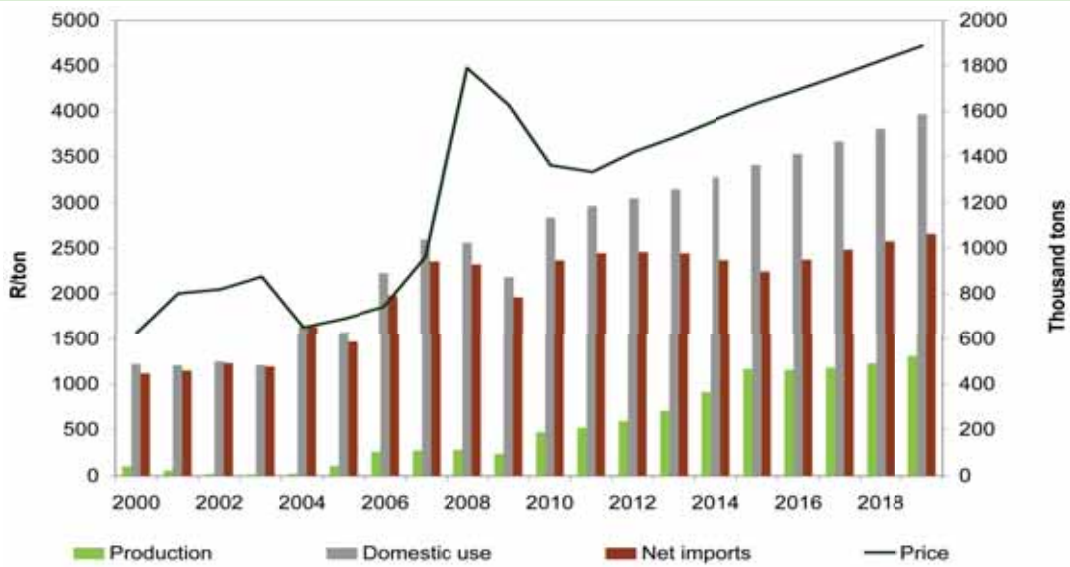Figure 24: Sunflower oilcake production, domestic use, net trade and prices

Figure 25: Soybean oilcake production, consumption, net trade and prices

VEGETABLE OIL

Vegetable oils - global

Strong growth in the demand for vegetable oil is projected over the baseline period as a result of rising per capita income and population growth combined with further growth in the industrial use of vegetable oil. However, per capita food use is expected to reach saturation levels in more and more countries and, together with the slower growth rate in the industrial use of vegetable oil, the annual growth rate in demand over the baseline period is projected to be lower than the rates of the past decade. Despite this lower projected growth in demand, global supply will remain relatively tight, hence the projected increase in world vegetable oil prices during 2010 to 2019 (Figure 26).

Vegetable oils - South Africa

The largest part of South Africa's vegetable oil demands needs to be imported, mostly coming from South America, as local production falls short. Hence, local vegetable oil prices are on average closely linked to the import parity of South American vegetable oil.

- Compared to prices in 2009, local sunflower and soybean oil prices are respectively projected to be 73% and 62% higher by the end of the baseline period as world vegetable oil prices are projected to increase and a depreciation of the exchange rate is expected (Figure 27 and 28).
- Sunflower and soybean oil consumption is projected to grow by 1.1% and 3.4% respectively per annum. The projected growth is attributed to the high per capita consumption as income rises, and to population growth.
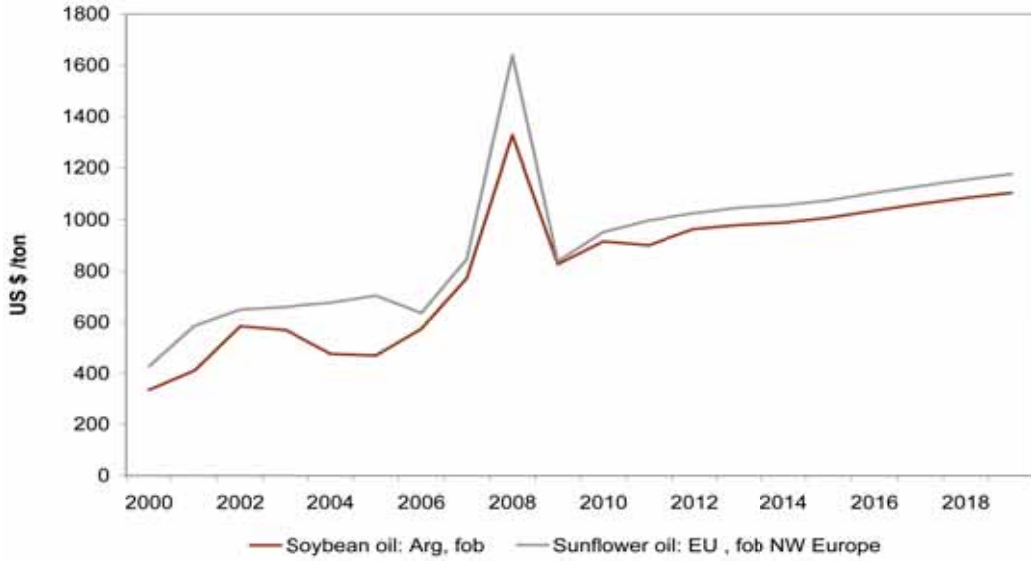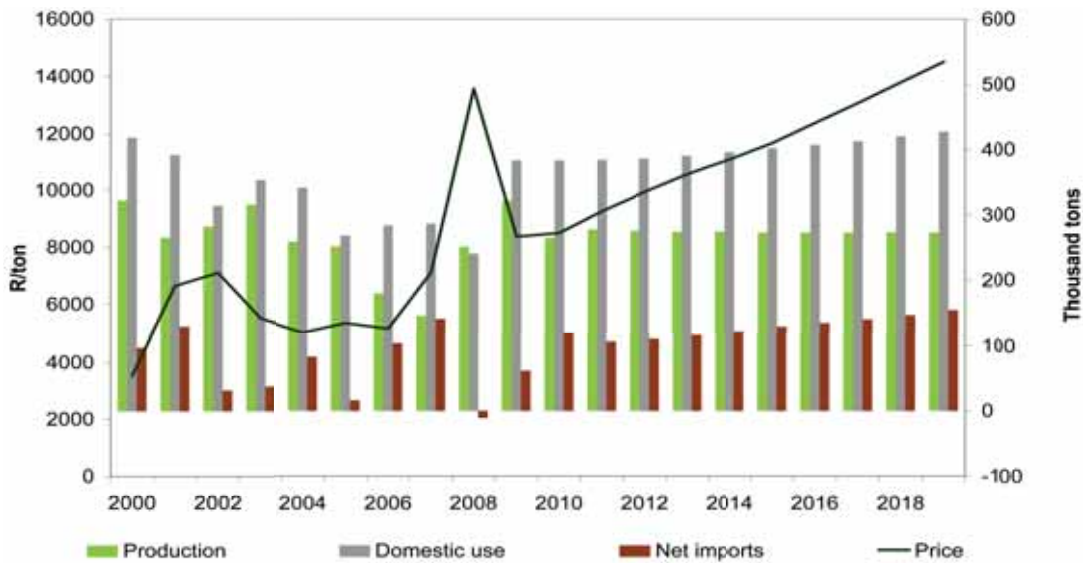
Figure 26: Vegetable oil world prices

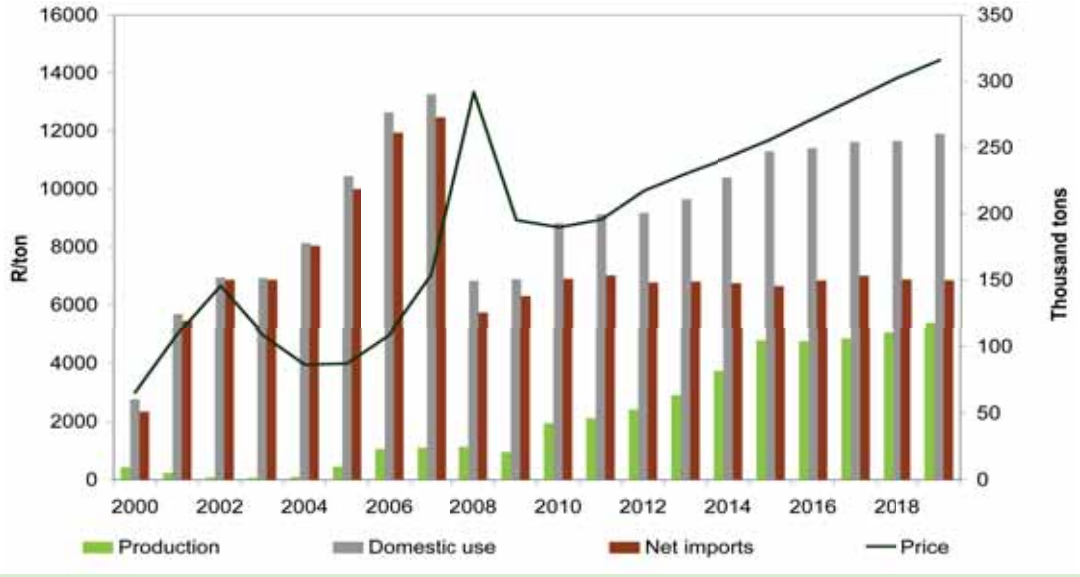Figure 27: Sunflower oil production, consumption, net trade and prices

Figure 28: Soybean oil production, consumption, net trade and prices

SUGARCANE AND SUGAR

The sugar industry in South Africa is in for some serious changes in the near future. The review of the Sugar Act is up for completion in November and the entire industry is scrambling to get new and optimal structures in place. The reform might well see the entire face of the industry change and with that a possible change in physical production.

- The production of marketable sugar in the industry is expected to continue on a marginal downward trend, averaging just above 2 million tons over the baseline period (Figure 29).
- South Africa reached its peak in terms of sugar exports in 2002 when more than 1.4 million tons of sugar were exported. Ever since sugar exports have been declining. Exports are projected to stabilize around 710 000 tons towards the end of the outlook period.
- Ethanol production from sugar, given certain changes in government policy, is expected to be boosted by a slightly weaker world sugar price, while a slightly weaker exchange rate results in an upward trend in the RV price of sugar.
- Changes in the government stance on ethanol production in South Africa could well see more export sugar being diverted to ethanol production. This diversion depends largely on the value of the locally produced ethanol and its relative value to export sugar.
- Cane yields are expected to decrease in the non-irrigated areas of KwaZulu-Natal, which in turn has an impact on overall production.
- The relatively high domestic sugar price has resulted in exporting countries seeking to share the benefits of the South African market. Brazil, which is the largest sugar producer in the world by a significant margin, remains a major source for imported sugar. Imports that have their origin in

neighbouring countries that belong to the Customs Union, such as Swaziland, also enter the South African market.

• Sugar imports are a continuing threat to the South African industry, with a further 100 000 tons of sugar imports expected to enter South Africa during the 2010/11 season.
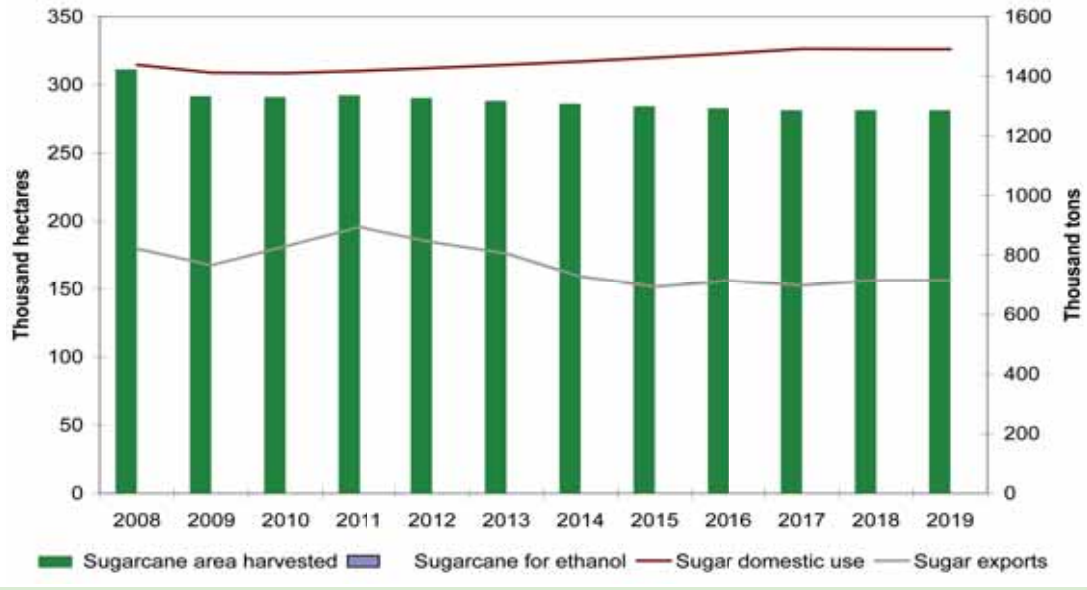
Figure 29: Sugarcane production, sugar use and exports

BIOFUELS

Bioethanol

The production of bioethanol in South Africa can potentially be boosted for the first time by a strong likelihood that government projects will be initiated in the near future. The use of hydrous ethanol as a transport fuel seems to be a likely development, with its expansion into a relatively large scale project.

- Ethanol production from maize is seen as a likely source of hydrous ethanol and is likely to experience an increase from 1.2 million litres to 4 million litres in 2011 (Figure 30). By 2019 it is expected that 45 million litres of hydrous ethanol will be produced from maize.
- Ethanol production from sugar is expected to remain relatively constant in the near future, at 15 million litres, but this is also expected to increase as the market for hydrous ethanol develops further. The production of ethanol from sugar is expected to exceed that of maize by 2019.
- Despite the current ethanol tariff of R3.17 per litre, imports are likely to be a major threat to the sustainability of the industry. Imports are likely to enter the country from Brazil. Under the baseline assumptions more than 400 000 million litres of ethanol will be imported towards the end of the baseline period.
- The price of ethanol is slightly cheaper than that of petrol due to the nature of the product. The use and policies of the government will however determine its final value. The use of ethanol as an oxygenate might well see its value increase with respect to the baseline while the price of hydrous ethanol is likely to be linked directly to the Ethanol Basic Fuel Price, or import parity price of Brazilian hydrous ethanol.
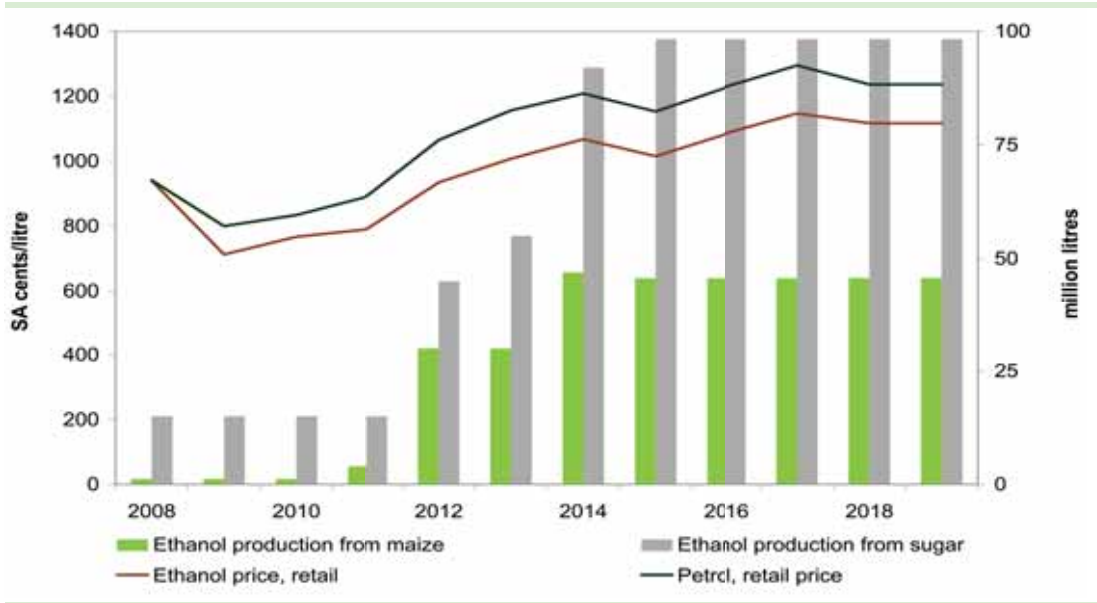
Figure 30: Bioethanol production & prices

Biodiesel

Biodiesel production is likely to continue on a small scale with most of the fuel being used on farm. Other small initiatives include supermarket groups that have embarked on the use of the fuel for their fleets. No significant changes are however expected in the industry as the fuel is relatively expensive to produce and as a result better returns can be generated by selling the vegetable oil into the human consumption market.

• Biodiesel production is projected to reach 100 million litres by 2019. Biodiesel retail prices are expected to trade slightly above fossil diesel prices but not by a great margin (Figure 31).
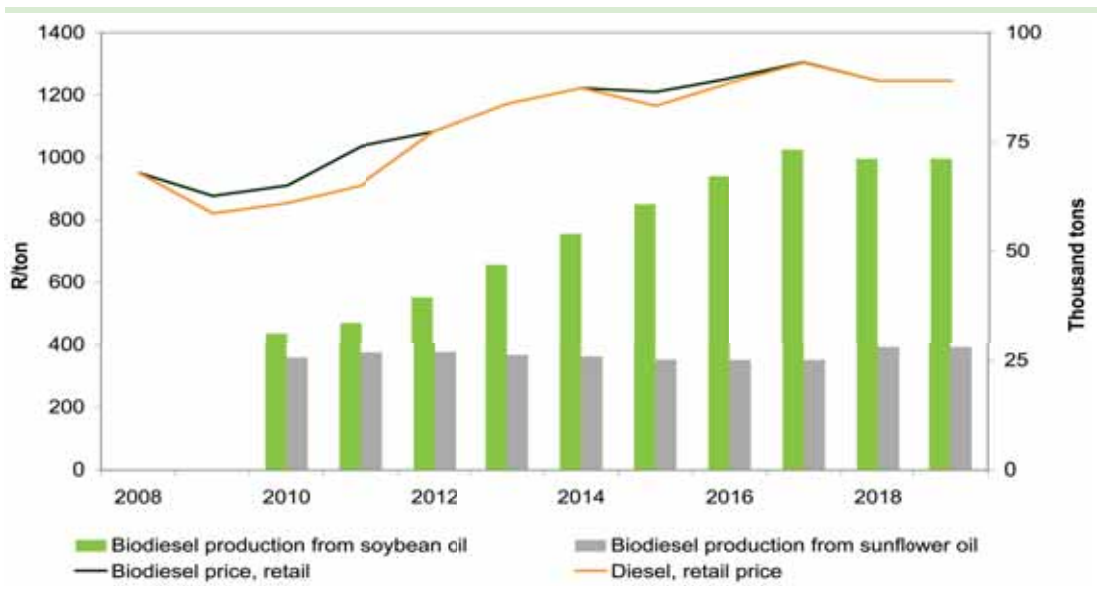
Figure 31: SA Biodiesel production & prices

MEAT

Meat – global

A significant recovery in global meat prices is expected over the next three years. This recovery is driven on the demand side by the recovery of the world economy boosting the purchasing power of consumers, especially in India and China. World poultry consumption is projected to grow at 2.8% per annum, followed by pig meat growth of 2.3% and growth in the consumption of beef by 2%. The recovery in meat prices is also driven by slightly reduced supply levels as herds are rebuilt following the herd liquidation that took place when feed prices spiked in 2007 and 2008.

Compared to other agricultural commodity markets, global meat prices traded at relatively stable levels, largely because meat plays a more limited role as a staple food. As feed prices spike, producers respond as usual through herd liquidation. This increases the supply on the world market, which dampens the increase in meat prices.

- Beef markets were most affected by the economic crisis as consumers switched to cheaper animal protein. This is the reason why chicken markets remained relatively strong throughout the financial crises.
- Whereas beef prices are expected to trade sideways from 2012 onwards, pork markets are projected to follow a typical cyclical trend, entering into a declining trend after a peak is reached in 2012.
- Chicken prices are supported by the consistent fast growth in the demand for poultry meat over the outlook period. It is interesting to note that towards the end of the baseline the margin between beef prices and chicken prices is reduced.

Figure 32: World meat prices
Source: FAPRI Baseline 2010

Meat – South Africa

Domestic meat markets seem to have been less affected by the global financial crises compared to some major shifts that have occurred in meat markets across the globe. For most of the meat types, av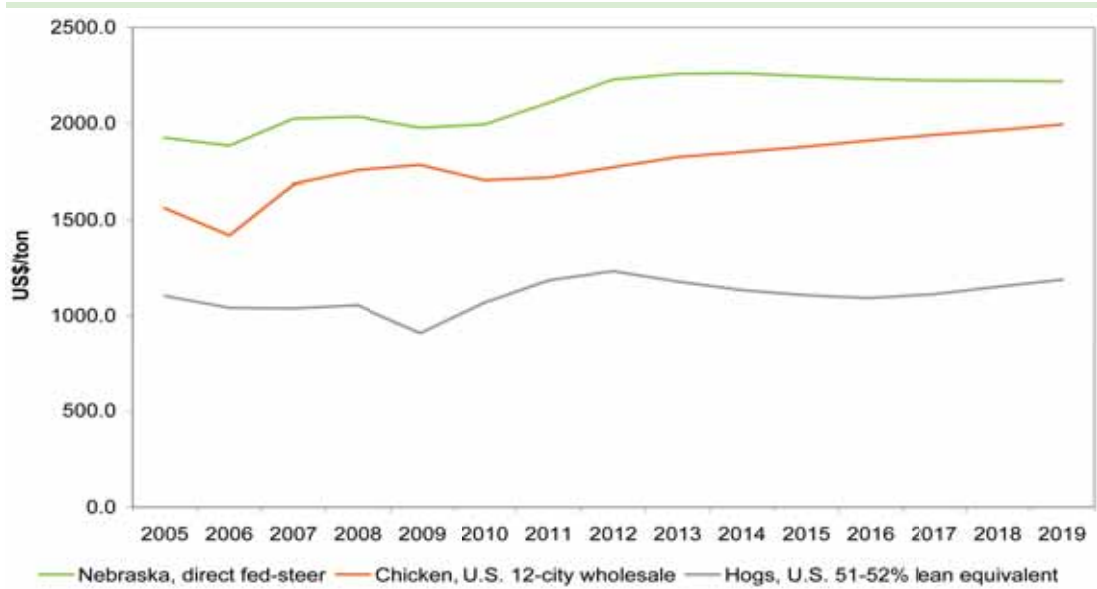erage prices remained relatively constant over the period 2008 and 2009, with beef and mutton/lamb prices recording slight increases and chicken and pork prices remaining under pressure. Sheep meat prices were supported by significantly higher international prices, especially in New Zealand, that outweighed the bearish impact of the stronger exchange rate. Chicken prices came under increasing pressure of cheaper imports due to the strengthening exchange rate. Early indications are that over the period 2008 and 2009 consumers, faced with a budget constraint, shifted towards cheaper cuts of beef and the consumption of chicken meat as an alternative source of animal protein. The consumption of sheep meat has remained relatively constant and the consumption of pork has declined marginally over the same period.

- The growth in the consumption of chicken meat is projected to outpace the growth for all the other types of meat. With an increase of 42% over the next decade, the total consumption of chicken meat is projected to exceed 2 million tons by 2019. Beef consumption is expected to grow by 17%. Although the sheep meat market is relatively small, a significant growth of 31% is expected over the next decade as *per capita* income increases. Pork consumption is projected to grow by 14% until 2019 (Figure 33).
- SA is expected to remain a net importer of chicken meat as the annual average growth in production (2.4%) is outpaced by the growth in consumption (3.4%) over the outlook period. Chicken production will increase to 1.7 million tons over the next decade.
- The chicken to maize price ratio is one of the key indicators illustrating the potential profit in the industry (Figure 34). The ratio has improved significantly over the past two years due to lower maize prices, but the profitability of the industry is still lower compared to 2004 and 2005 when extremely low maize prices coincided with strong economic growth, which led to a rapid expansion in production capacity. The chicken/maize price ratio will remain relatively constant over most of the baseline as the increase in chicken meat prices is met by the increase in maize prices. However, from 2016 onwards the profitability shows an increasing trend as consistent growth in the SA economy boosts consumption, which supports prices.

