The South African Agricultural Baseline

2011

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ACKNOWLEDGEMENTS

ABSA Agribusiness
Agri Benchmark
Distell
Food and Agricultural Policy Research Institute (FAPRI), University of Missouri
Food and Agricultural Organization (FAO)
GWK Ltd.
Hortgro Services (SAAPPA)
NWKLtd.
Maize Trust
National Agricultural Marketing Council (NAMC)
Department of Agriculture Forestry and Fisheries (DAFF)
Overberg Agri
Potato SA (PSA)
Protein Research Foundation (PRF)
Red Meat Producers' Organization (RPO)
South African Breweries (SAB)
South African Cane Growers' Association
South African Feedlot Association (SAFA)
South African Grain Information Service (SAGIS)
Southern African Poultry Association (SAPA)
South African Pork Producers Organization (SAPPO)
South African Table Grape Industry (SATI)
South African Wine Information Service (SAWIS)
Senwes Ltd.
VinPro

FOREWORD

The Bureau for Food and Agricultural Policy (BFAP) (www.bfap.co.za) is a virtual network linking individuals with multi-disciplinary backgrounds to create a coordinated research system that informs decision making within the Agricultural Food and Beverage System of South and Southern Africa. The core analytical team consists of independent analysts and researchers who are affiliated with 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 Southern 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. .

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CONTEXT AND PURPOSE OF THE BASELINE

The BFAP baseline 2011 presents an outlook of Southern African agricultural production, consumption, prices and trade for the period 2011 to 2020. 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 Southern 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 the World Bank. Baseline projections for world commodity markets are taken from the OECD-FAO Aglink Cosimo model and the FAPRI 2011 US and World Agricultural Outlook. Once the critical assumptions are captured in the BFAP sector 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*.

In 2008, BFAP baseline projections were published when crude oil, grain and oilseed prices were at 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 would be trading at higher levels than seen prior to the surge in global and domestic prices that started in 2006. In other words, the argument was that agricultural commodity markets had shifted to a new equilibrium with higher average prices and a wider variation in prices. The 2009 baseline projections seem to have held as world prices for most agricultural commodities since then kept on trading at higher levels throughout the period of the financial crises and since June 2010 have started to increase again.

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. Markets are extremely volatile and the probability that future prices will not match baseline projections is high. 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 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 2011 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.

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EXECUTIVE SUMMARY AND IMPLICATIONS

During the past 12 months, agricultural commodity markets experienced significant volatility as the balance between supply and demand tightened whilst markets were also significantly influenced by a wide range of exogenous forces. The sharp rise and renewed volatility in agricultural commodity prices since August 2010 was sparked by a chain of adverse weather conditions in key producing areas, such as the drought in Russia, and with exceptionally low stock levels especially for coarse grains, world supplies of grain were reduced. The general shortfall in grain available for usage was exacerbated by stronger economic growth in Eastern Europe, Asia and Latin America, which boosted the demand for energy and food. Apart from weather, stronger linkages between agricultural commodities and energy markets through inputs such as fuel and fertilizer, and through the demand for feedstock in the biofuels industry, has increased the transmission of volatility in energy markets to agricultural markets. This implies that world economic growth and volatility not only drives agricultural markets through food demand, but also through energy demand. In this regard, the OECD- FAO Agricultural Outlook 2011-2020 projects a gradual decline in GDP growth rates for all major economies beyond 2013. These projections are based on the assumption that major developing economies such as India and China will attempt to curb inflation, which is likely to result in energy prices remaining at reasonable levels.

Slower economic growth of the major global players will affect South African economic growth negatively and therefore in this year's Baseline the real per capita gross domestic product (GDP) is projected to peak at 4.6% in 2013 and then gradually decline to just over 2% by 2020. Oil prices are projected to trade within the band of US $110 – US $120 during the baseline projection period of 2011 to 2020. The Rand is projected to remain relatively strong and only a very gradual depreciation in the exchange rate is anticipated. On the basis of a more cautious outlook of world economic growth over the next decade, the demand for food in general is expected to grow consistently mainly due to population growth, whilst in real terms world commodity prices are likely to remain fairly stagnant albeit at a higher plateau compared to the previous ten year period from 2000 to 2010. The projected higher price plateau is not only supported by the growth in demand, but also by resource constraints, particularly those related to water and land. The costs, risks and barriers of breaking new land and producing on a sustainable but competitive basis globally are rising as production has to expand beyond the traditional well developed production areas.

In 2009 and 2010, real net farming income of the South African agricultural industry declined by 12% and 15% respectively. This trend is expected to be reversed in 2011 with an anticipated growth rate of 29%. This expectation is on the basis of significantly higher agricultural commodity prices currently seen in the markets. After 2011, the outlook of real net farming income is projected to remain fairly stagnant as the general rise in commodity prices is dampened by firstly a global supply response in 2012 on the assumption of weather patterns normalising, secondly projected subdued economic growth beyond 2013, thirdly; the relative strength of the exchange rate keeping import parity related prices such as wheat fairly stagnant, and lastly; the impact of relative high input costs due to sustained high crude oil prices and increasing labour costs. Real growth in the income of field crops and horticulture is projected to remain relatively stagnant, whilst a 2.7% annual average growth rate is projected in the real gross value of animal products from 2011 to 2020.

The total area under field crops is projected to increase by more than 400 000 hectares in 2012 on the back of significant improvements in profit margins in 2011 that boosted the cash flow positions of many farmers, as well as higher expected commodity prices at the time of planting. Whereas the area planted to white maize is projected to increase by 5%, the area planted to yellow maize is anticipated to increase by 14% to more than 1.1 million hectares in 2012. Sunflower plantings are anticipated to contract marginally in 2012 and the area under soybeans is expected to expand by an additional 22 000 hectares to reach 440 000 hectares. Following the expansion of maize plantings in the summer production region, slightly less wheat will be planted in 2012 due to rotational cropping systems and lower wheat prices. Over the long run the area under wheat, barley and canola is expected to remain constant as farmers remain in a fixed rotational system, and in some cases expand their livestock enterprise in order to diversify income and thereby reduce risk. Over the remainder of the baseline period relative switches between the various field crops are expected with yellow maize and soybean plantings increasing at the expense of white maize and sunflowers. It is anticipated that under the current South African biofuel industrial strategy, the demand for feedstock for the production of biofuels within South Africa will be negligible. Apart from policy, the primary constraint to the use of sugarcane locally in ethanol production is projected to increase world sugar prices resulting in sustained exports of sugar from South Africa to other parts

of the globe. In the case of maize, increasing South African export parity prices will constrain the use of this commodity as a prime feedstock for biofuel production locally.

The view that over the next decade a relative shift will occur in staple food consumption away from maize into bread, pastas, potatoes and rice, is adjusted in this Outlook due to slower economic growth beyond 2013. The demand for potatoes and wheat based products is projected to grow by 18% and 20% respectively, while the consumption of maize meal is projected to remaining stagnant. The increase in the demand for beef over the next decade is expected to match that of the past decade averaging an annual growth rate of 3%. Although the consumption of chicken meat is projected to maintain a rapid rate of expansion at approximately 4% per annum, it will not match the sharp rise of 70% that occurred during the past decade; the reason being projected lower rate of increase in real per capita income for the period 2011 to 2020. Some 2.3 million tons of chicken meat will be consumed by 2020. Chicken meat production is anticipated to grow by 38% from 1.4 million tons to 1.9 million tons over the next decade, implying South Africa will remain a net importer of chicken meat. The production of eggs will expand at a slightly slower pace of 29% during the baseline period which will be sufficient to meet the total demand for eggs of 498 000 tons by 2020. The negative trend in sheep meat production is likely to be converted to a positive trend over the outlook period as production is expected to increase due to profit margins exceeding those of grain farming. However, the expected turnaround in production is only likely to occur in areas were stock theft is limited, namely the Western and Northern Cape. The demand for fresh milk and dairy products is expected to increase by 23% and 31% respectively during the baseline period.

The upward trend in area planted to table and dried grapes is projected to break in 2011 and to stagnate between 2011 and 2014, before increasing again from 2015 onwards to reach 23 780 ha in 2020. The export prices for table grapes are projected to follow an increasing trend in nominal terms with an average annual increase of 7 percent. With a projected inflation rate of 6 percent for the baseline period, table grape prices in real terms are projected to increase on average by only 1 percent per year. The increase in real prices is driven by rising demand, especially in non-European markets, the slightly depreciating Rand against the Euro and Dollar, and also a stabilization in Southern Hemisphere exports which in turn creates market space for South African table grape exports to occur.

From a strategic planning point of view, the Outlook of agricultural markets that is presented by this Baseline can be considered as "cautious" or "conservative". It presents only one plausible outcome of future events where the world economy recovers very slowly and as a result energy prices remain fairly stagnant within a band with some level of volatility from time-to time. Risk and probability analysis in terms of the price levels presented in the baseline indicate that the probability of prices increasing relative to that presented in the baseline is significantly higher than for prices to be lower. With current tight stock-to-use levels, increasing input costs that limit the rapid expansion of production, significantly stronger linkages between agricultural commodities and energy prices, and potential adverse weather conditions to occur at a higher frequency compared to the past 10 years, it is likely that prices could be significantly higher than what is presented in this year's Baseline. This year's harvests in the Northern hemisphere are critical and markets will respond bullish to any indication that production might not reach the projected levels. Surplus maize stocks in South Africa are currently being exported as maize is competitively priced in deep sea export markets. Although the export market for white maize into neighbouring countries has diminished considerably over the past two seasons due to maize surpluses produced in a number of countries within Africa, the sustainability of surplus production in Southern Africa remains uncertain as government policies play a decisive role in providing incentives to small and large scale producers, and there are doubts about the fiscal sustainability of such support.

Lastly but most importantly, with respect to employment opportunities in South African agriculture, South Africa has the natural and human resource potential to expand agricultural output and therefore create more employment opportunities than what is projected in this Outlook. However, the expansion in production and thereby increased employment is not something that will happen without a favorable, committed, and aligned social, political and economic environment. Furthermore, various restrictions currently exist which limit the ability to expand production and thereby create employment opportunities. Examples of limitations are the local and expensive transport infrastructure which diminishes the competitiveness of local value chains in both the local and global markets, trade barriers into foreign markets limiting the ability of local producers and processors to compete in global markets, and the limited and sometimes inefficient usage of key resources such as water and high potential production soils. Since South Africa has a limited area that has sufficient precipitation for rain fed cash crop production, irrigation water is a key natural resource to consider. Over the period considered (up until 2020) 145 000 hectares can be added to the existing area under irrigation. If most of the expansion on this land is in labour intensive industries, an estimated 200 000 direct employment opportunities with 100 000 down stream jobs in value chains can be created under ideal circumstances.

OVERVIEW

Introduction

The agricultural sector's growth declined in 2010 due to sluggish economic recovery and stagnant commodity prices. However, the fall in the growth of the sector since 2008 is projected to recover somewhat in 2011 as the result of a rebound in commodity prices and a continuation of economic recovery, albeit a fairly low rate. In addition, a modest projected growth of agricultural income is also expected to spur a 1.3% annual average growth rate in agricultural GDP from 2011-2020. However, real net farming income is expected to remain stagnant during the baseline period due to a deterioration in the terms of trade, which results in higher growth in input expenditure than the gross income.

Real Gross Value of Field Crops

Real gross income from field crops decreased by 17% in 2010. The decline is mainly due to lower real domestic prices, which arises from the sluggish growth in world commodity prices. The recovery of world commodity prices in 2011, however, is projected to spill over into increased domestic commodity prices and gross income from field crops. Thus, the gross income is expected to grow by 25% in 2011. However, it is projected to remain relatively constant from 2011 to 2020 following the trend of real world commodity prices and area planted.

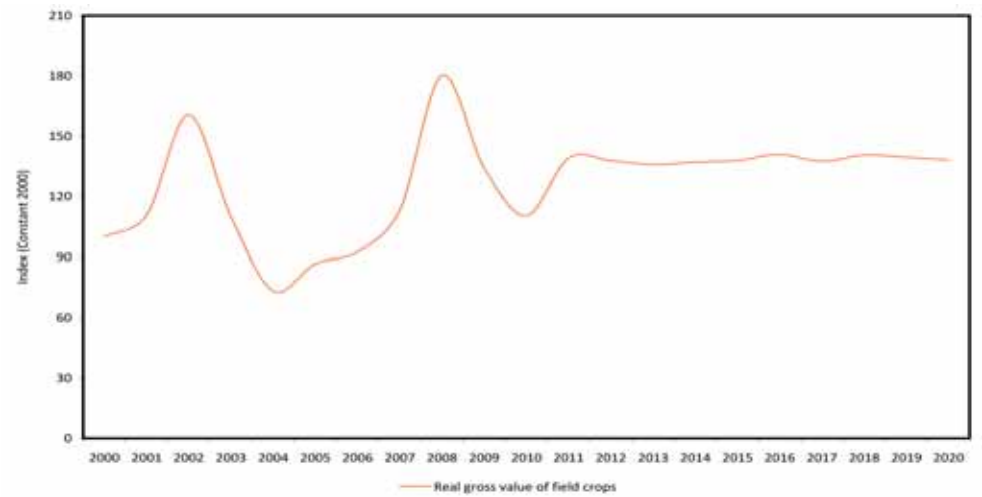

Figure 1: Real gross value of field crops

Real Gross Value of Animal Products

The modest growth in animal product prices and slower economic recovery has resulted in stagnant real gross income from animal products in 2010. However, its contribution to the total income of agriculture has risen to 51% during the same period. The recovery of animal products prices in 2011 is expected to spur the growth of real income from animal products by 7.2%. In addition, a 2.7% annual average growth rate is expected from 2011 to 2020 due to a projected growth in real disposable income and animal product prices.

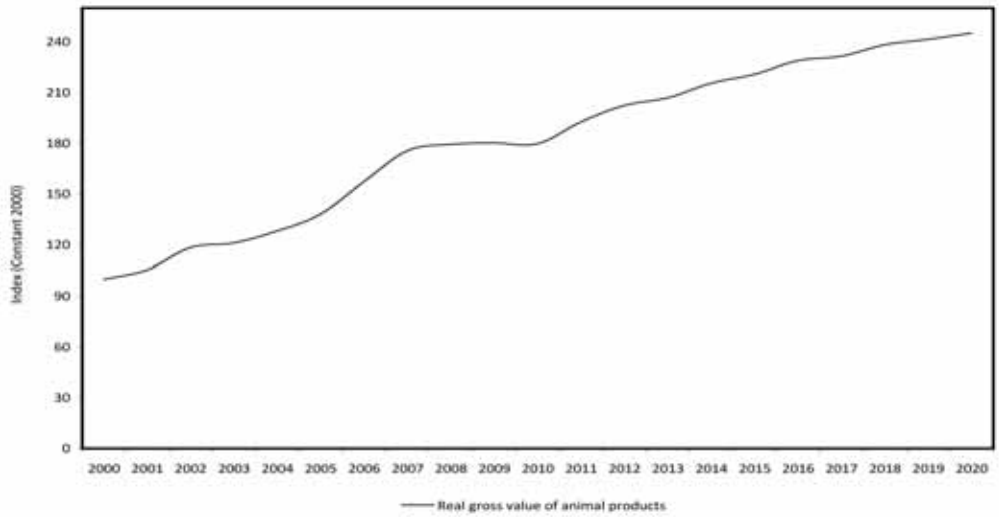

Figure 2: Real gross value of animal products

Real gross income of table grapes, apples and pears

The real gross income of table grapes, apples and pears increased only by 0.7% in 2010 due to a marginal increase in real prices for the fruits. However, a projected decline in production for table grapes and pears, despite the recovery of the prices, is projected to depress gross income by 3.5% in 2011. During the baseline period, however, real gross income of these fruits is projected to increase by an 0.47% annual average growth rate.

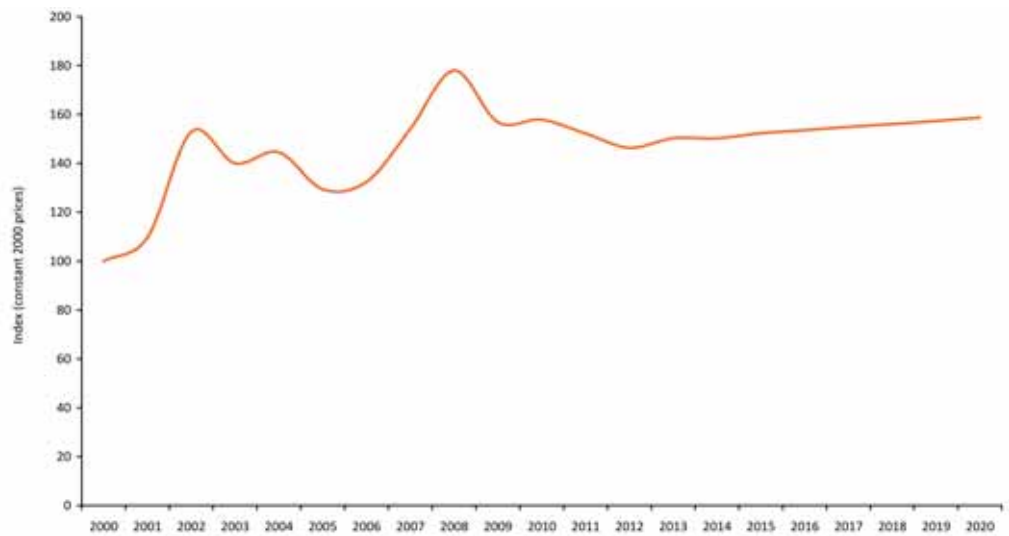

Figure 3: Real gross income of table grapes, apples and pears

Real gross income of the agricultural sector

The sluggish commodity prices and economic growth has resulted in a decrease in the real gross income (RGI) of agricultural sector of 4.5% in 2010, which is mainly due to the fall in gross income from field crops and stagnant of income from animal products. The projected higher commodity prices and the expected

economic recovery are projected to reverse this trend. Hence, real gross income of the agricultural sector is expected to grow by 13% in 2011. The projected low growth rate for income from field crops and modest growth rate for animal products are expected to induce a 1.8% annual average growth rate of the total income of the sector from 2011 to 2020.

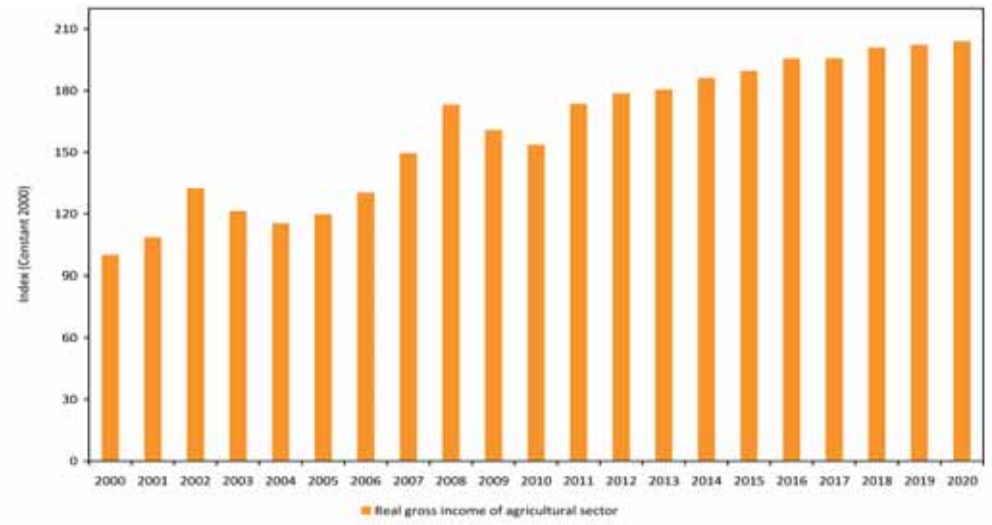

Figure 4: Real gross income of the agricultural sector

Real intermediate 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 general, the rise in input costs has contributed to a 3 percent growth in intermediate input expenditure in 2010. The projected increase in oil and fertilizer prices, however, is expected to increase the real input expenditures by 6.6% in 2011. The projected upward trend in input costs and depreciation of the exchange rate is also expected to increase intermediate input expenditure by an annual average of 2.4% from 2011-2020.

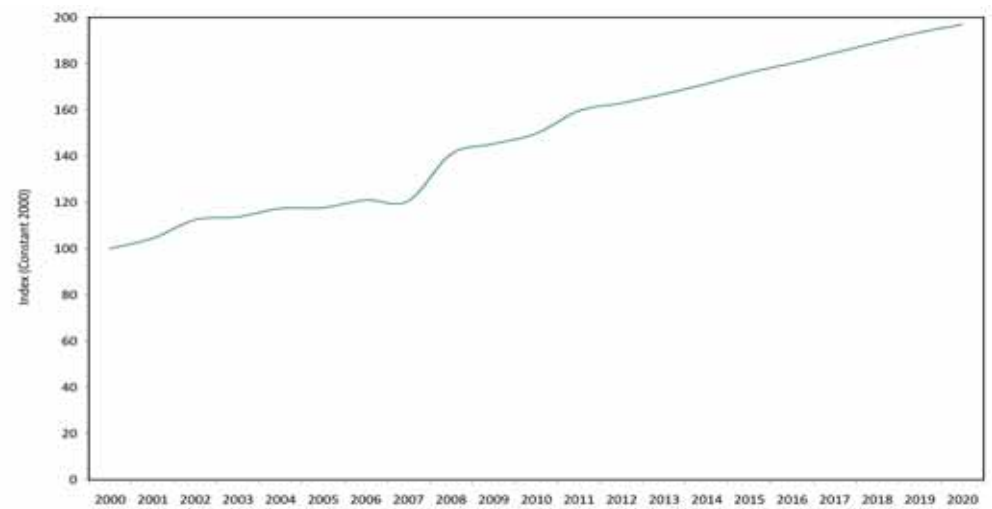

Figure 5: Real intermediate input expenditure

Real gross value added of the agricultural sector

The real gross value added of the agricultural sector (agric GDP) is the contribution of the sector to the economy. It is computed as the difference between the gross income (including own construction and change in livestock inventory) and intermediate input expenditure. The sluggish growth in agricultural income and higher input expenditure reduced the real value added of the sector by 10% in 2010. Prompted by higher growth in income from field crops and animal products, gross value added is projected to grow by 18% in 2011. A 1.3% annual average growth rate is projected during the baseline period.

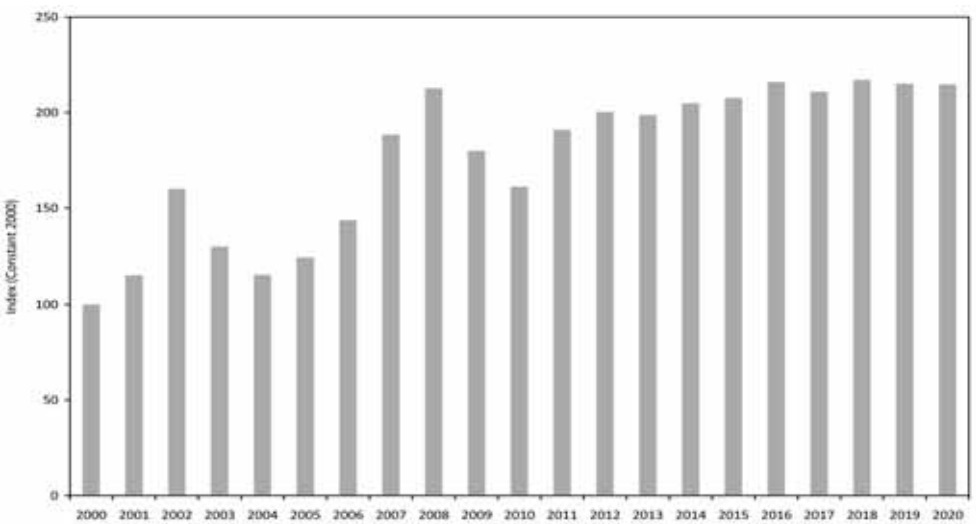

Figure 6: Real gross value added of the agricultural sector

Real net farming income

net farming income shows the producer's income after paying rent, interest, labour remuneration, allowing for depreciation and for the effect of inflation. The net farming income has declined by 15% in 2010 mainly due to a fall in the gross income of the sector and higher input expenditures. The decline in net farming income since the peak level of 2008 is expected to be reversed in 2011, when the gross income is projected to grow substantially more than the input expenditures. Thus, a 29% growth is expected in 2011. For the baseline projection period, however, higher projections of input expenditures induced by the rise in costs and a sluggish growth in output prices are projected to induce stagnation in the growth in real net farming income.