- The impact of the financial crises is clearly illustrated by the stagnation of growth in the consumption of beef from 2008 to 2010 (Figure 35). From 2011 onwards beef consumption will increase at an annual average rate of 1.7%, driven by the gradual economic recovery to reach a level of more than 700 000 tons in 2019.
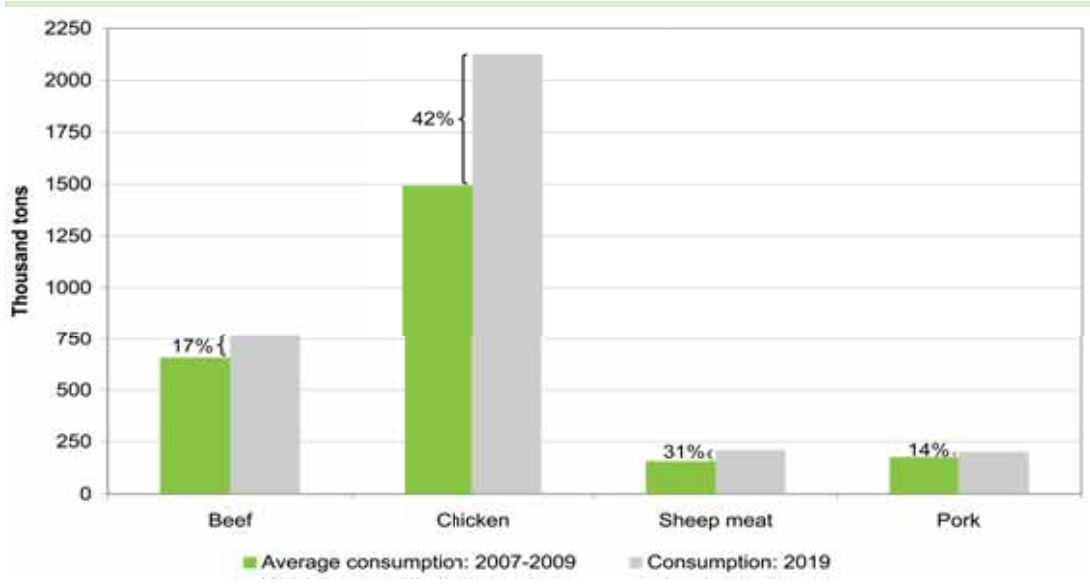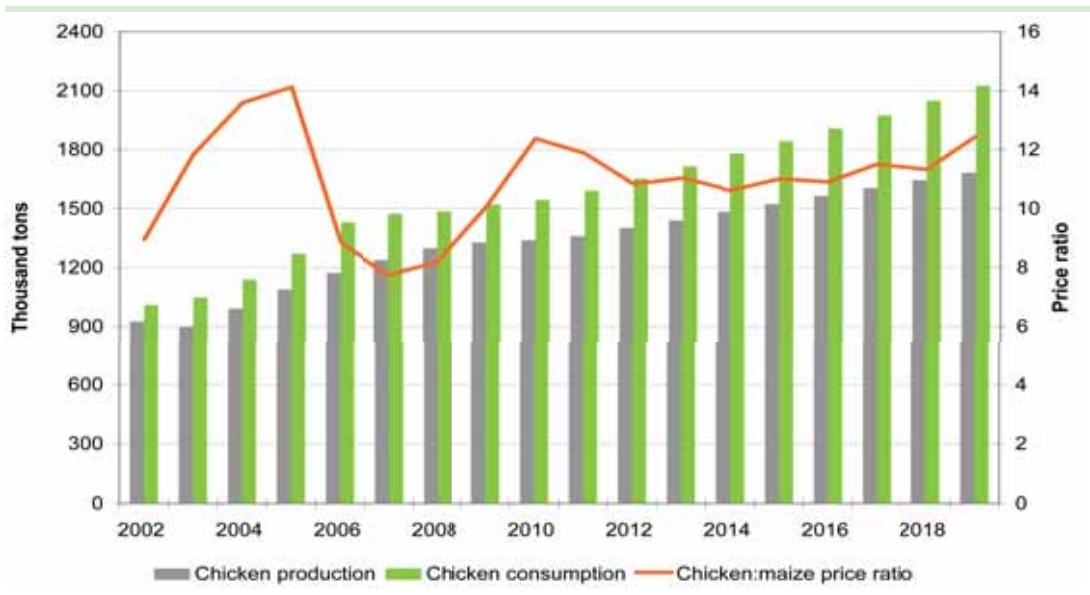

Figure 33: SA meat consumption

Figure 34: SA chicken production, consumption and price
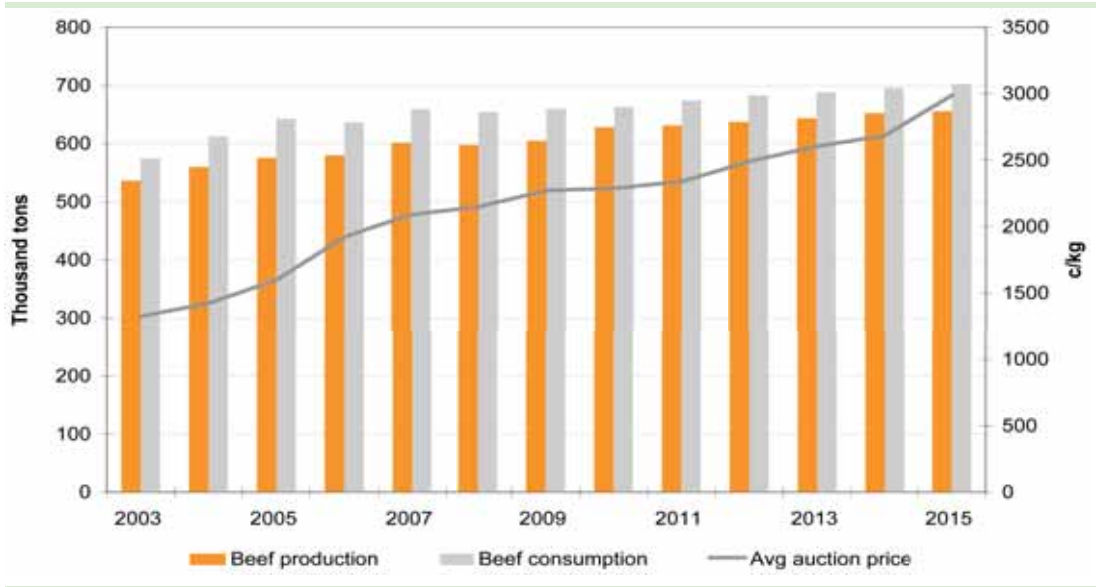
Figure 35: SA beef production, consumption and price

- The impact of the FIFA World Cup on beef prices seems to be marginal and prices are expected to come under increasing pressure in the third quarter of 2010 as production is expected to increase, mainly driven by lower maize prices (Figure 36). When maize prices are low, maize producers who also have a livestock production enterprise typically aim to realise a higher value for their maize by feeding it to calves which are not marketed. Consequently, in years where maize prices are exceptionally low, calf prices tend to increase rapidly as the calf supply contracts. If beef prices are not supported by strong demand for beef, the result is that calf prices as a percentage of beef prices increase rapidly, which holds a significant risk for the producers since beef prices could come under significant pressure when these animals are sold. An average beef carcass price of R22.50 per kg is projected for 2010.
- Over the outlook period beef prices will move in a typical cyclical pattern with the next increasing trend commencing in 2011. With a projected annual average rate of increase of 7%, the beef price will reach R46/kg in 2019 compared to a calf price of R28/kg.
- South Africa is expected to remain a net importer of pork. During periods of an appreciating exchange rate, cheaper imports pose a greater threat to the domestic industry. Since the origin of most imports is either France or Germany, the recent sharp depreciation in the Euro relative to the Rand has opened a window for imports to increase. Mainly ribs are imported.
- Pork production is projected to respond to lower feed prices and increase to almost 170 000 tons in 2010 (Figure 37). Consumption is also expected to increase in 2010 on the back of the economic recovery and favourable pork prices compared to other meat types. Over the baseline the growth in consumption of 14% marginally outpaces the projected growth in production of 11%. As a result pork imports will increase to approximately 22 000 tons by 2019.
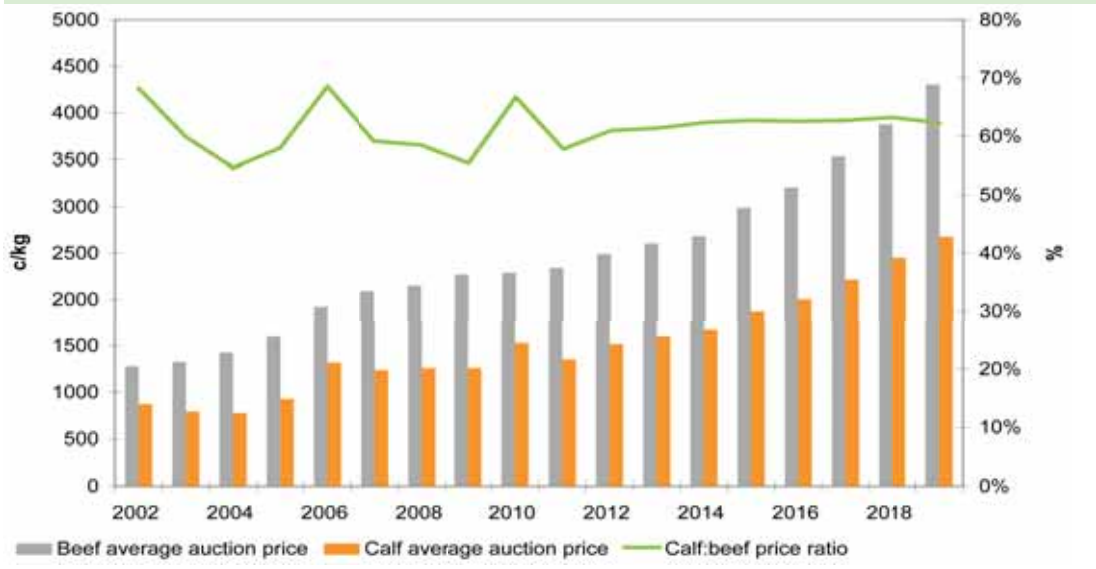
Figure 36: SA beef price versus calf price
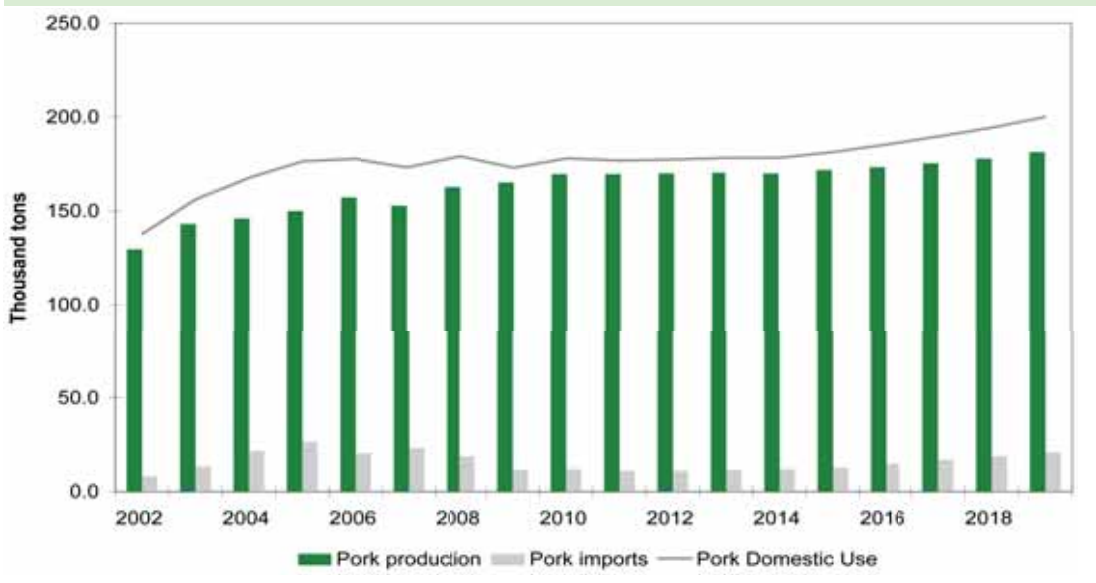
Figure 37: SA pork production, consumption and imports

MILK AND DAIRY PRODUCTS

Milk and dairy – global

International dairy markets have experienced one of the most dramatic rises and falls of all agricultural markets over the past four years. The run-up in product prices sparked a sharp increase in production levels. At the same time demand was contracting on the back of higher dairy prices and the impact of the financial crises on disposable incomes. The result was that dairy prices plummeted in the second half of 2008 and the beginning of 2009. However, over the past year a recovery was triggered by strong demand, mainly from countries in the Middle East and from China. Higher intervention stocks in Europe are also supporting prices by reducing the level of exports, and supplies also contracted in some regions due to low profitability in the previous years.

- With a recovery in demand growth due to improved economic conditions and lower feed costs supporting dairy production, demand and supply fundamentals seem to be in a closer balance and it is projected that dairy prices will gradually increase from 2012 over the baseline period (Figure 38).
- World market prices are expected to remain significantly higher compared to the decade preceding the 2007 and 2008 spike in prices.
- The dairy industry is expected to be one of the fastest growing agricultural industries over the next decade, with production increasing by an annual average of more than 2% in order to match the sharp increase in the consumption of fresh milk in developing countries.
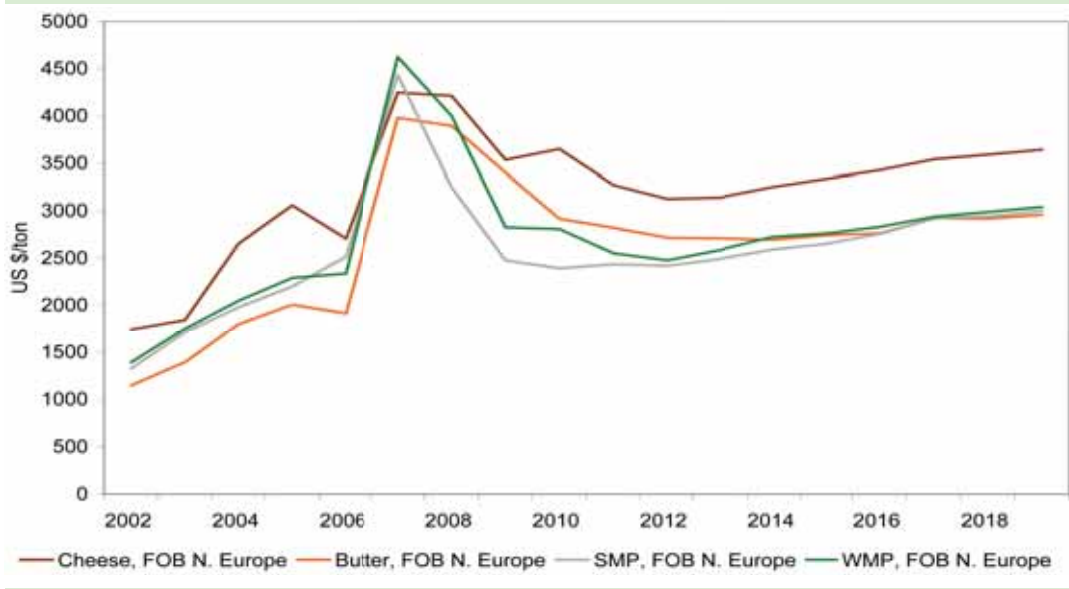
Figure 38: Global dairy prices
Source: OECD-FAO Outlook 2010

Milk and dairy – South Africa

A tight balance has existed between the production and utilization of fluid milk in South Africa for many years. However, it is important to note that this reflects only on annual averages and not on a monthly balance sheet, due to a strong seasonal trend which sees production dipping during the winter months and increasing in the summer months. The rapid increase in the producer price of milk in 2008 caused milk producers to increase production, which peaked at 2.65 million tons. This coincided with a record consumption of fluid milk of 2.64 million tons. However, due to recessionary constraints in 2009 the demand for dairy products softened and more fluid milk was consumed in the fresh milk market.
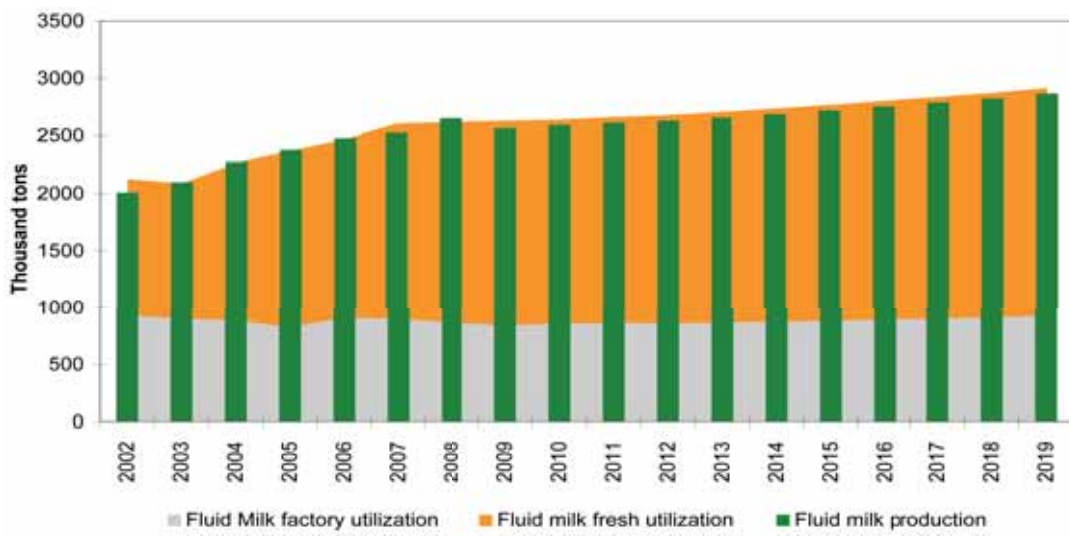
Figure 39: SA fluid milk production and utilization

- The tight balance between demand and supply of milk is projected to continue over the baseline with consumption growing at a marginally faster rate than production. The small shortage in the market will be supplemented through the imports of dairy products (Figure 39).
- Whereas the producer price of milk increased by an annual average of 10.1% over the past decade, an annual average increase of 8.1% is projected for the baseline period. This brings the milk producer price to R6.98 per litre by 2019. The higher prices over the outlook period are supported by the consistent growth in demand as the economy recovers and continues to grow over the baseline.
- Over the next decade the growth in the consumption of skimmed milk power (SMP) and whole milk powder (WMP) is projected to increase rapidly with a respective annual average growth rate of 4.9% and 5.9% (Figure 40).
- The consumption of cheese is projected to increase by 2.4% per annum to reach approximately 45 000 tons by 2019. The growth in butter consumption is expected to remain stagnant around 11 000 tons.
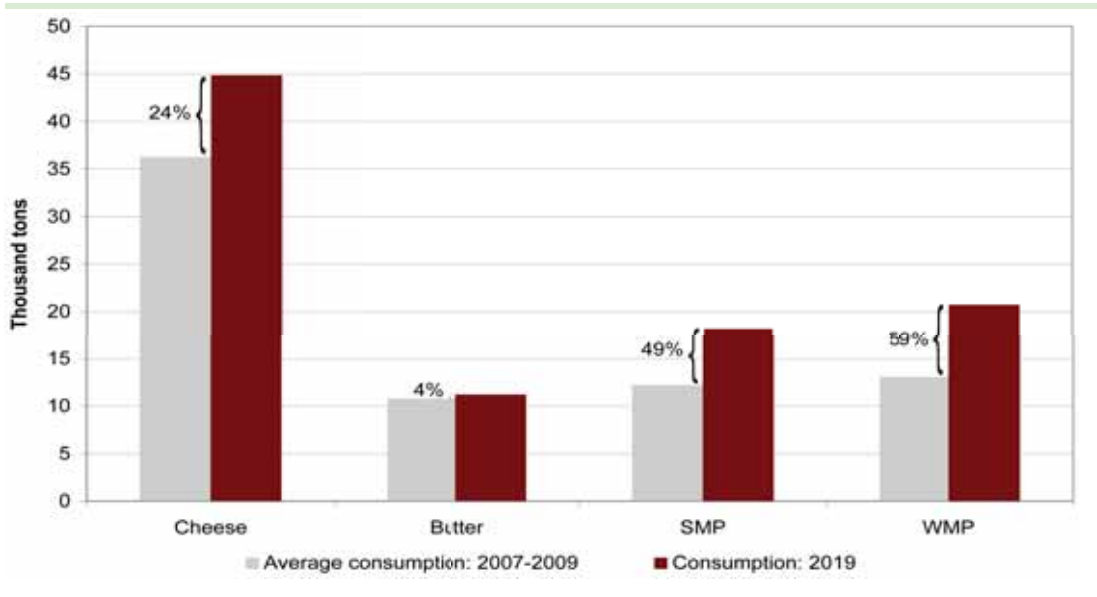
Figure 40: SA consumption of dairy products

POTATOES

During the period of relatively fast economic growth (2003-2007) the South African potato industry expanded rapidly with domestic consumption increasing by more than 35% over this short space of time. The fastest growth took place in the processed market (40%) as the per capita income of consumers rose and consumer patterns shifted towards more processed goods (Figure 41). In 2008 an all-time record harvest of more than 2 million tons had a bearish impact on market prices. Together with lower potato prices, the prices of inputs like fertilizer and fuel peaked, which led to a sharp contraction (approximately 10%) in the area under production. Consequently, prices spiked in 2009 on the back of the much smaller local potato crop and overall consumption levels softened. Ironically, this peak in prices coincided with the financial crises that cause the world and local economy to go into a recession. Producers responded to record-level prices in 2009 and increased the area under production for the 2010 season.

- In 2010 a total harvest of just below 2 million tons is expected (Figure 42). With the economic recovery, growth is returning to the various categories of consumption. Over the baseline, total consumption is projected to increase to almost 2.3 million tons.
- The increase in consumption will be matched by an increase in production due to improvement in technology and yields, but not due to an expansion in the area under production. Under the baseline it is projected that the area will continue fluctuating just below 50 000ha. Due to a number of factors like water, soil quality and strict rotational requirements, the amount of land suitable for potato production in South Africa is limited.
- It is important to note that despite the projected sharp rise in potato prices in nominal terms, real prices are projected to increase only marginally over the period of the baseline.
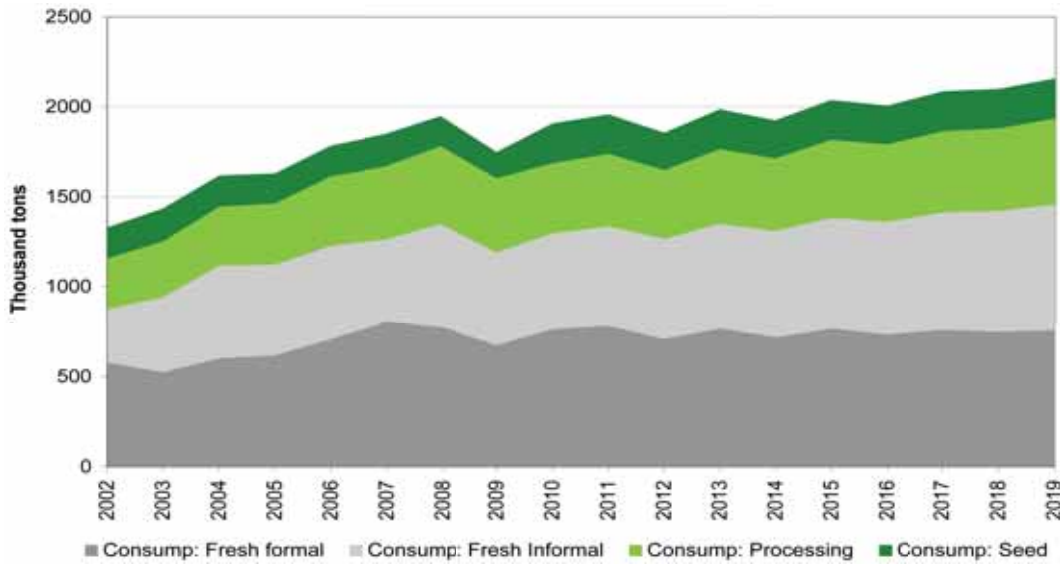
Figure 41: SA potato consumption
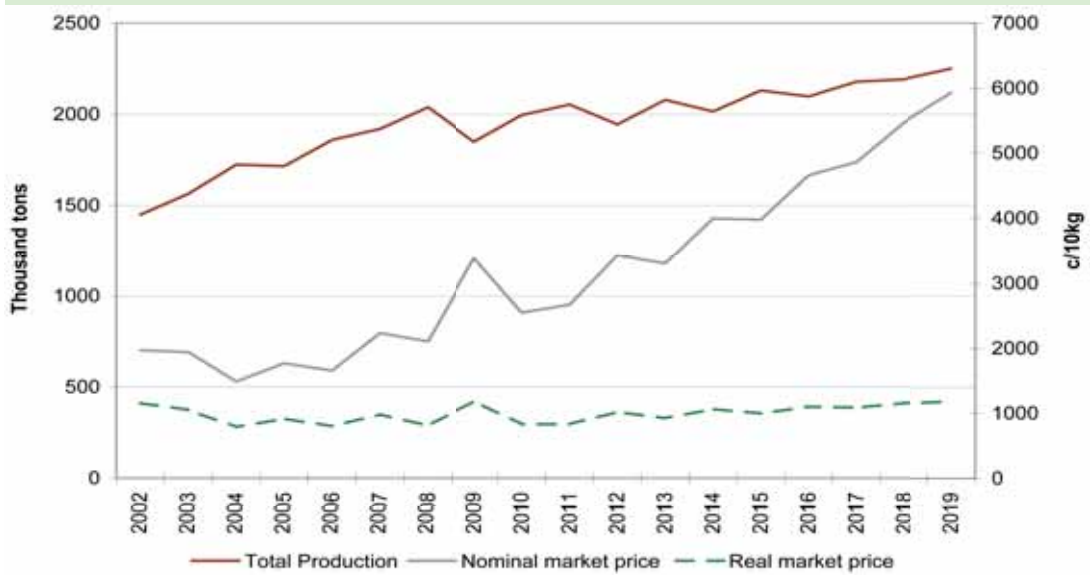
Figure 42: SA potato production and the nominal and real potato market prices

TABLE GRAPES

Demand, supply and price for South African table grapes

Total exports of fresh grapes are estimated at 51 million 4.5kg cartons for the 2009/2010 season, an increase of 5% year-on-year. This increase is preceded by three consecutive years of declining exports resulting from adverse weather conditions (Figure 43). Exports are projected to increase further in 2011, reaching 52.7 million cartons and driven by a projected increase in area under table grapes. The total area planted is projected to increase by roughly 270 hectares in 2010 and 2011, following relatively good prices over the past four years. Area planted is projected to stabilise around 24 000 hectares up to 2014, and then to increase to 24 600 hectares in 2019. Table grape exports are projected to follow a similar trend as area from 2011 to 2015, with small increases resulting from relative price changes in the different market segments in the grape industry. The projected increase in exports towards the end of the baseline is driven mainly by the increase in area planted.