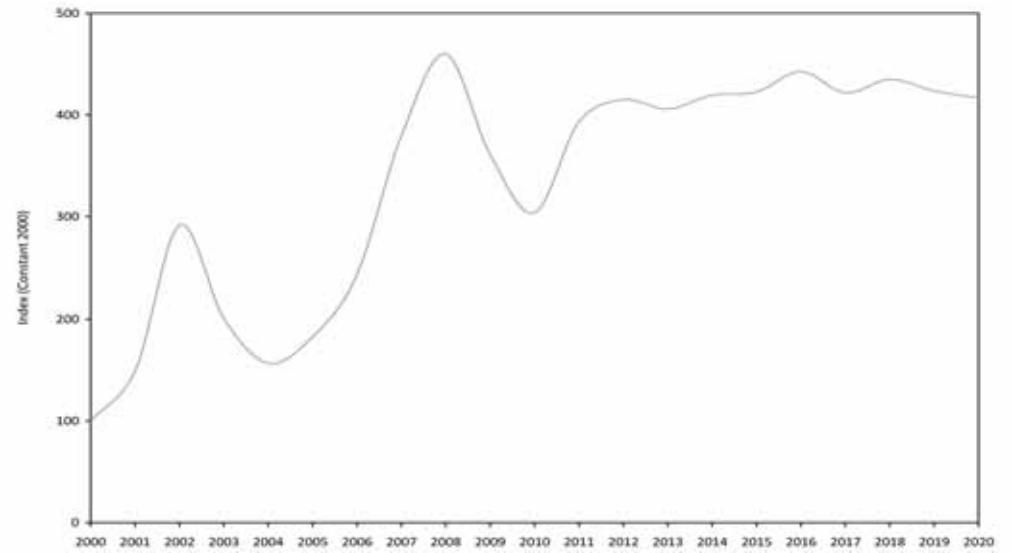

Figure 7: Real net farming income

Real Agricultural Debt

The real agricultural debt increased by 5 percent in 2010 following the decline net farming income. It is also projected to increase by a 3.5% annual average growth rate from 2011-2020 due to a projected growth in gross capital formation and an increasing interest rate. Moreover, sluggish to negative growth in real net farming income contributes to the rise in the debt of the sector. Thus, the debt burden (which is the percentage of the total debt to the total asset value) is projected to increase slowly and reach 29% in 2020.

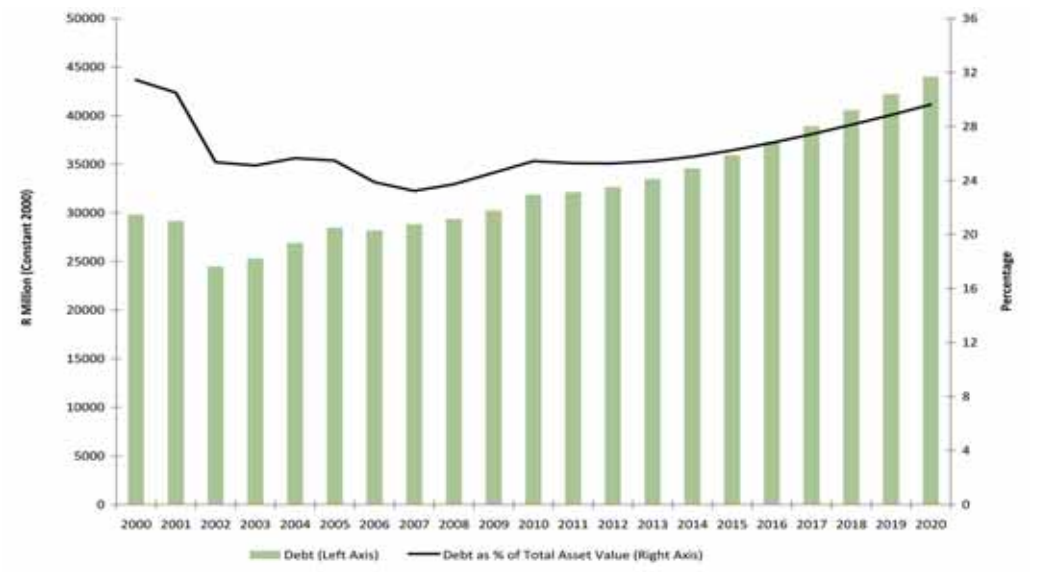

Figure 8: Real agricultural debt

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. On the domestic front, current policies are 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 the reference price that triggers the variable import levy on wheat was adjusted upwards from $157/ton to $215/ton. However, current levels of world prices for both maize and wheat are significantly higher than the references prices, therefore, the duty on imported wheat and maize is zero. 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 is implemented. The projected tariff levels, as derived from the OECD-FAO projections of world commodity prices, are presented in the table on page 7.

In the case of biofuels, the South African government published its industrial strategy on biofuels in December 2007. This strategy has been incorporated into the model by taking tax rebates into consideration that have been allocated.

Macroeconomic assumptions

In the case of biofuels, the South African government published its industrial strategy on biofuels in December 2007. This strategy has been incorporated into the model by taking the relevant tax rebates into consideration.

Table 1: Key policy assumptions

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	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	0	0	0	0	0	0	0	0	0	0
Sunflower seed tariff: 9.4% of fob	287	388	335	359	378	393	407	419	428	436	446
Sunflower cake tariff: 6.6% of fob	90	84	68	75	77	80	80	80	79	77	75
Sorghum tariff: 3% of fob	38	51	46	48	50	53	55	57	58	60	61
Soybean tariff: 8% of fob	234	266	247	253	260	272	284	299	306	318	329
Soybean cake tariff: 6.6% of fob	146	138	130	139	145	150	153	156	159	161	162
	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										
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										
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)	633	655	679	716	751	784	814	842	868	898	926
Lamb tariff: max(40%* fob,200c/kg)	1054	1263	1227	1228	1266	1309	1382	1435	1489	1547	1599
Chicken tariff: 220c/kg	220	220	220	220	220	220	220	220	220	220	220
Pork tariff: max(15%* fob, 130c/kg)	138	131	139	146	153	162	170	179	187	193	198

Table 2: Key macro economic assumptions

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
					Millions						
Total population of SA	50.5	50.8	51.1	51.3	51.5	51.7	51.9	52.1	52.3	52.5	52.7
				SA cents/Foreign currency							
Exchange rate (SA cents/US$)	757	708	733	757	781	807	831	854	878	903	929
Exchange rate (SA cents/Euro)	1003	1046	1065	1100	1139	1180	1220	1259	1299	1341	1385
				Percentage change							
Real GDP per capita	2.7	3.7	4.2	4.6	3.9	3.4	2.9	2.6	2.3	2.1	2.1
GDP deflator	4.3	5.8	6.7	6.3	6.1	6.0	6.0	6.0	6.0	6.0	5.7
					Percentage						
Weighted interest rate	9.42	9.00	10.00	10.07	10.13	10.20	10.27	10.33	10.40	10.47	10.53

SOUTH AFRICAN OUTLOOK

SUMMER GRAINS

Global maize situation and trends

Due to an expansion in the area planted to maize in the US the outlook for world maize production in 2011 is favourable and is forecast to increase by 3.8% compared to 2010. This forecasted increase in output may just be sufficient to meet anticipated use in 2011/12. Feed and industrial use of maize in 2011/12 is likely to increase, although not as fast as in 2010/11 as some price-conscious users are expected to include larger amounts of alternative feeds, such as wheat and barley. Despite expected larger crop, world stocks are not expected to be replenished in 2011/12 as total demand marginally outstrips total supply. However, the stocks-to-use ratio will remain near historic lows: international prices have been reflecting the tightening of maize markets. Maize in 2011/12 has traded at prices above the 2008 highs which may pave the way for some demand rationing. Consequently, market prices may drift lower in 2011/12, although much will depend on the final harvest outcomes. [Source: FAO Food Outlook, June 2011 & USDA World Agricultural Supply and Demand Estimates, 9 June 2011].

World coarse grain market at a glance

International maize prices are projected to decline in 2012 as production is expected to rise due to producers increasing planted acres because of higher prices. Over the baseline of 2011 to 2020, the Argentinean maize price is projected to increase in nominal terms from US$ 244 per ton in 2012 to US$ 262 per ton in 2020. The price of USA yellow maize will rise, in nominal terms, from an average of US$ 247 per ton in 2012 to reach US$ 261 per ton by the end of the outlook period (Figure 9). The projected price levels are expected to remain above the long-term historical average. However, when adjusting the projected prices for inflation, prices, in fact, will decline in real terms.

Total world coarse grain production, of which maize constitutes the largest part, is expected to increase by 18% compared to the average production levels from the base period 2008 to 2010. Significant increases in production are projected for Argentina, Brazil, China, the Russian Federation, Ukraine and the United States. The increase in production is mainly the result of an increase in planted area rather than improved yields. The total coarse grain area is projected to increase by 6.6% relative to the base period, with notable increases in Brazil, Argentina and Canada, as well as several Sub-Saharan African countries. Coarse grain

yields are however projected to only increase by 0.8% p.a., below historical trends [OECD-FAO Agricultural Outlook 2011-2020, June 2011].

World coarse grain utilisation is projected to increase by 18% compared to the base period, driven largely by expansion in feed and biofuel demand. Projected annual growth (1.4%) is less than in the previous decade (2.6%) because the rate of reduction in coarse grain food demand is expected to outweigh the rate of increase in feed and industrial use. Maize-based ethanol production in the US is projected to expand until 2015 before slowing down in the years following, due to the introduction of ethanol from cellulosic material within the US mandate and the cancellation of import tariffs on ethanol. World use of coarse grain for biofuels is projected to reach 166 million tons, nearly 34% more than in the base period, although its share of total production in 2020 is expected to remain at 12.6% [OECD-FAO Agricultural Outlook 2011-2020, June 2011].

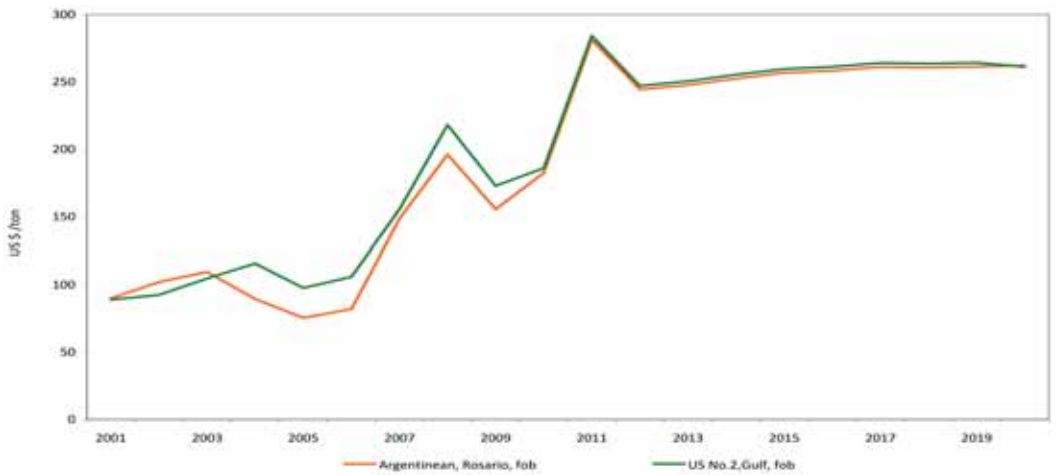

Figure 9: Yellow maize world prices

Source: FAPRI & BFAP

Domestic summer grain situation and trends

South African producers responded to lower maize prices during 2010 by decreasing total maize plantings by 13% in 2011. White maize plantings declined by 18% to 1.4 million hectares while yellow maize plantings declined by 7% to 954 000 hectares in 2011. The area planted to sorghum declined by 20% to 69 200 hectares (Figure 10).

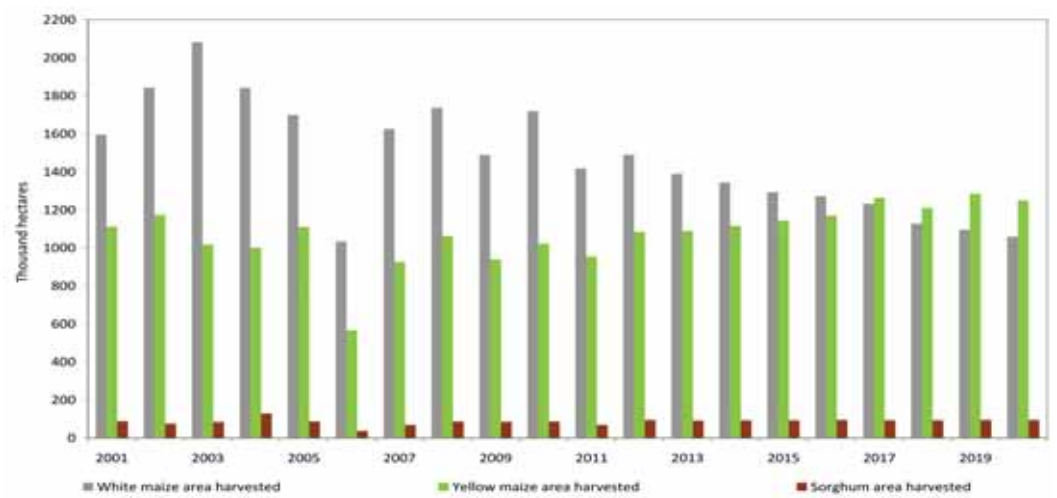

Figure 10: Summer grain area harvested

Domestic maize situation and trends

Due to the decrease in domestic production and a high level of exports, maize ending stocks are projected to decline in 2011 to 1.4 million tons, down by 950 000 tons compared to 2010.

After a decline during 2010, domestic maize prices followed world prices and to-date has been mostly showing an increasing trend for the first part of 2011. However, the effect of the increase in international prices on local maize prices was so far partly mitigated by the strengthening of the exchange rate. An average white maize price of R1 770 per ton is projected for 2011, which is 36% higher than the 2010 price. The average yellow maize price is projected to increase by 30% to R1 789 per ton during 2011 (Figures 11 and 12).

The surge in local maize prices during the 2010/2011 marketing year is likely to incentivise producers to expand maize plantings during 2012. White maize plantings are projected to increase by 5% to 1.5 million hectares and yellow maize by 14% to 1.1 million hectares.

Given the projected prices, the total 2011 maize exports are expected to reach 2.2 million tons. Based on the assumption of normal weather South Africa is projected to be a net exporter of white and yellow maize over the baseline period.

White and yellow maize prices are expected to decline marginally in 2012 on the back of softer export parity prices and higher production that keeps the local market at export parity. However, there is a significant probability of an upward swing in prices in 2012 if any expectations enter the market that the 2010/2011 crop might be smaller if export parity prices increase on the back of higher world prices or if the Rand weakens against the US Dollar. From 2013 onwards to the end of the baseline period white and yellow maize parity prices are projected to increase due to higher international prices and the projected depreciation of the exchange rate.

Human consumption of maize is projected to decline slightly over the baseline period to reach 4.58 million tons in 2020, 4.6% lower than the 4.8 million tons consumed as food in 2010. However, the demand for maize as animal feed is expected to increase from 4.7 million tons in 2010 to close to 6.4 million tons by the end of the baseline period. In the domestic market, the increase in feed demand will more than offset the decline in the human food market. The utilisation of maize by the bio-fuel sector will remain at a relative low level compared to the feed and food market, unless biofuel policies with respect to maize usage is changed to allow the inclusion of maize for biofuel production.

After the forecasted increase in maize plantings in 2012, maize plantings will decline during the remainder of the baseline period and will eventually consolidate around 2.3 million hectares. However, producers are projected to respond to the higher demand of maize by the animal feed sector and will increase yellow maize plantings at the expense of white maize. Yellow maize plantings are expected to increase to 1.25 million hectares while white maize plantings will decrease to 1.06 million hectares by the end of the baseline period. It seems 2.3 million hectares of maize plantings is more likely to be the long-term threshold beyond 2015 and if plantings drop below this level, local maize prices will break away from export parity levels.

Despite the decline in the total maize acreage, total maize production is forecasted to maintain a level of close to 12 million tons by the end of the baseline period due to the projected improvements in yields.

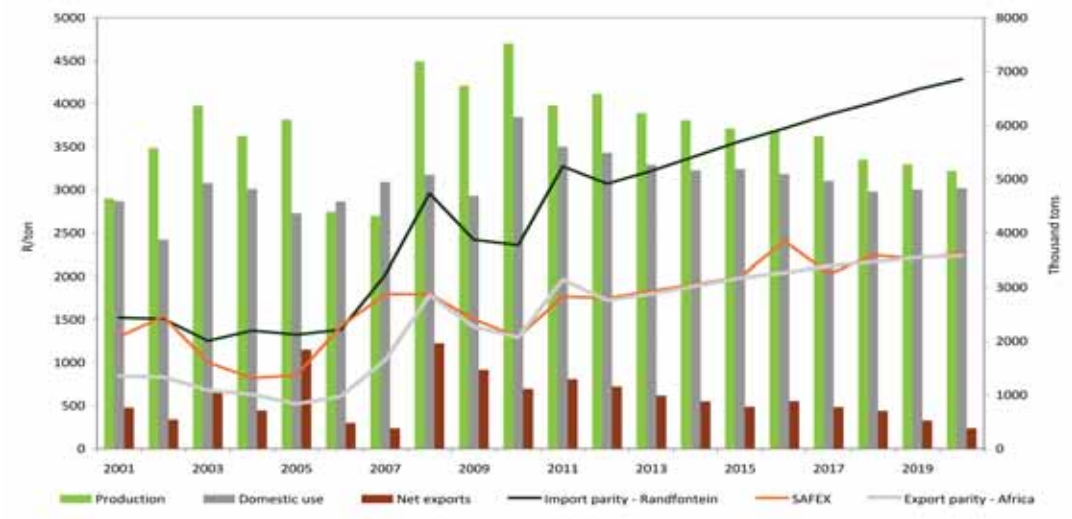

Figure 11: White maize production, domestic use, net trade and prices

Figure 12: Yellow maize production, domestic use, net trade and prices

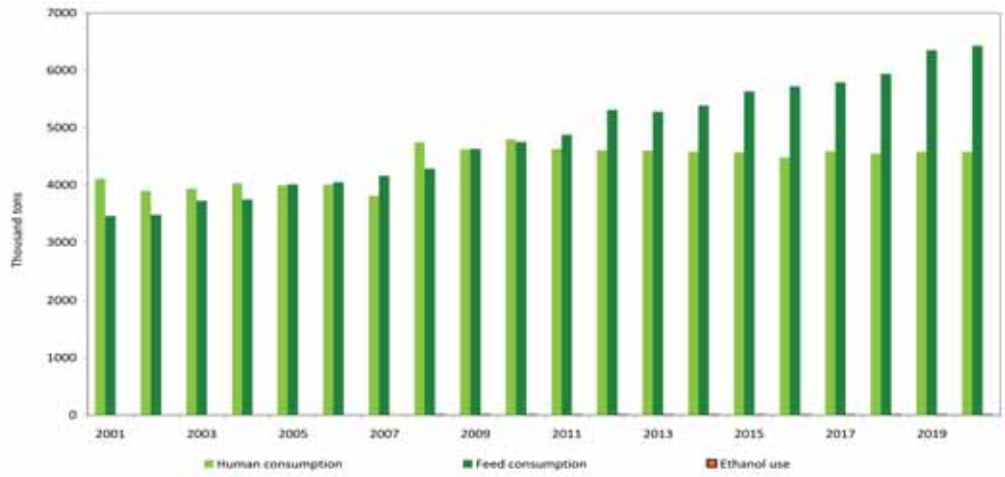

Figure 13: Total maize domestic use

Domestic sorghum situation and trends

The area planted to sorghum decreased by 20% to 69 200 hectares during 2011 (Figure 14) but due to higher yields, compared to 2010, the local sorghum crop is expected to increase slightly to 201 800 tons.

The sorghum producer price followed the local maize price during 2011. An average sorghum producer price of R1 650 per ton is projected for 2011 which is close to the average 2010 price. Following the marginally lower maize prices, the local sorghum prices are forecasted to move lower in 2012, but will increase again from 2013 onwards to reach R2 365 per ton in 2020.

Due to the higher maize prices relative to sorghum prices during planting producers are expected to decrease sorghum plantings to 73 800 hectares in 2011/12.The area under sorghum is projected to decline over the next decade as the relative profitability compared to maize production deteriorates due to fast improving maize yields.

Domestic consumption of sorghum is also forecasted to decline marginally over the baseline period to approximately 195 000.

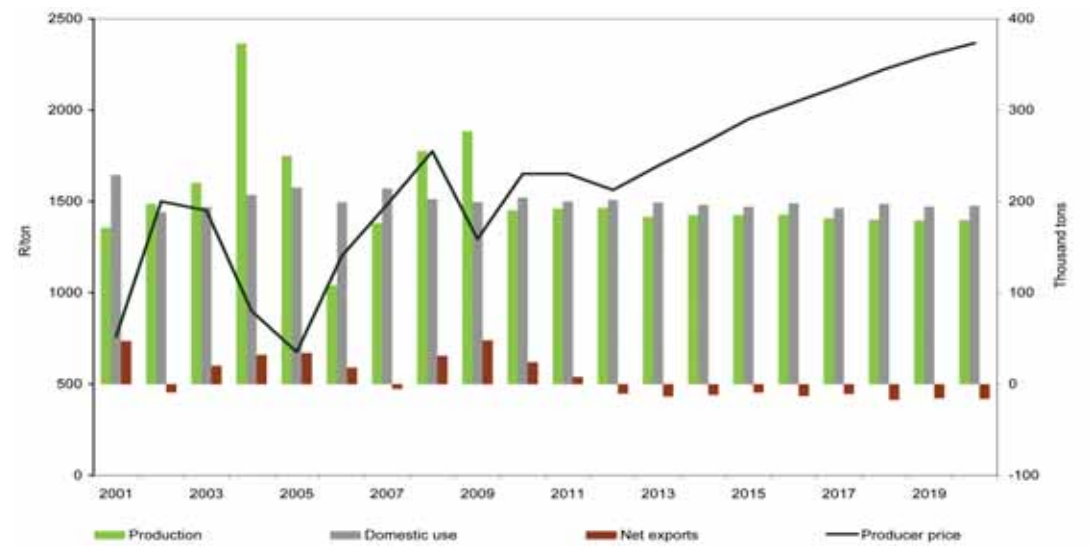

Figure 14: Sorghum production, domestic use, net trade and prices

WINTER GRAINS

Global cereal situation and trends

Following a sharp drop in world wheat production in 2010, global output is forecast to increase by 3.2% in 2011. However, the recovery is slightly less than anticipated due to unusual spring weather in North America and parts of Europe limiting plantings. World wheat production will not be sufficient to neutralise the expected increase in demand, in spite of slower demand growth compared to the previous season. As a result, world wheat inventory is forecast to end 2011 well below the 2010 levels. At the anticipated inventory levels, the global stocks-to-use ratio in the new season (2011/12) could drift slightly lower, to around 27%, which would still be above the low 22.6% of 2007/08 [Source: FAO Food Outlook, June 2011].

The world price for wheat is expected to reach an average of US$341 per ton in 2011 but is projected to drop to US$ 282 per ton in 2012 in response to expected higher global production. From 2012 the international wheat price will increase slowly to reach US$299 per ton by 2020 (Figure 15). The projected growth in nominal prices will be relatively slow over the baseline period with prices expected to remain well above the historical average.

World wheat production is projected to be about 11% higher than in the base period 2008-2010, but with slower annual growth relative to the previous decade. Area expansion is projected to be a modest, at 2 percent higher than the base period by 2020. The largest area expansions are projected for the Russian Federation, Ukraine and Kazakhstan. Average global yield growth for wheat is projected at only 0.8% p.a. [OECD-FAO Agricultural Outlook 2011-2020, June 2011].