Europe is projected to remain SA's main export destination, but exports to non-European countries are increasing over time and reached a record level of 9.8 million cartons during the 2009/10 season. Based on this performance it is projected that the industry will continue to gain share in other markets, with Hong Kong and United Arab Emirates the most important destinations as these countries serve as gateways to the Far East and Middle East markets.

Returns for South African grapes in foreign currency are estimated to increase in the 2009/2010 season, as supply from other Southern Hemisphere producers was down (Chile, the major player in the Southern Hemisphere is responsible for 95% of the decline in volume in the 2009/2010 season.) However, the strong

exchange rate lead to lower Rand returns as indicated in Figure 44. The decline is projected to continue for one more season, as a recovery in supply from Southern Hemisphere producers will exert downward pressure on prices and the outlook for economic growth in Europe remains tepid. Prices for South African grapes in foreign currency terms are anticipated to increase over the remainder of the baseline, as the global economy returns to higher growth, population increases and supply from competing Southern Hemisphere countries is assumed to increase only moderately (Table 3). The depreciation of the Rand contributes further to positive real returns from 2012.
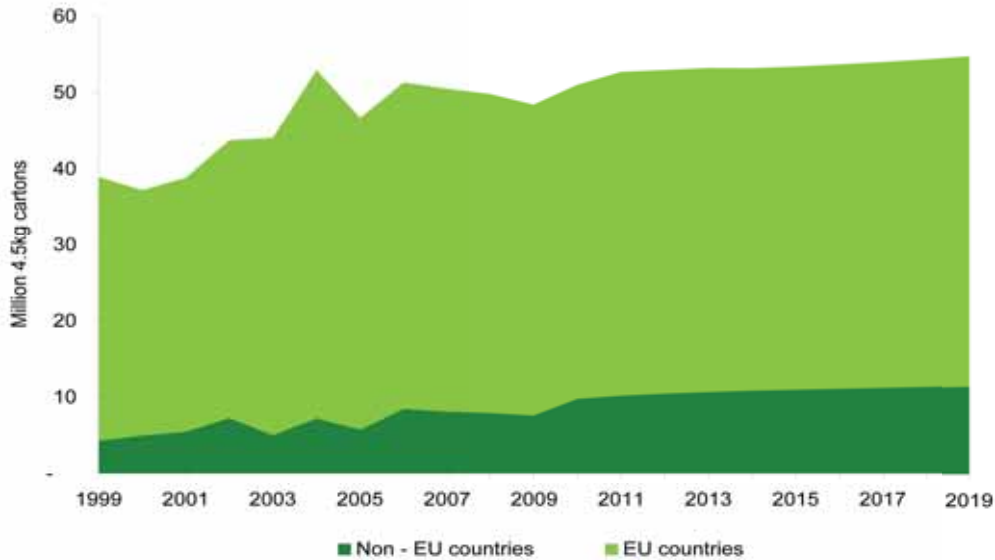
Figure 43: South African exports of fresh grapes
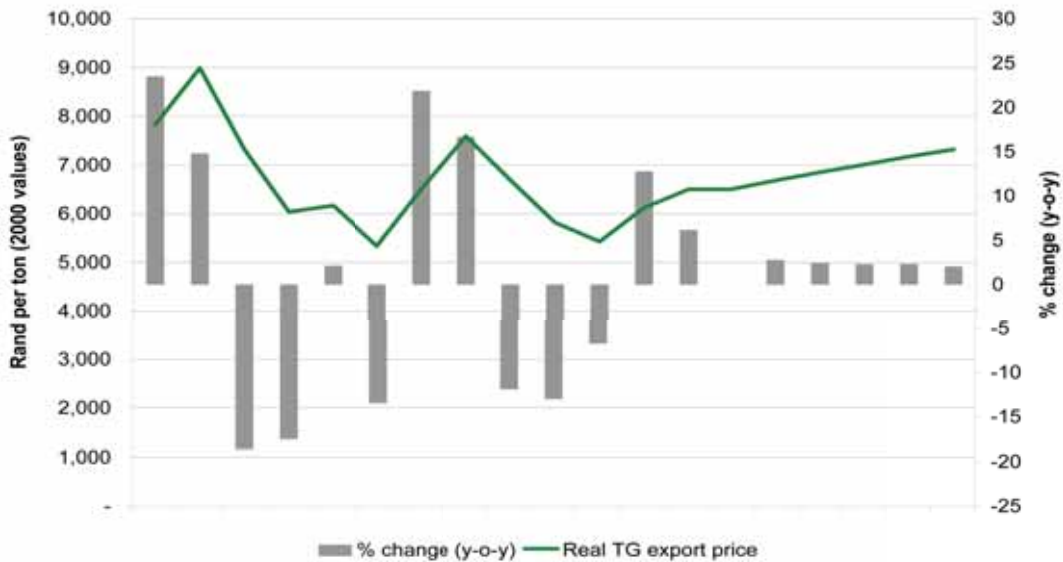
Figure 44: Returns for SA fresh grape exports in real terns

Table 3: Supply of fresh grapes from South Africa and other Southern Hemisphere Countries ('000 tons)

	2005	2006	2007	2008	2009	2010	2011	2013	2015	2017	2019
South Africa	210	231	227	224	218	230	237	239	239	241	244
Other	923	1 002	1 026	1 029	1 049	973	1 031	1007	1 015	1 016	1 015
Total	1 133	1 233	1 253	1 253	1 267	1 203	1 268	1 246	1 254	1 257	1 259

The domestic market

The local market for fresh grapes is projected to remain relatively small, but increasing from about 33 800 tons for 2007-2009 to 35 000 tons a decade later (Figure 45). The average real price of fresh grapes is projected to increase on average by 3% per annum, as the South African economy returns to higher economic growth and the population increases to over 50 million people.
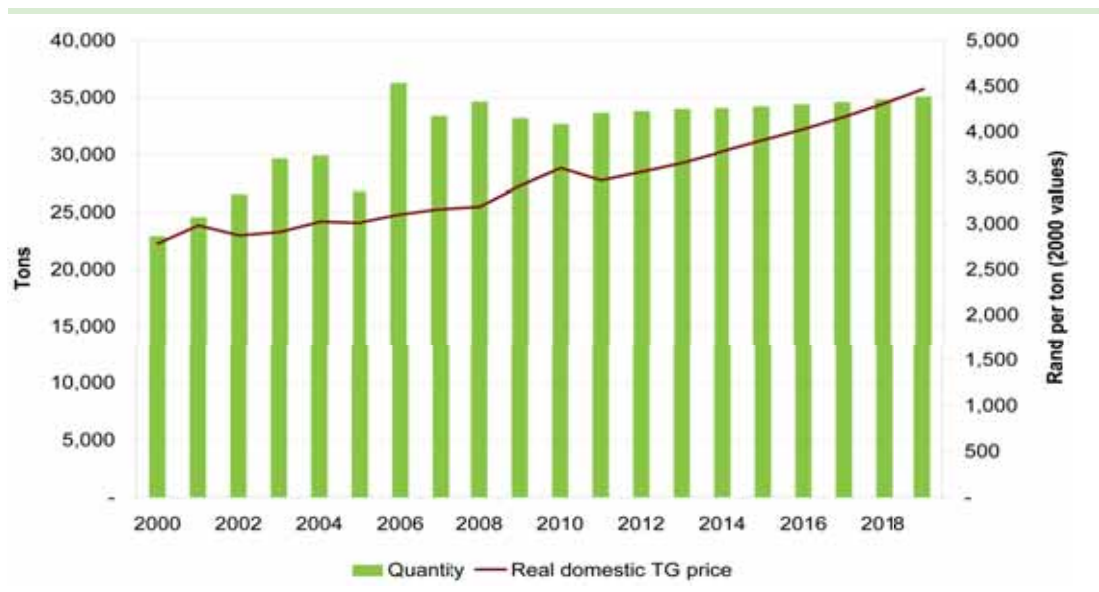
Figure 45: Returns for SA fresh grape exports in real terns

APPLES AND PEARS

Apples and pears - global

The global apple industry entered a new period of growth in 2002, following a decade of price stagnation. The new growth period is characterized by increasing production, but more so, increasing exports with the share of exports to production increasing over time (Figure 46). The creation of additional demand exerted upward pressure on prices, though prices fluctuated in response to fluctuating stock levels in the Northern Hemisphere. Increasing exports also placed a cap on the upward trend in stock levels prior to 2002.

The results presented in this section are based on the assumption that this new era of growth will continue over the next decade. Production is assumed to increase linearly to reach 77.5 million tons in 2015 (representing an increase of 11.6 million tons or 18% compared to the 2007-2009 average) and 81.7 million tons in 2020 (World Apple Review, 2010). Exports are expected to continue the increasing trend that commenced in 2002. Whether this will materialize will depend on various factors, including the industry's ability to improve quality, to the extent to which new markets are opened by trade negotiations and to a lesser extent on economic growth. However, a prosperous world economy with high output growth will certainly be more favourable for trade liberalisation. Based on these assumptions, the apple price in the US (used as a proxy for a world price[1]) will continue on an upward trend (Figure 47).

[1]The US apple and pear prices were used as reference prices based on statistical analysis and taking into consideration the availability of data. The movement of produce across continents in the current global environment ensures high price correlations between the markets, with the correlation coefficient between the average price of apples and pears in US and France being 0.78 and 0.92 respectively.

The rate of increase in world pear production is significantly higher than in world apple production, with the rate of increase in exports only marginally above that of production. According to the World Pear Review of 2009, world pear production is expected to reach 14 million tons in 2015, up 17% from the 2007-2009 average. Pear production is assumed to continue its increasing trend up to 2019. The ratio of world exports to production has also increased over the past seven years, but has not reached quite the same levels as during the nineties. Pear stock levels in the Northern Hemisphere are projected to increase marginally until 2014, exerting downward pressure on prices. The price of pears in the US is projected to turn for the better from 2013, supported by rising apple prices and reasonably even stock levels.
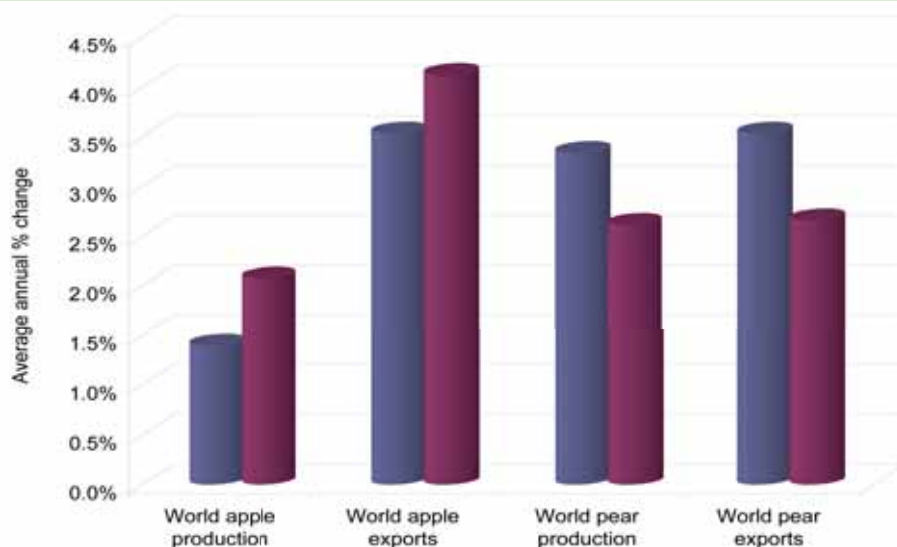
Figure 46: Change in world production and exports for apples and pears
Source: BFAP, World Apple Review 2010, World Pear Review 2009.

Apples and pears – South Africa

Based on historical relative price changes, total bearing acreage of apples is projected to increase in 2010 and 2011, with a projected area of 19 350 hectares in 2011. This is followed by two years of marginal declines in area. Thereafter area planted is projected to increase to almost 20 300 hectares in 2019. Production is estimated to fall by almost 10% from the record level in 2009 due to adverse weather conditions. For the rest of the ten year outlook production will follow a similar trend as area with total tonnage reaching almost 802 000 tons in 2019 – a 6% increase from the average production of 2007 to 2009 but still 1% below the record harvest of 2009. The total area under pear trees bearing is projected to increase by 500 hectares reaching over 11 000 hectares in 2019. Production is anticipated to increase by over 6% over the baseline period amounting to a total of 366 000 tons.

As a consequence of the lower supply of apples in 2010, the export volume for 2010 is estimated at 280 000 tons, The quantity of apples exported is anticipated to fluctuate between 310 000 tons and 330 000 tons over the remainder of the baseline period. The price rally that started in the early 2000's is projected to continue, underpinned by rising international prices and the assumed depreciation in the South African Rand (Figure 48). The price is projected to increase on average by 8.3% per annum in nominal terms and 1.5% per annum in real terms over the next decade.

The quantity of fresh pears exported is projected to increase gradually over time reaching almost 190 000 tons in 2019. Following international price trends the average price for pears exported is expected to drop in 2010 to R6900 per ton. From 2011 onwards prices are projected to follow an upward trend, fuelled by the depreciating exchange rate and rising international prices (Figure 48).
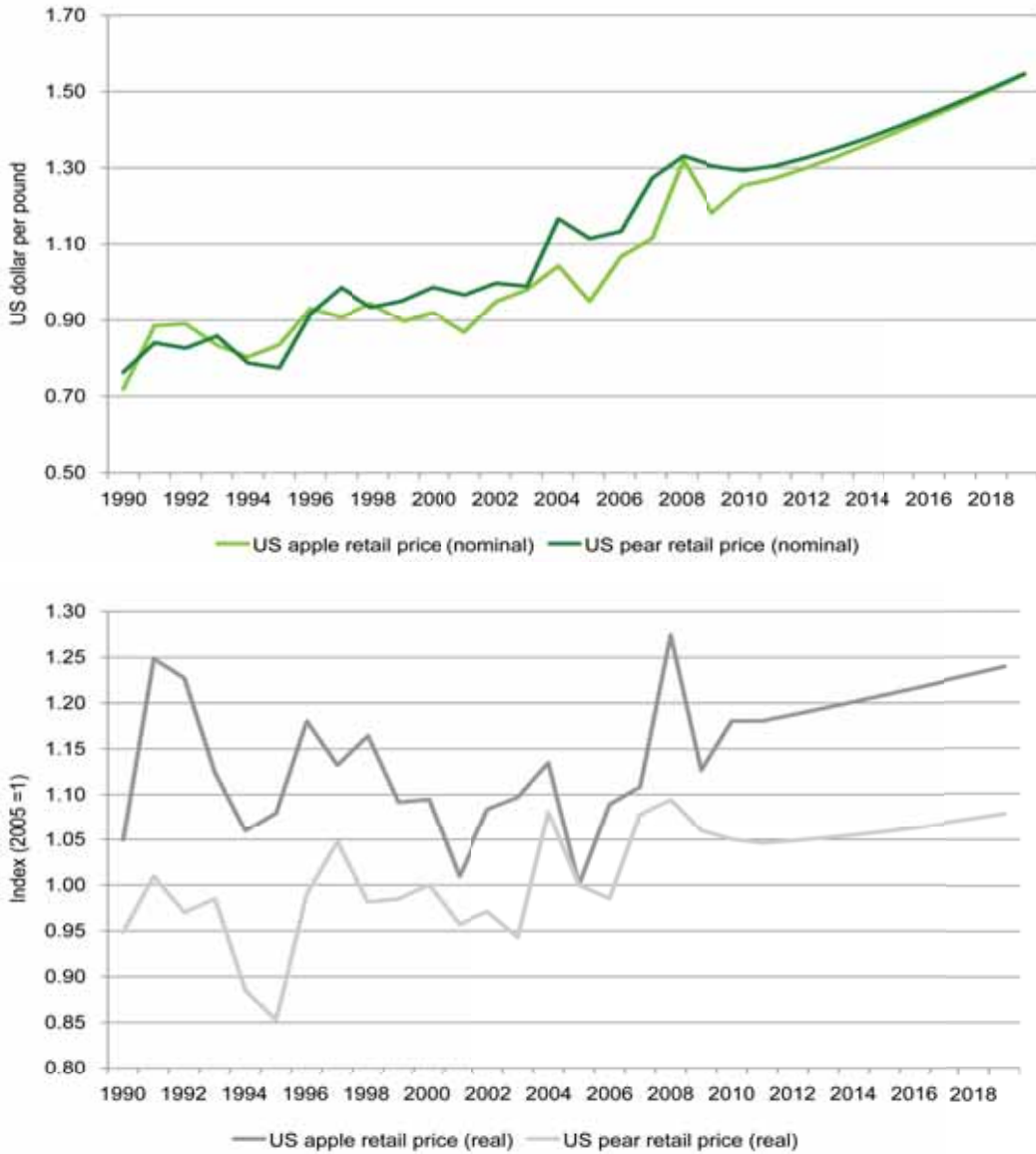
Figure 47: US Nominal Prices and Real Price Index
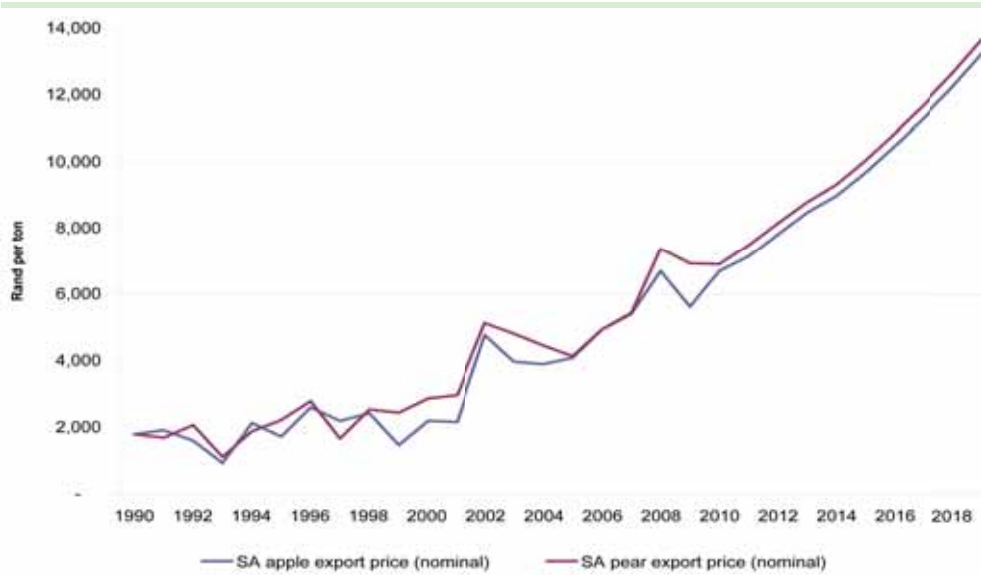
Figure 48(a): Rand returns for SA exports: nominal prices
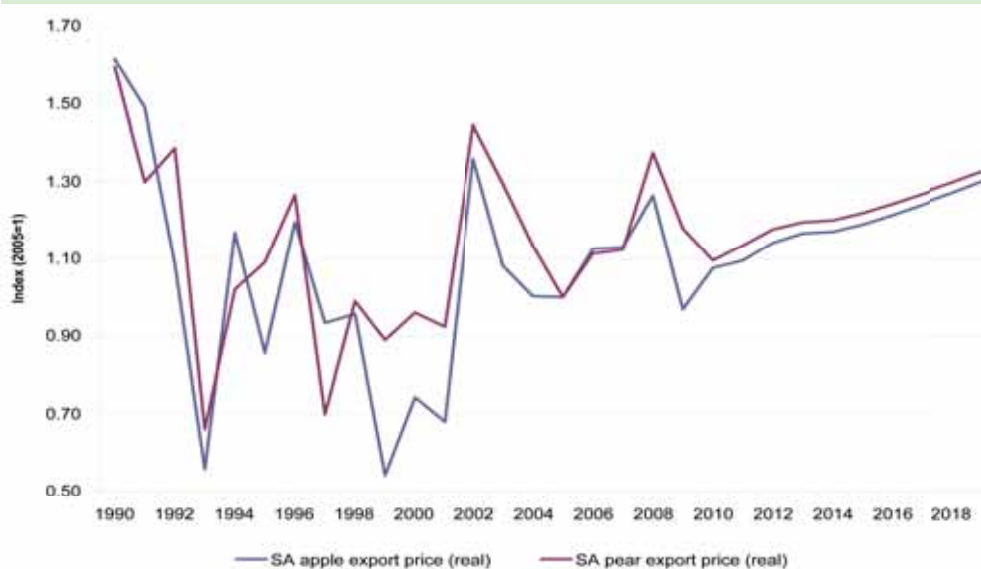
Figure 48(b): Rand returns for SA exports: real prices

The average price for fresh apples plummeted in 2009 to R3 550 per ton after it reached a record high of over R4 200 per ton in 2008 (see Figure 49). A combination of factors contributed to this low level in 2009, including quality issues resulting from adverse weather and the economic recession. The price is projected to return to its upward trend from 2010 onwards as positive economic growth prospects and population growth exert upward pressure on demand.

The local market for pears is small, representing less than 20% of total demand in recent years, and the quantity sold on the local market is projected to remain below 50 000 tons. The average price of fresh pears is projected to follow a similar trend as that of apples over the baseline period.
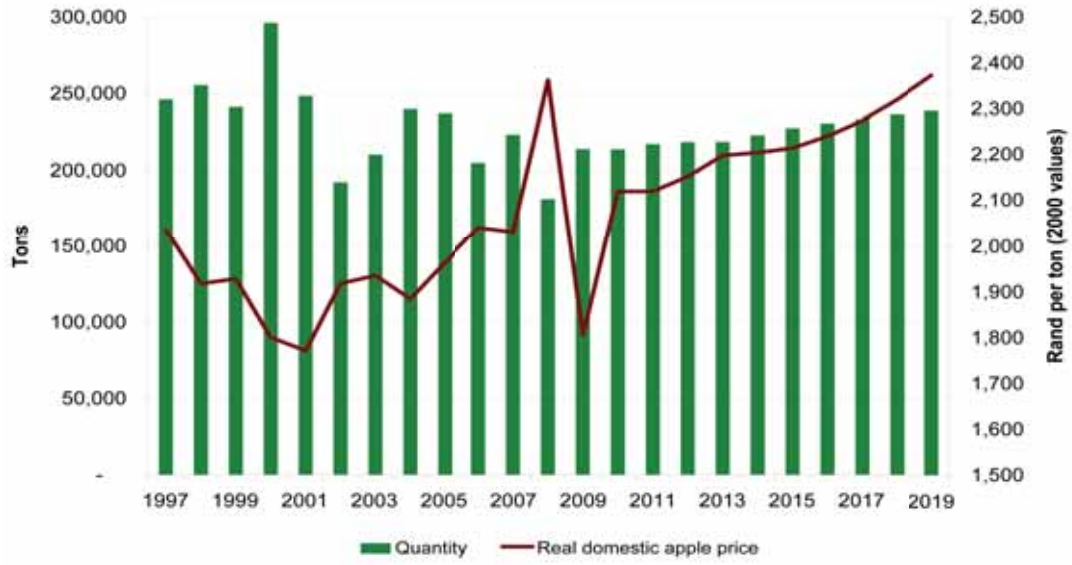
Figure 49: Local market for South African Apples

WINE

Wine prices and stocks

The downward spiral in the price of red wine finally ended in 2009, following a decade of declining prices in real terms. The average price of red wine sold in bulk increased to R4.59 per litre in 2009, representing a 19% year-on-year increase in nominal terms or an 8% real increase. Another 11% real increase is projected for 2011, but thereafter prices are projected to cool down. Figure 50 shows that the average annual price increase for red wine over the next five years is projected at 6%. The rate of increase slows over the latter part of the baseline period to an annual average of 3.15%.