Total wheat consumption is projected to reach nearly 746 million tons by 2020. Wheat is expected to remain a commodity predominantly consumed for food, roughly 68% of total use by 2020, which is slightly below its current share. Per capita food consumption is projected to remain around 66 kg per person p.a. World wheat feed utilisation is expected to reach 145 million tons by 2020, growing at a slightly slower pace compared to the 10 year historical, though still representing around 19.5% of total use. Wheat use for biofuels is expected to reach 2 percent of world wheat utilisation by 2020 compared to 0.9% in the base period. The projected increase of 9 percent p.a. will be driven largely by growth in EU wheat-based ethanol production which, by 2020, may account for almost 75% of global wheat use for biofuel production (compared to 63% in the base period) [OECD-FAO Agricultural Outlook 2011-2020, June 2011].

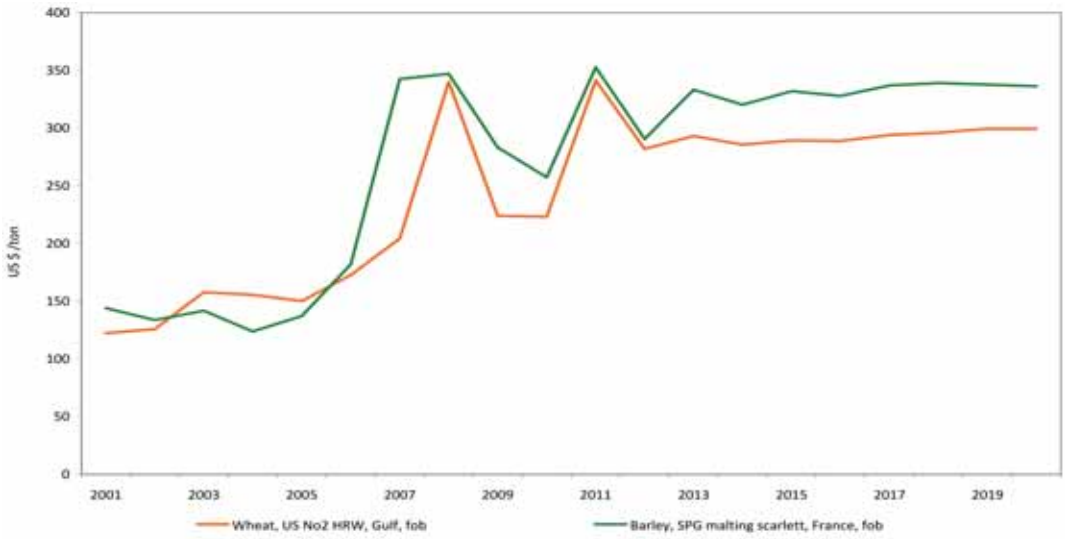

Figure 15: World winter grain prices

Source: FAPRI & BFAP

Domestic winter grain situation and trends

South African winter grain plantings continued to decline during the past season and a record low of only 641 000 hectares were planted to winter grains during 2010. This is only 60% of the local winter grain acreage of 2001. The deteriorating profitability of local winter grain production over the past decade forced producers to switch to alternative crops, fallow land systems and pastures.

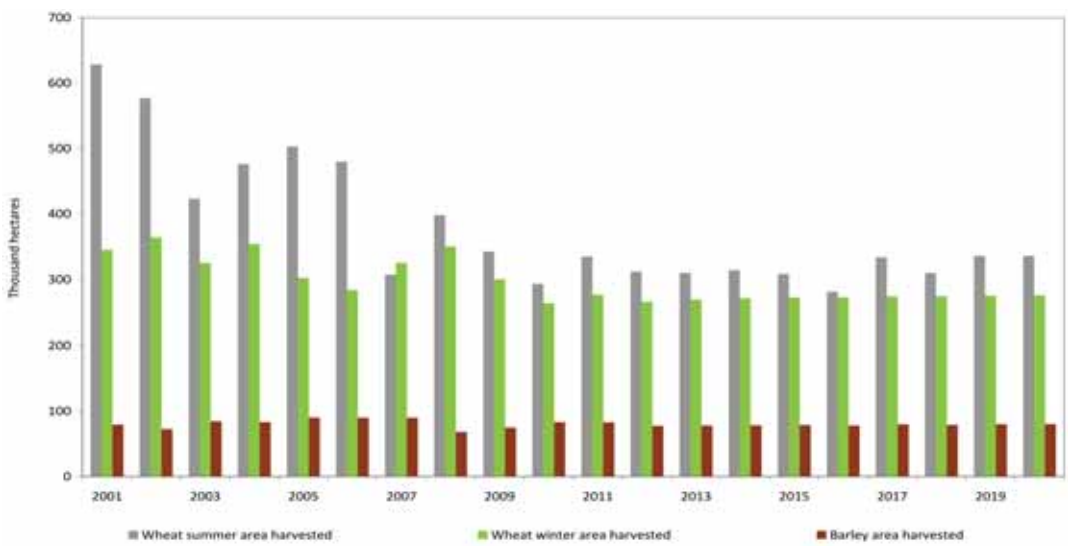

Figure 16: Winter grain area harvested

Domestic wheat situation and trends

In 2010 wheat plantings in the summer rainfall area declined to a level 293 000 hectares while in the winter rainfall area wheat plantings decreased by 35 000 hectares to 265 000 (Figure 17). However, the recent high wheat price is projected to provide an impetus to higher wheat plantings during 2011.

The SAFEX wheat price is projected to increase from an average of R 2 286 per ton in 2010 to R 3 090 per ton in 2011 due to higher international prices. However, the domestic wheat price is projected to decline to R2 819 per ton in 2012 in line with international prices and then increase over the rest of the baseline period to reach R3 975 per ton by 2020.

With the expectation of higher prices, together with the higher availability of fallow lands in the summer rainfall area, means that wheat plantings are projected to increase by 10% to a total of 613 000 hectares in 2011. Wheat plantings in the summer rainfall area is projected to increase by 42 000 hectares to 335 000 hectares and in the winter rainfall area by 13 000 hectares to 278 000 hectares.

Wheat plantings are projected to decline again in 2012 due to the projected lower prices. Over the rest of the baseline period the total wheat acreage is projected to fluctuate between 560 000 and 612 000 hectares.

Domestic use of wheat is projected to increase by an average of 1.5% per year over the baseline period to reach a total of 3.55 million tons in 2020. With no significant increase in wheat production projected, wheat imports of 1.6 to 2.0 million tons per annum will be needed to compensate for the production shortfall.

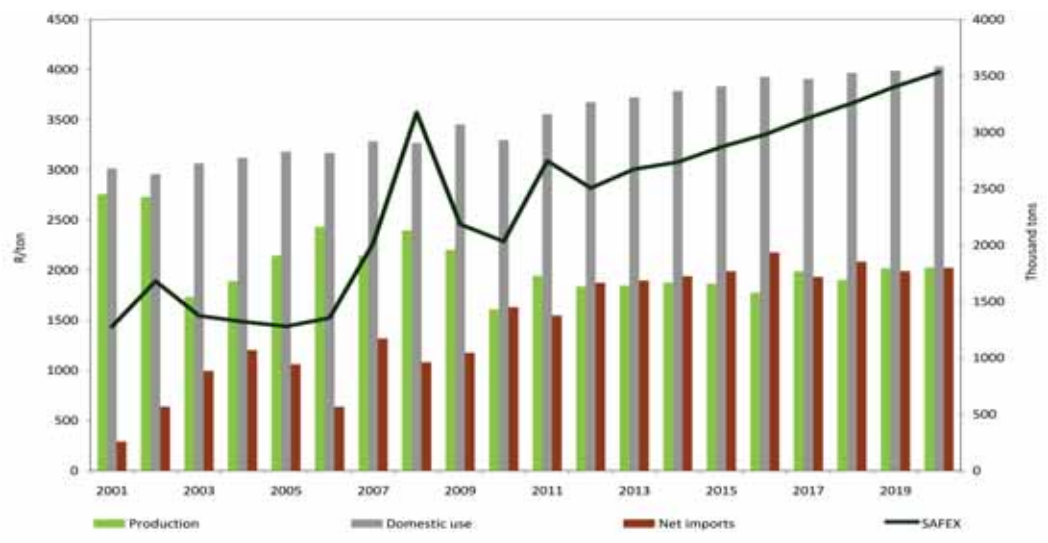

Figure 17: Wheat production, consumption, trade and price

Domestic barley situation and trends

Barley plantings are projected to increase marginally in 2011 to 86 000 hectares (Figure 18) but are projected to decline by 7 percent to 81 000 hectares in 2012 due to the lower 2012 price.

After a sharp decline in the barley price of 22% in 2010, the average price is projected to increase by 40% to R2 779 per ton in 2011. After projections of trading softer in 2012 on the back of a lower domestic wheat price, barley prices are projected to follow the increasing trend of wheat import parity prices on the back of the gradual depreciation of the exchange rate and higher world prices (Figure 18).

Despite higher prices forecasted over most of the baseline period, producers will keep plantings at around 80 000 hectares because of the rotational benefits of growing barley. At projected yields, this will result in a local barley crop of 240 000 to 265 000 tons.

The domestic utilisation of barley is projected to increase by less than 3 percent per year to reach 330 000 tons in 2020.

With consumption growing faster than production over the baseline period, South Africa will remain a net importer of barley over the baseline period and close to 100 000 tons of barley will be imported in 2020.

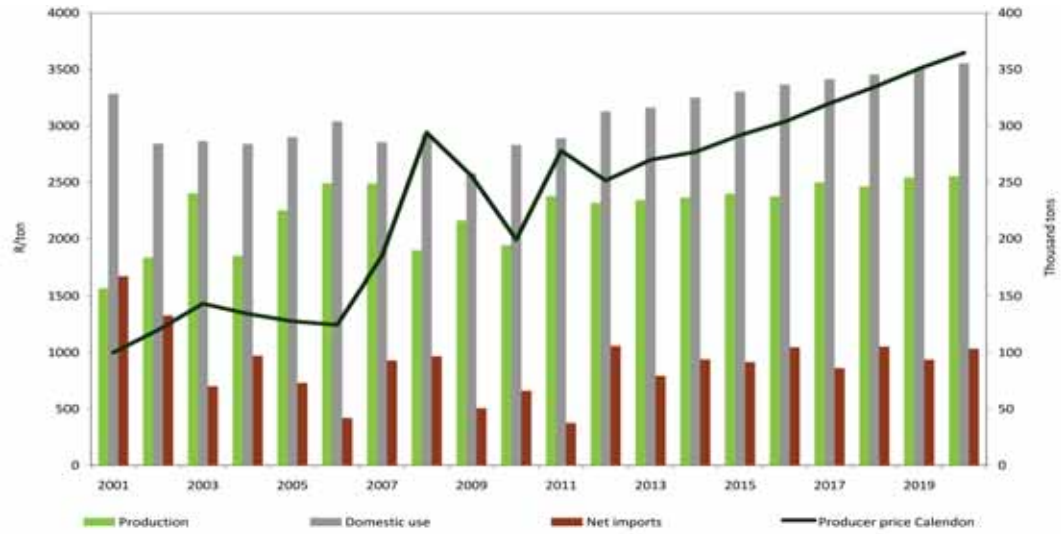

Figure 18: Barley production, consumption, trade and producer price

OILSEEDS AND OILSEED PRODUCTS

Global oilseed situation and trends

The upward trend in world prices for oilseeds and derived products, which started in 2009, continued into the current 2010/11 marketing year with prices for several oilseeds and derived products close to the 2008 peaks. The renewed surge in prices mainly reflects a progressive tightening in global supplies combined with steady demand growth and robust buying interest by major importing countries. Initial forecasts for 2011/12 suggest that the current tightness in world oil/meal markets could carry on as supplies in the coming season may not be sufficient to satisfy the steadily expanding oil and meal demand. This would imply further reductions in global inventories as well as in stock-to-use ratios [Source: FAO Food Outlook, June 2011].

Nominal world prices for oilseeds are forecasted to decline in 2012 before rising slowly throughout the baseline period and to remain well above the levels before of the 2007-08 food crises. The CIF price of EU sunflower seed is projected to dip from US$ 651 per ton during 2011 to US$ 551 per ton in 2012 as production is expected to increase in response to the current high price levels. The international sunflower price is expected to increase again to reach US$ 585 per ton in 2020. The CIF price of Argentinean soybeans is expected to decline to US$ 485 per ton in 2012 and stay constant at this level until 2014 before it will increase gradually over the rest of the baseline period to US$ 517 per ton in 2020 (Figure 19).

World oilseeds production is expected to expand by 23% over the Outlook period, marking a strong slowdown in growth relative to the previous ten year period of 2001 to 2010. The anticipated production increase is based equally on higher plantings and yield improvements. The US remains the world's top oilseed producer, followed by Brazil, China, Argentina, India and the EU. The share held by Latin American and Eastern European producers is likely to increase at the expense of China and the US [OECD-FAO Agricultural Outlook 2011-2020, June 2011].

Annual growth in global crushing is projected to slow down, with deceleration more pronounced in the developing world. When comparing individual countries, Canada, the Russian Federation, the Ukraine,

Argentina and Brazil are expected to realize above average expansion in volumes [OECD-FAO Agricultural Outlook 2011-2020, June 2011]

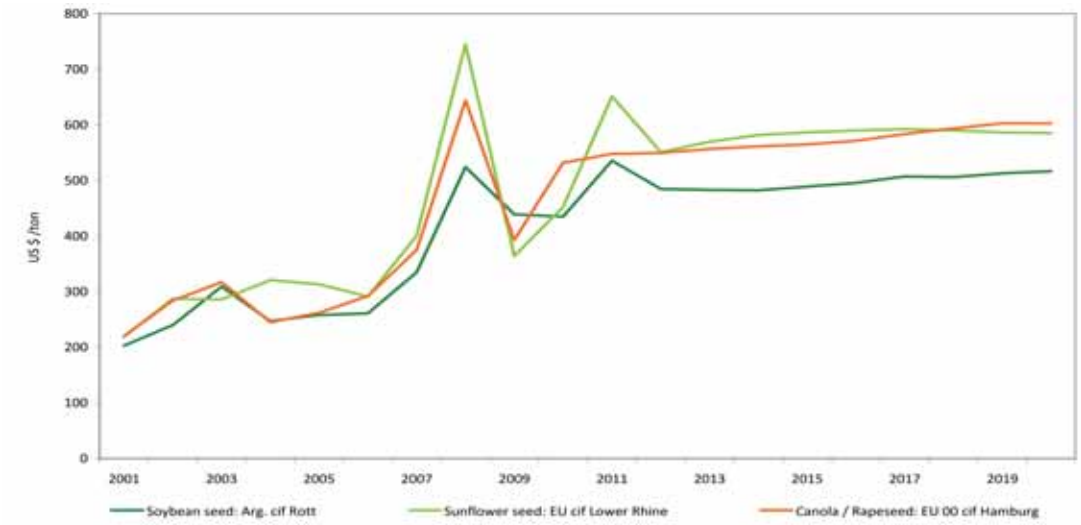

Figure 19: Oilseed Word Prices

Source: FAPRI & International Grains Council

Domestic oilseed situation and trends

Lower maize prices and better oilseed prices caused producers in the summer rainfall area to increase sunflower seed and soybean plantings. The local sunflower seed acreage increased by 61% to 642 000 hectares and soybeans by 34% to 418 000 hectares in 2010/11. Canola, the key oilseed crop in the winter rainfall area, declined slightly to 33 200 hectares in 2010/11 (Figure 20).

After the sharp increase in sunflower seed plantings in 2010/11, it is expected to decline to 590 000 hectares in 2012. Over the rest of the baseline period sunflower seed plantings will fluctuate between 580 000 and 650 000 hectares.

Sunflower seed yields are projected to increase from 1.22 tons per hectare to 1.53 tons per hectare by 2020. This will result in a total sunflower seed crop of close to 1 million tons by the end of the baseline period.

The domestic use of sunflower seed is forecasted to increase from 825 000 tons in 2010/11 to 975 000 tons by the end of the baseline period. Since the growth in production is expected to outpace the growth in consumption, South Africa will import less sunflower seed over the next decade and is expected to be self-sufficient by 2020.

The average 2011 sunflower seed SAFEX price is estimated to increase to R4 072 per ton. It will decline slightly to R3 998 per ton in 2012 before gradually increasing over the rest of the baseline period.

Soybean producers planted a record 418 000 hectares in 2010/11 and it is forecasted to grow slightly to 424 000 hectares in 2012. From 2013 to the end of the baseline period, producers are forecasted to expand soybean plantings by 5.7% per year which will result in a total acreage of 656 000 hectares in 2020 (Figure 20).

Soybean yields are forecasted to increase from 1.62 tons per hectare in 2011 to 2.62 tons per hectare in 2020. The improvement in yields, together with the projected growth in soybean plantings will result in a total domestic production of approximately 1.7 million tons in 2020.

Domestic consumption of soybeans is projected to increase by almost 300% over the next decade. The fastest growth will be in the crushing industry. Despite the rapid increase in domestic consumption, it is projected that South Africa will remain an exporter of soybeans into premium export markets, mainly in Asia

where South African soybeans are well suited for the tofu market. Between 150 000 tons to 200 000 tons will be exported in the later years of the baseline.

The SAFEX soybean price is forecasted to decline from an average of R3 353 per ton in 2011 to R3 176 per ton in 2012 due to the lower international prices. The growth in domestic use of soybeans is projected to pick up steam from 2013 which will provide support to the local soybean price.

A small increase in canola plantings to 39 000 hectares in 2012 is projected and will grow steadily over the baseline period to 43 000 hectares in 2020. Production of canola will be slightly higher than usage during the first years of the baseline period, but domestic use will grow faster during the second half and is projected to equal production by the end of the baseline period.

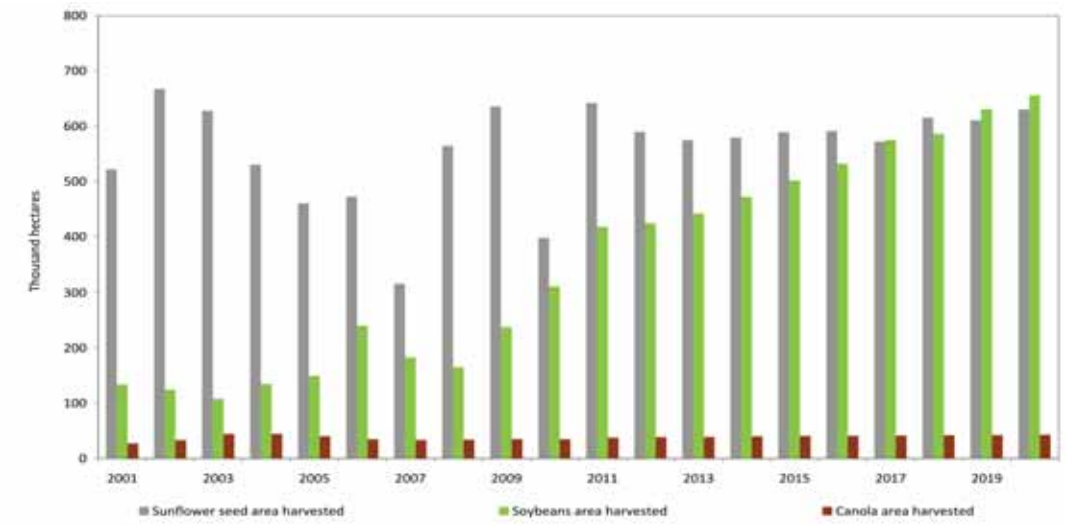

Figure 20: Oilseed area harvested

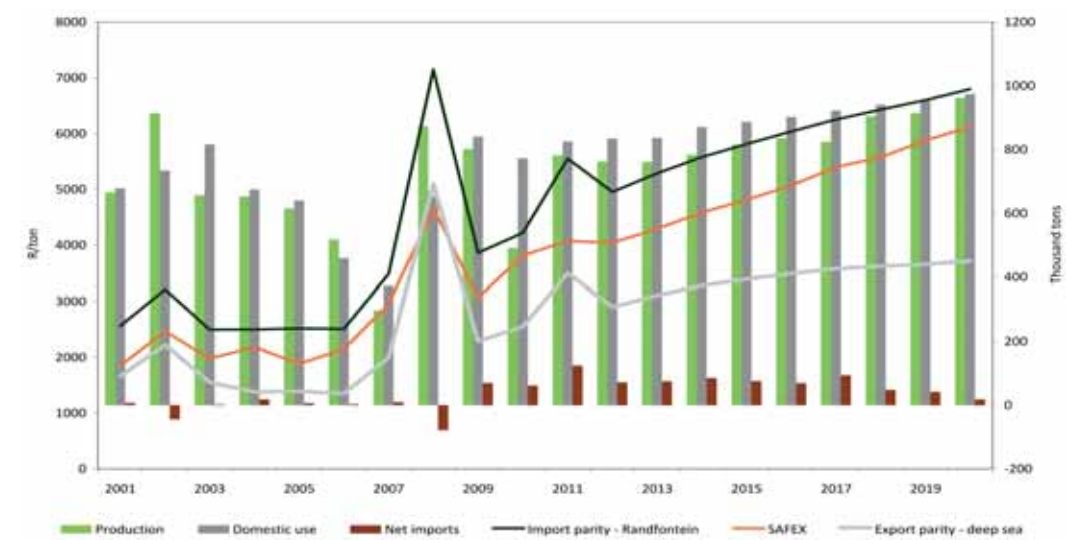

Figure 21: Sunflower seed production, domestic use, trade and prices

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

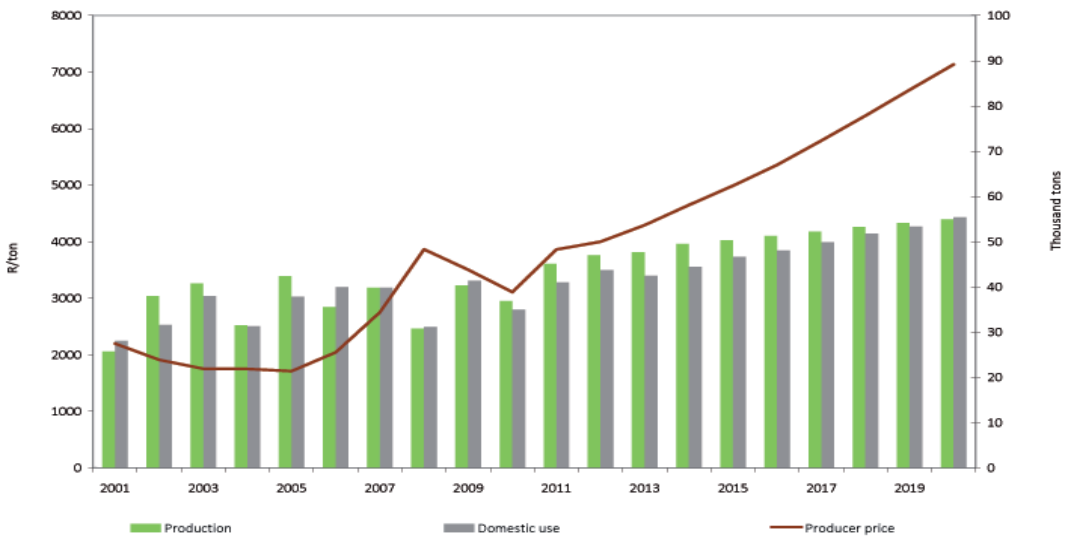

Figure 23: Canola production, domestic use and prices

Global oilcake situation and trends

In developing countries, oilseed meal consumption is expected to grow at about 2% per year, about a third of the previous decade's rate of growth. Demand for livestock products, and thus meals, is taking time to recover after income growth slowed down in the wake of the 2008/09 economic crisis. In developed countries, where livestock industries are more mature and demand is more stable, meal consumption is expected to grow at a similar rate as in the past [OECD-FAO Agricultural Outlook 2011]. No significant increase for international protein meal prices is projected from 2012 towards the end of the baseline period. However, on average prices will remain at higher levels compared to the levels before the 2007/08 food crisis (Figure 24).

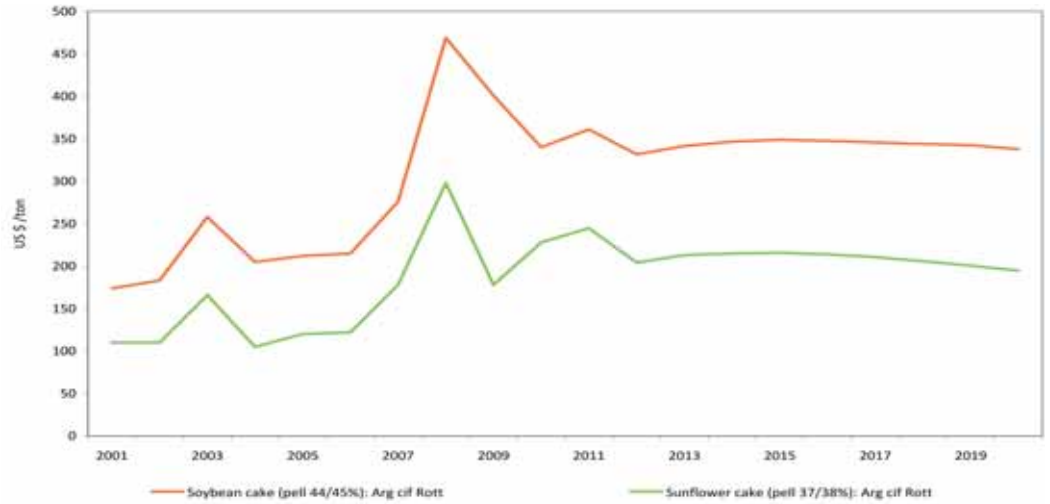

Figure 24: Soybean and sunflower oilcake world prices

Source: FAPRI & International Grains Council

Domestic soybean oilcake situation and trends

Soybean oilcake is the key protein feed source used in South Africa, with most of it being imported from South America.

In 2011 local production of soybean oilcake is expected to reach 213 000 tons due to the expansion of the local soybean crushing industry, which is a significant increase compared to the 148 000 tons produced locally in 2010. Locally produced soybean oilcake is forecasted to increase further to reach 893 000 tons by the end of the baseline period (Figure 25).

Domestic consumption of soybean oilcake is expected to increase from approximately 1.2 million tons in 2011 to 1.7 million tons by 2020 (Figure 25). This corresponds to an increase of 4.3% per year.

Imports of soybean oilcake are projected to decrease over the baseline period as local production grows faster than consumption (Figure 25).

However, as South Africa will remain a large net importer of soybean oilcake over the baseline period; the local soybean oilcake price will be significantly influenced by international prices and the exchange rate.

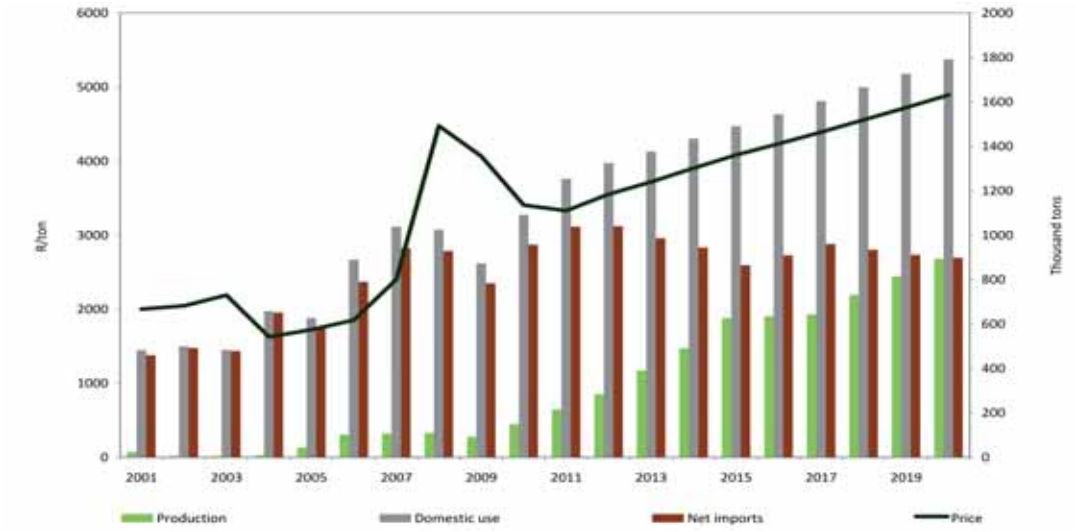

Figure 25: Soybean oilcake production, consumption, trade and prices

Global vegetable oil situation and trends

Led by developing countries, global vegetable oil production is expected to increase over 30% by 2020. However, in terms of annual growth rate, production slows down relative to the last decade's growth rate (5.3%) due partly to the prices trading at higher levels. Based on per capita income and population growth, three-quarters of global demand expansion is expected to occur in developing countries, with Asian countries and food use dominating consumption. Demand for non-food uses of vegetable oil (in particular for biodiesel) should account for about one-third of global consumption growth. By 2020, biodiesel production will account for 15% of total consumption, compared to 10% in the 2008-2010 period [OECD-FAO Agricultural Outlook 2011]. The outlook for vegetable oil prices remains positive throughout the baseline period (Figure 26).

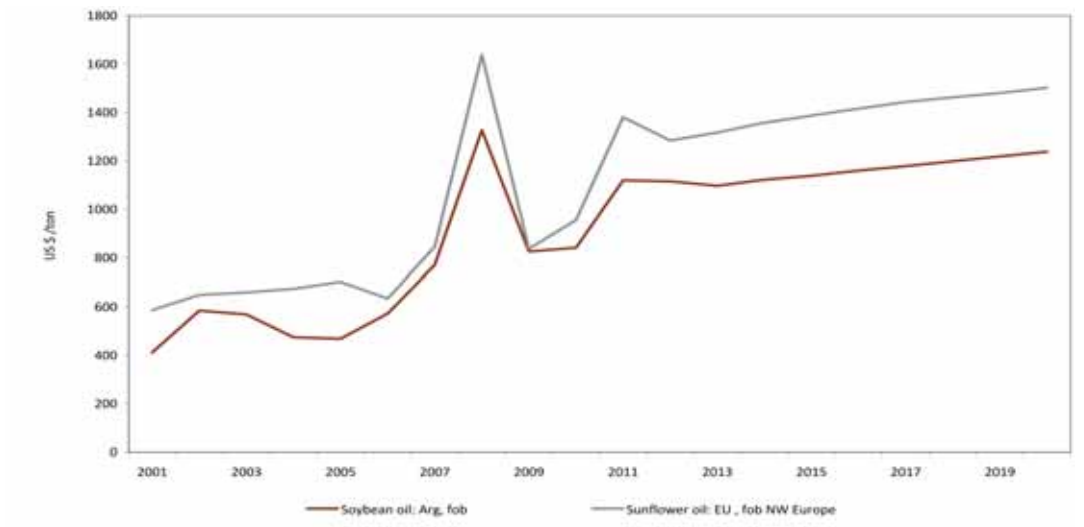

Figure 26: Vegetable oil world prices
Source: FAPRI & International Grains Council

Domestic sunflower oil situation and trends

South Africa is a net importer of sunflower and other vegetable oils and therefore local prices are mainly determined by international prices and the exchange rate.

The domestic consumption of sunflower oil is projected to increase by 1.3% per year over the baseline period to a total of 419 000 tons in 2020. With local production growing slightly faster than consumption over the baseline period, imports are projected to decline to 42 000 tons by 2020 (Figure 27).

The average sunflower oil price is forecasted to increase from R11 556 per ton in 2011 to R16 626 per ton in by the end of the baseline period.

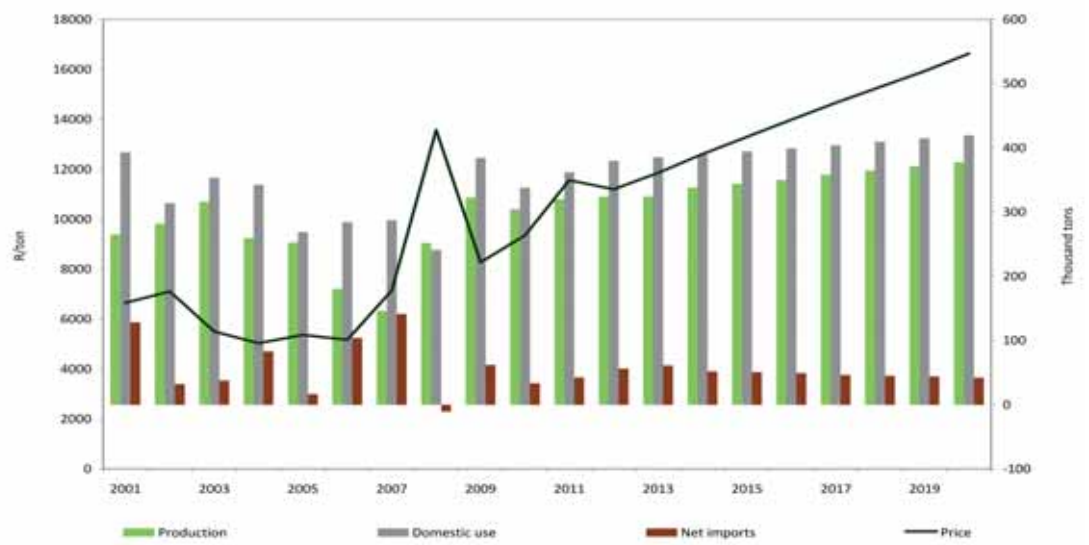

Figure 27: Sunflower oil production, consumption, net trade and prices

SUGAR CANE AND SUGAR

Extreme drought conditions in South-Africa's sugar producing areas have had a serious impact on the volume of sugar produced in the 2010/11 season. The production of sugar is expected to consolidate at around 2.1 million tons due to a favourable legislative framework and a slight upward trend in the No.11 world price. South African sugar exports have been hampered by the drought in the 2010/11 season, which will continue into the 2011/12 marketing year, after which the industry is expected to recover and the total volume of exports is expected to reach approximately 600 000 tons for the remainder of the outlook period (Figure 28).

The review of the South African biofuels strategy is expected to start in 2012. The viability of ethanol production from sugar cane is dependent on the potential revenue that the industry can earn from exporting sugar and with rising world prices being projected for 2012 – 2020, the South African biofuels policy will have to offer significant value if it is to attract investment.

Apart from ethanol there are other renewable energies that are at present under consideration, for example the co-generation of electricity from bagasse. The sugar industry has developed various strategies to ensure active participation in the value-adding process. The first co-generation projects are expected to come online in the next few years which in turn will benefit industry role-players and improve the economics of cane farming. The additional revenue is expected to improve yields and maintain production.

Cane yields are expected to remain constant with changes subject to weather conditions. The average yield will increase from around 59 tons per hectare in 2011 to 65 tons per hectare in 2020. Sugar imports continue to compete with domestic production. In 2010/11 approximately 85 000 tons entered the South African market, most of which originated from Brazil. High world prices have reduced the quantity of imports but it is expected that the average level for the baseline period will be around 120 000 tons per season. Swaziland imports are still entering the country as the trade policy harmonisation efforts between the respective governments have yet to be implemented. Total exports of Swaziland sugar to the SACU countries is expected to continue throughout the baseline period with a season average of 300 000 tons entering the market.

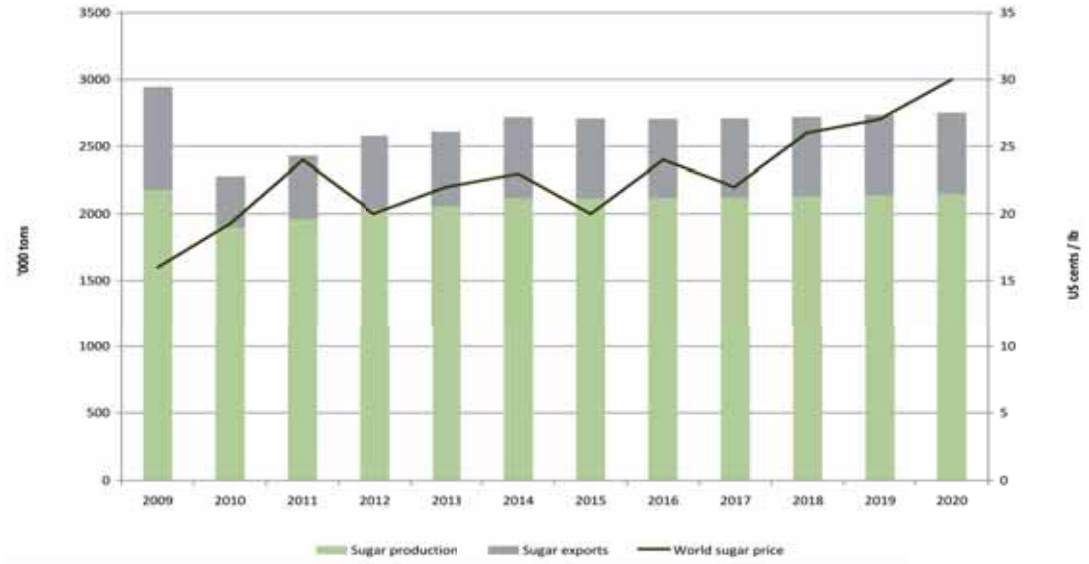

Figure 28: Sugar production, sugar exports and world price.

BIOFUELS

Bioethanol

The implementation of government funded projects on bioethanol development has not progressed as envisaged. There is at present still a need for the government to expand the use of hydrous ethanol as a transport fuel and the pilot project in the Reef seems to be running successfully. In terms of bioethanol, the baseline focuses on the profitability of large-scale ethanol production from various commodities. The analysis essentially works on the oil price equivalent that needs to be achieved for projects to be profitable and focuses on sugar cane and maize as the primary feedstock.

The primary constraint to the use of sugarcane in ethanol production is rising world price as evidenced in the Brazilian biofuels industry. In the case of maize, high export parity prices will also constrain the use of this commodity as a prime feedstock. The main assumption is that there is no mandate in place and that the price of ethanol is slightly cheaper than that of petrol. Tax rebates remain at their previous levels.

Figure 29 represents the reality that the biofuels industry faces. In order for biofuels to be viable government will have to implement significant reforms and support mechanisms.

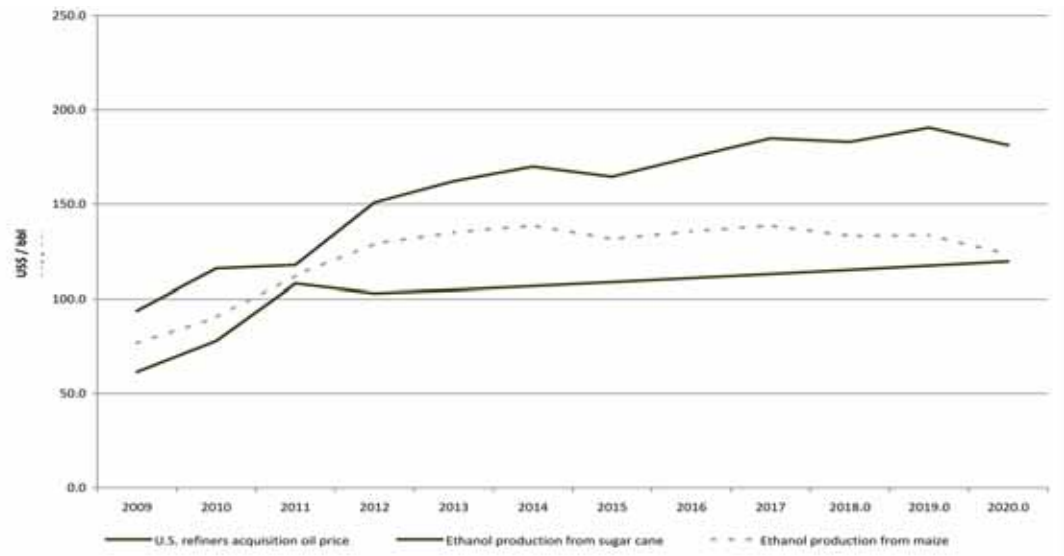

Figure 29: Bioethanol profitability

Biodiesel

Biodiesel production is likely to continue on a small-scale over the baseline period as oil prices are expected to trade above the $100 per barrel mark. Again the baseline projection focuses on the profitability of various feedstocks, such as sunflower and soybeans, which can be used in the production process.

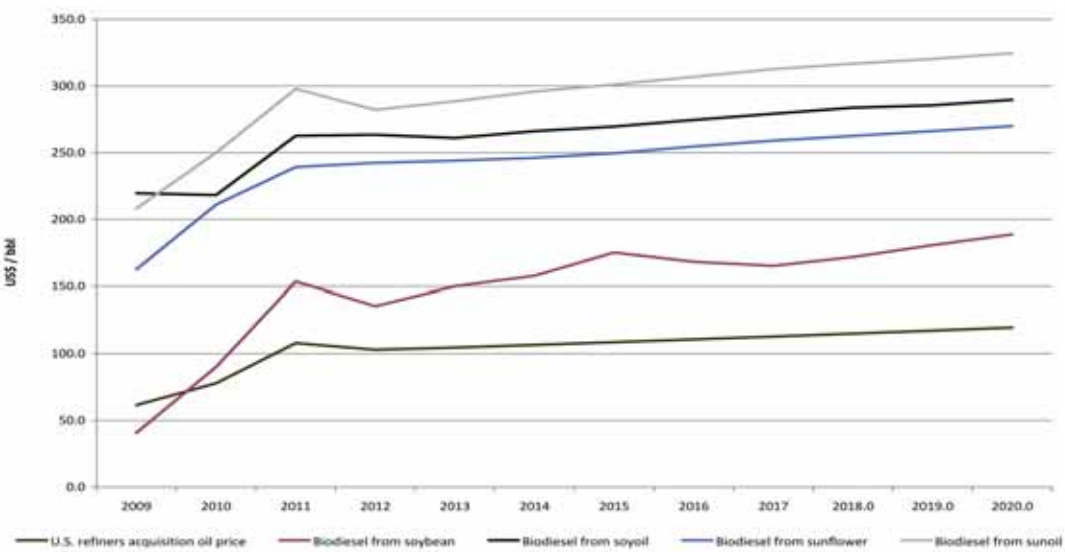

Figure 30: SA Biodiesel profitability

MEAT AND EGGS

Meat – global

Global meat prices have recovered significantly over the past two years. It is clear that beef prices were most affected by the economic crises as consumers switched to cheaper animal protein. This is the reason why chicken markets remained relative strong throughout the financial crises. The recovery of meat prices is not only demand led, but also due to a contraction of supply. World stock numbers have declined and in the US the cattle herd numbers are the lowest since the 1960's. Mercosur countries also face tight beef supply, which coincides with an increased demand for exports due to the gradual economic recovery, thereby pushing prices significantly higher. On the back of higher profits over the past eighteen months, a number of countries have entered a restocking phase. Similarly, first indications are that the restocking of sheep numbers, especially in Australia, is feeding into the market with an expected lamb slaughter growth of 6% over the next year. However, currently overall supplies remain tight and prices significantly higher than a year ago.

The profit margins of pork and chicken farmers have come under increasing pressure over the past six months due to the spiraling feed prices. This follows after a brief period in 2010 during which profit margins improved significantly due to higher chicken and pork prices with feed costs remaining relatively stable. .

- The OECD-FAO Outlook projects that world consumption of meats over the next decade will continue to expand at a constant rate. World poultry consumption is projected to grow by 2.3% per annum over the next decade, followed by sheep meat (2.2% per annum), pork (1.6% per annum) and beef (1.5% per annum).
- The recovery in meat prices has already induced a phase of rebuilding stock numbers and over the long run production will expand in order to match consumption of meat.
- 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.
- The price for lamb is projected to pull back slightly from record levels in 2011 and trade softer in 2012 and 2013 as supply out of major exporting countries such as Australia and New Zealand increases.

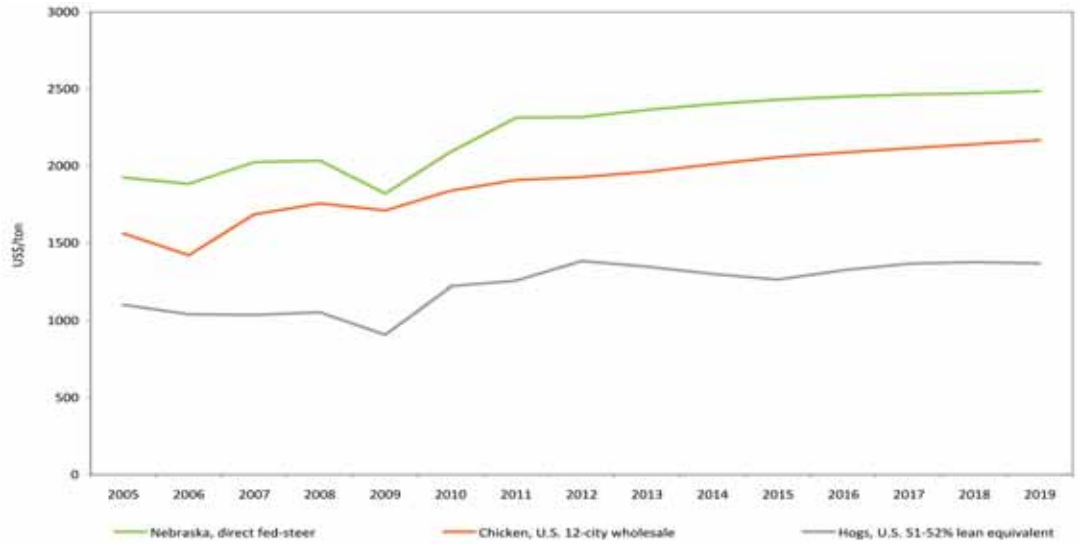

Figure 31: World meat prices

Source: OECD-FAO Outlook 2011 & BFAP updates

Meat and eggs – South Africa

Over the past two seasons domestic meat and egg markets have been characterised by exceptional volatility. The price margins between the various types of meat changed continuously as the impact of key exogenous drivers differed from one industry to the next. Although cross substitution relationships do exist, the fundamental equilibrium pricing conditions differ between the various industries, which imply that over the short run the margins between the various types of meat can fluctuate as exogenous drivers shift. Not only did market prices drive the uncertainty in the meat industry, but also the outbreak of Rift Valley Fever and more recently Foot and Mouth Disease has influenced the behaviour of role players in the market.

Feed costs and the level of import parity prices play an important role in the formation of prices in the poultry and pork industries, as these key indicators are used in the price negotiations between major producers and buyers. With the appreciation of the Rand and feed prices trading softer in 2010, chicken and pork producer prices came under severe pressure. The appreciation of the Rand outweighed the increase in international chicken prices, therefore making imported chicken more attractive. Lower prices boosted consumption and in the case of chicken meat, consumption rose by more than 7 percent in one year from 1.52 million tons to 1.63 million tons. During the same period chicken production increased by only 60 000tons and, therefore, more chicken meat had to be imported. The producer prices of eggs also declined in 2010 mainly due to lower feed costs. Local egg producers were able to match more than the increase in local consumption of eggs, resulting in the level of egg exports into neighbouring countries to increase.

Lamb and beef prices found significant traction in the market place and increased from 2009 to 2010. South Africa is a net importer of sheep meat and with a strong correlation between domestic and import parity prices, lamb prices increased on the back of the higher import parity prices. The parity prices increased as soaring international prices due to limited exports out of New Zealand outweighed the bearish impact of the appreciating Rand exchange rate.

The impact of the financial crises on the local beef market seems to be almost negligible when compared to the impact on, for example, the US beef market where prices declined by approximately 10 percent. At the heart of the financial crises in 2009, the contraction of 3 percent in the consumption of beef was matched by a 3 percent contraction in supply, and beef prices posted marginal gains. Calf prices remained constant as the feeding margin of feedlots did not improve as grain prices remained relatively high. In 2010, with the gradual recovery of real disposable income of consumers and South Africa's hosting of the soccer world cup,

the demand for beef increased by 45 000 tons (6 percent) and beef producers responded by increasing the number of carcasses slaughtered and the average weight of the carcases. During 2010, beef prices posted solid gains, especially in the last quarter of 2010. Higher carcass prices and lower feed prices boosted the feeding margins of feedlots in 2010 and calf prices increased sharply as the demand for calves increased.

- Over the next decade 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 41% (compared to 70% over the period 2000 – 2010) over the next decade, the total consumption of chicken meat is projected to exceed 2.2 million tons by 2020. This implies that per capita consumption of chicken meat will reach 43kg by 2020. The consumption of eggs is also expected to increase by 30% (compared to 22% over the period 2000 – 2010), reaching almost 500 000 tons by 2020. Beef consumption is expected to grow by 29% (compared to 24% over the period 2000 – 2010). Although the sheep meat market is relatively small, a significant growth of 28% (compared to a contraction of 7 percent over the period 2000 – 2010) is expected over the next decade. Pork consumption is projected to grow by 25% (compared to 41% over the period 2000 – 2010) until 2020 (Figure 33).