The average price of white wine sold in bulk is projected at R3.86 per litre for 2010, representing a 12% nominal and 4% real increase from the 2009 price of R3.45 per litre. White wine prices are projected to set on an increasing trend in real terms over the baseline period, but at a lower rate compared to red wine prices.

These price increases are driven by depleting stock levels over the baseline period (Figure 51). The shortfall in supply in 2010, resulting from a grape crop that is estimated to be 10% smaller compared to 2009, will cause a significant decline in wine stocks. Total wine stocks are projected to fall from 362 million litres in 2009 to 317 million litres in 2010. Stocks are projected to increase in 2011, and then to decline over time. The share of red wine in total stocks will decline to 32% in 2013, from 35% in 2009 and 53% in 2005, and then to increase to 34% in 2019.
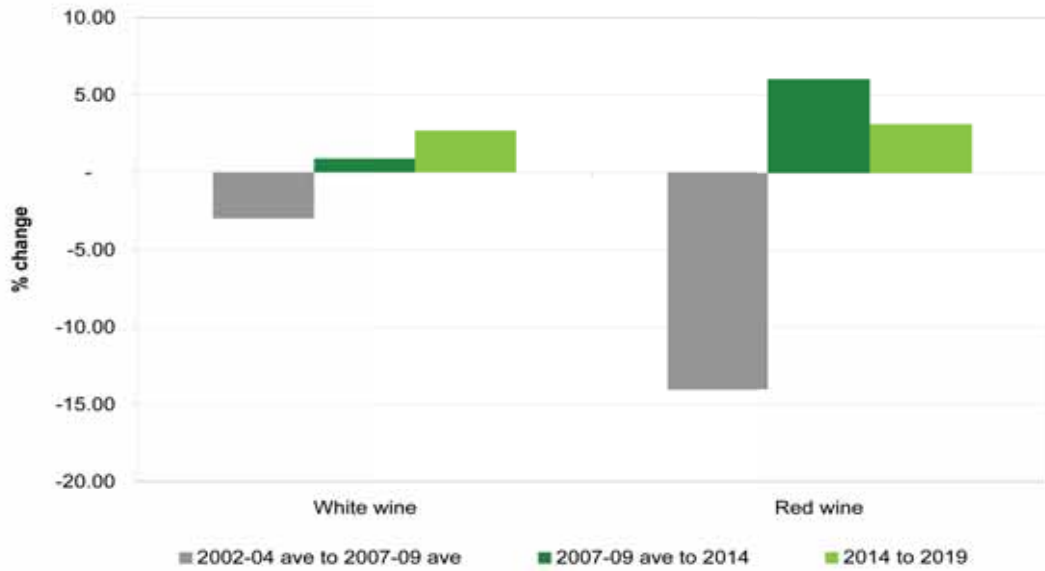
Figure 50: Average annual growth of wine sold in bulk

Supply and demand

Wine price increases are driven by demand growth, while the supply base remains relatively flat, especially over the first few years of the baseline period (Figure 52). Exports are projected to increase by 78 million litres over the next ten years and domestic consumption by 17 million litres, while the supply of wine is projected to increase by only 37 million litres, reaching 840 million litres in 2019. Red wine and white wine is expected to hold on to their 50% share in exports respectively. It is projected that South Africa will continue to gain market share in the United Kingdom as well as Germany, Scandinavia and the United States. Non-traditional markets are also growing in importance. The expansion in the local market is partly driven by increases in disposable income of consumers and partly by population growth.
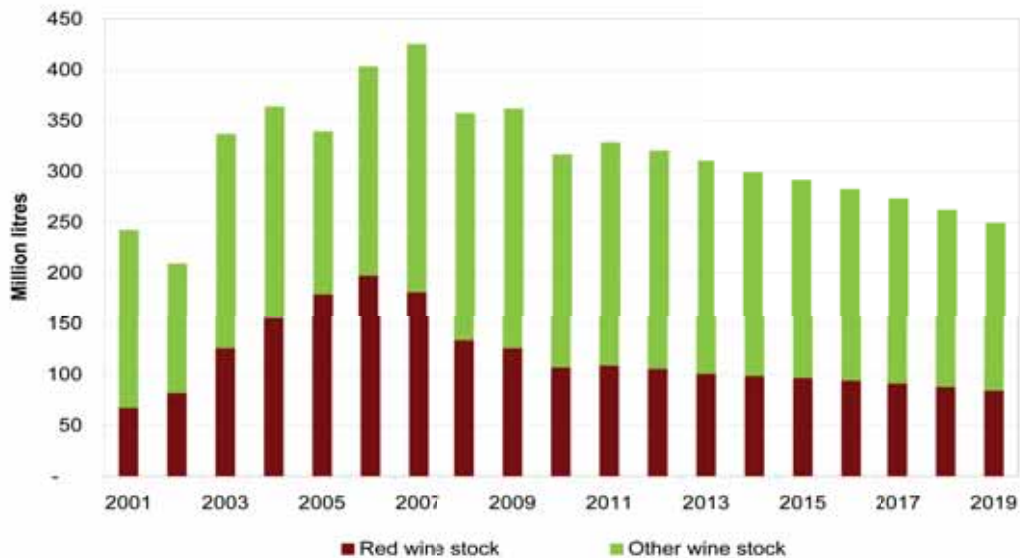
Figure 51: Ending Stock – Wine
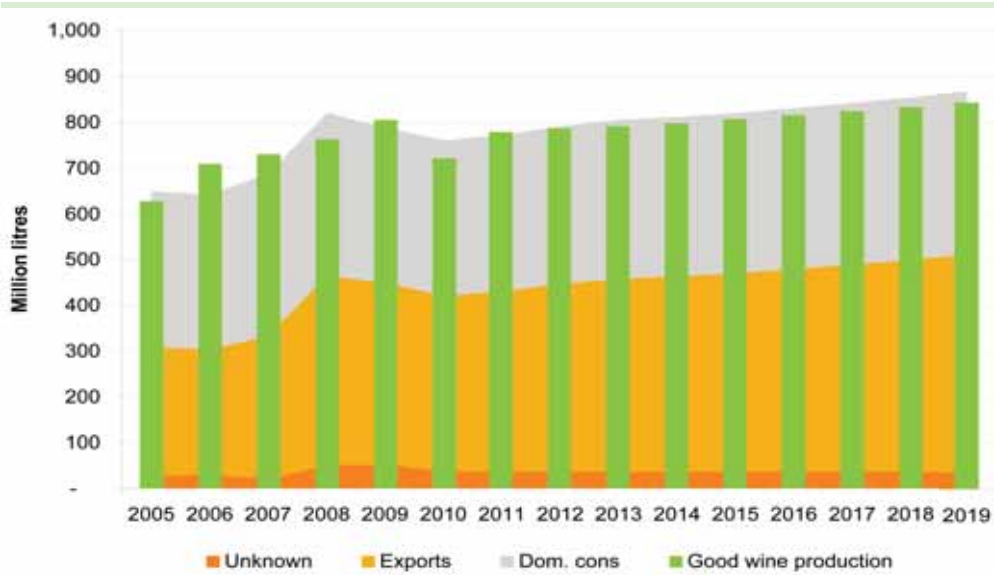
Figure 52: Production and consumption of wine

Supply by variety

Figure 53 presents the changes in the supply base of the different varieties over the next ten years. The number of white vines in production is projected to increase by 4.5% over the next ten years, with Chenin Blanc and Chardonnay showing the biggest gains. The number of red vines in production is projected to increase by 1.6%, with area under Shiraz, Merlot and Cabernet Sauvignon showing the largest expansions. It is projected that Pinotage vines will decline over the next ten years.
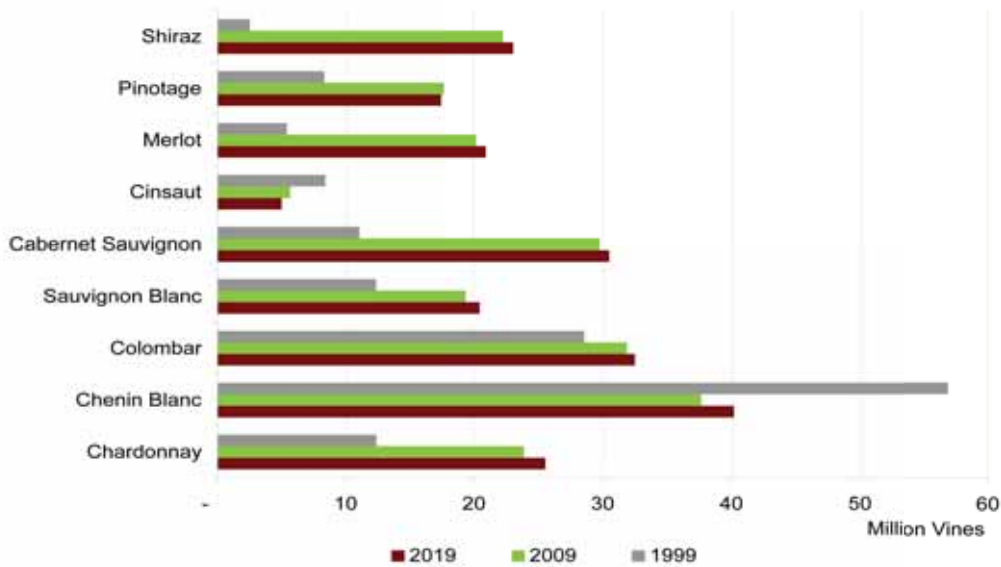
Figure 53: Vines in production for selected varieties

Price trends for wine grapes and wine

The increase in real wine prices in 2009 will only fully filter through to grape prices in 2010, when real increases of between 1 and 4 per cent for white varieties and between 21 and 32 per cent for red varieties are projected (Figure 54). After this, the rate of increase in the prices of red varieties slows over the baseline period. The prices of white grape varieties are projected to decline in real terms for the 2011 and 2012 seasons, resulting in negative growth over the next five years. This declining trend is reversed from 2013 onwards, with projected prices increasing by between 1.6 and 2.6 per cent annually in real terms.
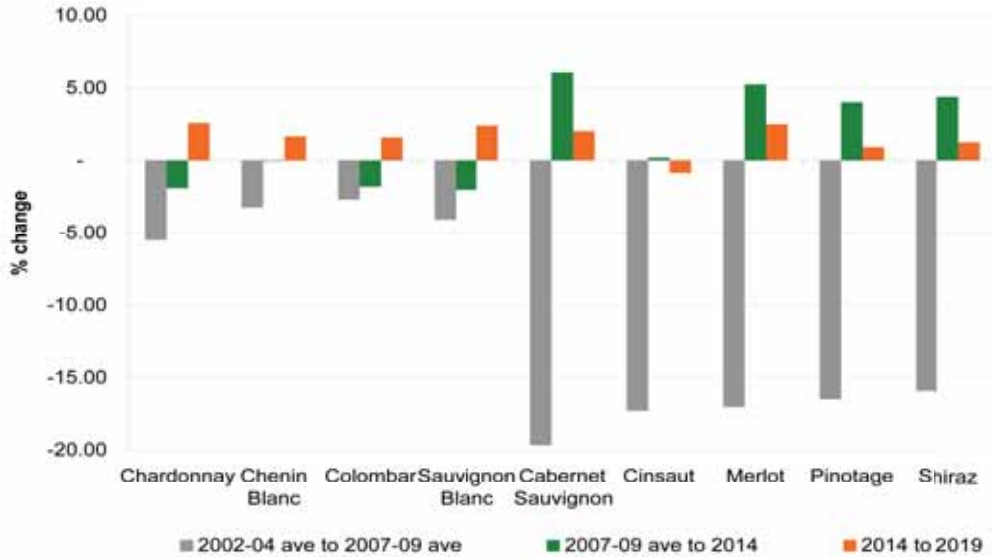
Figure 54: Average annual growth of grape prices

CONSUMER TRENDS AND ANALYSIS

Introduction

In order to develop a more comprehensive understanding of the models and baseline projections, it is important to understand the food consumption trends affecting food demand in South Africa. This section provides a view of food consumption trends in terms of the following aspects:

- The profile of the South African consumer market
- Dynamics in the South African consumer market
- Current consumer food trends in the global agro-food sector
- Current consumer food trends in South Africa
- The impact of the economic recession on consumers

A profile of the South African consumer market

South Africa is a diverse nation with a wide variety of wealth groups and cultural denominations spread over both urban and rural areas. The South African Advertising Research Foundation (SAARF) has developed a market segmentation tool entitled the SAARF LSM® (Living Standards Measure), a scale used for indicating the socio-economic status of adult consumers (aged 16 years and older) within South Africa (SAARF, 2010). Consumers of lowest socio-economic status form the segment SAARF LSM® 1 and those of the highest SAARF LSM® segment 10. Most South African consumers fall within the middle class, specifically segments SAARF LSM® 4 to SAARF LSM® 7 (Figure 55). This represented approximately 59% of the total South African adult population in 2009 (SAARF, 2010).
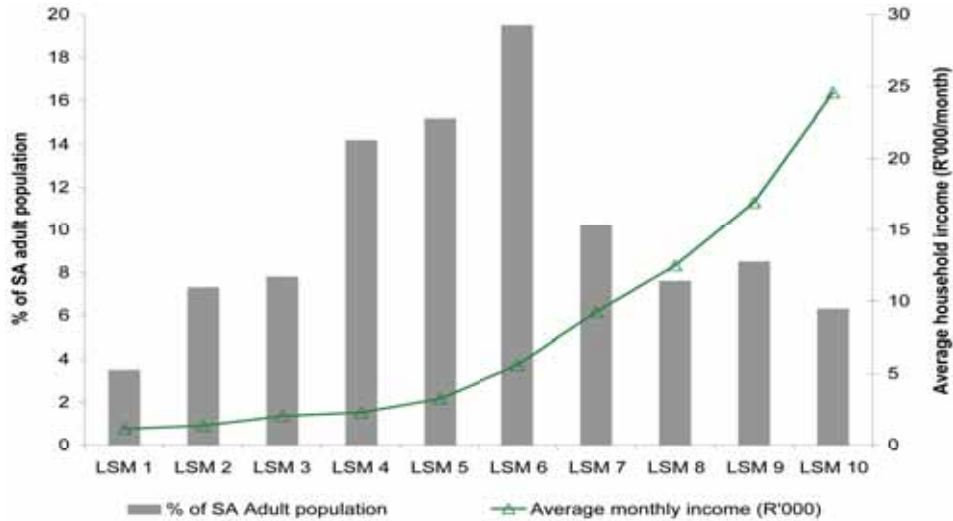
Figure 55: The SAARF LSM Segments: Proportion of SA adult population and average monthly household income in 2009
Source: SAARF (2010a)

A summary profile of the South African consumer market is presented in Table 4, based on a classification system[2] distinguishing between marginalised consumers (SAARF LSM® segments 1 to 3), modern emerging consumers (SAARF LSM® segments 4 to 6) and modern established consumers (SAARF LSM® segments 7 to 10).

Dynamics in the South African consumer market

Class mobility

South African consumers are characterized by class mobility, where consumers migrate to higher LSM groups driven by economic growth as well as socio-economic empowerment. Figure 56 illustrates the
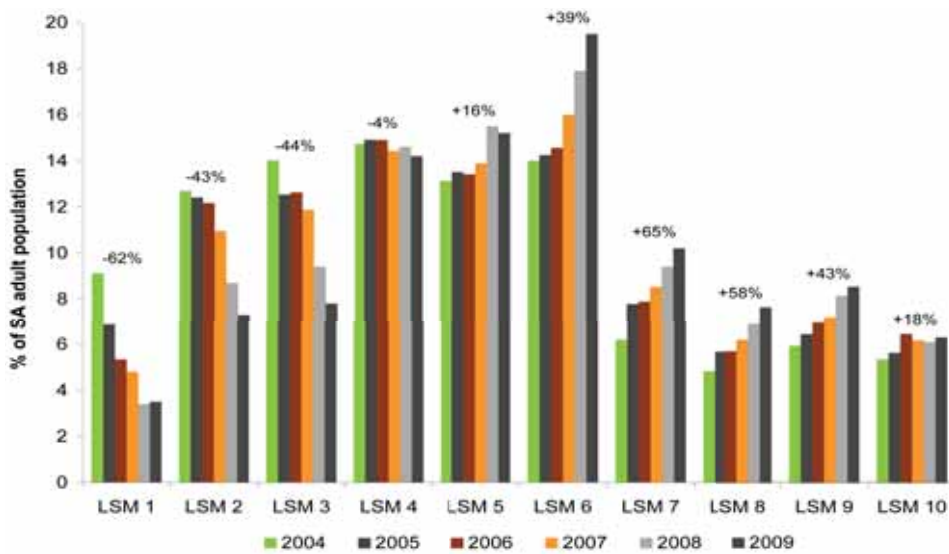
Figure 56: LSM class mobility: All adults during the period 2004 to 2008
Source: SAARF AMPS data for the period 2004 to 2009

[2]Proposed by AC Nielsen (Source: Nielsen, 2005)

Table 4: A summary of the South African Consumer Market based on the SAARF LSM segments

Descriptor:		Marginalised consumers: (18.6% of population) SAARF LSM® segments:			Emerging consumers: (48.9% of population) SAARF LSM® segments:				Established consumers: (32.6% of population) SAARF LSM® segments:		
		1	2	3	4	5	6	7	8	9	10
Average monthly household income		R1142	R1367	R2043	R2288	R3250	R5588	R9238	R12474	R16941	R24554
Gender: % Male / % Female		41.6% / 58.4%	40.9% / 59.1%	51.9% / 48.1%	49.9% / 50.1%	50.5% / 49.5%	49.1% / 50.9%	51.7% / 48.3%	50.9% / 49.1%	54.5% / 49.1%	52.4% / 47.6%
Dominant age groups		50+: 32% 16-24: 28%	50+: 30% 16-24: 30%	16-24: 28% 35-49: 27%	16-24: 28% 25-34: 27%	16-24: 29% 25-34: 27%	16-24: 28% 35-49: 28%	35-49: 28% 25-34: 26%	35-49: 29% 50+: 25%	35-49: 32% 50+: 26%	35-49: 30% 50+: 29%
Perceived unemployment		45%	44%	42%	39%	40%	30%	22%	14%	10%	5%
Rural share		100%	91.8%	88.1%	66.7%	42.4%	19.8%	12.1%	6.5%	6.9%	7.5%
Provincial location		E Cape, KZN, Limpopo			KZN, Limpopo, Gauteng				Gauteng, W Cape, KZN		
Formal education	None	22.0%	16.6%	9.5%	8.0%	3.0%	1.4%	0.7%	0.4%	0.0%	0%
	Primary	32.1%	30.1%	27.2%	22.2%	16.5%	9.9%	5.2%	2.2%	1.5%	0.4%
	High	45.6%	52.8%	60.9%	67.4%	77.3%	80.3%	78.6%	75.0%	65.9%	51.0%
	Post-matric	0.4%	0.6%	2.4%	2.2%	3.1%	8.5%	15.5%	22.6%	32.5%	48.7%
Electricity in home		35.4%	51.3%	76.3%	92.4%	98.7%	99.4%	99.7%	99.5%	99.6%	99.8%
Refrigerator in home		0%	12.1%	39.5%	65.9%	88.4%	94.7%	97.2%	98.8%	99.3%	99.7%
Microwave oven in home		0%	0.1%	1.6%	12.3%	36.9%	75.3%	93.2%	97.0%	98.5%	99.2%
Shopping frequency: Share mainly engaging in monthly bulk shopping		73%	64%	63%	62%	58%	54%	52%	49%	48%	44%
Products bought for household	Maize meal	72.0%	81.3%	81.2%	82.1%	82.4%	76.1%	63.1%	58.1%	53.2%	47.5%
	Rice	57.2%	64.1%	71.3%	73.6%	76.5%	79.8%	77.4%	78.4%	74.7%	75.7%
	Long life milk	32.6%	40.2%	46.2%	53.6%	57.1%	59.0%	59.9%	56.0%	57.0%	55.1%
	Vegetables (frozen)	10.4%	11.6%	16.4%	23.3%	28.0%	44.6%	57.1%	59.9%	62.3%	67.0%

Source: SAARF (2010a, 2010b)

CONSUMER TRENDS AND ANALYSIS

dramatic decline in the share of the South African adult population classified within SAARF LSM® segments 1 to 3 from 2004 to 2009, accompanied with an increase in the share of the adult population classified within SAARF LSM® segments 6 to 9. Interestingly, class mobility slowed down somewhat from 2008 to 2009 (compared to 2007 / 2008) in particular within SAARF LSM® segments 6 to 9. This observation could relate to the potential impact of the economic recession on class mobility in South Africa.

The extended LSM model

Due to the significant presence of class mobility in the South African consumer market, a need developed for greater sensitivity towards the upper end of the LSM scale (specifically among SAARF LSM® segments 7 to 10) in order to differentiate between the increasingly complex behaviour of these groups (SAARF, 2009). A statistical re-iteration of the existing LSM criteria (AMPS 2008) has resulted in an effective 14 LSM model, with increasing differentiation among middle- and upper class consumers (Muller, 2009). Within the extended LSM model SAARF LSM® segments 7 to 10 have been divided into SAARF LSM® segments 7-Low, 7-High, 8-Low, 8-High, 9-Low, 9-High, 10-Low and 10-High, enabling marketers to target consumers with higher living standards more accurately (SAARF, 2009).

Consumer trends and analyses: A global perspective

Due to the spill over of international consumer food trends into the local consumer market, it is critical to understand the trends shaping the global agro-food environment before taking a closer look at South Africa. This section provides a discussion of prominent global consumer food trends, based on extensive literature review. The discussion illustrates the continued focus on the mega-trends (health/wellbeing, indulgence, convenience and ethical/environmental issues) as illustrated in the previous BFAP Baseline (2009), as well as newly emerging trends. Again it is critical to note that successful food products usually rely on 'double-positioning strategies', where food products are designed to address at least two (or more) consumer food trends.

Trend 1: Health / Wellbeing

Euromonitor identified health and wellness as a top ten trend for 2010 (Kasriel, 2010). Prominent sub-components of the health trend include functional food, natural food, minus claims, and plus claims.

- **Functional food:** According to Innova Market Insights, consumers have become sceptical about functional food, largely since they do not see the immediate benefits associated with the consumption of these food types. Subsequently there is an increasing focus on foods with traditionally perceived health benefits (i.e. food with inherent healthy qualities) such as fruit, vegetables and milk. This presents an opportunity to communicate the inherent health benefits of such food types to consumers (*Food Review*, 2009).
- **Naturalness:** Innova Market Insights and Datamonitor confirm the importance of naturalness (Jones, 2009; Foodproductdesign.com 2010). Naturalness encompasses dimensions such as the absence of artificial preservatives/flavourants/colourants, a focus on the inherent healthiness of products, the substitution of artificial sweeteners with natural sweeteners, and organic food. According to Innova Market Insights the naturalness trend is particularly evident in the beverages market (Jones, 2009).
- **Minus claims:** Minus claims (e.g. reduced/no levels of sugar/salt/fat/allergens) is an increasingly important health trend. Gluten free products are currently of particular interest, but within the context of maintained taste and quality (Innova Market Insights and reported by *Food Review*, 2009, Foodprocessing.com, 2009).
- **Plus claims/'Prove-it':** It is important to note that consumers demand transparency in their food offering – also related to health attributes and claims of food, with the implication that food brands have to put in a lot of effort to earn consumers' trust (Mintel data as reported by Foodprocessing.com, 2009).