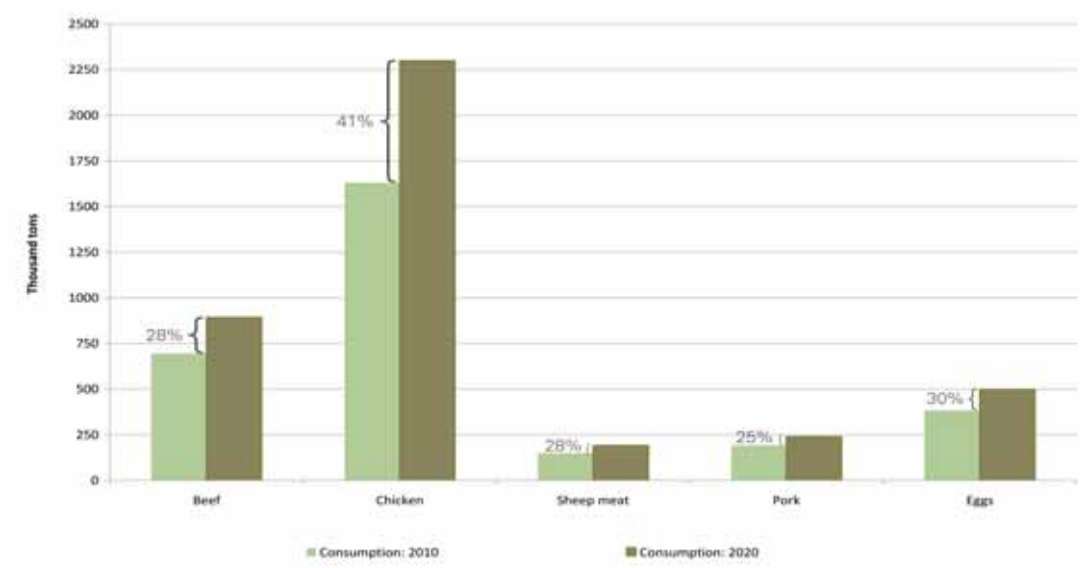

Figure 32: SA meat consumption

- SA is expected to remain a net importer of chicken meat as the annual average growth in production (3.8%) is outpaced by the growth in consumption (4.1%) over the outlook period. Chicken production will increase to 1.9 million tons over the next decade. Approximately 350 000 tons of chicken meat will be imported in 2020.
- The chicken to maize price ratio is one of the key indicators illustrating the potential profit in the industry (Figure 34). Although the profitability of increased rapidly in 2009 as grain prices started to plummet, the ratio has deteriorated again in 2011 with the higher feed costs and stagnant producer prices of chicken. The price ratio will remain relatively constant over the medium term with a slightly upward trend towards the outlying years of the baseline as the average annual increase (nominal terms) in chicken prices of 7.2% marginally outpaces the projected increase in yellow maize prices of 6.3% per annum.
- Despite of a high level of volatility over the past decade, the producer price of eggs has on average increased at a faster rate than feed costs (maize) and this trend is projected to continue over the period of the outlook. This positive output:input price ration supports the expansion of the local industry in order to match the increase in per capita consumption.

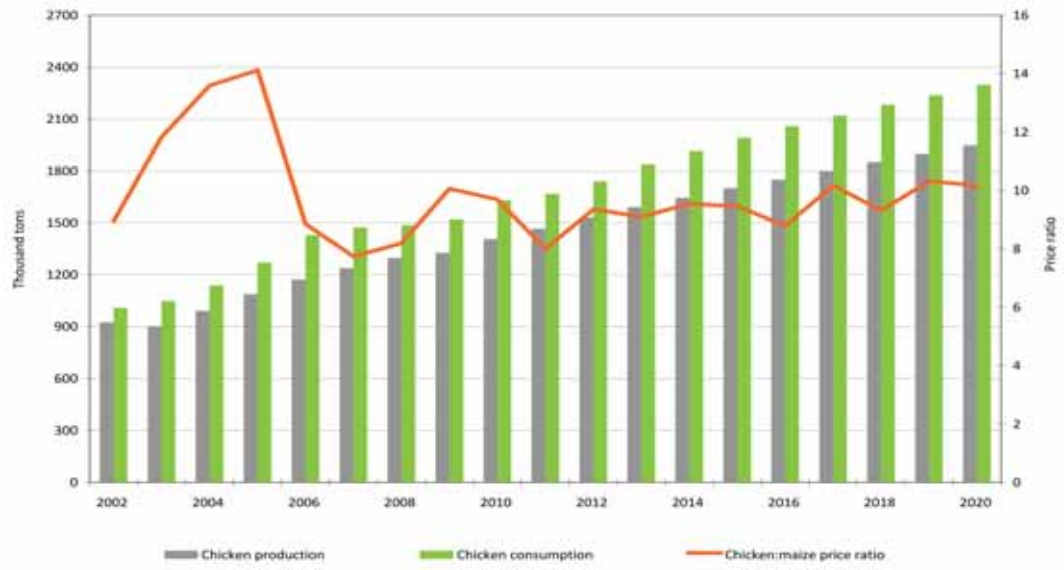

Figure 33: SA chicken production, consumption and chicken-feed price ratio

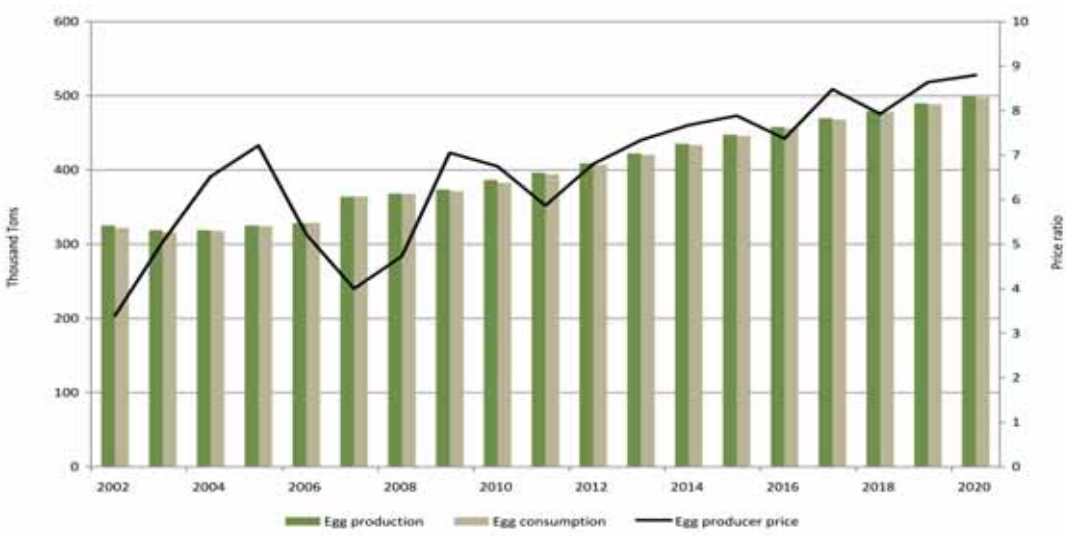

Figure 34: SA egg production, consumption and egg-feed price ratio

- Over the long run demand and supply of beef is projected to grow at a constant rate, matching the growth that was recorded over the past decade. The typical cycles will recur as restocking of herd numbers takes place on the back of significant increases in prices (as in the current 2011 season), which will be followed by periods of slower growth in prices due to increased supply.
- Prices are currently in an upward swing which is anticipated to last until 2012, after which prices are expected to trade sideways for a period of time. With a projected annual average growth rate of 7.8%, nominal beef prices will reach R44/kg in 2020, which implies that with a target inflation rate of approximately 6% over the next decade, beef prices are expected to grow in real terms by almost 2 percent.

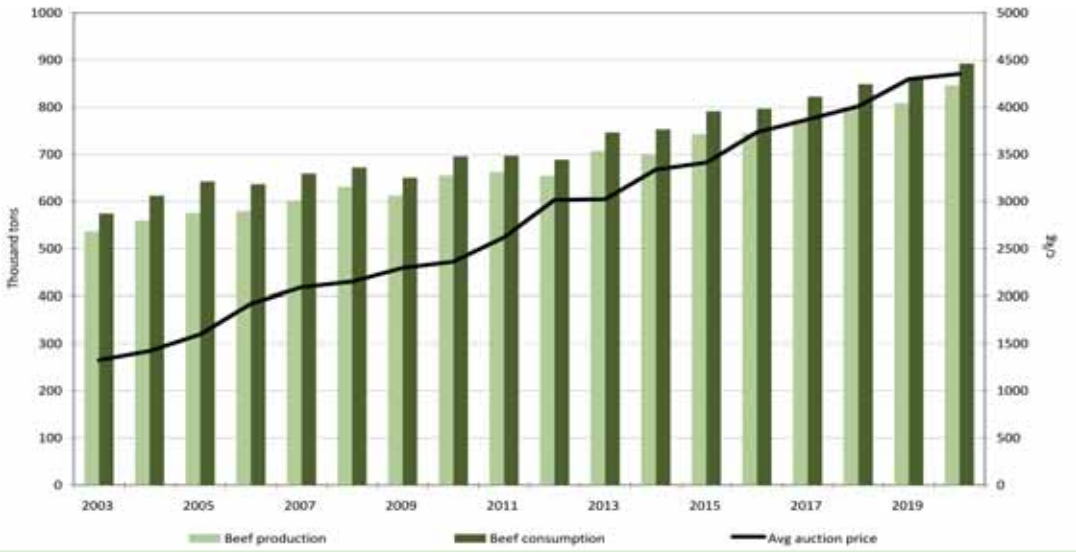

Figure 35: SA beef production, consumption and price

- 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 immediately. Consequently, in years where maize prices are exceptionally low, calf prices tend to increase rapidly as the calf supply contracts in the short term. 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 finally sold.

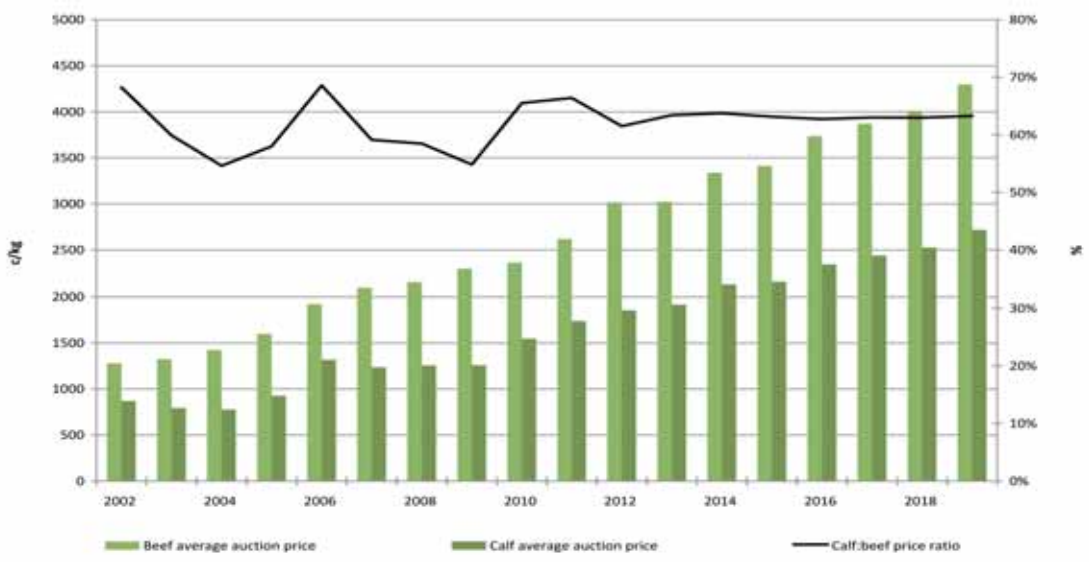

Figure 36: SA beef price versus calf price

- Over the past year lamb prices have broken away completely from the other types of meat, spiralling upwards as local supplies cannot meet demand and import parity prices have increased sharply on the back of international prices that have reached record levels.
- The negative trend sheep meat production can be converted to a positive trend over the outlook period

in certain production is expected to increase due to high profit margins that exceed those of grain farming However, this will only lead to restocking in areas were stock theft is limited, largely in the Western and Northern Cape.

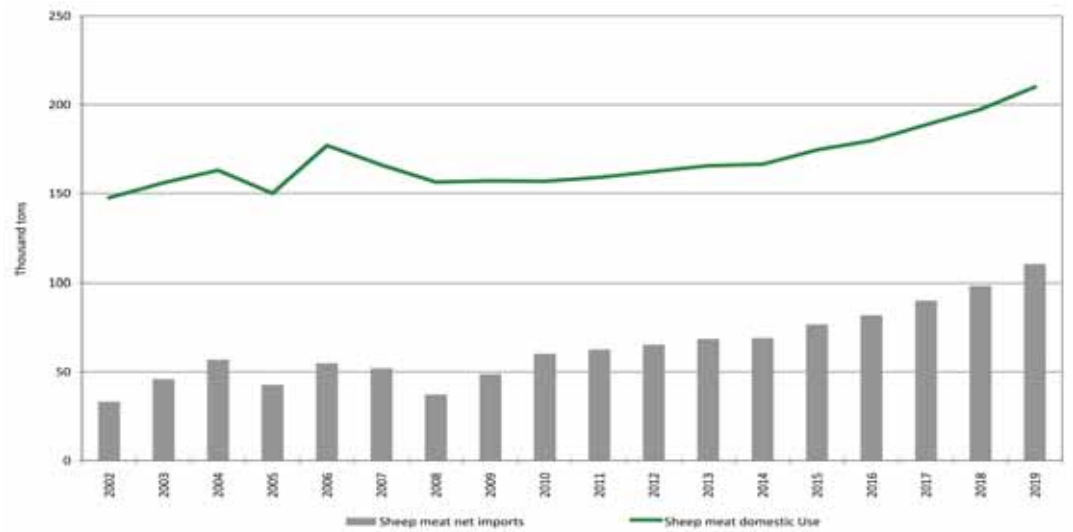

Figure 37: Sheep meat consumption and imports

- 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 2011 on the back of the economic recovery and favourable pork prices compared to other meat types. Over the baseline the growth in consumption of 41% marginally outpaces the projected growth in production of 35%. As a result pork imports will increase to approximately 36 400 tons by 2020.

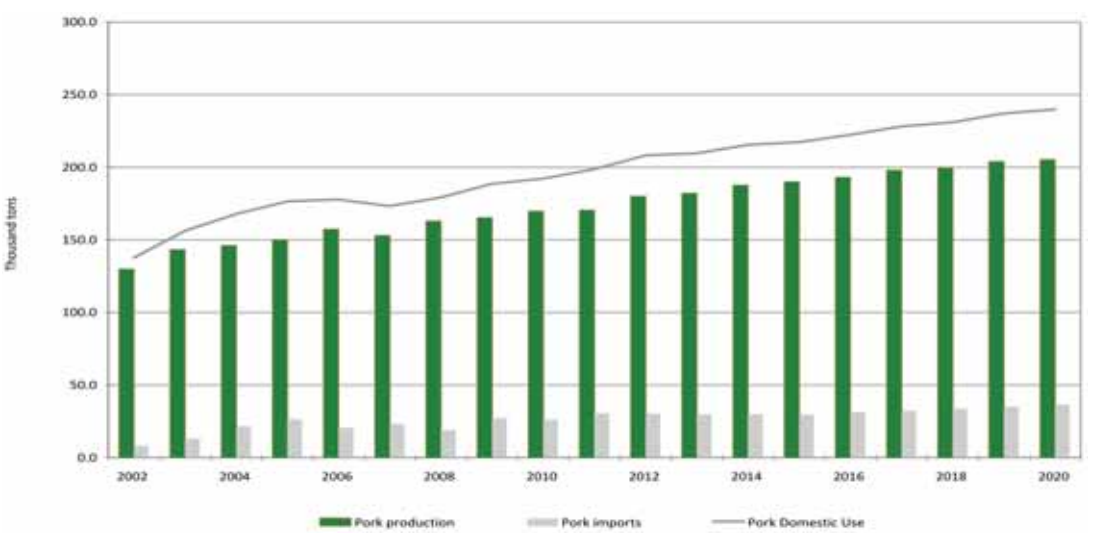

Figure 38: SA pork production, consumption and imports

MILK AND DAIRY PRODUCTS

Milk and dairy – global

Over the past four years international dairy markets have been exceptionally volatile with excessive price swings from one season to the next as the shifts in key exogenous drivers influence the equilibrium pricing conditions of world markets. The cycle of a peak in prices in 2007 and the consequent collapse in 2009 is in the process of being repeated as world prices seem to be backing down from levels that were reached in 2010 and the beginning of 2011. Dairy prices increased in 2010 and the first half of 2011 as demand for dairy products gradually strengthened with the recovery of the world economy. Not only did the demand increase in 2010, but stockpiling of butter and milk powder by the USA and the EU also limited supplies.

- Climatic conditions in the various major exporting countries play a major role in the determination of world market trends; especially since less than 10 percent of the world production of dairy products is traded on world markets. In other words, any small shift in supply conditions of one of the main exporting nations has a major impact on world markets.
- Subject to the assumption of normal weather conditions, it is expected that the supply out of the Southern Hemisphere will grow enough for prices to trade slightly softer in 2012.
- For the remaining outlook period, prices are expected to trade 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 percent in order to match the sharp increase in the consumption of fresh milk in developing countries.

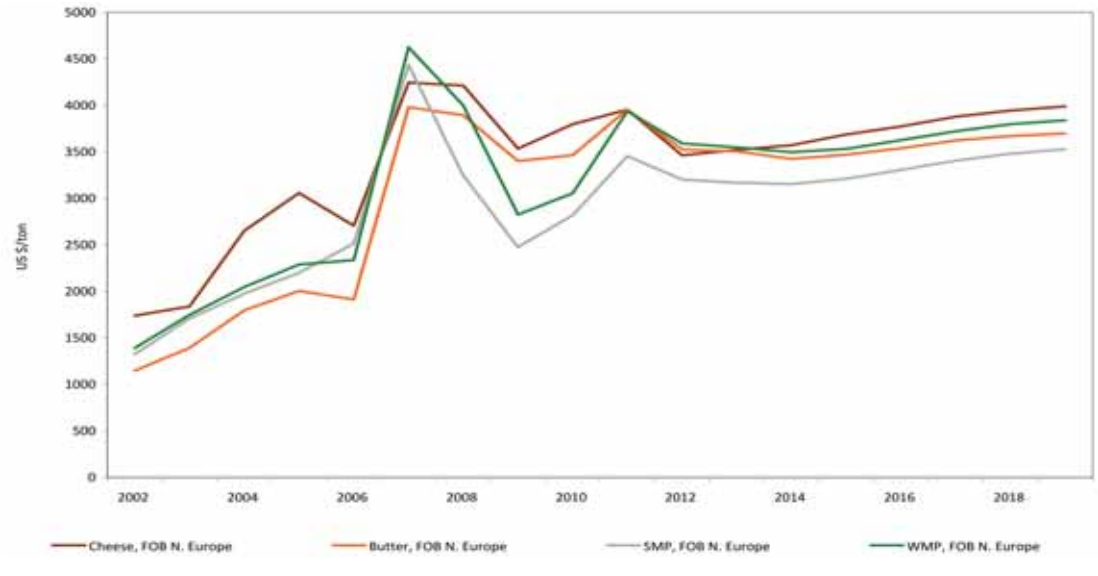

Figure 39: Global dairy prices
Source: OECD-FAO Outlook 2010

Milk and dairy – South Africa

A tight balance has existed between the production and utilization of fluid milk in South Africa for many years. A favourable milk:feed price ratio induces the expansion of milk production, which is followed by lower milk prices. Lower milk prices cause production to slow down and the price cycle is repeated. However, despite of the volatility in prices, the industry is constantly expanding due to the growing demand for dairy products. Over the past decade the dairy industry has expanded by 36 percent, with total consumption of dairy products increasing from 2 million tons in 2000 to 2.6 million tons in 2010. Relatively lower feed grain prices in 2010 boosted production to a record level of 2.68 million tons, consequently causing the producer price of milk to decrease towards the end of 2010 and the beginning of 2011.

- The milk producer price is projected to trade sideways over the next 18 months, supported by higher feed grain prices in 2011 and 2012 and marginally higher dairy product prices. Dairy product prices are expected to increase marginally in 2012 as the assumed depreciation of the Rand outweighs the softer world prices for dairy products. Although prices are expected to remain high over the baseline, the annual average increase in real terms is projected to be relatively small.
- Since the average economic growth rate over the baseline period is projected to be lower than the past decade, the growth in the demand for dairy products is expected to slow down to an annual average increase of 4.5 percent per year, compared to 5 percent over the past decade. However, the growth in consumption of fresh milk is projected to increase from an annual average rate of 2 percent over the past decade to 2.3 percent per year until 2020. By 2020, 3.4 million tons of milk (excluding the imports of dairy products) will be produced to match local consumption.
- Over the next decade the growth in the consumption of skimmed milk power (SMP) and whole milk powder (WMP) is projected to soften with a respective annual average growth rate of 4.7 percent and 4.2 percent.
- The consumption of cheese is projected to increase by 5.5% per annum to reach approximately 107 000 tons by 2020. The growth in butter consumption is expected to be slower and reach almost 16 000 tons over the next decade.

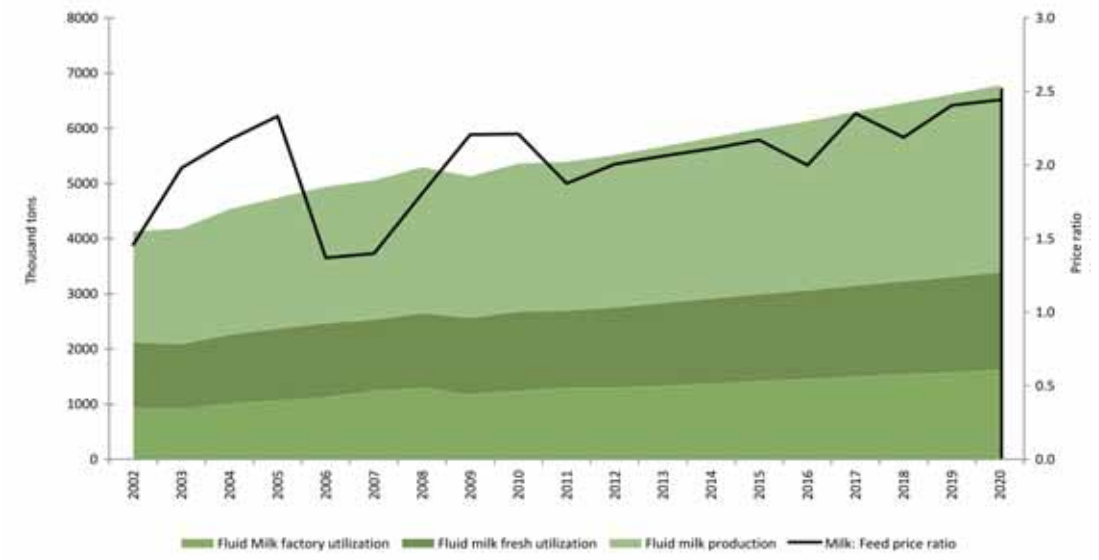

Figure 40: SA fluid milk production and utilization

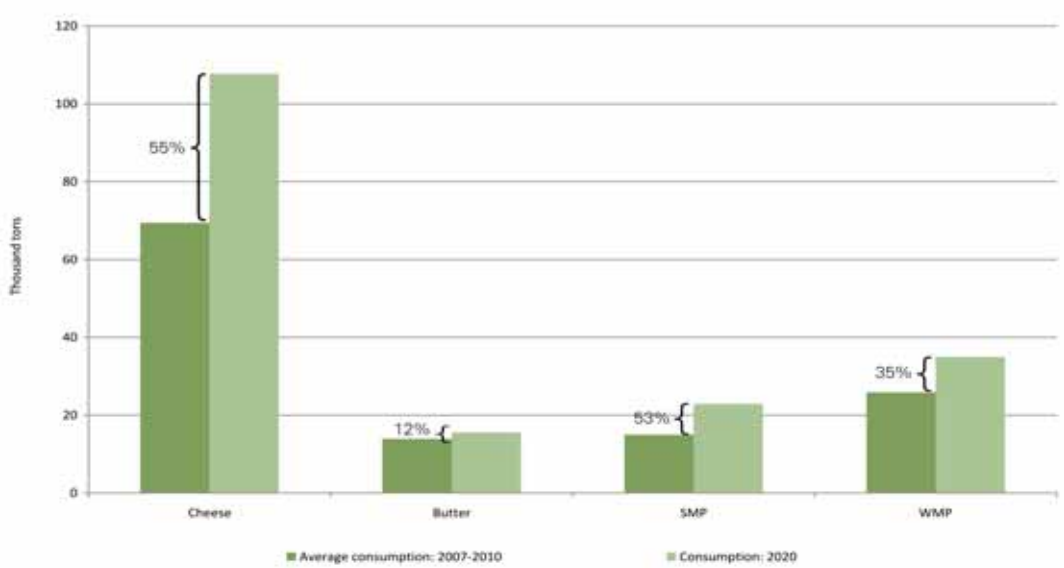

Figure 41: SA consumption of dairy products

POTATOES

For two consecutive seasons annual average potato prices have been declining. On the back of record high prices in 2009, potato farmers expanded the area under production by more than 5 000 ha (13 percent) in 2010. Good yields were obtained and production rose to an all-time high of almost 2.1 million tons, which had a bearish impact on market prices. Taking only the potato market into consideration, a contraction in the area under production seemed plausible for the 2011 production season. However, at the time that farmers in the summer production regions (Eastern-, South-Western – and Western Free State) placed their orders for seed, the futures prices for maize had plummeted and despite of lower prices compared to the previous season, potato farmers opted to expand the hectares planted under potatoes. The area under production expanded by a further 7 percent and with favourable weather conditions, another record harvested or more than 2.2 million tons is expected for 2011.

- An annual average market price of R22.86 per 10kg is projected for 2011. The low market prices with the anticipated increase in fertilizer costs of 18 per cent are projected to result in a contraction of more than 2 000 hectares planted under potatoes in 2012. Hence, a marked recovery of prices is anticipated in 2012 with prices likely to rise above R30 per 10kg.
- Market prices in 2012 will not only be supported by the smaller crop, but also by a gradual improvement in real disposable income of the consumers.
- Over the long run per capita consumption of potatoes will increase by more than 20 percent, which implies approximately 2.5 million tons of potatoes will be marketed by 2020. Over the period 2000 – 2010, the consumption of potatoes rose by 35 percent from 1.4 million tons in 2000 to 2 million tons in 2010. In other words, under the macro-economic assumptions for this Baseline, the increase in per capita consumption of potatoes over the next ten years is unlikely to match the expansion in consumption over the past decade.
- The area under production will rise marginally and settle around 55 000 hectares by 2020 with higher yields boosting local production to meet the demand for potatoes. Whereas prices in real terms declined over the past decade, constant real prices are anticipated for the period of the outlook, which will provide the necessary support for average annual plantings to be approximately 8% higher over the next decade compared to the past ten years.

- Although there is a constant threat of imports of processed potatoes at competitive prices due to the relative strength of the Rand compared to the Euro, South Africa will remain a net exporter of potatoes over the long run with approximately 140 000 tons being exported and 40 000 tons of processed potatoes being imported per annum.

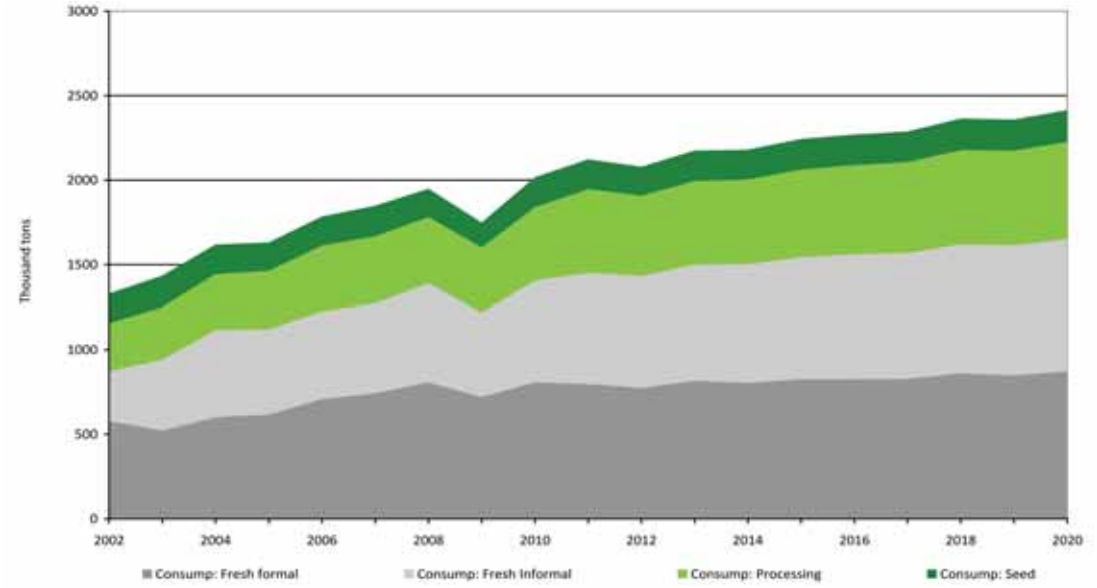

Figure 42: SA potato consumption

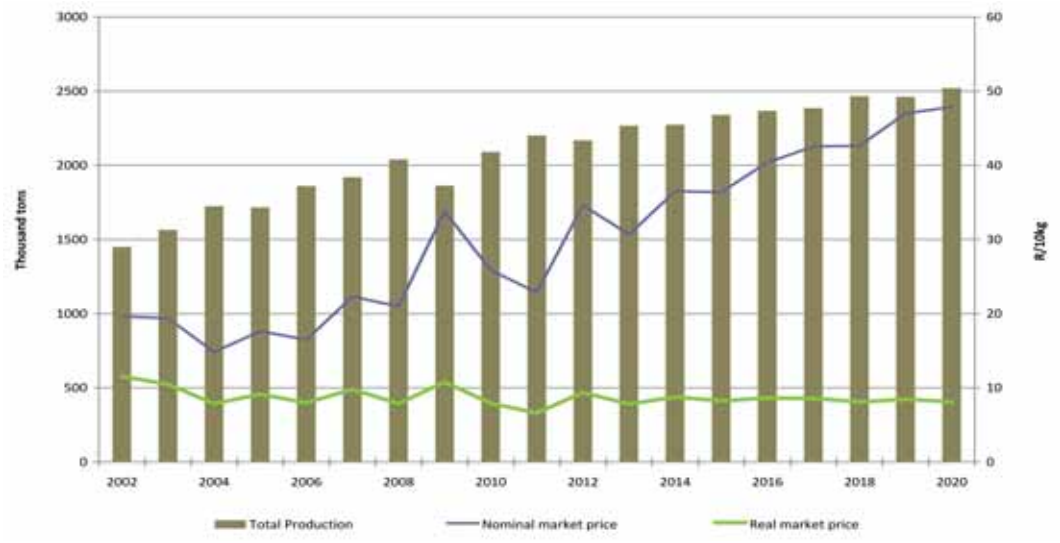

Figure 43: SA potato production and the nominal and real potato market prices

TABLE GRAPES

Demand, supply and price for South African table grapes

Above average yields and increased area resulted in a record high table and dried grape crop in 2009/10. The current total crop is estimated at 545 778 tons, a 23% increase from the previous season. The surplus production was mainly channeled into the raisin market as producers responded to an 81% price increase in the previous season for dried grapes. Total exports of fresh grapes increased year-on-year by 5% totaling 229 540 tons in 2009/10. Europe remains South Africa's most prominent export destination, despite its falling share in total South African exports; between 2008/09 and 2009/10 Europe's share decreased from 84percent to 81%. However, an overall decline in total export volume from the Southern Hemisphere put upward pressure on prices as the average world price for fresh grape exports increased from R13 162 per ton to R13 662 per ton in 2009/10, a 4 percent increase year-on-year. The increase in the derived Euro and US dollar price for SA grapes was even more pronounced at 19% and 18%; respectively.

The shift in the focus of export destinations is even more evident in the export figures for the 2010/11 season. Total exports declined by 28 000 tons or 12% year-on-year the past season, due to adverse weather conditions, in particular heavy rains and flooding in the northern production regions. The decrease in total exports was fully absorbed by the European market with exports to the EU-27 down by more than 30 000 tons. The decrease in exports to the United Kingdom accounts for 42 percent of the decline in exports to Europe. Exports to the EU-27 accounted for only 77% of total South African fresh grape exports over the past season.

- The lower supply from South Africa, specifically to Europe, exerted upward pressure on the average export price for SA grapes. The export price for 2010/2011 is projected at R15 850/ton, an increase of 16% year-on-year (see Figure 44). Accounting for inflation, the average export price for 2010/11 is estimated 10% higher compared to the previous season.
- Over the longer term, export prices are projected to follow an increasing trend with an average annual increase of 7 percent in nominal prices projected for the next decade. With an assumed inflation rate around 6 percent, prices are projected to increase on average by 1 percent per year in real terms. This increase is driven by rising demand, especially in non-European markets, the depreciating Rand and also a stabilisation in Southern Hemisphere exports.
- The upward trend in area planted to table and dried grapes is projected to turn around in 2011, with total

area decreasing from 23 532 ha in 2010 to 23 526 ha in 2011. Total area is projected to shrink to less than 23 500 ha in 2014, where after it is expected to increase steadily to reach 23 780 ha in 2020.

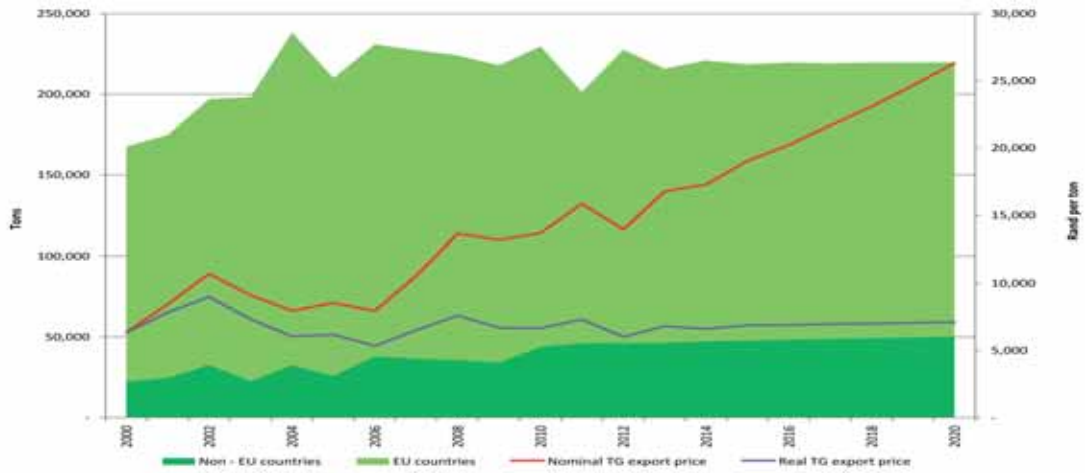

Figure 44: Export Market for SA fresh grapes

The Domestic market

The domestic market for fresh grapes remained strong in 2009/10 with a price increase of 6 percent year-on-year, despite volume increasing by 4 percent from the previous season (Figure 45).

- Volume marketed locally is projected to have increased by another 5 percent in 2010/11. The higher supply, together with quality problems resulting from the rain during harvest time, exerted downward pressure on prices. The average price for grapes sold locally is simulated at R6 825 per ton, 4 percent lower compared to the previous season. In real values, the average price for fresh grapes is projected to decline by 9 percent year-on-year
- Over the next decade the domestic market is projected to remain lucrative with nominal price growth averaging 9 percent per annum. However, returns in the local market still fall far short of the projected returns in the export market, ensuring that the volume marketed locally remains small relative to exports.

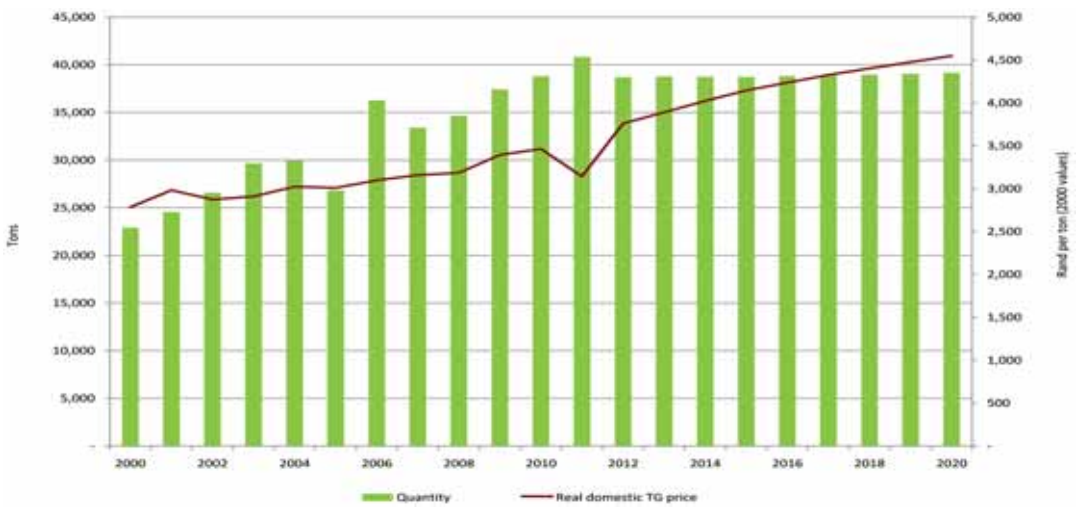

Figure 45: Local market for SA fresh grapes

APPLES AND PEARS

Apples and Pears - global

Exports from the Southern Hemisphere and stocks in the Northern Hemisphere are some of the key drivers in the prices of fresh apple and pear exports from South Africa. Projections of these key variables, as shown in Table 2 and Figure 46, are based on historical trends and forecasts of world production and exports published in the World Apple Review and World Pear Review. Apple stocks in cold storage in the Northern Hemisphere in 2009 and 2010 were amongst the highest levels in the past six years. Though stock levels are estimated 3 percent lower in 2011 compared to 2010 they are still high compared to the levels of 2006 to 2008. Northern Hemisphere pear stocks in cold storage in early 2011 were estimated to decline by 14% over 2010.

- Stock levels of apples and pears are expected to follow an upward trend over the next decade as production increases over time. The effect of the rising stock levels on prices should be considered in the context of world demand. Over the long term the ratio between apple stocks and world exports is expected to drift downwards. For pears the projected stock to export ratio remains fairly stable over time.
- Apple exports from Southern Hemisphere countries increased rapidly in the first four years of the previous decade, but then stabilised at around 1.7 million tons. For 2011, total exports from the Southern Hemisphere are estimated at 1.748 million tons. Exports are expected to increase gradually over the next decade reaching 1.9 million tons in 2020.
- Pear exports from the Southern Hemisphere increased from 550 000 tons in 2000 to 772 600 tons in 2009, but declined to 695 000 tons in 2010. For 2011 total pear exports from the Southern Hemisphere is estimated at 730 000 tons. Over the next decade exports are expected to increase steadily reaching almost 858 000 tons in 2020.

Table 2: Northern Hemisphere stocks (Index 2010=100)

	2005	2006	2007	2008	2009	2010	2011	2012	2014	2016	2018	2020
Apples	104	77	78	70	104	100	97	99	105	109	113	116
Pears	110	106	106	93	60	100	86	92	98	103	107	111

Source: Own calculations

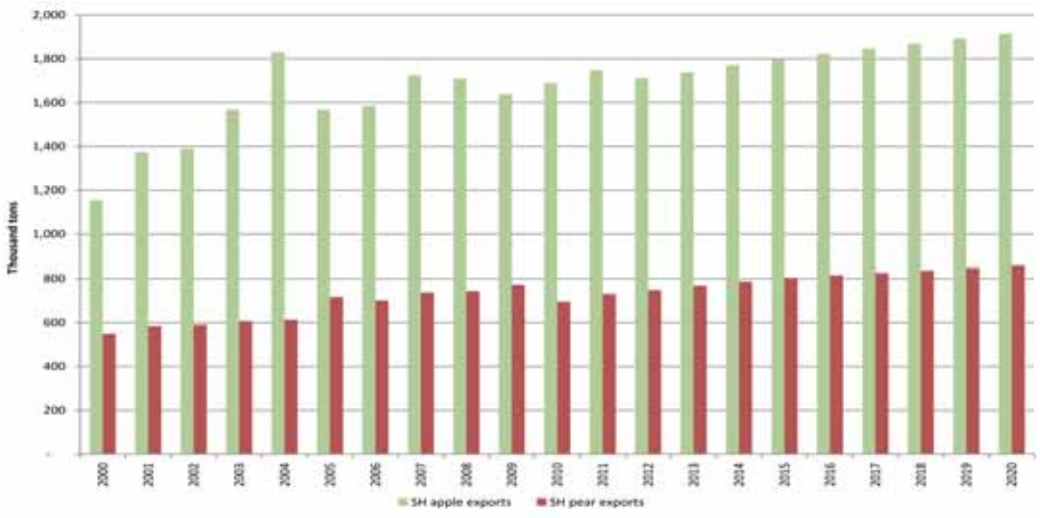

Figure 46: Southern Hemisphere exports of apples and pears

Source: BFAP

Apples and Pears – South Africa

The downward trend in bearing acreage of both apples and pears turned around in 2008 (plantings of four years and older are considered bearing.) Over the past three years the area planted to bearing apple trees increased by 846 hectares reaching 19 428 hectares in 2010, while area planted to bearing pear trees increased by 289 hectares to 10 585 hectares. Total area planted to apple and pears trees were 21 554 hectares and 11 332 hectares; respectively in 2010. Following the bumper crop of 2009, total apple production was 3 percent down in 2010 at 781 000 tons. Total apple exports declined year-on-year by 10%, with its share in total production down from 42% in 2009 to 38 percent in 2010. This is mainly due to improved returns in the local market relative to the export market for 2009 and 2010. The price ratio of local market to export market was 0.75 and 0.71 for 2009 and 2010 respectively, well above the 2003-2008 average of 0.63. In 2010 lower apple stocks in cold storage in the Northern Hemisphere supported the export price as the price increased by 8 percent to R6 084 per ton. Growth in returns in the local market was disappointing at 2 percent as price increases were dampened by a 21% increase in supply.

In 2010 total pear production increased by 5 percent due to improved yields and also increased area. The share of exports declined from 52% to 50%, with the share of local sales and pears delivered for processing increasing with roughly one percentage point each. Local sales and processing accounted for 14% and 34% of the total 2010 crop. In 2010 the domestic market price for pears increased by 1 percent and the export price declined by 8 percent. Though smaller export volumes from South Africa and other Southern Hemisphere producers did alleviate the downward pressure on prices, it was not sufficient to off-set the negative impact of higher levels of pears in stock in the Northern Hemisphere and the stronger Rand. Given the underlying assumptions, baseline projections include;

- Apple bearing acreage is projected to increase by 1 322 hectares (7 percent) over the next ten years reaching 20 750 hectares. Under the assumption of normal weather conditions and average yields, production will follow a similar trend with total production reaching almost 833 000 tons in 2020 – a 7 percent increase from the average production of 2008 to 2010. Total apple production for 2011 is estimated at 792 000 tons, up 1percent from last year.
- The apple export price for 2011 is simulated at R6 110 per ton, only R24 per ton more than in 2010 (Figure 47a). However, prices are projected to gain momentum over the baseline period with an average annual increase of 5.8%. Taking inflation into consideration, the 2011 price is projected to decline by almost 3 percent. Lower real prices will continue for two more seasons as rising stock levels and sluggish world demand push prices downward. However, the situation is projected to turn around with real growth in the export price projected from 2014 onwards (Figure 47b).
- Though the 2011 domestic market price for apples is projected to fall by 4% from 2010, the market is expected to recover from 2012 onwards with year-on-year increases in excess of 6% (Figure 48). In real terms this translates to an annual increase of between one and two per cent per annum. These increases are the result of increasing demand, which again is backed by positive economic growth in South Africa, and increasing population, and also limited growth in volume supplied to the local market. Total quantity sold in the local market is projected at 267 000 tons in 2020 – only 17 780 tons or 7% more compared to 2010.
- The area planted to bearing pear trees is projected to increase annually reaching a peak of 11 080 hectares in 2013. Thereafter, based on relative returns, area is simulated to decline annually totalling almost 10 700 hectares in 2020. That is 380 hectares below its peak in 2013, but still 110 hectares more than the 2010 estimate. As with apples, assuming normal weather conditions and average yields, total production is expected to follow a similar trend to that of acreage. Production for 2011 is simulated at 353 790 tons and is projected to peak at 366 700 tons in 2013.
- The pear export price for 2011 is projected to rise by 9 percent from last year with lower stock levels in Europe being the main contributing factor (Figure 47a). However, for next year prices are projected to decline marginally as stock levels are replenished and Southern Hemisphere export volumes recover to historical levels. Over the remainder of the baseline prices are projected to gain between 3.8% and 5.5% per annum, resulting in no real growth (Figure 47b). Prices are dampened by increasing supply from other Southern Hemisphere producers and to a lesser extent relatively high stock levels in the Northern Hemisphere.
- The domestic market for pears is expected to remain relatively small with less than 60 000 tons being traded. The 2011 price is simulated at R3 890 per ton, 3 percent down from last year. Annual growth from 2012 to 2020 is projected to vary between 6 and 7 percent.

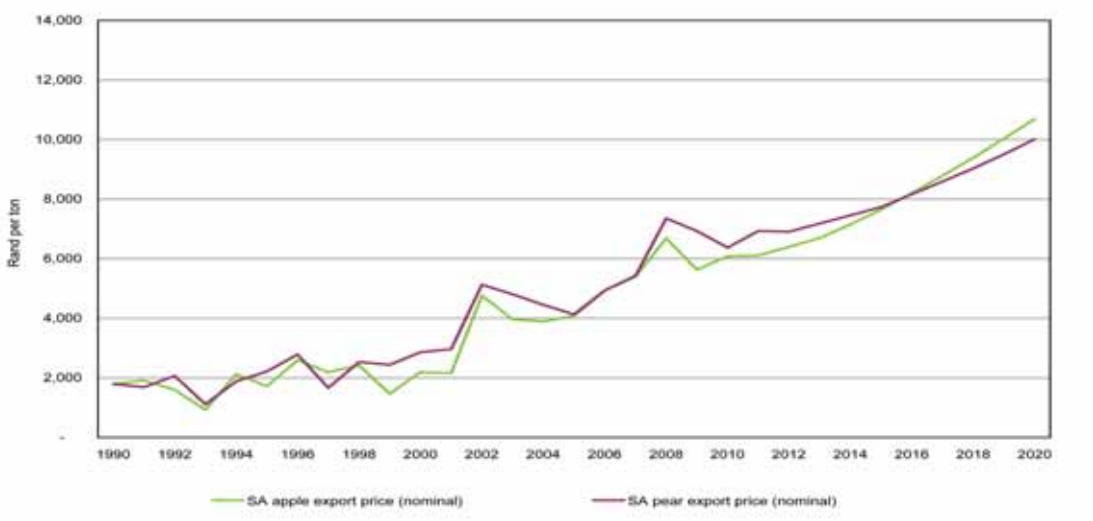

Figure 47a: Rand return for SA exports: nominal prices

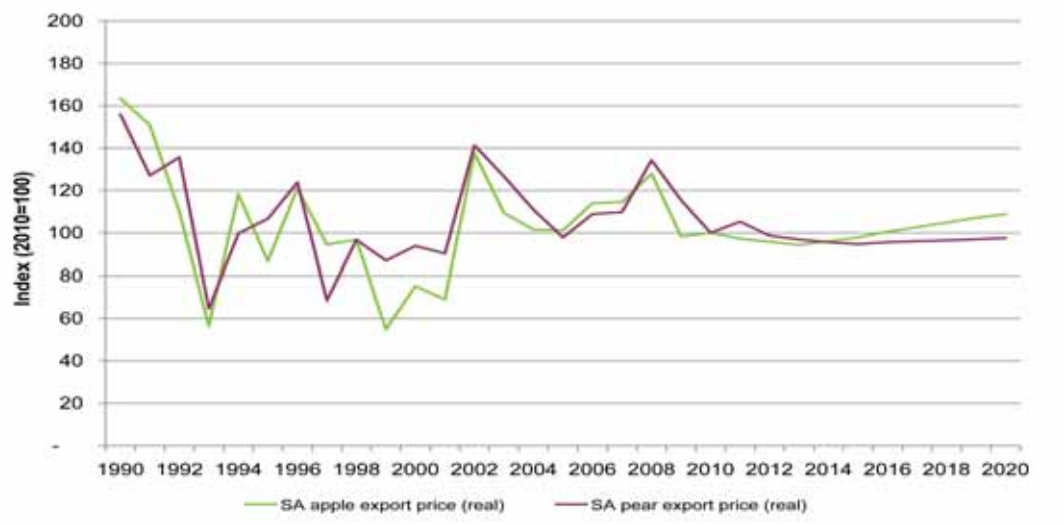

Figure 47b: Rand returns for SA exports: real prices

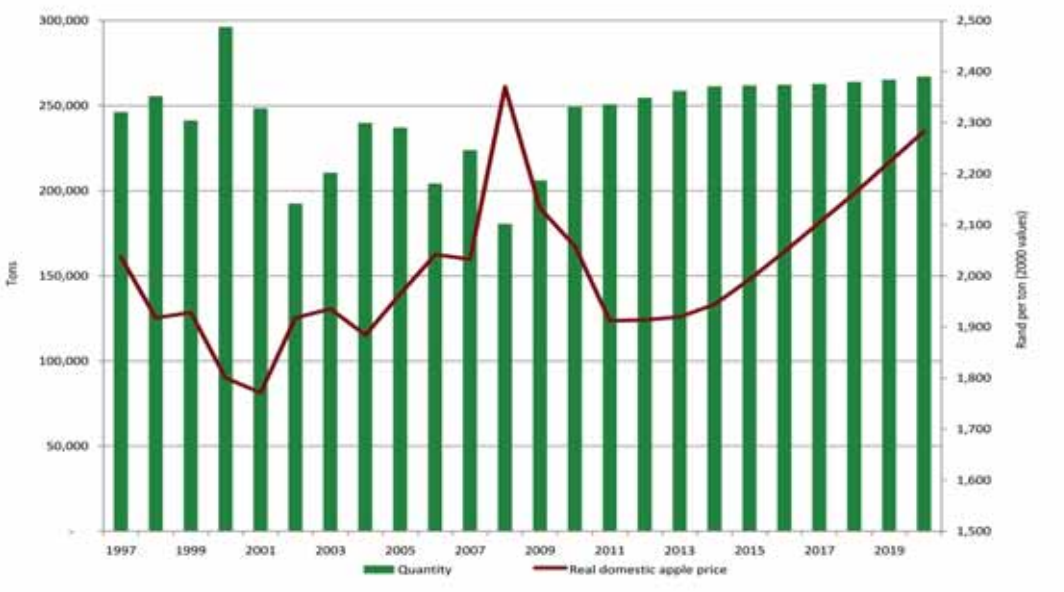

Figure 48: Local market for SA apples

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

A profile of the South African consumer market

South Africa is a diverse nation with a wide variety of income 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, 2010a). 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. This represented approximately 60% of the total South African adult population in 2009 (SAARF, 2011a).