Trend 2: Indulgence

Indulgence could be described as consumers' need for exciting, diverse and more sophisticated food experiences to ensure more pleasure, intensity and sensation. Popular dimensions of the indulgence trend include refined product presentation, food products with rare or noble ingredients and interesting taste

combinations and a focus on food from different cultures. Some of these aspects will be discussed based on interesting observations:

- **'Simple made special':** Since the indulgence trend also includes dimensions of product packaging and product presentation, the concept of 'Simple made special' involves the transformation of ordinary products into special products (e.g. with boutique-style packaging). However, sustainability should still be addressed despite the new look of such products (Mintel data reported by *Organic Wellness News*, 2010).
- **Consumers' interest in 'exotic super fruits':** According to Datamonitor and other sources consumers' are increasingly interested in 'exotic superfruits' based on their inherent health benefits related to antioxidant and energizing properties on the one hand, but also the exotic organoleptic qualities of these foods. Examples include the tart flavour of Baobab and interesting berry flavours e.g. Yum berry from China (*Food Review*, 2010; Jones, 2009).
- **'Extreme' flavours:** Consumers' exhibit a growing interest in 'extreme flavours' such as very spicy (hot) food (Innova Market Insights as reported by *Food Review*, 2009). This trend could be linked to consumers' interest in food from other cultures.
- **Unconventional flavour combinations:** Unconventional flavour combinations are still a prominent manifestation of the indulgence trend. An interesting new development in this regard is the development of unconventional meat flavoured products e.g. meat-flavoured lollipops, potato chips and bacon flavoured vodka (*Food Review*, 2010 3).

Trend 3: Ethical & Environmental concerns

The continued importance of the 'familiar' mega trend concerned with consumers' concerns regarding sustainability regarding ethical and environmental concerns (or 'caring consumption' according to Euromonitor) was confirmed by trend watchers such as Mintel, Euromonitor and Innova Market Insights (*Organic Wellness News*, 2010; *Food Review*, 2009; Kasriel, 2010). Food manufacturers are expected to rebuild brands through ethical efforts (Foodprocessing.com, 2009). These concerns include:

- **Animal rights:** Datamonitor mentions an increase in consumers' awareness of animal rights in particular, driving significant growth in the free range foods category (*Food Review*, 2010 3).
- **Fair trade:** Innova Market Insights as reported by *Food Review*, 2009.
- **Origin of food:** Based on consumers' concerns with the carbon footprint of food, this sustainability trend is strongly linked to consumers' concern with the origin of food. It encompasses country-of-origin, region-of-origin and food produced with local ingredients labelling (Innova Market Insights as reported by *Food Review*, 2009b; Lempert, 2009). According to Lempert (2009) origin is of particular importance in the meat category, which could stimulate the re-emergence of local butchers (freestanding butchers and butchers in supermarkets).
- Sustainable food packaging: From a packaging material perspective Datamonitor expects a renewed interest in plastic packaging given the availability of new types of degradable plastic packaging, currently having a particular impact on bottled water but with the expectation to expand to other categories in the future (*Food Review*, 2010).

Trend 4: Simplicity

Consumers are still demanding simpler food products:

- **Ingredient simplicity:** The reformulation of food products to include 'real' food ingredients, less 'bad' ingredients (e.g. no additives/preservatives, less salt), natural sweeteners and shorter/simpler ingredient lists with 'recognisable' ingredient names (Lempert, 2009; *Supermarket & Retailer*, 2010, Foodprocessing.com, 2009; *Food Review*, 2009; *Food Review*, 2010, Foodprocessing.com, 2009)
- **Simpler nutritional labelling:** The simplicity trend could also be observed in consumers' need for simpler nutritional labelling (i.e. a movement away from nutritional symbol 'overload') towards 'clean, clear facts on front-of-pack statements' (Mintel data reported by OWN News, 2010).
- **Home cooking and entertainment:** Consumers' increasing interest in home cooking could also be linked to the simplicity trend, even though it is also strongly driven by the difficult economic climate and the health trend. Innova Market Insights relate this simplicity trend to consumers rediscovering their

cooking and entertaining skills (*Food Review,* 2009)

- **Natural goodness:** The simplicity trend is also driving growth in naturally healthy beverages (e.g. bottled water, fruit drinks) (*Food Review,* 2009).

Trend 5: Convenience

Consumers are still challenged with insufficient time in their daily schedules, impacting significantly on their food preparation and consumption behaviour as confirmed by Mintel (*Organic Wellness News*, 2010). Popular dimensions of the convenience trend include the outsourcing of meal preparation and fragmented eating.

It should be kept in mind that consumers' ability to pay the premium usually associated with convenience foods could be significantly affected by the adverse economic climate.

Trends linked to the economic recession

- **The increased popularity of private labels:** The global economic recession has forced consumers to re-evaluate food value versus savings, leading to a dramatic increase in the popularity of retailers' private label products. It is important to note that even though consumers demand low cost products, they are not willing to compromise on quality. Literature sources suggest that the manufacturers of branded products will engage in retailer partnerships to develop co-branded products (i.e. private label products with 'branded' key ingredients) (Lempert, 2009; *Supermarket & Retailer,* 2010, Mintel trends as reported by Foodprocessing.com, 2010).
- **Finding comfort in food:** In the previous BFAP Baseline consumers' need for 'comfort' in the difficult economic times through food luxuries was mentioned. Such comfort-seeking behaviour relies mainly on the psychological attributes of foods (e.g. experiencing a mood improvement after consuming a chocolate). However, the latest comfort food trend is based on the consumption of food products where 'relaxation' ingredients have been added in the product formulation (Lempert, 2009; *Supermarket & Retailer*, 2010b). Furthermore, while energy 'shots' (beverages) were a major trend previously, the focus has moved towards relaxation 'shots' as a means of non-alcoholic stress reduction (*Food Review*, 2010).
- **Home entertainment:** Euromonitor identified home as the new 'entertainment hub' as a top 10 trend for 2010 (Kasriel, 2010). Interestingly, when asking US consumers how they will change their entertainment habits as the economy improves, Nielsen (2010) reports that younger consumers (aged 21 to 27) plan to go out much more often while the 55+ generation has less ambitious plans for going out under improved economic conditions. Mintel also expects a continued focus on home cooking, since the economic recession has forced consumers to learn skills related to home cooking and meal planning (Foodprocessing.com, 2009). This could also be linked to consumers' movement towards the simplicity of home cooked meals. Innova Market Insights also expect continued home cooking as consumers are rediscovering their cooking and entertaining skills (*Food Review*, 2009).
- **More conservative consumers post-recession:** Mintel states that consumers are adjusting to 'new' economics conditions through more conservative spending and stabilisation in terms of food preparation and selection behaviour, This presents an opportunity for established brands to present consumers with multiple product options characterised by different price points and benefit levels (Foodprocessing.com, 2009; Euromonitor Kasriel, 2010).
- **Something old, something new:** According to Mintel food manufacturers could recreate familiar brands in the post-recession period by combining familiar product characteristics with new product characteristics (e.g. sustainability, simplicity) to satisfy consumer needs (*Organic Wellness News*, 2010).

Food trend watch South Africa

To investigate the reflection of global food trends in South Africa, a three-component analysis is presented in this section based on a new food product perspective; a 'favourite' food product and a review of literature on local consumer food trends.

South African consumer food trends based on a new product perspective (1)

Since new food products are developed to address consumers' needs, which are in turn strongly affected by consumer trends, a food product attribute analysis was conducted of the new food products involved in the Symrise/Food Review New Product Competitions (NPC) for 2007, 2008 and 2009 (Neall, 2006, 2006b, 2006c, 2006d; *Food Review* 2007a, 2007b, 2007c; Shaw, 2008; *Food Review,* 2009b). This annual competition involves the selection of the best new food products on South African retail shelves, as evaluated by a panel of industry experts. This section presents a qualitative and quantitative analysis of the relevant food trends addressed by the finalist products from 2006 to 2009 (as evident from individual products' prominent attributes) in order to illustrate food trend dynamics for the analysis period.

Table 5 presents the distribution of the NPC finalists among food categories. Dairy products (milk and yoghurt), condiments (e.g. bread spreads, sauces, seasonings, dips) and confectionary dominated the new product finalists from 2006 to 2009. Among animal protein categories innovation was particularly evident in the chicken category. Interestingly staple foods (e.g. bread, maize porridge, samp) were also among the more innovative categories.

Table 5: Product Categories of NPC finalists				
Food product category:	Share of new product finalists in specific year:			
	2009 (n=6)	2008 (n=8)	2007 (n=9)	2006 (n=10)
Dairy	17%	25%	11%	20%
Condiments	-	-	44%	10%
Confectionary	17%	25%	-	10%
Staples	-	25%	11%	-
Vegetables	33%	-	-	-
Plant oil products	17%	13%	-	-
Fruit	17%	-	11%	-
Chicken	-	-	11%	10%
Fish	-	13%	-	-
Meat	-	-	-	10%
Tea	-	-	-	10%
Baked goods (sweet)	-	-	-	10%
Baked goods (savoury)	-	-	-	10%
Baby food	-	-	11%	10%
Source: Neall 2006 a,b,c,d; Food Review 2007a,b,c; Food Review 2009b				

The main trends addressed by NPC finalists are presented in Table 6. The prominence of double positioning strategies should be noted (applicable to the majority of products analysed), where products' positioning is based on combinations of at least two or more prominent food trends. For the particular analysis period, the main trends among the new product finalists were health, convenience and indulgence.

CONSUMER TRENDS AND ANALYSIS

Table 6: Consumer Food Trends Addressed by the NPC finalists products, 2006 to 2009

Trend:	Share of new product finalists in specific year exhibiting specific trend:			
	2009 (n=6)	2008 (n=8)	2007 (n=9)	2006 (n=10)
Health	83%	38%	33%	60%
Convenience	67%	38%	56%	70%
Indulgence	67%	50%	89%	80%
Local	33%	25%	11%	-
Sustainability	17%	-	-	10%

Source: Primary data developed according to information obtained on the Symrise.
Food Review New Product competitions of 2006 to 2009

Examples of more specific manifestations of these trends include:

- Health: No preservatives and trans-fats, functional promises, healthier ingredients, organic, safer products, cholesterol lowering plant-based cooking oil.
- Convenience: Food preparation convenience (e.g. oven chips, microwaveable pies) and product serving/ usage convenience (e.g. longer life fresh milk, resalable packs, ready-to-eat, pack sizes, easy storage and pouring long life milk in plastic bottles)
- Indulgence: Taste, texture and interesting/novel flavours and combinations e.g. Aloe Vera food products.
- Local: Utilising local ingredients in innovative ways, e.g. rooibos espresso, canned samp and beans.
- Sustainability: Organic food, environmentally friendly packaging.

South African consumer food trends based on a new product perspective (2)

A similar analysis was conducted based on the IUFoST Global Food Awards, which is hosted every second year in association with the IUFoST World Congress. The winners of the IUFoST Global Food Awards for 2010 will be announced at the IUFoST World Congress in Cape Town during August 2010. Following product submissions from the local food industry, products were judges internationally against competing goods submitted by other countries, resulting in the selection of 22 finalists. Award categories include product and/or process innovation, package innovation and the communication of science-related knowledge to consumers aimed at improving their lifestyle (Frisby, 2010). The prominence of innovation in the South African food sector is reflected in the large number of finalists selected from this country - seven finalists in total.

The South African finalists within the first two categories were were Bits-o-Juice Lemon Pods (frozen, in-membrane, bits of lemon for flavouring meals and cocktails), the Werda "To-Go" salad range, Cremora (with a dual tamper-evident closure and jar), Nouvelle Mushrooms (with a special packaging for optimum humidity balance regulation) and the Woolworths Long Life Dairy Range. The main trends addressed by these IUFoST Global Food Award finalists are convenience (5 products), indulgence (2 products), health (1 product) and sustainability (1 product). Thus, once again the prominence of convenience, indulgence and health is enforced by these results.

South African consumer food trends based on a 'favourite' product perspective

To further explore the prominent consumer food trends within the South African context, similar analyses were conducted on the food products awarded the title of Product of the Year in 2009 and 2010. Product of the Year is an international awards programme developed to recognise innovation in the fast moving consumer goods sector. The award was introduced in South African in 2009. In contrast to the Symrise/ Food Review New Product Competition, the Product of the Year awards are based on consumer votes acquired through a large country-wide independent survey by Nielsen (n=5000 consumers) (*Supermarket & Retailer,* 2009). The food products awarded Product of the Year in 2009 were Purejoy Lite fruit juice, Five Roses Speciality teas, Danino yoghurt, Clover Great Taste No Fat milk, Crosse & Blackwell Creamynaize and

Stimorol Centre Filled Gum (*Supermarket & Retailer,* 2009). The food products awarded Product of the Year in 2009 were Clover Café Crème coffee cream, Cholestro Go Sunflower Oil, Nola Yum Yum Peanut Butter, Pringles Rice Infusions, Maggi 2 Minute Noodles, Nestle multigrain Cheerios, Farmer Brown Tenderbreasts and Rainbow Family Polony (Jones, 2010).

The main trends addressed by the food products awarded Product of the Year are presented in Figure 57. The prominence of double positioning strategies should be noted (applicable to all of products analysed), where products' positioning are based on combinations of at least two or more prominent food trends. The combination of health, indulgence and convenience dominated the analysed products (64% of products), followed by health/indulgence (14%) and health/convenience (7%).
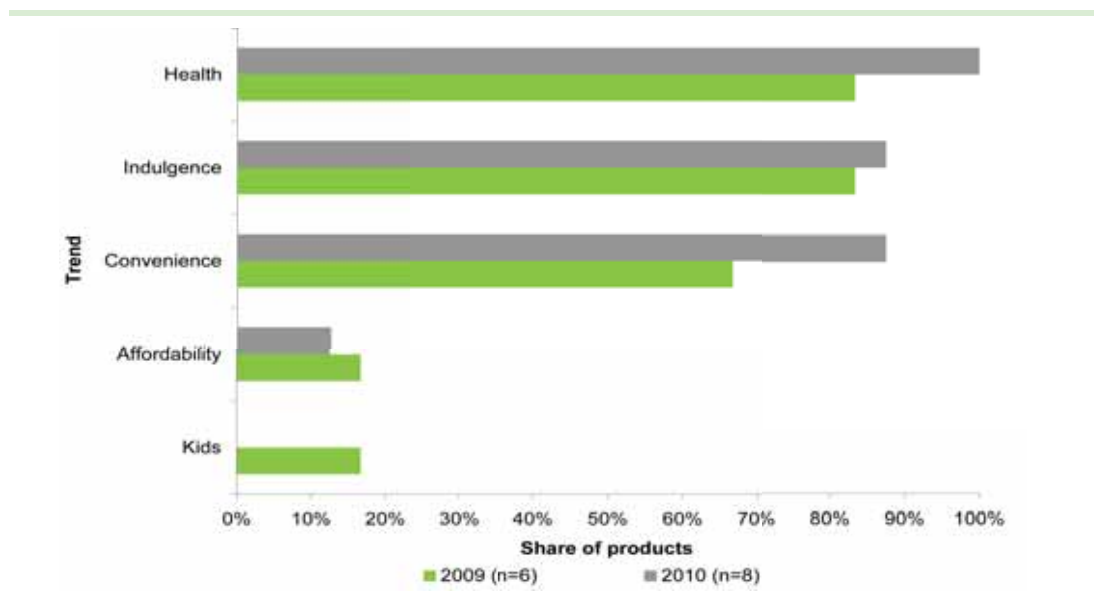
Figure 57: Consumer food trends addressed by the Food Products of the Year, 2009 and 2010
Source: Primary data developed through the analysis of product attributes

South African consumer food trends: A summary

The results presented in this section clearly illustrate the dominance of health, convenience and indulgence among South African consumer food trends. While sustainability is emerging it still lags behind the three main trends. The importance of the health/wellness trends in South Africa, as well as naturalness and indulgence through new ingredients and flavour combinations were also confirmed by the *Food and Beverage Reporter* (2010) survey among several flavour houses on their views of the most prominent flavour trends in the South African context.

Other prominent factors shaping consumer trends in South Africa, pointed out by industry literature sources (Paul, 2010; Supermarket & Retailer, 2010) include:

• The importance of marketing communication through social networking and digital technologies;
• The prominence and lingering effects of the economic recession;
• Consumers need for value AND affordable prices – strongly linked to the growth in private labels locally;
• Consumers need for convenience - strongly linked to the dramatic growth in the convenience store format;
• The growing importance of addressing sustainability issues;
• The growing importance of product authenticity.

These aspects strongly reflect the global trends discussed in the previous section.

The potential impact of the economic recession

The BFAP Baseline 2009 presented a discussion on the potential impact of the economic recession on consumers' food selection and preparation behaviour (based on a review of international literature), highlighting the key aspects such as:

- A continued demand for quality, health, natural food and indulgence (on a budget);
- Finding comfort in little luxuries;
- More at-home meal preparations, consumption and entertainment;
- Buying more affordable food (e.g. cheaper outlets, cheaper brands, house brands, less luxuries)
- Meat consumption - less meat (partially substituted with vegetables), cheaper meat cuts;
- Staple foods – same or higher consumption;
- Better grocery and meal planning;
- Selected convenience;
- Reduced consumption of product categories such as processed foods, functional foods, expensive meat cuts and alcoholic beverages.

The impact of the recession on South African consumers

The results presented in this section are based on an extensive consumer survey on consumers' views on food quality conducted during 2009 by BFAP and the Department of Agricultural Economics, Extension and Rural Development at the University of Pretoria, with funding support from the National Agricultural Marketing Council. The survey targeted consumers from SAARF LSM segments 7 to 10, sampled through a representative quota sample (n=420). This section reports on consumers' views regarding the impact of the economic recession:

- 64% of consumers indicated that the economic recession changed their household's food purchasing and consumption behaviour, significantly dominated by consumers from SAARF LSM segments 7 and 8 ($p < 0.1$).
- Consumers' coping strategies' in recession times were evaluated through a series of agreement state-ments. The most popular 'coping strategies' are shown in Table 7.

The results illustrate the dominance of careful planning and 'homing' for South African consumers. Even though 52% of the overall sample indicated that it costs more to eat healthy, the consumption of more vegetables is a popular recession 'coping strategy'. For those consumers consuming more staple foods during the recession, maize meal and rice were particularly important. In general the result represents a good reflection of international recession impacts.

Table 7: South African consumers' 'coping Strategies' during the economic recession		
Coping strategy:	Share of consumers affected by the recession: (n=302)	Share of total sample (n=420)
Eat home-prepared food to save money	99%	71%
Plan meals and shopping lists more carefully	86%	62%
Engage in more at-home entertainment (instead of going out for entertainment)	83%	60%
Consume more vegetables	71%	51%
Consume less meat	68%	49%
Shop at a variety of retailers based on advertised special prices	67%	48%
Consumes more staple foods	57%	41%
Consume more cheaper meat types	46%	33%
Buy cheaper lower quality food to save money	44%	31%
Source: Primary research data		

FARM LEVEL ANALYSIS

Introduction

The BFAP Farm level analysis was established with the main objective to assist farmers and agribusinesses with strategic decision-making under uncertain market conditions and forms part of the BFAP system of models.

The aim of the BFAP system of linked sector and farm-level models is to provide quantitative analyses and projections of how different policy options as well as a range of macroeconomic variables will affect the supply and demand of agricultural products in South Africa and to eventually address some of the most pressing information needs facing agribusinesses, farmers and policy makers. The BFAP farm level analysis now include representative (or typical farms) in all the main grain, wine, fruit, vegetable and livestock enterprises of South Africa. This allows BFAP to project the impact of any exogenous or market changes on farm profits. As such it is an useful tool for farmers and agribusiness firms to plan ahead for potential short falls in income.

The farm level activity of BFAP consists of two key components on which services to individual clients are based. These include the system of linked models between the sector and the *FinSim* farm-level models on the one hand, and the *agri benchmark* network on the other hand.

The farm-level model *(FinSim)* is a total farm budgeting model capable of simulating a (representative) farm comprising of various enterprises and in the case of the wine grape model, specific wine grape varieties, each grouped into three different blocks of which the present age and productive lifespan can vary, as well as the yield and delivery of the crop to various distribution points, cost structure and price at each point of

FinSim services to our clients

- Analysis of likely impacts of changes in markets and policies on the financial viability of farming businesses
- Analysis of future policy and market scenarios and the impact of these on agri/farm businesses
- Strategic planning for agri/farm businesses based on possible policy and market scenarios
- Risk analysis and management

sale. The capital structure and financing method(s) of the business are also incorporated in the farm level model. The output of the farm-level model is measured by various performance measures, like farm gross margin, the net farming income (NFI), return to family living (as a cash flow measure), the cumulative net cash balance (CNCB) and net worth.

FinSim is used to analyse farms in the Western, Southern and Northern Cape regions, North West, Free State and the Mpumalanga highveld. Limpopo, KwaZulu-Natal, Eastern Cape and the Mpumalanga lowveld have been identified for future expansion. The capabilities of the BFAP system of models are further illustrated in the sections on the impact of electricity costs on grain and wine grape farms that follow later in this chapter.

The objective of the *agri-benchmark* activity (which is run in collaboration with the NAMC and the global *agri-benchmark* network) is to create a national database on farm information through collaboration between the public sector, government, agribusinesses and producer organisations. The link between the local *agri benchmark* network and the international network provides the means to benchmark South African agriculture with worldwide farming systems. More specifically, the national farm information database that is linked to the international information system provides decision-makers and stakeholders in South African agriculture with a useful tool that can be used as indicated in the text box to follow.

Agri benchmark benefits to our partners

- Collection of key business intelligence for the protection and growth of local markets.
- Keep stakeholders in South African agriculture updated on the current state agriculture on national as well as global level.
- Financial and managerial strategies for profitable and sustainable farming that are successfully implemented by farmers in other countries or regions can be investigated and implemented on South African soil.
- Knowledge with regard to optimal production techniques (E.g. crop rotations, cultivation methods, fertilising, etc.) can be gained, compared and introduced on international and national level.
- Providing a platform on which farmers and stakeholders can compare their farming businesses against other successful farms that are representative of their respective regions. Strong and weak points can subsequently be identified and corrected.

BFAP has already established a firm base of *agri bench-mark* collaborative partners that include Griekwaland Wes Koöperasie (GWK) in the Northern Cape Province, Senwes in North West/Free State, Noordwes Koöperasie (NWK) in North West, Vrystaat Koöperasie (VKB) in the Free State and Overberg Agri in the Overberg. BFAP are further in discussions with future possible collaborative partners in Mpumalanga and KwaZulu-Natal that will expand our local *agri benchmark* to those parts of South Africa.

Application of the farm-level model: the impact of electricity costs on grain irrigation farming

Electricity and the irrigation farmer

Electricity is a vital component for irrigation farmers in the Northern Cape Province, where average rainfall amounts to approximately 250 mm per annum. Farmers are dependent on electricity to pump water for irrigation from their surrounding water sources, and the recent electricity tariff hikes, as announced by the National Energy Regulator of South Africa (NERSA) in February 2010, are expected to have a significant impact on them.

In order to determine the impact on the profitability and risk position of an irrigation farm in the Northern Cape Province the electricity cost impacts were analysed by means of the BFAP system of linked models. The BFAP sector model was used to simulate expected future market conditions, while the farm-level model (*FinSim*) indicated the effects of market conditions and electricity cost increases on the financial position of the constructed typical farm for the next five years.