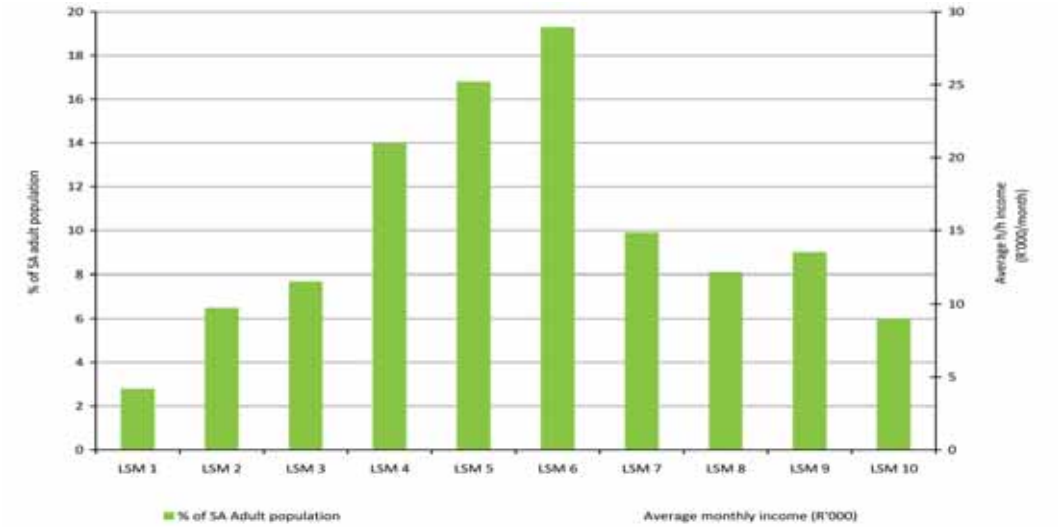

Figure 49: The SAARF LSM Segments: Proportion of SA adult population and average monthly household income in 2010

Source: SAARF (2011a)

A summary profile of the South African consumer market is presented in Table 4, based on a classification system[1] 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).

It is interesting to note that as from 2008 SAARF has been working on an extended LSM model that provide more discrimination and a more specific identification of target markets among LSM 7 to 10 with a 'low' and a 'high' sub-division within each of these four upper LSM segments (SAARF, 2011a).

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

Table 3: A summary of the South African Consumer Market based on the SAARF LSM segments

Descriptor:		Marginalised consumers: (17% of population) SAARF LSM® segments:			Emerging consumers: (15% of population) SAARF LSM® segments:			Established consumers: (23% of population) SAARF LSM® segments:			
		1	2	3	4	5	6	7	8	9	10
Average monthly household income		R1351	R1575	R1885	R2582	R3515	R6090	R9644	R13262	R18223	R27647
Gender: % Male		37.1	42.4	43.0	49.0	48.0	46.7	48.5	47.5	51.4	51.7
Age:	% 15-24	27.9	32.6	30.8	30.8	32.8	29.4	26.1	28	26	26.6
	% 25-34	16.8	20.2	18.9	24.6	24.1	26.4	24.5	21.4	20.4	16.5
	% 35-49	16.7	20.7	26.9	22.8	23.5	25	27.3	26.5	30.2	29.8
	% 50+	38.6	26.5	23.4	21.8	19.5	19.2	22	24.1	23.5	27.1
Perceived unemployment		38	40	47	44	40	32	25	19	11	5
Rural share		100	95.2	89.0	74.5	46.5	20.6	6.5	9.1	6.1	5.5
Provincial location		E Cape, KZN, Limpopo			KZN, Limpopo, Gauteng				Gauteng, W Cape, KZN		
Formal education	None	22.2	14.8	11.7	5.8	3.3	1.1	0.5	0.1	0	-
	Primary	40.6	33.1	26.1	20.5	14.4	9.8	4.7	2.8	1.2	0.7
	High	37	51.7	61	71.2	78.4	79.1	78.2	77.3	66.2	56.4
	Post-matric	0.3	0.4	1.2	2.5	4	10.1	16.6	19.8	32.6	42.9
Electricity in home		27.7	56.3	74.0	93.4	97.9	99.6	99.5	99.5	99.6	99.8
Refrigerator in home		0	13.4	40.6	72.2	89.0	96.7	98.9	99.5	99.5	99.7
Microwave oven in home		0	0.6	2.5	10.4	39.8	75.6	95.6	97.3	98.4	99.4
Shopping frequency: Share mainly engaging in monthly bulk shopping		67	65	64	63	58	56	50	50	49	43
Products bought for household	Maize meal	75.2	84.1	84.3	84.2	84.9	77.0	65.4	60.3	53.3	45.0
	Rice	60.4	71.2	74.6	76.9	77.8	79.3	81.0	82.0	76.8	74.5
	Long life milk	43.3	43.0	49.1	53.7	58.6	61.4	59.3	61.3	53.0	50.0
	Vegetables (frozen)	9.3	12.9	17.8	24.2	31.2	44.3	57.0	61.1	61.8	63.7

Source: SAARF (2011a, 2011b)

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 50 illustrates the dramatic decline in the share of the South African adult population classified within SAARF LSM® segments 1 to 3 from 2004 to 2010, accompanied with an increase in the share of the adult population classified within SAARF LSM® segments 6 to 9.

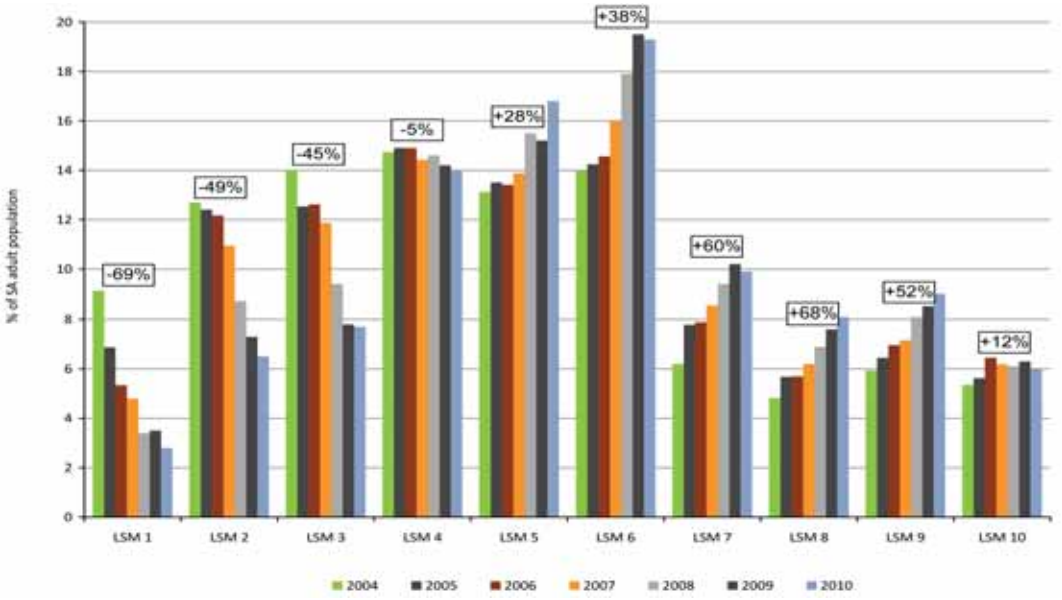

Figure 50: LSM class mobility: All adults during the period 2004 to 2010

Source: SAARF AMPS data for the period 2004 to 2010

As noted in the BFAP Baseline 2010, class mobility slowed down somewhat from 2008 to 2009 relative to 2007 / 2008; in particular within SAARF LSM® segments 6 to 9. This decrease in movement can be attributed to the global recession.

When considering the movement from 2009 to 2010 interesting observations are evident:

- The share of adults classified within LSM groups 6, 7 and 10 decreased by 1.0%, 2.9% and 4.8% respectively. These observations could be linked to the lingering impact of the economic recession on South African consumers.
- Class mobility remained a reality within LSM groups 5, 8 and 9 where the share of adults classified within these LSM groups increased by 10.5%, 6.6% and 5.9%; respectively. However, the rate of class mobility slowed down further within LSM 8.

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. This section provides a discussion of prominent global consumer food trends, based on extensive literature review (see Table 5 for a summary of these trends). It is critical to note that successful food products usually rely on 'double-positioning', where food products are designed to address at least two (or more) consumer food trends.

Table 4: A summary of prominent global food trends in 2011

Main trend:	Examples:
Health / well-being	• Increased focus on personalised nutrition through improved functional food applications (Innova Market Insights); • Continued focus on energy drinks (Innova Market Insights); • Increased focus on innovative relaxation beverages (Innova Market Insights); • Increased focus on 'passive health', i.e. 'minus'-claims such as reduced sodium, sugar and high fructose corn syrup (Innova Market Insights, Mintel); • Decreasing focus on 'active health (i.e. 'plus'-claims) due to increasingly complex food labelling legislation globally (Innova Market Insights); • Renewed interest in fruit and vegetables - strongly linked to inherent health benefits (e.g. packaged fruit snacks and fruit smoothies) (Innova Market Insights); • According to MMR Pulse programme health-related claims are highly sought after by UK consumers in the post-recession era, with particular focus on aspects such as low/ no fat, low/no saturated fat, natural and low/no sugar (Searby, 2011); • According to Euromonitor's top 10 consumer trends for 2011, post-recession consumers are increasingly interested in health and wellness given the reduced certainty associated with job security and retirement funds.
Convenience	• Increase consumer demand for simple, convenient food solutions (Mintel); • According to the NPD Group (Restaurant management magazine, May 2011) convenience is expected to be a key food consumption factor among US and Canadian consumers in the next ten years, driving growth in food categories such as easy meals, yoghurt, fruit bars, snack bars and frozen pizza.
Naturalness	• Increasing consumer need to reduce the dissociation they experience with the food they consume (Innova Market Insights); • Less processed (Innova Market Insights); • No or less additives & preservatives (Innova Market Insights); • Organic food (Innova Market Insights); • Renewed interest in fruit and vegetables (Innova Market Insights); • Defining 'natural' more clearly by focusing more on the inherent goodness of certain foods (Mintel);
Sustainability	• Increased focus on environmental and social sustainability (Innova Market Insights); • Increased importance of reduced packaging material (Mintel); • According to MMR Pulse programme free range (following health in the dominant position) is sought after by UK consumers in the post-recession era (Searby, 2011); • According to Euromonitor's top 10 consumer trends for 2011, consumers are 'more comfortable' with affordable sustainable food offerings in the context of post-recession budget constraints.
Post-recession trends	• Consumers' need for real value, but combined with additional benefits such as indulgence included (Innova Market Insights). Consumers' need for value is confirmed by Euromonitor's top 10 consumer trends for 2011; • Persuading sceptical consumers: During the global economic recession many consumers became sceptical towards functional foods, due to the lack of immediate health benefits experienced. In the post-recession setting food manufacturers are trying to motivate consumers to re-enter the functional food market, by applying the 'proven' labelling claim (constrained by increasingly complex food labelling legislation around the globe (Innova Market Insights); • 'Culinary expansion' at home: Building upon the 'homing' trend that emerged during the recession, this trend incorporates indulgence, quality food, good 'professional' cooking skills and creativity into home cooking. (Innova Market Insights);

Table 4: A summary of prominent global food trends in 2011 (Continued)

Main trend:	Examples:
	• 'Professionalisation of the amateur': This trend is linked to the previous point and focus on products that enable consumers to engage in home-preparation of what used to require a specialist service, e.g. chef-endorsed restaurant-style meals (Mintel); • 'Econo-chic': In the post-recession era consumers' need for luxury is returning, but in very limited and selective cases, e.g. premium confectionery products (Mintel).
Other	• Continued focus on establishing connections between consumers and brands through electronic social media platforms (Innova Market Insights); • Increasing focus on 'cradle-to-grave' marketing, i.e. adapting existing brands to a wider age spectrum (Mintel); • 'Blurring categories', e.g. beverages as snacks, snacks as meals (Mintel); • 'New retro', i.e. revitalising old products and / or their advertising campaigns (Mintel).

Sources: Innova Market Insights trends reported by Supermarket & Retailer (2011); Mintel trends reported by Von Der Heydt, 2010; Euromonitor, 2011; MMR information reported by Searby, 2011; NPD Group information reported by Restaurant Management Magazine, 2011.

Food trend watch South Africa: A new product perspective

To investigate the impact of global food trends on South African consumers, an analysis on a new food product perspective is presented in this section based, after which some prominent local food trends are discussed based on the opinions of role-players within the South African food industry.

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, 2009 and 2010 (Neall, 2006a, 2006b, 2006c, 2006d; Food Review 2007a, 2007b, 2007c; Shaw, 2008; Food Review, 2009b; Hillman, 2010; Rolando, 2010). 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 2010 (as evident from individual products' prominent attributes) in order to illustrate food trend dynamics for the analysis period.

Table 6 presents the distribution of the NPC finalists among food categories. The information presented in Table 6 indicates that among the 2010 NPC products, innovation was evident in a wide range of product categories, but in particular with condiments, dairy, vegetables, plaint oil products, chicken, baked goods, ready-to-eat meals and non-alcoholic beverages.

Table 5: Product Categories of NPC products[a]					
Food product category:	Share of product:				
	2010 (n=20)	2009 (n=6)	2008 (n=8)	2007 (n=9)	2006 (n=10)
Dairy	10%	17%	25%	11%	20%
Condiments	15%	-	-	44%	10%
Confectionary	5%	17%	25%	-	10%
Staples	0%	-	25%	11%	-
Vegetables	10%	33%	-	-	-
Plant oil products	10%	17%	13%	-	-
Fruit	5%	17%	-	11%	-
Chicken	10%	-	-	11%	10%
Fish	5%	-	13%	-	-
Meat	0%	-	-	-	10%
Tea	0%	-	-	-	10%
Baked goods (sweet)	10%	-	-	-	10%
Baked goods (savoury)	0%	-	-	-	10%
Baby food	0%	-	-	11%	10%
Ready-to-eat meals	10%	-	-	-	-
Non-alcoholic beverages	10%	-	-	-	-

[a] 2010: All entries; 2006 to 2009: Finalist products.

Source: Primary data developed according to information obtained from articles on the Symrise / Food Review New Product competitions of 2006 to 2010

The main trends addressed by NPC finalists are presented in Table 7. 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. Among the 2010 products the most relevant trends were indulgence and convenience, followed by health / wellbeing.

Table 6: Consumer Food Trends Addressed by the NPC finalists productss[a], 2006 to 2010					
Trend:	Share of new product finalists in specific year exhibiting specific trend:[b]				
	2010 (n=20)	2009 (n=6)	2008 (n=8)	2007 (n=9)	2006 (n=10)
Health	50%	83%	38%	33%	60%
Convenience	75%	67%	38%	56%	70%
Indulgence	80%	67%	50%	89%	80%
Local	20%	33%	25%	11%	-
Sustainability	20%	17%	-	-	10%

[a] 2010: All entries; 2006 to 2009: Finalist products

[b] Percentages in columns add up to more than 100% due to 'double-positioning' in food products.

Source: Primary data developed according to information obtained from articles on the Symrise / Food Review New Product competitions of 2006 to 2010

Examples of more specific manifestations of these trends:

Health: Water with anti-oxidants, healthy low kilojoule ready-to-eat meals, oil-free salad dressing, fruit and aloe mixed juice and dairy-free dark chocolate.

Convenience: Food preparation convenience (e.g. ready-to-eat diet meals and children meals, dehydrated 'complete' meals) and product serving/usage convenience (e.g. ready-to-drink children iced tea portion with sports cap, salad dressing with spray pump, ready-mixed stuffing mix for meat dishes).

Indulgence: Interesting/novel flavours and combinations (e.g. chocolates with aloe and fruit jelly centres, aloe and fruit mixed juices, preserved plums with spices in red wine, yoghurt range combining rooibos tea and fruit flavours) and enjoyment of the luxurious aspects related to food (e.g. hidden-centre cup cakes, antioxidant sparkling water in a luxurious glass bottle with an up-market look)

Local: Utilising local ingredients in innovative ways, e.g. rooibos tea flavoured yoghurt range, using aloe in chocolate and fruit juice.

Sustainability: Environmentally friendly packaging (e.g. recyclable such as glass), reduced packaging quantities).

The results presented in this section clearly illustrate the dominance of indulgence and convenience among South African consumer food trends, based on the 2010 NPC products. The health trend is somewhat less prominent than in the 2009 analysis.

Food trend watch South Africa: Food industry perceptions

Food Review magazine predicted a number of top trends for the South African food sector for 2011, based on expert opinions elicited from local food industry role-players (Rolando, 2011):

The health / well-being trend:

- Dieting: Increased focus on dieting, given the significant prevalence of obesity in South Africa, e.g. 'lite' and healthier product choice options.
- Functional food: Local consumers are predicted to focus more on food solutions to improve their body functions and health.

Homing, combined with indulgence and convenience:

- Experts predict the rediscovery of home cooking and entertaining, but with the incorporation of some luxury (indulgence) and convenience elements within the homing context.

Sustainability, combined with naturalness and local food:

- Increasing consumer demand for sustainable business practices.
- Consumers engaging more and more in a simpler and more natural approach to food consumption.
- Increased focus on locally produced products (linked to concerns regarding the carbon footprint of food), as well as unique local (African / South African) products such as baobab, rooibos tea and aloe.

Food transparency:

- Food labelling transparency: Increased focus on food labelling transparency in the light of the implementation of the new South African food labelling legislation (as from March 2011).

Food security:

- Continued focus on food security, in particular within the African continent and local context.

FARM-LEVEL ANALYSIS

Introduction

The BFAP Farm program was established with the main objective of assisting farm businesses with strategic decision-making under changing and uncertain market conditions. This is done by means of advanced quantitative analyses of how different policy options, macroeconomic variables, and volatile commodity market conditions could impact farm businesses in selected production regions in South Africa. The BFAP Farm Program includes economic analysis of the production of grain, oilseed, livestock, wine, fruit, sugar, and vegetables. As such it is a useful tool for farmers, agribusiness firms and policy makers to strategically 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 budgeting model capable of simulating a (representative) farm comprising of various enterprises e.g. grain, oilseeds, livestock etc. Apart from the enterprise specifics, the model captures business specifics such as the asset structure and financing method(s). The output of the farm-level model is presented by means of various performance indicators such as gross margins, net farm income (NFI), return to family living (as a cash flow measure), the cumulative net cash balance (CNCB), the net worth and, the debt to asset ratio. FinSim is currently used to analyse farms in the Western, Southern and Northern Cape regions, North West, Free State and the Mpumalanga Highveld. For future analysis, Limpopo, KwaZulu-Natal, Eastern Cape and the Mpumalanga Lowveld have been identified. The capability of the BFAP system of models is illustrated in the section on net margins and provincial analysis.

The agri benchmark network is an international network of agricultural research and advisory economists aiming to create a better understanding of global cash crop farming and the economics thereof. The objective of the agri benchmark initiative is to create a national and international database on farm information through collaboration between the public sector, agribusinesses and producer organisations. The link between the local and international network provides the means to benchmark South African agriculture with world-wide 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 to obtain business intelligence information, obtain updates on local- and international agriculture, create financial and managerial strategies for profitable and sustainable farming and finally, provide a platform to compare farming businesses and production systems of 16 cash crop enterprises all over the world. BFAP manages the agri benchmark network within South Africa in collaboration with the National Agricultural Marketing Council (NAMC) and the global agri benchmark network based in Germany.

The 2010/2011 season – profits followed by input inflation?

A highly complex and volatile production environment was experienced over the past 12 months considering the occurrence of unexpected macro-economic, political, social, and climatic events, both globally and locally. The aftermath of the global recession was still evident with interest rates at their lowest level in decades, debt levels at their highest in many developed economies, growth recovery in mostly developed economies painfully slow, whilst developing economies were beginning to struggle with inflation. This caused foreign exchange relationships to change, which generally resulted in the appreciation of developing economies' exchange rates relative to those of developed economies. The result was a strengthening in the Rand both against the US Dollar and the Euro. Commodity prices also skyrocketed, partly due to low stock levels on specifically corn and soybeans in the US, but also due to adverse weather conditions like the drought in Russia that constrained the volumes of exports out of Russia severely. The increasing oil price due to political unrest in North Africa and the Middle East had a major impact on all production input expenditure. Finally, international and local weather fluctuations increased the pressure on the production environment, which included excessive rainfall together with drought conditions in one season. Consequently higher output prices but also increased input expenditures were characteristics of the agricultural production environment both globally and locally.

The question is, given all these changes in the operating environment, what is the current state of farming in South Africa, and given the current state, what is the prospective future of farming in South Africa and what does the BFAP outlook say about the future prospects? The following section addresses these two questions with reference to representative farms in the Northern Cape Province, North West, North/Western Free State and the Overberg region of South Africa.

Underlying key indicators and assumptions

The latest outlook from the BFAP sector model is applied in the FinSim farm-level model, in order to simulate baseline projections for the different grain- and oilseed enterprises of the representative farms in selective regions. The same applies for production input expenditure. Table 7 shows the baseline projections for the key macro-economic indicators for the period 2010-2012. These serve as the key assumptions that underlie the farm-level model.