Northern Cape Farm Structure

- While farming units in the Northern Cape vary significantly in terms of size, the typical irrigation farm consists of 200 hectares under pivot irrigation. It produces mainly yellow maize and wheat. Water for irrigation is obtained from the Vaal River irrigation system.
- A typical production system involves the following production practices: maize is planted during November/December and harvested during May/June the following year. Wheat is then planted directly after the maize harvest, and harvested during November/December. The typical farming unit also consists of a livestock production unit that contributes to the total turnover of the farm.
- Maize and wheat contributed almost equally (45% and 46% respectively) to the total turnover of the farm in 2008, while other farm income (e.g. livestock production) and non-farm income (shares, transport, etc.) contribute 4% and 5% respectively. Despite good yields in 2009, the contribution of wheat to the turnover of the farm declined to 43% as a result of a lower wheat price. Other farm income and non-farm income increased to 5% and 7% respectively, while the contribution of maize remained constant at 45% of total turnover.
- Fixed costs as a percentage of total costs are lower than the usual norm of 25% to 30% of total costs. Input costs (especially fertilizer) surged in 2008, which resulted in higher variable costs relative to fixed costs.
- The input cost composition of maize and wheat are presented in Figures 59 and 60 respectively. The actual data was provided by Griekwaland-Wes Koöperasie (GWK). It is important to note that despite a decline in fertilizer prices in 2009, all the variable cost components (with the exception of crop insurance, fertilizer and fuel costs) increased in 2009. Electricity costs are the second and fourth largest cost components respectively in the production of wheat and maize under irrigation. The high proportion of fertilizer costs in the production of maize and wheat indicates that farm income is extremely sensitive to variability in fertilizer prices. This is also applicable to the costs of electricity, marketing and seed.
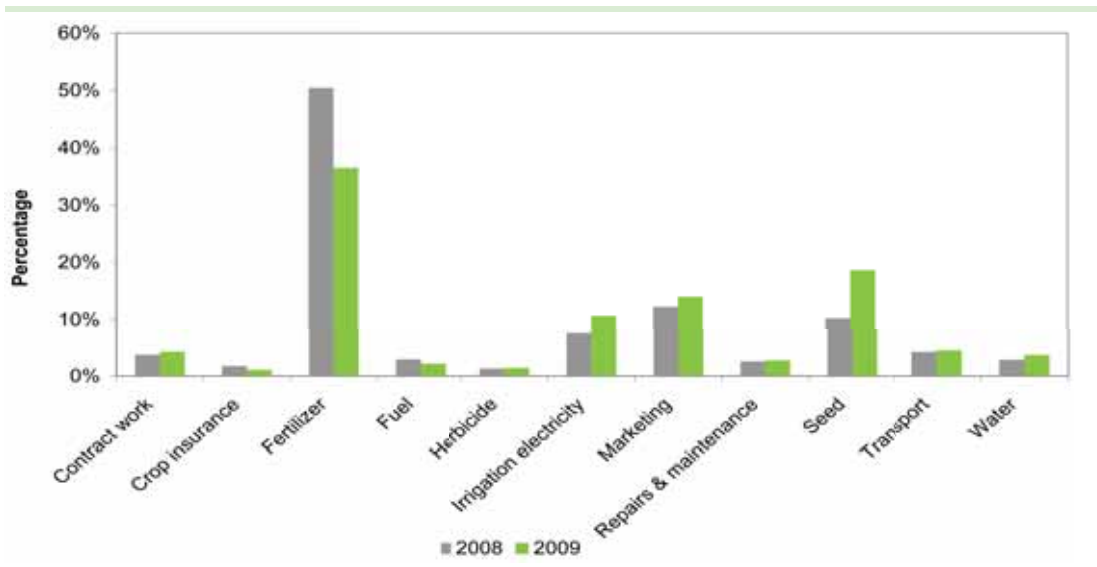

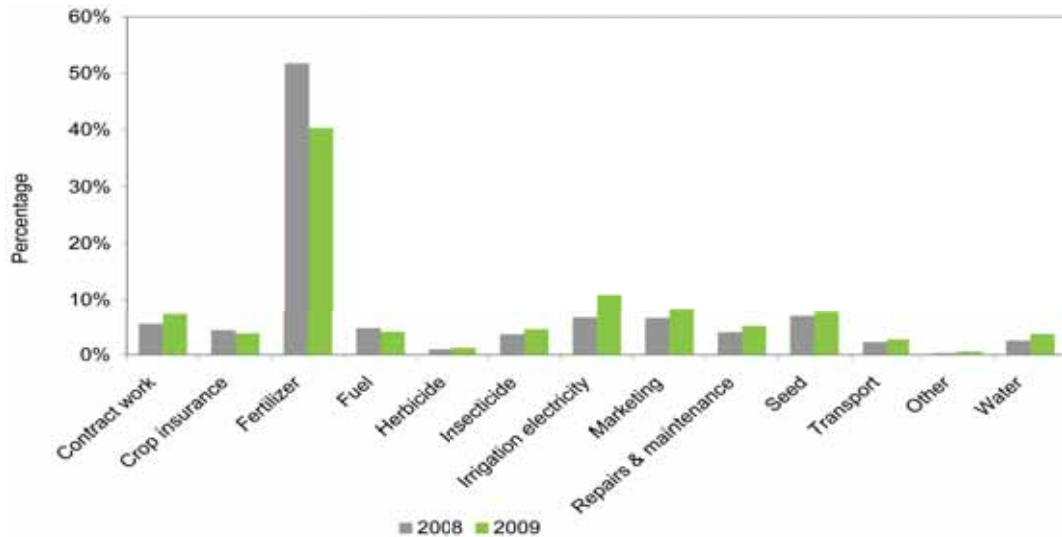Figure 58: Input Cost Composition for maize enterprise

Figure 59: Input Cost Composition for wheat enterprise

Underlying key indicators and assumptions

The latest outlook from the BFAP sector model is applied in the FinSim model in order to simulate baseline projections for the Net Farming Income (NFI) of the typical farm. Prices and yields of the typical farm follow these projected trends. Table 8 shows the key macro-economic assumptions and baseline projections generated by the BFAP sector model.

Table 8: Assumptions and Baseline Projections		2010	2011	2012	2013	2014	2015
Oil price: refineries acquisition	US $/barrel	79.6	90.00	80.77	86.43	86.00	80.65
R/USD	SA cents/ US $	743.9	780.35	814.43	847.49	880.58	909.55
SA Real GDP	Percentage	0.5%	3.5%	4.1%	4.2%	4.3%	4.3%
SA CPI	Percentage	6.7%	6.3%	7.6%	7.8%	8.1%	7.7%
Yellow maize yield	t/ha	13.71	14.03	14.15	14.26	14.38	14.49
Yellow maize producer price	R/ton	1210.2	1513.0	1455.6	1631.7	1690.3	1810.2
Wheat yield	t/ha	6.53	6.56	6.60	6.63	6.66	6.69
Wheat producer price	R/ton	2078.6	2350.9	2486.1	2696.0	2840.9	2924.3

Additional assumptions:

- The typical farm has a long-term loan as well as two medium-term loans, with subsequent instalments and interest payments
- The interest rate for the long-term loan amounts to 9.5% per annum, while interest rates for the medium-term loans amount to 10.5% per annum.
- Asset replacement takes place every year at an average rate of 10% for vehicles and 7% for equipment.
- The farmer utilises 75% of his production loan and overdraft facilities each year.
- The soil potential and quality, as well as water quality remain constant.
- The condition and productivity of equipment remain constant.
- The farm business structure remains unchanged.

- The quality of farm management remains constant.
- The electricity hikes as announced by the National Energy Regulator of South Africa (NERSA) in February 2010 are introduced in the farm-level model. The hikes are introduced as follows: 24.8% in 2010, 25.8% in 2011 and 25.9% in 2012. These hikes are applied in the analyses over and above the hike of 31.3% in 2009
- After imposing these projected increases in the model, the assumption is made that beyond 2012, electricity costs will increase in line with inflation.

Impact of electricity tariff increases on farm profitability

- Although the global demand for maize in the ethanol industry is expected to increase by 5% in the current marketing season, this increase is nowhere close to the average annual increase of 23% over the past ten years. This is another important driver that underlines the argument of a new equilibrium in the global maize market.
- The effect of electricity costs on maize and wheat production on the typical farm is represented in Figures 60 and 61. While electricity costs have never exceeded 8% of the total variable costs, it is projected that it will constitute almost 20 % of the maize variable costs in 2014 and 2015. In the case of wheat, electricity costs will increase to more than 18% of total variable costs from 2012 onwards. In 2010, electricity costs will make up 12% of variable costs of maize production at R1 906 per hectare. In 2015, electricity costs are projected to amount to R3 551 for every hectare of maize planted under irrigation. Similarly, electricity costs for the production of wheat under irrigation are projected to increase from R1 516 per hectare in 2010 to R2 965 per hectare in 2015.
- In order to determine the impact of electricity tariff increases on the profitability of the typical farm, Net Farm Income (NFI) is used as a proxy for farm profitability. Figure 62 compares NFI for the typical farm with electricity tariff increases with an NFI where no tariff increases were included. The negative impact of electricity tariffs can clearly be observed as the typical farm would have realised an NFI of approximately R300 000 higher in 2010 if electricity tariffs were not increased. It is further expected that as a result of the tariff hikes, the farm will even realise an NFI approximately R829 000 lower in 2015.
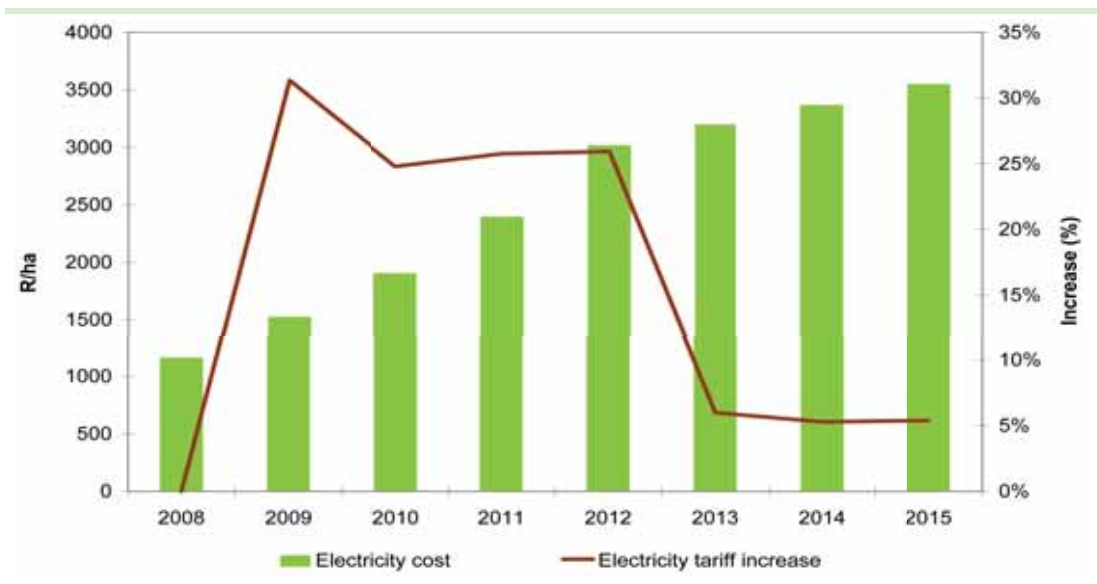

Figure 60: Electricity Cost for Maize enterprise

FARM LEVEL ANALYSIS
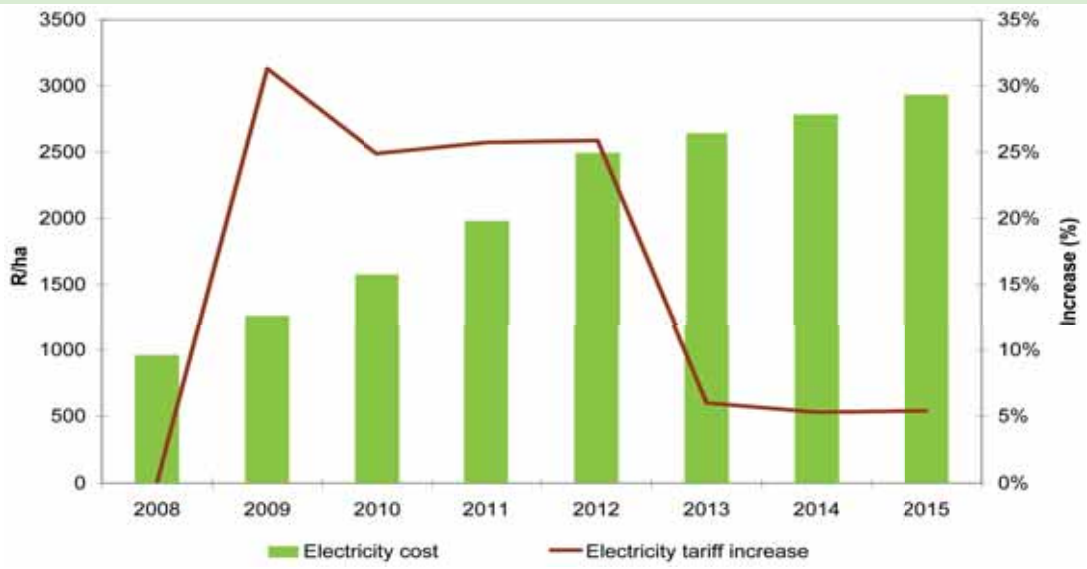
Figure 61: Electricity costs for wheat enterprise
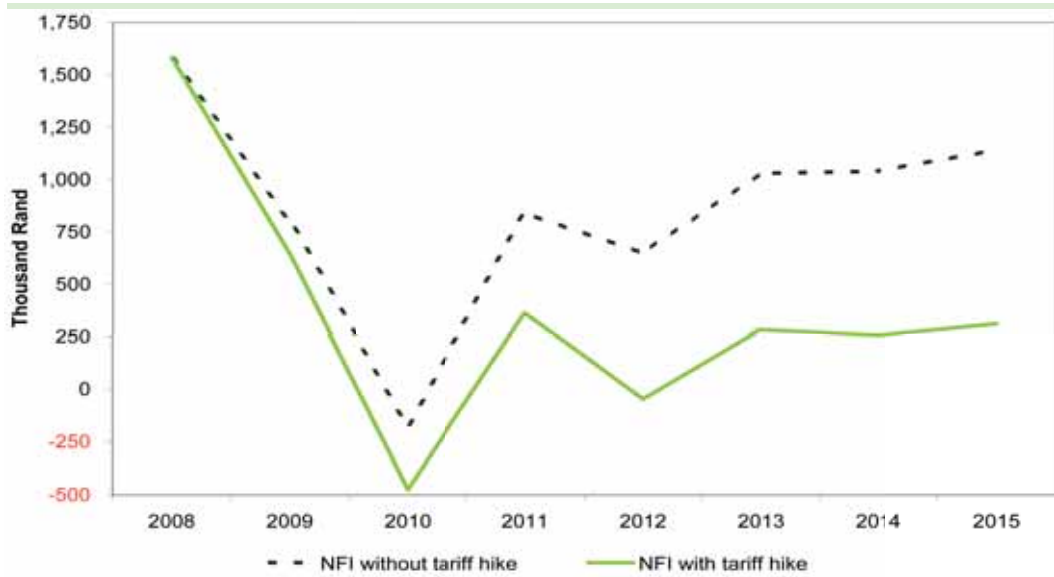
Figure 62: Impact of electricity on Net Farm Income (NFI)

Impact of electricity tariff increases on farm risk

Due to the volatile nature of agricultural markets, farm businesses are exposed to a high level of risk. Changes in commodity and input prices have a significant effect on the risk position and subsequent financial stability of a farm business. The effect of increasing electricity costs on the risk position of the typical farm is subsequently investigated in this section.

- The NFI as presented in Figure 62 includes the potential risk of variability in exogenous variables such as yields, prices and input costs for both maize and wheat production. In other words, these exogenous variables are generated stochastically and applied to simulate the outlook on the NFI in order to incorporate the risk due to significant fluctuations of these exogenous factors. These variables were selected on the basis of variability that will have a significant impact on the risk profile of the farm.

- An average outcome, together with a maximum and minimum level of the NFI, is generated. The maximum value represents a situation where farmers obtain maximum yields, receive high output prices and pay low prices for inputs. Conversely, the minimum value represents low yields and output prices, as well as high input prices. The solid lines in Figure 63 represent NFI values where electricity tariff hikes were included, while the dashed lines represent NFI values without electricity tariff hikes. Given the macro-economic assumptions of the baseline, volatility of exogenous factors and proposed electricity hikes, an average NFI loss of R314 200 in 2010 can be expected for the typical farm under consideration. The average NFI seems to recover from 2011 onwards as a result of projected price recoveries and increased yields. However, the NFI remains lower than historical levels due to increasing input costs. Were it not for the electricity tariff hikes, the average NFI would have been between R353 491 (in 2011) and R684 098 (in 2015) higher. In extremely favourable conditions, the farm will be able to generate an NFI of between R1.9 million in 2010 to R3.64 million in 2015. On the other hand, losses of between R1.4 million and R2.2 million can be expected from 2010 onwards in the case of extreme adverse conditions. Without the electricity tariff hikes, the farm would have been able to generate an NFI of R2.07 million in 2010 and R4.35 million in 2015 under favourable conditions.

- Figures 64 and 65 represent the probabilities of the NFI being higher than R350 000 (green area), between R360 000 and R0 or below R0. The amount of R350 000 is used as a benchmark to cover the expected family living costs. In order to cover the family living costs and still be able to prosper, the farm must generate an NFI greater than R350 000. From Figure 64 is clear that the typical farm has a good chance to incur losses in 2010 as a result of declining output prices and increasing costs. This probability of incurring a loss in 2010 is further amplified by the hikes in electricity tariffs (Figure 65). The probabilities further suggest that from 2011 onwards, farmers will have better prospects for profitable farming. However, after the introduction of electricity tariff increases, farmers are expected to experience substantial pressure on profit margins with a relatively high probability that the NFI will fall below the critical level.
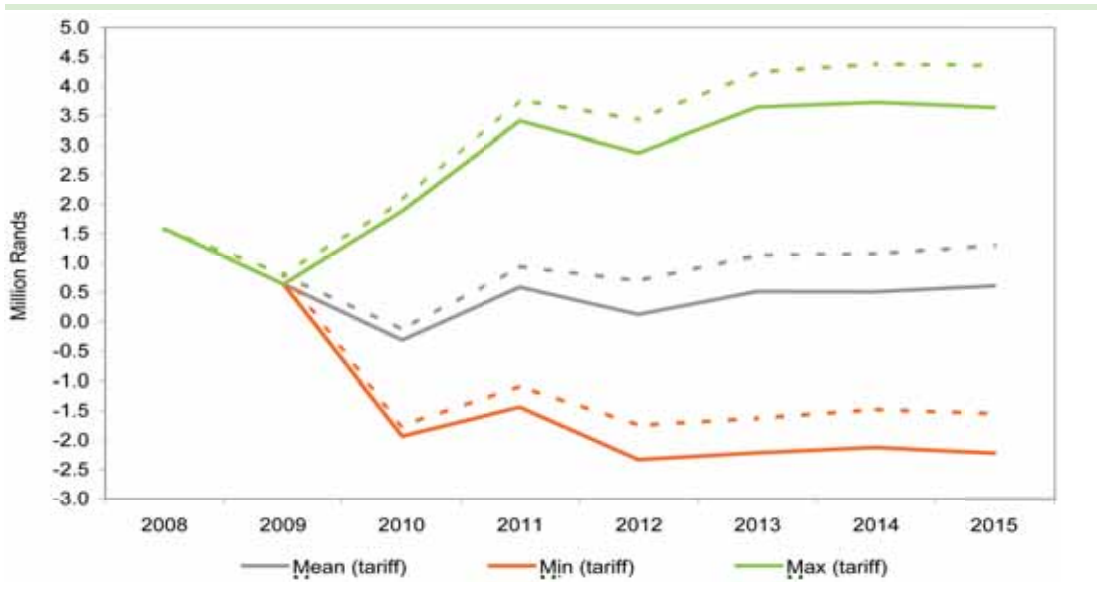

Figure 63: Impact of electricity tariff hikes on risk position of a firm
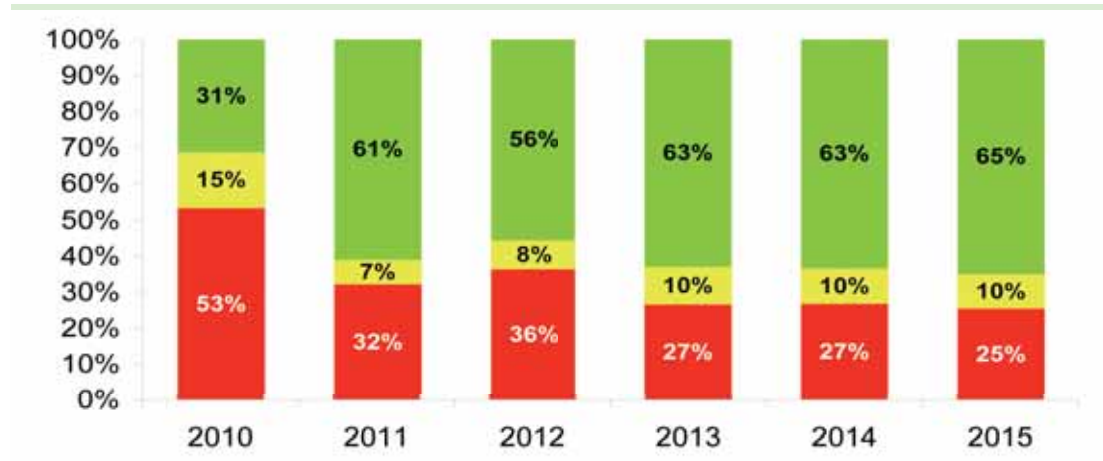
FARM LEVEL ANALYSIS

Figure 64: Probabilities of NFI without electricity tariff increases

Figure 65: Probabilities of NFI with electricity tariff increases

- Green coloured area: Probability of NFI higher than R350 000
- Yellow coloured area: Probability of NFI between R0 and R350 000
- Red coloured area: Probability of a loss

The impact of electricity costs on farming: wine grapes

Special note: This report was compiled at the request of agricultural industry players in 2009 when ESKOM initially applied for yearly electricity tariff increases of 45% over the three-year second Multi Year Price Determination (MYPD2) timeframe. Since then, ESKOM adjusted their request to increases of 35% per year. The National Energy Regulator of South Africa (NERSA) eventually approved a nominal ESKOM electricity tariff increase of 24.8% as from April 1, 2010 and subsequent increases of 25.8% and 25.9% for 2011/12 and 2012/13 correspondingly. This report was thus compiled with the objective to create a scenario in which ESKOM's request for a 45% electricity tariff increase over three years was approved by NERSA, and the impact thereof on a typical wine and grape producing farm in the Western Cape Province. Conversely, the report on the impact of electricity costs on grain irrigation farming in the Northern Cape Province was created after the announcement of electricity tariff hikes by NERSA, which explains why different electricity tariff figures were used.

Operational environment of the wine and grape farmer

- The decision making environment in which wine grape farms operate is uncertain, especially due to the long term nature of grape production, exposure to international markets, and deregulation of the industry. Decision making within such an environment requires effective strategic, operational and tactical management.
- With deregulation of the wine industry "wine grape producers" had to become "entrepreneurs" and were forced to make marketing decisions about their produce as well. Decisions about variety selection, "quantity" versus "quality" considerations with the accompanied effect on the unit product price and whether to enter into the marketing arena as an individual role player, nationally and/or internationally, were of utmost importance. Decision making regarding marketing and markets is now even more important for the South African role players in the wine business due to international trends and pressing issues such as the structural over supply of wine and consumption shifts from old world to new world wines. Every wine producing country thus has to balance the dynamics between the domestic market, exports and imports.

Analysing a typical wine grape farm

- The farm-level wine grape model is linked to the sector-level wine grape model via the respective projected wine grape prices for twelve varieties. These projected wine grape prices are transformed to price indexes and the index for the price of each wine grape variety is used to project a relevant price for each variety for any specific farm over the specified planning period.
- Specific application of the farm-level wine grape model over the past few years was on an aggregated level for representative farms in each of the nine VINPRO wine grape producing areas in South Africa. Each region differs regarding amongst others climate, soil, altitude, availability of irrigation water, and thus the composition of varieties planted. A representative wine grape farm was selected for each of these VINPRO regions, differing primarily in enterprise composition, area under vineyards and composition of varieties.
- For the sake of simplifying comparison between regions, a lifespan of 20 years was assumed for all the blocks of the vineyards of the representative farms, and it was assumed that the first yield would be in the second year and full bearing from the fourth year. The respective wine grape prices for the varieties included in the simulated representative farms were estimates by SAWIS for average wine grape prices paid by the producer cellars for specific varieties in the various regions. For the representative farm simulated for the Stellenbosch region, the estimate of grape wine prices of other institutions (such as the wholesalers of wine) was used. This was done to reflect a situation where wine grape farmers with own wine cellars on their farm could also be represented.
- Representative wine grape farms for the various wine grape producing regions in South Africa were identified and their performance analysed (for 2008) and projected (for 2009 to 2015) by implementing the farm-level wine grape model. The results of some of the performance measures for the baseline projections for one of these representative farms are presented in Figure 66. For each of the simulated performance measures, such as NFI and the net cash balance in Figure 66, various descriptive statistics, including the minimum, mean and maximum monetary value, as well as the probability of a negative NFI in a specific year, were calculated based on a specific number of iterations (500 in this application) in the stochastic simulation process.
- From Figure 66 it is clear that the average NFI for the simulated wine grape farm displays a generally increasing trend, although a slight decrease in NFI has been projected for 2011 and 2012. As a result of *inter alia* a positive NFI over the entire projection period, the net cash balance shows a sustained increasing trend and therefore a sustained improvement in the cash position of the specific typical wine grape farm. Obviously the results of a simulated typical wine grape farm differ in each VINPRO region.

FARM LEVEL ANALYSIS
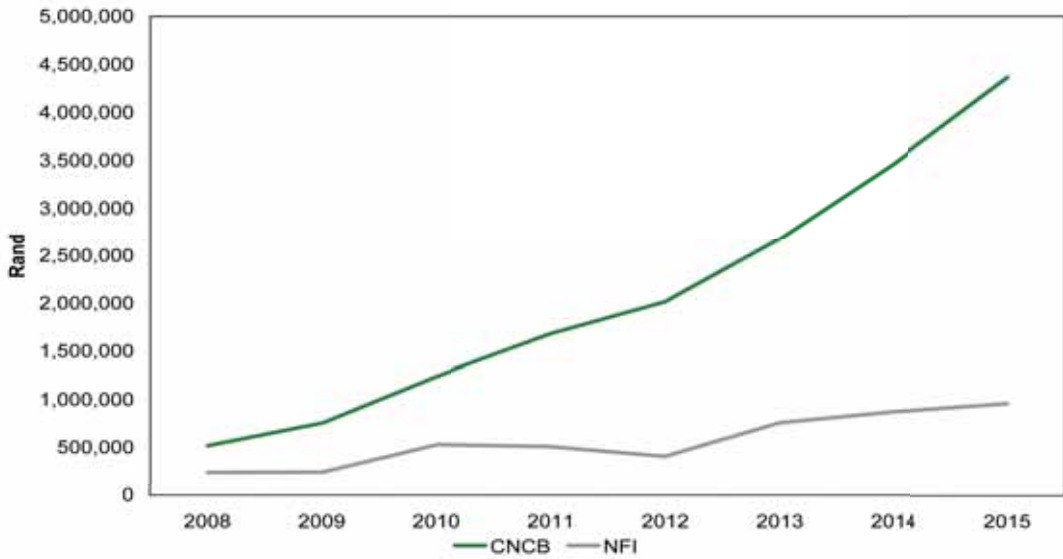
Figure 66: Projected NFI and typical net cash balance (CNCB) for typical wine grape farm

Based on the same descriptive statistics, Figure 67 shows the possible influence of price risk by means of the probability that the projected annual NFI will range between R0 and R300 000 in each year.
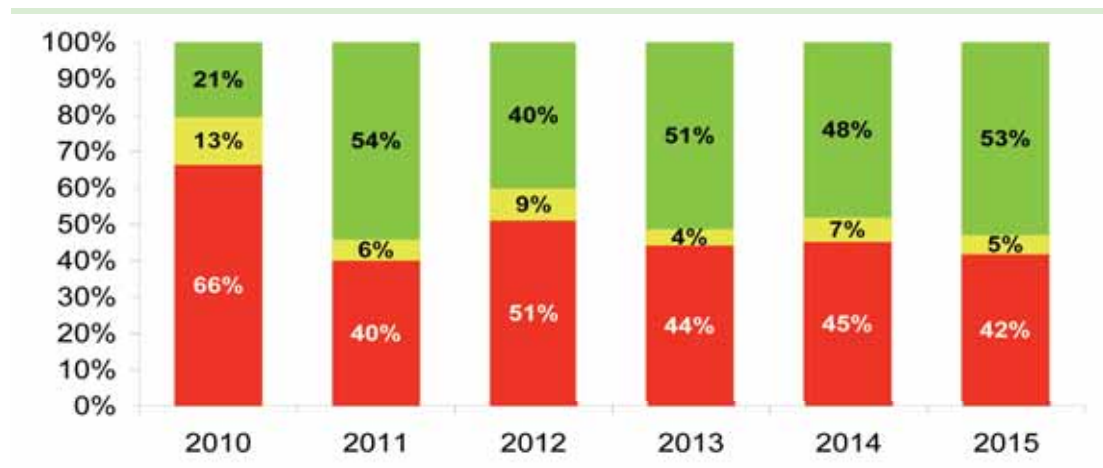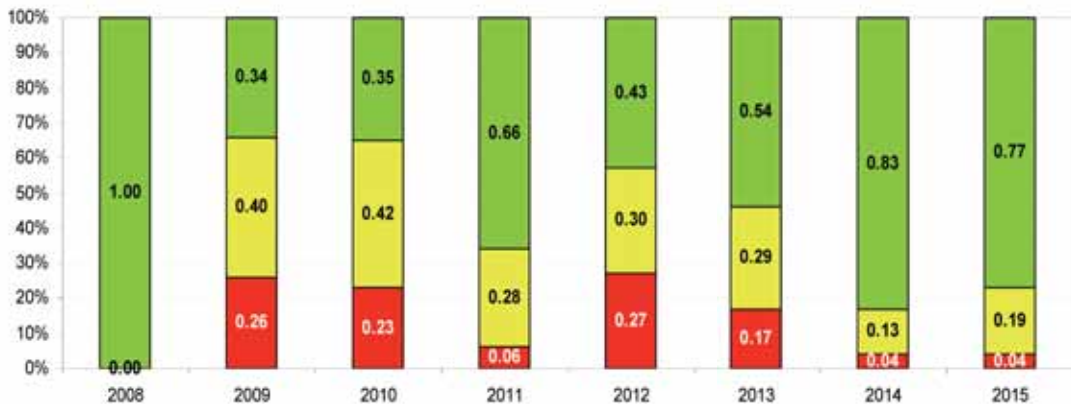

Figure 67: Probabilities of NFI for a typical wine grape farm

- Green coloured area: Probability of NFI higher than R300 000
- Yellow coloured area: Probability of NFI between R0 and R300 000
- Red coloured area: Probability of a loss

Scenario analysis: The impact of a constant exchange rate on profitability

Figure 68 shows the effect of a scenario where the exchange rate remained relatively strong and constant at R8.50 per USA $ (compared to a weakening exchange rate as assumed in the baseline projection). For this scenario the baseline projection obviously looks better than the scenario with a stronger exchange rate. It is likewise possible to quantify the possible effect of different scenarios on farming level and compare the relative effect of different uncertainty variables.
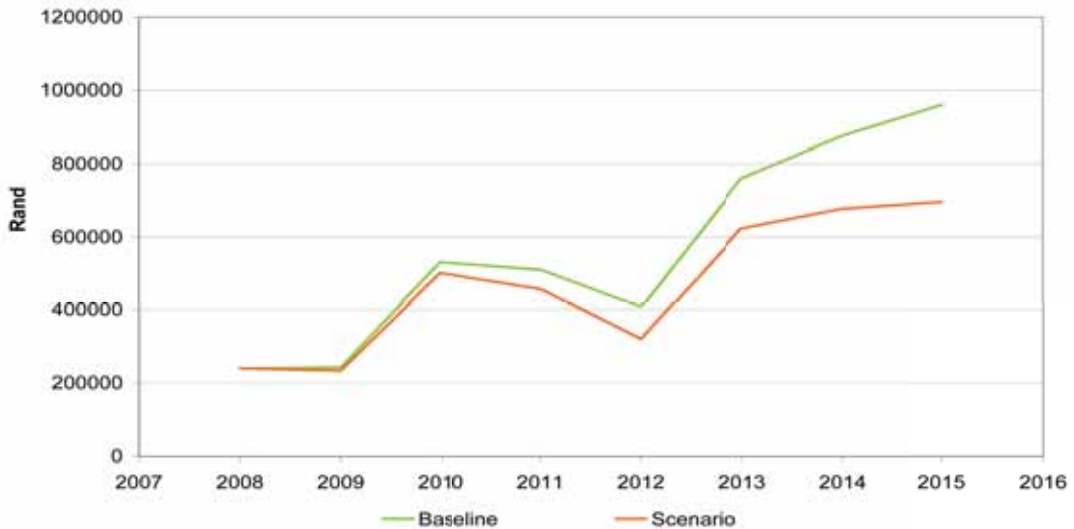
Figure 68: Comparison of Projected NFI of a typical wine grape farm for baseline projection and scenario with constant exchange rate

The BFAP farm level model was further used to evaluate the direct effect of possible tariff increases by ESKOM. The results of a scenario in which the electricity tariffs were to increase by 31, 45, 45 and 45 per cent annually in 2010, 2011, 2012 and 2013 respectively, are shown in Table 9. The scenario pertains to a simulated typical wine grape farm in the Breedekloof and Stellenbosch regions. The costs are based on the VINPRO Production Plan results for the 2008 production period and the two regions respectively had the highest (R1 092/ha) and lowest (R625/ha) cash expense for electricity per hectare of wine grapes. The difference in cost was calculated between the baseline projections and the scenario with the increased electricity expense for each of the simulated typical wine grape farms. Should this scenario materialise, the increase in production cost would obviously be much higher as a result of the effect of increased electricity tariffs on other farming requirements and services.

Table 9: Effect of electricity tariff increase on cash expense and NFI for two simulated typical wine grape farms

Simulated typical wine grape farm, Breedekloof (50 ha):

	2009	2010	2011	2012	2013
Cash farming expense (baseline projection) (R)	909 127	810 057	979 172	1 149 789	975 112
Cash farming expense (for scenario) (R)	909 127	823 802	1 021 427	1 233 394	1 127 756
Increase in cash expense (R)	0	13 745	42 255	83 604	152 644
Percentage increase (%)	0	1.7	4.3	7.3	15.7
Net farm income (baseline projection) (R)	242 257	531 432	510 836	408 487	759 554
Net farm income (for scenario) (R)	242 257	517 687	468 633	325 089	607 269
Decrease in NFI (R)	0	13 745	42 202	83 398	152 285
Percentage decrease (%)	0	2.6	8.3	20.4	20.1

Simulated typical wine farm, Stellenbosch (60 ha):

	2009	2010	2011	2012	2013
Cash farming expense (baseline projection) (R)	1 407 903	1 689 354	1 752 095	1 836 293	1 805 208
Cash farming expense (for scenario) (R)	1 407 903	1 698 350	1 780 318	1 893 580	1 908 765
Increase in cash expense (R)	0	8 996	28 223	57 287	103 557
Percentage increase (%)	0	0.5	1.6	3.1	5.7
Net farm income (baseline projection) (R)	147 932	108 774	291 759	414 748	759 724
Net farm income (for scenario) (R)	147 932	103 745	256 929	367 875	677 858
Decrease in NFI (R)	0	5 028	34 830	46 872	81 866
Percentage decrease (%)	0	4.6	11.9	11.3	10.8

THE FIRST STEPS TOWARDS AN AFRICAN AGRICULTURAL OUTLOOK: UNDERSTANDING REGIONAL MARKETS AND PRICES

Introduction

The outlook of global agricultural markets is frequently presented by a broad host of institutions. The presentation and the content of these projections vary mainly on the bases of commodity, country coverage and the outlook period. In general the agricultural markets in developed countries as well as emerging economies (such as Brazil, Argentina, India and China) are well-informed and supported by comprehensive databases since the potential impact of these markets on global conditions can be significant. In comparison, the coverage of agricultural markets in sub-Saharan Africa is limited and aggregate models and/or approaches, which assume long-run price relationship between domestic and global commodity prices, are often utilized in an attempt to capture key underlying trends for the continent.

The severe impact on sub-Saharan Africa of the 2007-2008 global food and subsequent financial crises has made it imperative that a fuller, more comprehensive understanding of the complex relationship that exists between world food prices and those within Africa be developed in order to ensure regional food security. While changing conditions in world markets do have an undeniable effect on prices within the African region, studies have shown other factors, such as market structures, policy environment, weather-related supply shocks, regional trade flows etc; have a significant impact on the price discovery process and need to be accounted for when attempting project future prices within these markets (GISMA, 2009).

It is the intention of BFAP to develop a disaggregated, African-specific modelling framework that links the South African and world agricultural sectors to those within the southern African region. The purpose of an initiative will be to produce an African Outlook which informs regional trade policy, private and public sector investment, as well as food-security initiatives within the agricultural subsectors of the region.

However, the development of such models is not without its own, unique set of challenges and many key drivers in agricultural markets in African cannot be captured in a model. This is why the development of an African Outlook is a gradual process where a certain body of basic market intelligence has to be established before the actual modelling process commences. Recent, collaborative initiatives and research, aimed at laying the groundwork for the first round of empirical work, have highlighted specific market and policy issues that need to be understood and accounted for when developing a regional, partial-equilibrium model. The remainder of this chapter will be focused on highlighting the challenges inherent in the development of an African Outlook by summarizing the objectives and key findings of the regional studies undertaken over the past couple of years.

RSA-Mozambique grain trade: the complexities of spatial price transmission

Studies aimed at understanding the linkages between global and commodity prices in Africa have found very little evidence of a long-run relationship between the price series, making it difficult to predict the impact of global shocks on regional commodity markets and therefore regional food security[3]. However, in the case of South Africa there is a clear transmission of global price shocks onto the South African grain markets since domestic agricultural commodity prices fluctuate between the import-export parity price band, which is determined by global prices as well as the Rand/USD exchange rate. Given South Africa's role of surplus grain producer for the southern African region it could be expected that price shocks within the South African market would transmit onto regional grain markets. However, this price transmission is not as easily defined and captured. For example, during the first half of 2008 as world grain prices soared, maize grain prices in South Africa rose dramatically but fell sharply in the second half of 2008, ranging from $150 to $170 per ton. However, over the same period, maize prices in interior areas of southern Africa continued to rise to historically unprecedented levels despite falling global and South African maize grain prices.[4]

In order to better understand the apparent disjoint between South African grain markets and those within the interior, this section of the document assesses the degree of market integration and the speed of price adjustment to spatial price differentials between the SAFEX maize price in South Africa and maize grain and maize meal prices in Maputo, Mozambique. Because maize has been consistently exported from South Africa to Maputo almost every month since January 1990, this is a particularly relevant trade route to test for price transmission in the region.

Modelling complexities: understanding regional markets

Trade policy as well as the structure of the milling industry within Mozambique strongly influences the maize gain trade between RSA and southern Mozambique and therefore the price transmission between the two countries. Figure 69 on page 79 illustrates the flow of maize grain from South Africa into the Mozambican market.

---

[3]Based on the Johansen test, Nicholas Minot found that out of 62 African prices, only 6 had long-term elasticity of transmissions that were statistically significant, thereby indicating a long-term relationship with international prices of the same commodity (Minot, 2010).
[4]For example, in December 2008, SAFEX maize grain prices were quoted at $167/MT while prices in Maputo, Mozambique reached record high of $546/MT.
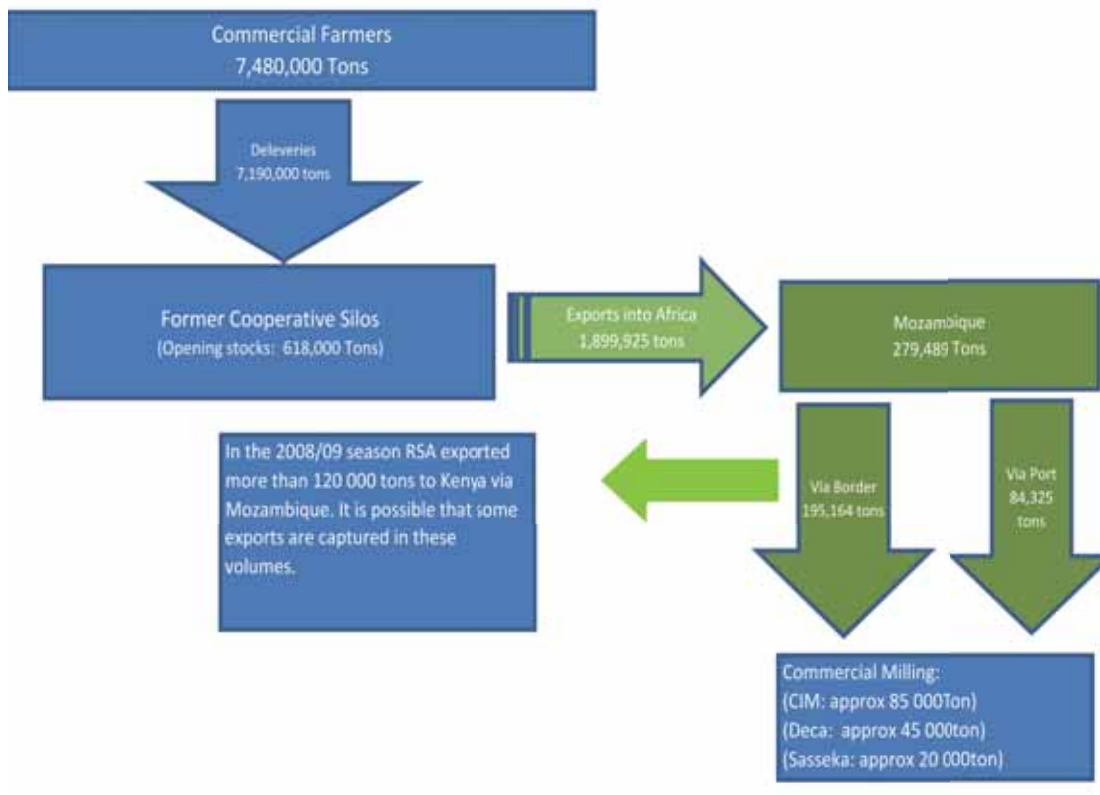
Figure 69: White Maize Flow Diagram – RSA to Mozambique (2008/2009)[5]

Large grain traders within South Africa dominate the grain export market into the region. These include multi-national companies such as Cargill and Louis Dreyfus as well as former cooperatives such as AFGRI (AFGRI, 2009). Typically, grain destined for southern Mozambique, specifically Maputo, goes by rail and trade administration fees include filing of phytosanitary certification, non-GMO or GMO testing certification, importation license, and payment of a 17% VAT (AFGRI, 2009; CIM, 2009). Imports, from time of loading to off-loading at the final destination, can take from 14 to 21 days (CIM, 2009).

Within the Maputo market, maize grain trade at the wholesale and the retail level is entirely of domestic origin and is thinly traded (Tschirely and Abdula, 2007). The reason for this is two-folded:

• First, the retail maize meal market within Mozambique is dominated by two large-scale milling enterprises; Companhia Industrial de Matola (CIM) and MEREC Industries. In 2007, these mills jointly held almost 100% share of the retail maize meal market in Maputo and were responsible for a significant portion of total maize imports into southern Mozambique originating in South Africa (Tschirley and Abdula, 2007). In the 2008/2009 marketing year, it is estimated; assuming full-capacity operation, CIM's grain requirement alone would require 45% of total grain imports into southern Mozambique (CIM, 2009).

• Secondly, trade administration fees serve as a potential barrier for small-trader grain trade between South African and Mozambique.

Given the disjoint between wholesale markets within the two countries, it is not surprising to find that wholesale maize grain prices in Mozambique do not follow the SAFEX price, despite the fact that Mozambique is a net importer of maize from South Africa. Figure 70 illustrates monthly SAFEX and Maputo wholesale/retail maize grain and meal prices between January 1995 and September 2009.

[5]Deliveries refer to maize grain received directly from the farm (not from commercial storage).
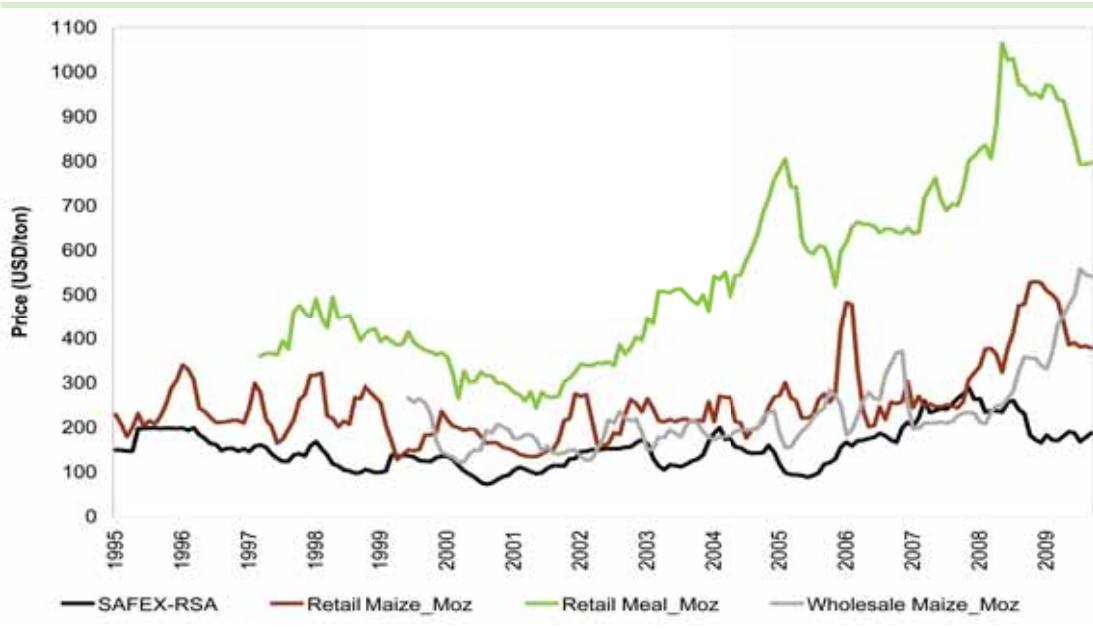
Figure 70: Maize Grain and maize meal prices: 1995 to 2009 (Nominal USD/MT)
Source: SAGIS, SAFEX, SIMA

From the price trends it is clear that there is very little co-movement between South African (as measured by SAFEX) and Maputo wholesale maize grain prices. There are periods where wholesale prices in Maputo increased while SAFEX prices declined; specifically 2000/2001 and 2003. When correlation coefficients are calculated for the various price series we find little evidence for a linear relationship between wholesale and retail maize grain in Maputo and SAFEX, whereas some indication in the case of retail maize meal prices in Maputo and SAFEX grain prices. Table 10 below summarizes the coefficient measures.

Table 10: RSA and Mozambican Maize Grain and Meal Coefficient Measures	
	SAFEX
SAFEX	1.0
Retail Maize	0.475
Retail Meal	0.673
Wholesale Maize	0.348

The results from econometric tests indicate that there is evidence of a cointegrating relationship between SAFEX and Mozambican retail prices but not in the case of Mozambican wholesale prices. This implies then, that the price differential between the South African wholesale maize grain and the Mozambican retail maize meal market will have a tendency to come back together in the long run. However there exists no evidence of a long-run price relationship between the wholesale grain markets within the two countries. Given the structure of the milling industry within Mozambique and its influence on grain imports into the country, these results are not surprising.

Conclusion

Despite the growing importance of the interregional trade, grain traders within the region face several constraints to efficiency:

1. Uncertainty caused by unpredictable export bans, import tariffs, state importation and/or stock releases
2. Lack of suitable storage facilities.
3. Lack of sufficient funding on the part of regional consumers.
4. Poor quality of maize grain originating within regional markets.
5. Non-tariff trade barriers in terms of non-GMO requirement for white maize.

These constraints determine and/or influence the price transmission between regional markets. The brief review presented in this section indicate that regardless of trade flow volumes and/or underlying model assumptions, there is no evidence of a long-run relationship between Mozambican and South African maize grain prices. This implies then that any large deviations, which exceed transaction costs between these markets, could continue to grow with no tendency towards equilibrium. Given this result it becomes important to understand the reasons why Mozambican grain traders do not engage in cross-border trade. Tschirley and Abdula (2007) found that despite periods where the price differential between the two markets provided sufficient incentives:

1. Lack of consumer demand for maize grain as well as maize meal produced by small-scale, informal millers was cited as potential reasons.

2. Market power: The existence of market power could limit the extent of arbitrage and allow for price differentials to remain well above the pareto efficient level

3. Inventories: inventory management can be an important element of a market's adjustment to exogenous shocks therefore inaccurate crop estimates may contribute to the inability of market actors to appropriately respond economic pricing signals.

4. Policy Intervention: *ad hoc* policy interventions, such as export bans or government buying programs, both domestically and/or regionally can result in increased risk and uncertainty for grain traders.

5. Asymmetric Information: Distorted market information on prices and/or crop projections could result in market actors not engaging in profit-maximizing behaviour.

There is some evidence of price transmission between South African wholesale and Mozambican retail markets. Given the structure of the milling industry within Mozambique, these results are what could be expected. However, there needs to be further study on the impact of the oligopolistic market structure of the milling industry on the efficiency of price transmission between the South Africa and Mozambique, in particular determination of asymmetric price transmission. Furthermore, the development of a model that links relevant agricultural markets within both countries in a partial equilibrium framework would allow for a more complete or holistic analysis of the potential impact of shocks within the South African grain market on the Mozambican retail maize meal market. Such a model would allow for the projection of future prices and possible market outcomes under various scenarios, and serve as a tool in designing regional policy aimed at addressing food security.

RSA – Zimbabwe maize grain trade: the complexities of trade policy

South Africa has been playing a key role in providing maize and maize meal exports to Zimbabwe over the past couple of years and this trend is expected to continue in the upcoming trading year. Overall, South Africa's export surplus of maize grain has increased against a concomitant increase in the import demand for white maize from Zimbabwe since 1997. But why then has it declined in 2009 and 2010? Figure 71 compares Zimbabwe's maize imports against South Africa's maize exports.

THE FIRST STEPS TOWARDS AN AFRICAN AGRICULTURAL OUTLOOK:
UNDERSTANDING REGIONAL MARKETS AND PRICES

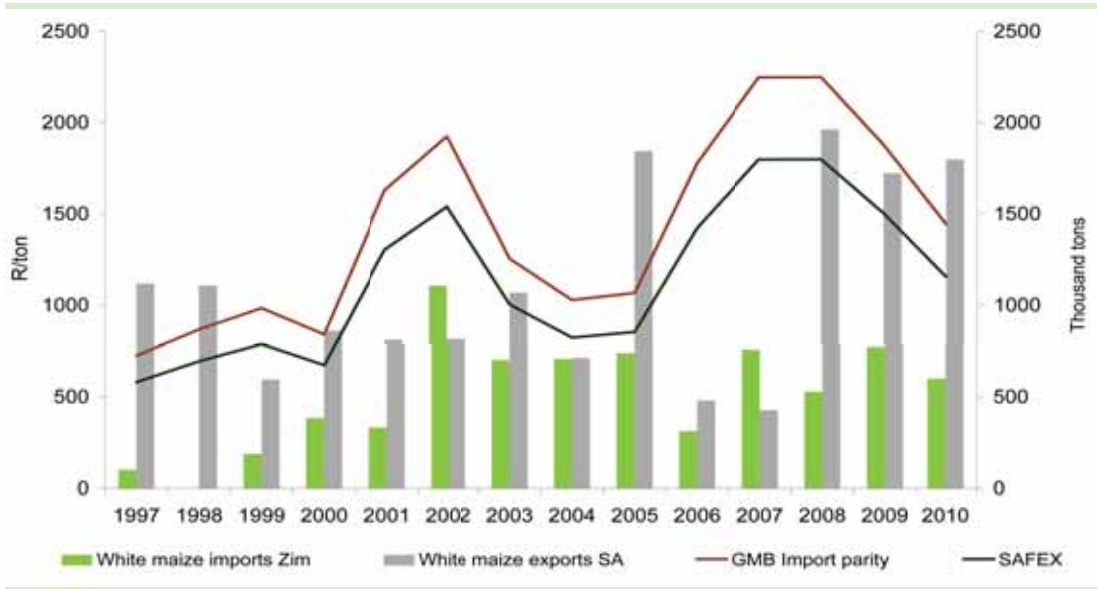[6]ADF and Engle-Granger test at 5% level of significance, Johansen at the 95% level of significance

Figure 71: Zimbabwe White Maize Import and South Africa Export

Zimbabwe has spent a cumulative expenditure in the excess of US$2.8 billion in emergency food imports since 2001 to feed between 2.4 and 7.2 million of its people who faced chronic and transient food insecurity, or both, during the past decade (Kapuya, forthcoming). It is against this background that Zimbabwe has been South Africa's main export market for maize over the past ten years, accounting for approximately 69.7% of South Africa's maize exports since 2000 (UNCOMTrade and SAGIS, 2010).

In the last trading season, Zimbabwe imported 411 305 tons of white and yellow maize from South Africa (SAGIS, 2010). Based on the most recent crop assessment committee estimates conducted in April 2010, it was reported that Zimbabwe's current cereal deficit is estimated at 432 540 tons (MoAMID, 2010). Projections given by the Zimbabwe Commercial Grain Producers Association imply that the deficit could be at least 600 000 tons against FEWSNET reports that 3.5 million Zimbabweans (a quarter of the population) were vulnerable during the peak hunger period of January to March. Nonetheless, Zimbabwe's government has already issued import permits to private players of 41 205 tons of maize grain and 120 546 tons of maize meal since January 2010 to be imported from South Africa (ibid).

Given that Malawi and Zambia produced maize surpluses, the implication is that South Africa will need to be strategic in the Zimbabwean market for it to effectively dispose its own surplus. Strategic planning in this regard is however going to be impaired by a number of policy (and non-policy) challenges and these are discussed in the next subsections.

Policy Challenges

However, a number of challenges (and opportunities) may probably obstruct (or promote) the anticipated contribution of South African maize and maize meal exports into Zimbabwe. These include::

• Zimbabwe currently has a strict Sanitary and Phyto-sanitary (SPS) policy that requires that imported maize be non-GM certified. Alternatively, SPS policy allows for GM maize imports either in milled form or as raw grain that should be milled upon arrival under strict monitoring from the Surveillance Unit of the Plant Quarantine Service Department. Stringent GMO import requirements have however, forced Zimbabwe's local milling industry to use higher priced local organic maize. However, GM maize and maize meal imports have posed a threat to the very survival of the grain milling sector. Zimbabwe's grain millers have been arguing against the unfettered influx of cheaper GMO imports from South Africa which have been creating significant competition. Therefore, there has been a fierce debate among industry players on the need to lobby government to adjust Zimbabwe's GMO policy to allow a balance

in industry protection of sensitive products (chiefly maize) and attainment of food security.

- Closely linked to the foregoing is the impending tariff regime change that is set to be reviewed on 31st July. South Africa has over the past couple of years enjoyed the zero-rated duty on maize and maize exports to Zimbabwe, a measure put in place to stabilise the local economy and to avert a dire food crisis situation. Currently the Grain Millers Association is now lobbying government to put in place a 25% duty on imported maize and maize meal products to protect the country's local farmers and processors as part of economic recovery efforts.

Events on the policy front will however depend to a larger extent on the political environment within the coming year, which brings some degree of uncertainty over the eventual policy outcomes. The wherewithal of the government to engage in policy changes that are likely going to increase prices in domestic grain markets seems rather unlikely. This is because, as expected, Zimbabwe will conduct its Presidential Elections in April 2011 in line with the commitments of the Global Political Agreement (GPA) of the Government of National Unity (GNU). All the policy issues discussed may thus be delayed until 2011 and the amount of imported maize during electioneering may most likely be higher in line with the philanthropy of the body politic.

Looking Ahead

- Appreciating the need to go beyond South Africa means that a more concrete and richer analysis is required and an outlook needs to be developed on Zimbabwe as an export market. This means that Zimbabwe's market dynamics (i.e. scope of maize shortages, emerging developments in its grain markets with respect to current and impending policies) need to be carefully assessed in order to understand their implications on South Africa's domestic maize sector. Thus, it is important, in the short to medium term, to understand the market trends in Zimbabwe as South Africa's export market in order to anticipate opportunities and challenges in disposing maize surplus.
- However, understanding and developing pragmatic models in regional markets is extremely complex due to a number of factors. Firstly, as in the case of Zimbabwe, although agricultural markets are *de jure* unregulated, experts argue that grain markets are regulated de facto and markets operate within the context of *ad hoc* policies and institutional failures that cannot be easily captured in models. For instance, Zimbabwe's markets currently operate in a *de jure* unregulated market in which the Grain Marketing Board (GMB) acts as a buyer of last resort. In principle, the Board pegs floor prices according to a prescribed formula that is based on the South African Futures Exchange (SAFEX) price plus 25%. However, Industry experts argue that current GMB prices neither reflect the formula price nor the market fundamentals. To add, most maize producers seem not to be responding to the GMB prices due to the Board's poor financing in previous seasons that has led to late payments for farmers.
- The smallholder sector which produces, on average, at least 60% of Zimbabwe's total maize output has been argued to be a sector that is not market-driven. Industry experts argue that smallholder farmers do not respond to price signals due to lack of sufficient market information, segmented markets and inaccessible farmlands (infrastructural constraints).
- It has been acknowledged that large volumes of grain are being traded amongst smallholders in Zimbabwe's informal markets. These stocks have however not been adequately captured in available grain databases. Although previous efforts to capture cross-border maize were made in the past, there are data discrepancies that exist in the formal sector as estimates from the Food and Agricultural Organisation/Global Information and Early Warning Systems (FAO/GIEWS), The Ministry of Agriculture, Mechanisation and Irrigation Development (MoAMID), Zimbabwe Commercial Grain Producers Association (ZCGPA), Famine Early Warning Systems Network (FEWSNET) and the Zimbabwe Vulnerability Assessment Committee (ZIMVAC) are markedly different[7]. As an illustration, a comparison is made in Figure 72 between government's MoAMID estimates against ZCGPA estimates on maize output.

---

[7]The norm has been to take government estimates which have however been questioned by industry players in the private.
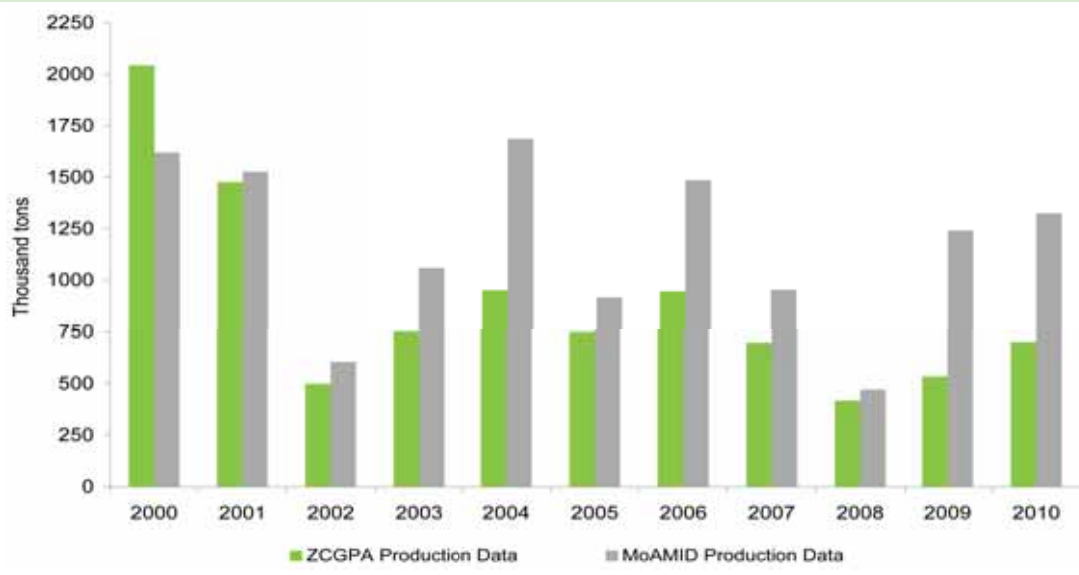
Figure 72: ZCGPA versus MoAMID Maize Output Data

As can be seen in figure 72, the maize output differences reported by the ZCGPA and MoAMID respectively, are quite large. The problem of data inconsistency is even more serious when looking at particular variables such as beginning and ending stocks, human and feed consumption estimates which have varied across institutions and based on different estimation criteria. The poor data in Zimbabwe's grain markets therefore makes planning and development of models and strategic planning initiatives extremely difficult.

There are two important implications given the insightful issues discussed here. Firstly, a more accurate and comprehensive data base on stock levels needs to be put in place in order to build a solid foundation for the development of sound regional market models that can assist South Africa's future planning decisions. Secondly, unique market features in African grain markets imply that there is a high probability that conventional market models may not stand as an adequate description of important regional maize markets. Therefore, a rather careful analysis of operational mechanisms in regional grain markets needs to be done in the short to medium term in the development of strategic planning instruments.

South Africa's contribution to regional grain trade markets: maize

Expanding the BFAP baseline into Africa is motivated by two reasons. From a regional perspective, the recent developments in the SADC, in particular the formation of the SADC FTA, have underlined the importance of regionalisation of trade and the importance of regional markets. From a domestic perspective, it is important to reflect and assess markets in the region for local planning decisions because knowledge of the extent of deficit (or surplus) in regional markets allows for government and private players in the grain market to anticipate opportunities (and challenges) that would allow for the design of adaptive measures to dispose of surplus (or to combat deficits).

Regional maize fundamentals and export opportunities

It has been argued in the past that the Sothern African region operates within an autarkic regime with respect to grain markets. The recent trends in regional maize trade strengthen the notion that regional maize markets are trading at a slightly distinct equilibrium from global markets. This also goes along with recent findings which have established that anticipated impacts of the recent global food crisis have been less severe within SADC compared to the rest of the world due to recorded surpluses and increases in trade within the region (Chilonda *et al*, 2008).

Table 11 summarizes South African exports of maize (white and yellow) to SADC (excluding Southern African Customs Union[8] (SACU)) over the past decade. It shows average annual exports in tons and shares as well average annual growth rate to individual non SACU-SADC members.

Zimbabwe is clearly an important market for South African maize following production declines since the late 1990s. Exports accounted for 57% of SADC shares in the first period (2000 – 2004) and 72% of the second period. Mozambique is the second most important SADC market with shares of about 12.5% in both periods. Maize exports to the island economies (Mauritius, Madagascar and Seychelles) have grown the fastest in the latter period as SADC moved closer and closer to an FTA. Tanzania is also the fastest growing market in the latest five years. This improving trade seems to suggest a possible response to regional integration and trade liberalisation.

With an estimated total local maize crop of 13.3 million tons, South Africa's disposal of its maize surpluses will need to be managed by a careful analysis of its export markets. Important markets for maize and maize products are found in the region and these include Zimbabwe, Mozambique and Angola. Maize surpluses in Kenya, Malawi and Zambia in the current season mean that the maize shortfall in the Southern African region is expected to be less. As such, South Africa's stock management policies need to be informed by a sound and grounded understanding of the impending developments and direction of commodity sectors in its regional markets to allow for more informed perspectives and effective utilisation of export market windows.

Table 11: South African Maize Exports to SADC (tons, share and growth rate)

Country	Average Annual Export ('000 t)		Average Annual Export Share (%)		Average Annual (%) Export Growth		
	2000-04	2005-09	2000-04	2005-09	2000-04	2005-09	2000-08
Angola	21.98	11.63	5.7	1.8	42.3	23.1	31.2
DRC	5.05	2.03	1.3	0.3	16.4	37.8	26.9
Madagascar	1.77	2.32	0.5	0.4	42.2	69.7	43.6
Malawi	19.95	28.79	5.2	4.3	22.5	15.8	34.4
Mauritius	0.74	0.04	0.2	0.0	3.6	91.8	24.4
Mozambique	48.87	82.5	12.7	12.4	37.7	33.4	37.3
Seychelles	2.7	0.52	0.7	0.1	13.6	232.6	16.0
Tanzania	14.65	11.45	3.8	1.7	56.0	110.4	41.8
Zambia	49.69	43.47	12.9	6.6	63.8	27.9	36.8
Zimbabwe	219.57	480.38	57.0	72.4	136.3	27.4	57.7
SADC	384.96	663.14	100.0	100.0	51.0	28.3	38.6

Source: UNCOMTRADE and SAGIS (2010)

Potential threats to interregional trade

Over the past three decades the structure of South African agriculture has changed. The development of risk management instruments, such as SAFEX, the establishment of predictable government market interventions and regulatory framework, as well as compliance with free trade agreements, has positioned the South African grain sector as a reliable regional supplier. However, the sector faces key challenges which may threaten this role. These include;

- **GMO's implication for trade:** SADC does not have a regional position on agricultural biotechnology nor bio-safety. South Africa and Zimbabwe have functioning legislation on GM grain, while Malawi, Mauritius, Namibia and Zambia have draft legislation. The rest of SADC members (except Angola) have

[8]SACU consists of South Africa, Botswana, Lesotho, Namibia and Swaziland.

either signed or signed and ratified the Cartagena protocol, but have no bio-safety guidelines (Feris, 2007). The absence of legislation implies that South African maize exports are likely to be subjected to stringent and sometimes arbitrary measures.

- **South African land reform:** Unresolved land claims within South Africa currently involve approximately 25% of all commercial farm land. This results in increased uncertainty, decreasing investment and potential decline in commercial agriculture. Furthermore, the implementation of land reform has resulted in a restructuring of commercial agriculture that involves decreasing farm sizes with increasing yields. However, this consolidation makes grain production more vulnerable to drought.
- **Transportation infrastructure:** Transnet (formerly Spoornet) has become inefficient due to insufficient public investment. This has resulted in increasing reliance on road transportation, which involves higher costs and higher turnaround time, for regional traders.

In order for South Africa to remain a reliable regional supplier these challenges need to be addressed. In particular, the development of consistent regional GMO policies; niche market development for non-GMO products; resolution of land reform that encourages commercial farming sector investments; as well as rail transport investment.

REFERENCES

Bizcommunity. 2010. Is food labelling effective? *Bizcommunity Daily Media, Marketing and Advertising News.* Available on the World Wide Web at www.bizcommunity.com

Chilonda, P, Olubode-Awosola O. O and Minde, I. (2008). Recent Trends and Future Prospects for Agricultural Growth, Poverty Reduction and Investment in Southern Africa. ReSAKSS-SA Trends Report No. 1 December, 2008. International Crops.

Research Institute for the Semi-Arid Tropics (ICRISAT) and International WaterManagement Institute (IWMI).

Feris, L. (2007). The EC Biotech Case and its Implications for SADC Countries. In: Draper, P and Khumalo, N (Eds). Trade in Genetically Modified Foods. Acumen Publishing Solutions, p 78 – 110.

Flatters F and Stern M. 2006. SACU Revenue Sharing: Issues and Options. Pretoria, South Africa.

Food & Beverage Reporter. 2010. Top flavour trends. *Food & Beverage Reporter.* May 2010. Available on the World Wide Web at www.developtechnology.co.za

Foodprocessing.com. 2009. *Mintel reports global consumer trend predictions for 2010.* 12 November 2009. Available on the World Wide Web at www.foodprocessing.com

Food Product Design. 2010. *Packaged Food Trends 2010.* Posted online 11 January 2010. Available on the World Wide Web at www.foodproductdesign.com

Food Review. 2007a. Setting a strong NPD pace. *Food & Beverage Review.* 1 January 2007. Available on the World Wide Web at www.foodreview.co.za

Food Review. 2007b. Reflecting the NPD Trends. Food & Beverage Review. 1 April 2007. Available on the World Wide Web at www.foodreview.co.za

Food Review. 2007c. Déjà vu – it's NoMU! *Food & Beverage Review.* 1 August 2007. Available on the World Wide Web at www.foodreview.co.za

Food Review. 2009a. Congratulations to our 2009 winner! *Food and Beverage Review.* September 2009. 36(9):12-16

Food Review. 2009b. Trends 2010: Innova Market Insights. *Food & Beverage Review.* 8 December 2009. Available on the World Wide Web at http://foodreview.co.za

Food Review. 2010. Datamonitor: Trend Predictions for 2010. 31 March 2010. *Food and Beverage Review.* Available on the World Wide Web at http://foodreiview.imix.co.za

Frisby, O. 2010. Global Food Awards Finalists. *SAAFoST press release.* Available on the World Wide Web at www.saafost.org.za

Futurefact. 2007. Class mobility presentation. Available on the World Wide Web at www.futurefact.co.za

Gouse M, Piesse, J. and Poulton, C. 2009. Assessing Performance of GM Maize Amongst Smallholders in Kwazulu Natal, South Africa. AgBioForum, 12(1) 78 – 89.

Jones L. 2009a. Taste the trend. *Food and Beverage Review.* 27 August 2009. Available on the World Wide Web at http://foodreview.co.za

Jones, L. 2009b. This is the latest South African trends says Coley Porterbel. *Food Review.* 26 November 2009. Available on the World Wide Web at http://foodreview.co.za

Jones L. 2010. Product of the Year winners in food show up! F*ood & Beverage Review.* 29 January 2010. Available on the World Wide Web at www.foodreview.co.za

Kapuya T. 2010. Modelling the Impact of the "Fast Track" land reform on Zimbabwe's maize sector. Unpublished Thesis

Kasriel D. 2010. Top 10 consumer trends for 2010. Euromonitor. 8 February 2010. Available on the World Wide Web at www.euromonitor.com

Lempert P. 2009. The Top Trends for 2010. *Facts, Figures & The Future.* Available on the World Wide Web at www.factsfiguresfuture.com

Minot, N. (2010). "Transmission of World Food Price Changes to African Markets and its Effect on Household Welfare." Paper presented at the COMESA Policy Seminar, Maputo, Mozambique.

MoAMID (2010). Ministry of Agriculture, Mechanisation and Irrigation Development:

Second Round of Crop and Livestock Assessment Report 9 April 2010. Government of Zimbabwe Publications.

Monke, EA and Pearson, SR, (1989). *The Policy Analysis Matrix for Agriculture Development*. Cornell University Press: Ithaca

Mukhatar, T and Muhammad, I, (2009). WTO and Pakistan's agriculture: A price integration and welfare analysis for Wheat. *Journal of Economic Cooperation and Development*. 30(1): 59-86

Nel, Tinus (2009 and 2010). Managing Director, Companhia Industrial Da Matola (CIM). Personal Interview. Maputo, Mozambique.

Neall B. 2006a. First off for 2006. *Food & Beverage Review*. 1 January 2006. Available on the World Wide Web at www.foodreview.co.za

Neall B. 2006b. Innovation in many forms. *Food & Beverage Review*. 1 April 2006. Available on the World Wide Web at www.foodreview.co.za

Neall B. 2006c. Realising the impossible. *Food & Beverage Review*. 1 August 2006. Available on the World Wide Web at www.foodreview.co.za

Neall B. 2006d. Viva Red Espresso! New Product of 2006! *Food & Beverage Review*. 1 October 2006. Available on the World Wide Web at www.foodreview.co.za

Nielsen. 2005. A country divided – Consumer spending trends in the dual economy. AC Nielsen Market Intelligence Report. 15 April 2005. Available on the World Wide Web at www.foodreview.co.za

Nielsen. 2010a. Despite improving economy, alcohol beverage consumers cautiously indulge. *News Release*. 16 June 2010. Available on the World Wide Web at www.nielsen.com

Nielsen. 2010b. Nielsen Unveils retail 2015 forecast. *News Release*, 15 June 2010. Available on the World Wide Web at www.nielsen.com

Organic Wellness News. 2010. *Mintel CPG trend predictions for 2010*. January 2010. Available on the World Wide Web at www.orgnaicwellnessnews.com

Paul K. 2010. An overview of the South African label market. Packaging Review. 18 February 2010. Available on the World Wide Web at http://packagingreview.imix.co.za

Potatopro.com. 2009. US Food Trends 2010: Supermarket guru Phil Lempert see 7 trends. 8 December 2009. Available on the World Wide Web at www.potatopro.com

SACU (2010) Southern African Customs Union 2002 Agreement. SACU, Windhoek, Namibia.

SADC (Southern African Development Community) Secretariat.(2003) SADC Free Trade Area: Handbook. Gaborone, Botswana.

SADC Secretariat.(2002) SADC Trade Protocol: Tariff Phase Down Schedules. Gaborone, Botswana.

SAGIS (2010) SA Maize Exports by SAGIS. Online data (June 2010).

Shaw L. 2008. Koo samp & beans in a can wins new product of the year. Food & Beverage Review. 8 October 2008. Available on the World Wide Web at www.foodreview.co.za

South African Advertising Research Foundation (SAARF). 2010a. SAARF Segmentation Handbook – Based on AMPS 2008B and AMPS 2009A. Johannesburg: SAARF.

South African Advertising Research Foundation (SAARF). 2010b. SAARF Trends, 2005 to 2009 – Based on data from SAARF AMPS. Johannesburg: SAARF.

South African Advertising Research Foundation (SAARF). 2009. SAARF New Extended LSMS. Presentation. January 2009. Available on the World Wide Web at www.saarf.co.za

Stephans, E., Mabaya, E., Von Cramon-Taubadel, S., and Barrett, S. (2008) "Spatial Price Adjustment with and without Trade", paper presented at the AAEA Annual Meeting, Orlando, Florida.

Supermarket & Retailer. 2009. Product of the Year 2009 winners announced. *Supermarket & Retailer*, February 2009. Available on the World Wide Web at www.supermarket.co.za

Supermarket & Retailer. 2010. South Africa: What's causing sleepless nights for retailers? *Supermarket & Retailer*. January 2010. Available on the World Wide Web at http://en.sial.fr

Supermarket & Retailer. 2010b. South Africa: Top food trends for 2010. *Supermarket & Retailer*. January 2010. Available on the World Wide Web at http://en.sial.fr

The Wellness Foods staff, Foodprocessing.com. 2009. The next wave: Wellness food trends for 2010 – Our annual look at the future of better-for-you foods. 23 November 2009. Available on the World Wide Web at www.foodprocessing.com

Tschirley, D. and Abdula, D. (2007). "Toward Improved Marketing and Trade Policies to Promote Household Food Security in Central and Southern Mozambique: 2007 Update". Research Report No. 62 E. Republic of Mozambique.

UNCOMTRADE (2010) Trade Data Online Database (June 2010)

Van Rensburg, Carla (2009). Junior Trader, AFGRI. Personal Interview. Centurion, South Africa.

Webster, J., Keetch, D., and Guthrie, B. (2007). Overview of Global Status of Agricultural Biotechnology. In: Draper, P and Khumalo, N (Eds). Trade in Genetically Modified Foods., Acumen Publishing Solutions, and p.23 55.

World Bank. 2007. *Enhancing agricultural Innovation: How to go beyond the strengthening of research systems.* World Bank: Washington D.C.

ZCGPA (2010). Zimbabwe Grain Producer's Association. Unpublished Database.