Table 7: Assumptions and Baseline projections (2010-2012)				
VARIABLES	UNIT	2010	2011	2012
Oil price: U.S. refineries acquisition	US $/barrel	77.8	108	103
R/US$	SA cents/ US $	757	708	733
Fuel input	Index'95	540.98	621.72	667.72
Fertilizer input	Index'95	414.68	489.77	507.98
Farming requisites	Index'95	396.57	448.56	473.17
White maize SAFEX price	R/ton	1300	1732	1702
Yellow maize SAFEX price	R/ton	1379	1795	1683
Sunflower SAFEX price	R/ton	3812	4194	4280
Wheat SAFEX price	R/ton	2286	3385	3587
Barley derived price (Caledon)	R/ton	1992	3069	3267
Canola derived price (Western Cape)	R/ton	3190	3895	4162

General assumptions on a representative farm:

- The representative farm is typical of the specific output mix and production system as reflected in a specific combination of enterprises, land, capital and labour resources for a specific region.
- The representative farm has long-term as well as medium-term loans with concomitant instalments and interest payments.
- Asset replacement occurs each year at a specific rate depending on cash availability and other calculations.
- Production loan and overdraft facilities are classified as short-term loans and are captured in the model.
- Soil- and water potential and quality remain constant.
- The condition and productivity of equipment remains constant.
- The farm business structure remains unchanged.
- The quality of farm management remains constant.
- Production input cost for the summer rainfall grain production has been adjusted according to 2010 inputs and does not follow the baseline trends and projections for input costs.
- Net Farm Income (NFI) is used as a proxy for farm profitability.
- Cash Flow (CF) is used as a proxy for the cash flow position of the representative farm.
- The results obtained in the FinSim model can be described as follows: 2010 – Actual data; 2011 – Estimates; 2012 – Projections.
- The farm gate price has taken silo differentials of the selective regions into account.

Northern Cape – High input cost & yields, a winning combination?

The Northern Cape farm represents a farm in the Douglas/Prieska region and consists of 2 553 hectares of which 323 hectares are under irrigation on a double-cropping rotation with maize and wheat. The remaining hectares are used as grazing, albeit of low carrying capacity. Water for irrigation is obtained from the Orange River irrigation system. The main income of the farm is obtained from grain production which is supported by the production of livestock. A conservation tillage operation with reduced stubble breaking and a mulch-seed approach is used on the farm. The assumed interest rate on production loan and overdraft facilities is 12%, whilst long- and medium-term loans are obtained at an interest rate of 10% and 10.5% respectively.

Table 8 provides information on the gross margin of the selective grain enterprises of the Northern Cape farm for the period 2010 – 2012. Also included in the table are crop prices, selective input expenses and Net Farm Income (NFI) as a proxy for farm profitability. It is important to notice that the percentage changes that are indicated in the table differ for maize- and wheat production in terms of year intervals.

Table 8: Northern Cape production analysis (2011)				
Description	Yellow maize irrigation	Wheat irrigation	% Change	
			Maize	Wheat
Farm income			2011-2012	2010-2011
Yield (t/ha)	13.06	6.59	-	-
Farmgate price (R/ha)	1 472	2451	1.50%	17.99%
Gross income (R/ha)	19 230	16 148	-	-
Selective production expenses (R/ha)				
Fertilizer	5 914	5 612	17.34%	18.10%
Seed	1 490	958	14.63%	14.58%
Fuel	782	714	13.68%	14.92%
Irrigation electricity	1 162	1 324	5.42%	14.58%
Other production costs	2 755	3 028	7.04%	12.70%
Total costs	12 103	11 637	13.29%	15.77%
Gross Margin (R/ha) 2011	7 172	4 511	-16.88%	0.85%
Gross Margins				
	R/Ha	R/Ha	% Change	
Gross Margin 2010 (Actual)	5 034	4 474	-	-
Gross Margin 2011 (Estimate)	7 172	4 511	41.58%	0.85%
Gross Margin 2012 (Projection)	5 925	5 637	-16.88%	24.94%
Financial Indicators				
	2010	2011	2012	% Change (2010-2011)
Net Farm Income (NFI)	R1 483 078	R1 859 856	R1 575 875	25.41%
Debt to Asset Ratio	26%	28%	27%	7.69%
Return on Assets (ROA)	5.74%	6.40%	4.86%	-

The gross margin for 2011 is estimated at R7 172 per hectare for yellow maize produced under irrigation. This is more than 41% higher than the gross margin (actual data) in 2010, due to a sharp increase in the farm gate price on standard grades and higher than normal irrigation yields. However, the gross margin declines by almost 17% in 2012 to R5 925 per hectare due to a sharp increase in input expenditure, particularly, fertilizer (17.34%), seed (14.63%) and fuel (13.68%), as illustrated in Figure 51.

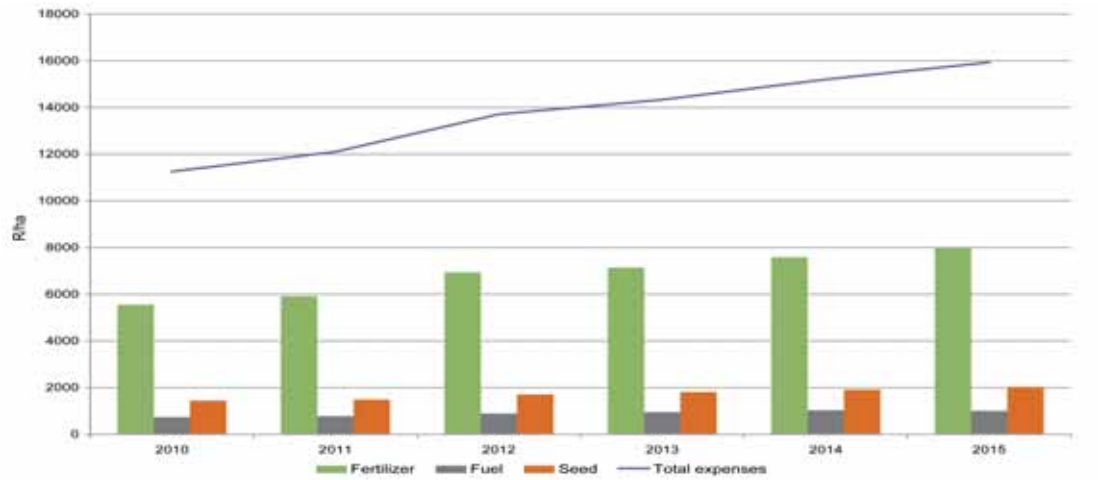

Figure 51: Maize production cost

High relative input cost in the Northern Cape is largely due to water availability and the potential to harvest 13 ton per hectare of maize. In Figure 51 and 52, selective input costs are projected. The cost of fertilizer application for maize and wheat in 2010 was R5 550 and R4 752 per hectare; respectively. It is projected that this cost could increase by more than 40% towards 2015.

In the production season 2010/2011, maize was planted at the end of 2010 and thus benefited from the lower input expenditure and higher commodity prices in 2011 which resulted in higher margins per hectare. The same did not occur in the production of wheat as planting dates are later and input inflation period was already at an advanced stage at the time when the wheat season had kicked off. The gross margin for wheat in 2011 is estimated at R4 511 per hectare only 0.85% higher than in 2010. However, the projection for 2012 is almost 25% higher, at R5 637 per hectare, largely due to an increase in the farm gate price of wheat. The rising wheat price from 2010 to 2011 and the corresponding impact on gross margin per hectare is projected to be dampened by increasing input expenditures. Fertilizer, seed and fuel cost are projected to increase by 18.10%, 14.48% and 14.92% respectively for 2011 (Figure 52).

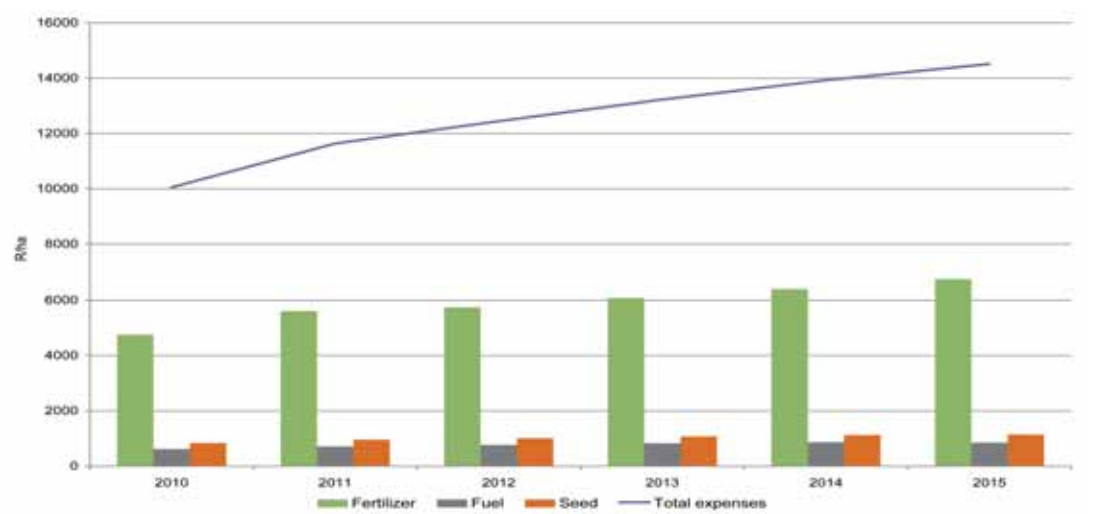

Figure 52: Wheat production cost

The Net Farm Income (NFI) of the representative farm in 2010 was R1 483 078 for the entire farm business. It is estimated that NFI will increase by 25.41% in 2011 to R1 859 856 due to a better margin in maize production. A decrease in NFI is expected in 2012 due to the sharp increase in production input expenditure. The debt to asset ratio, which is simply total debt divided by total assets lies between 26% and 28%.

North West – Low cost production and the financial benefits.

The representative farm in the North West with sandy loam soil and an average rainfall of 550 millimetre per annum consists of 1 230 hectares, which of 1 024 hectares are permanently under a maize/maize/sunflower/fallow dryland rotation. Thus, the main enterprise on this farm is maize followed by sunflower production, further supplemented by the production of livestock. The type of tillage system that is common in this district is an intensive tillage approach with prevailing conventional ploughing or deep soil cultivation. The strategy on this farm is to follow an economical input approach and to operate with a conservative approach to risk. The assumption in this region is that farmers use 75% of their available production loan and overdraft facilities each year at an interest rate of 10.5%. Asset replacement occurs each year at an average replacement rate of 16% and 7% for vehicles and machinery- and implements respectively.

Table 9 shows the results of the production analysis of a representative farm in the North West region. The gross margin per hectare for maize and sunflower production has been calculated according to the BFAP sector model trends and projections. Included in the NFI is a net margin for livestock production of R157 142. The table also provides information on yield, farm gate prices and selective production expenses.

Table 9: North West production analysis (2011)

Description	Maize dryland	Sunflower dryland	% Change (2011-2012)	
			Maize	Sunflower
Farm income			2011-2012	
Yield (t/ha)	4.55	2.43	-	-
Farmgate price (R/ha)	1 511	3 418	6.47%	-3.01%
Gross income (R/ha)	6 873	8 294	-	-
Selective production expenses (R/ha)				
Fertilizer	1 137	583	17.35%	17.35
Seed	400	196	14.64%	14.64%
Fuel	576	514	13.76%	13.76%
Other production costs	1 162	893	7.22%	7.22%
Total costs	3 276	2 186	12.79%	12.30%
Gross Margin (R/ha) 2011	3 597	6 107	-6.34%	-32.40%
Gross Margins				
		R/Ha	R/Ha	% Change
Gross Margin 2010 (Actual)	2 494	4 905	-	-
Gross Margin 2011 (Estimate)	3 597	6 107	44.23%	24.51%
Gross Margin 2012 (Projection)	3 369	4 128	-6.34%	-32.40%
Financial Indicators				
	2010	2011	2012	% Change (2010-2011)
Net Farm Income (NFI)	R451 840	R1 442 385	R1 018 612	219.22%
Debt to Asset Ratio	13%	16%	13%	23.08%
Return on Assets (ROA)	3.57%	10.40%	6.90%	-

The gross margin for dryland maize production in 2011 is estimated at R3 597 per hectare, approximately 44.23% higher than gross margins in 2010 due to relatively low input cost, a high farm gate price and a relatively high yield. However, this could change in 2012 when input cost is expected to increase. The gross margin projection for 2012 is R3 369 per hectare, more than 6 percent lower than in 2011. The cost of fertilizer input is expected to increase by 17.35% for both maize and sunflower production, so farmers would do well to consider carefully when they buy fertilizer, and to track movements and trends in the oil price because of the definite correlation between the oil price and, for example, the price of nitrogen. The fluctuations in the exchange rate are also an important pointer.

The low cost of production of sunflower and a good farm gate price results in excellent margins for 2011 at R6 107 the margin is 24.51% higher than in 2010. As mentioned earlier, the input expenditure for sunflower is expected to increase towards 2012 which could cause the gross margin to decrease by 32.40%. The average expected increase in total production cost for sunflowers is 12.30%.

The results indicate a Net Farm Income (NFI) of R451 840 for the farm enterprise in 2010. The projection is that NFI could increase towards 2011 by more than 200% due to better prices and thus, margins. The expectation of increasing input expenses will force NFI to drop back in 2012. The strategy of maintaining a low debt to asset ratio has a positive effect on the cash flow (CF) position of the farm. This strategy could become more valuable in future when interest rates are expected to increase. For the period between 2010 towards 2012, the debt to asset ratio remains between 13% and 16%.

Figure 53 illustrates international fertilizer prices and projections for the period 2007-2012. The spike in 2008 fertilizer prices placed enormous pressure on gross margins. In 2011, fertilizer prices are not near the levels in 2008 but there are still concerns that price levels can increase.

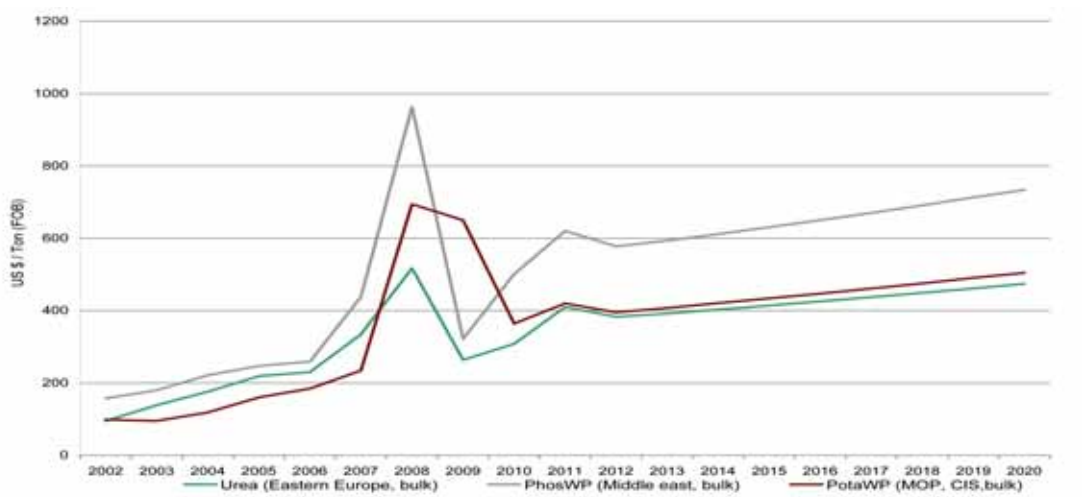

Figure 53: International fertilizer price (2002-2020)

Source: World Bank, 2011, BFAP projection

According to Figure 53, the following can be assumed, given that:

- Urea (Eastern Europe, bulk) is projected to increase by more than 30% from 2010 to 2011 which will have a direct impact on local nitrogen prices.
- The price for phosphorus (Middle East, bulk) could increase by 23% from 2010-2011.
- The price of potassium (MOP, CIS, bulk) is projected to increase by 15.38% towards the end of 2011.
- The price for urea, phosphorus and potassium is projected to decrease on average by 6.48% from 2011 to 2012.
- It is further projected that the price of urea, phosphorus and potassium will follow an increasing trend towards 2020.

- The price of urea could reach a price of US$ 734 per ton in 2020 where phosphorus and potassium could range between US$ 474 and US$ 504 per ton.
- Increasing international fertilizer prices directly impact domestic prices.

Western Free State – The performance of maize production

The representative farm is situated in the core maize production region of South Africa. The farm consists of 2 296 hectares of which 1 640 hectares are under a dryland maize/maize/fallow/maize rotation. The main crops produced in this region are maize and sunflower but for the purpose of this analysis, only dryland white maize production will be discussed in detail. On this representative farm, a conservation tillage approach is used. The average rainfall in the area is more or less 450 millimetres per annum. The strategy of the farm business is to use own capital if possible and to limit market risk. The average annual percentage of production loans and overdraft facility used is 80 percent at an interest rate of 10.5%. Asset replacement occurs each year at a rate of 7 percent for vehicles and 6 percent for implements and machinery.

A summary of the production analysis for 2011 for white maize production is given in Table 10. Gross margin calculations for 2011 and 2012 followed the BFAP sector model.

Table 10: Western Free State production analysis (2011)

Description	White maize dryland	% Change		
Farm income		2011-2012		
Yield (t/ha)	5.62	-		
Farmgate price (R/ha)	1 536	3.65%		
Gross income (R/ha)	8 628	-		
Selective production expenses (R/ha)				
Fertilizer	1 860	17.35%		
Seed	993	14.64%		
Fuel	679	13.76%		
Other production costs	1 776	5.00%		
Total costs	5 309	12.27%		
Gross Margin (R/ha) 2011	3 319	-6.47%		
Gross Margins				
	R/Ha	% Change		
Gross Margin 2010 (Actual)	2 542	-		
Gross Margin 2011 (Estimate)	3 319	30.56%		
Gross Margin 2012 (Projection)	3 104	-6.47%		
Financial Indicators				
	2010	2011	2012	% Change (2010-2011)
Net Farm Income (NFI)	R482 527	R1 340 195	R829 395	171.00%
Debt to Asset Ratio	11%	13%	11%	18.18%
Return on Assets (ROA)	1.41%	3.67%	2.16%	-

Table 10 reflects the profitability estimates for the Western Free State farm for 2011. The gross margin is estimated at R3 319 per hectare given a yield of 5.62 tons per hectare and a farm gate price of R1 536 per ton. This is 30.56% higher for the same period in 2010 where the gross margin was only R2 542 per hectare. It is further expected that gross margins could decline by 6.47% in 2012 due to an increase in production expenses. Fertilizer is expected to increase by 17.35%, seed by 14.64%, fuel by 13.76% and other production costs by 5%.

The NFI in 2010 was R 482 527 for the farm business. Given the increasing farm gate price and gross margins, NFI could increase by 171 percent in 2011 then decline (by 38%) in 2012 due to increasing input costs and lower gross margins.

Overberg: The production of winter crops

The farm is situated in the Overberg region in the Western Cape and represents a combination between dryland cash crop, pasture and livestock production. The farm consists of 2 269 hectares of which 1 796 hectares are used for the production of cash crops and pastures. Winter wheat, barley, canola, oats, triticale, lucerne and fodder crops are under a strict rotation system. The average annual precipitation is 430 millimetres of which 65 percent occurs in the winter and 35 percent in the summer. A conservation tillage approach is used on the shallow shale/granite soils. The farm has two key rotations systems, a long rotation with lucerne and a short rotation with medics. The livestock production enterprise of the farm accounts for roughly 76 percent of total farm income. The assumption is that farmers in this region use 80 percent of their available production loan and overdraft facilities annually and asset replacement occurs each year at an average rate of nine percent for vehicles and six percent for implements and machinery.

In Table 11, the production analyses and margins for the different cash crops are illustrated. The gross margins for winter wheat, winter barley and winter canola have been calculated using the 2011 BFAP sector model projections.

Table 11: Overberg production analysis (2011)

Description	Winter wheat dryland	Winter barley dryland	Winter canola dryland	% Change 2010-2011		
Farm income				Wheat	Barley	Canola
Yield (t/ha)	2.68	3.10	1.71	-	-	-
Farmgate price (R/ha)	2 547	2 342	2 954	18.48%	23.28%	11.48%
Gross income (R/ha)	6 815	7 267	5 053	-	-	-
Selective production expenses (R/ha)						
Fertilizer	945	791	946	18.10%		
Seed	451	348	418	14.58%		
Fuel	624	633	587	14.92%		
Other production costs	1 194	1 456	734	12.51%	12.27%	13.13%
Total costs	3 214	3 229	2 686	14.87%	14.42%	15.47%
Gross Margin (R/ha) 2011	3 601	4 038	2 367	43.29%	109.44%	111.53%
Gross Margins						
	R/Ha	R/Ha	R/Ha	% Change		
Gross Margin 2010 (Actual)	2 513	1 928	1 119	-	-	-
Gross Margin 2011 (Projection)	3 601	4 038	2 367	43.29%	109.44%	111.53%
Gross Margin 2012 (Projection)	4 235	4 781	2 618	17.61%	18.40%	10.60%
Financial Indicators						
	2010	2011	2012	% Change (2010-2011)		
Net Farm Income (NFI)	R679 534	R1 557 963	R1 664 254	129.27%		
Return on Assets (ROA)	1.79%	3.71%	3.63%	-		

The gross margin for winter wheat is projected to reach R3 601 per hectare in 2011, 43.29% higher than in 2010, largely because yields have returned to previous levels as well as a significant increase in the farm gate price of wheat which is projected to increase by 18.48% from 2010 to 2011. A further increase in

the gross margin is projected for 2012. In the case of malting barley, it is projected that the gross margin could more than double to R4 038 per hectare, also due to recovered yields from 2010 and an increase in the farm gate price. Furthermore, the gross margin for canola production could also increase significantly, again because of better yields and prices.

As commodity prices increase, it is projected that input expenditure will similarly increase from 2010 towards the end of 2011. The cost of fertilizer is projected to increase by 18%, and of seed and fuel by 14.58% and 14.92% respectively. Given the different cost structures, capital framework and financial approach it is projected that NFI could increase considerably from 2010 to 2011 to reach a value of R1 557 963 in 2011.

Agri benchmark analysis

The global cash crop agri benchmark network consists of 26 countries and can be defined as an international network of agricultural research and advisory economists aiming to create a better understanding of global cash crop farming and the economics thereof. The objective of the participating countries is to include typical farms or an existing dataset which describes a farm in a specific region and which represents a major share of output for a specific product. The farm reflects a specific production system for the different cash crops produced and further includes a combination of enterprises, land, capital and labour resources. The farms are designed by means of a standard operating procedure (SOP) which creates a harmonised dataset and thus generates the opportunity to compare farms globally. The farm comparisons enable decision makers to gain key business intelligence in order to facilitate better strategic analyses. They provide updates on local and international agriculture and creates the opportunity to analyse hot topics and most likely impacts. The platform that is created makes it possible to compare farming businesses and production systems, thus providing a snapshot of the performance of farmers in an international perspective. In the following section, certain key analyses were generated in order to illustrate the capacity of the agri benchmark cash crop initiative.

Breakeven analysis – At what price can farmers still produce?

When considering the cost of production and commodity prices, it is important to keep in mind the breakeven price as it is a vital component in decision-making and analysing the risk position of farming businesses. In addition it is important to know at what price levels can direct international competitors produce as it can place cash crop production into perspective and thus, partially identify limitations to and the sustainability of farming businesses in South Africa.

Table 12 below provides a description of the countries under discussion. The first two letters of the farm name indicates in what country the farm is situated. The numerical numbers in the farm name describes the size of the farm and finally, the area where the farm is located.

Table 12: Farm names and country description		
Farm name	Country	Farm size (hectares)
AR900WBA	Argentina	900
BR1300MT	Brazil	1300
CZ1200JM	Czech Republic	1200
FR200DOR	France	200
HU1100TC	Hungary	1100
UA2600PO	Ukraine	2600
US700IA	United States	700
US900ND	United States	900
UY360CEN	Uruguay	360
ZA1200NW	South Africa	1200
ZA1700WFS	South Africa	1700

Figure 55 below illustrates the maize yield in tons per hectare (secondary axis), the crop revenue (primary axis) and the total cost (primary axis) in US dollars per ton (US$/ton) for 2010. The grey area specifies international maize yields and the orange area indicates the South African maize yields in the farm sample space. The orange line in the figure demonstrates the maize revenue (farm gate price) for the different farms. Finally, the lime green line illustrates the total cost or breakeven point of a ton grain produced. The total cost includes all direct (crop establishment and finance cost), operating (labour, contractor and machinery costs) and land cost. The margin/space between the lime green and orange line indicates the profit/loss for maize production on a per ton basis.

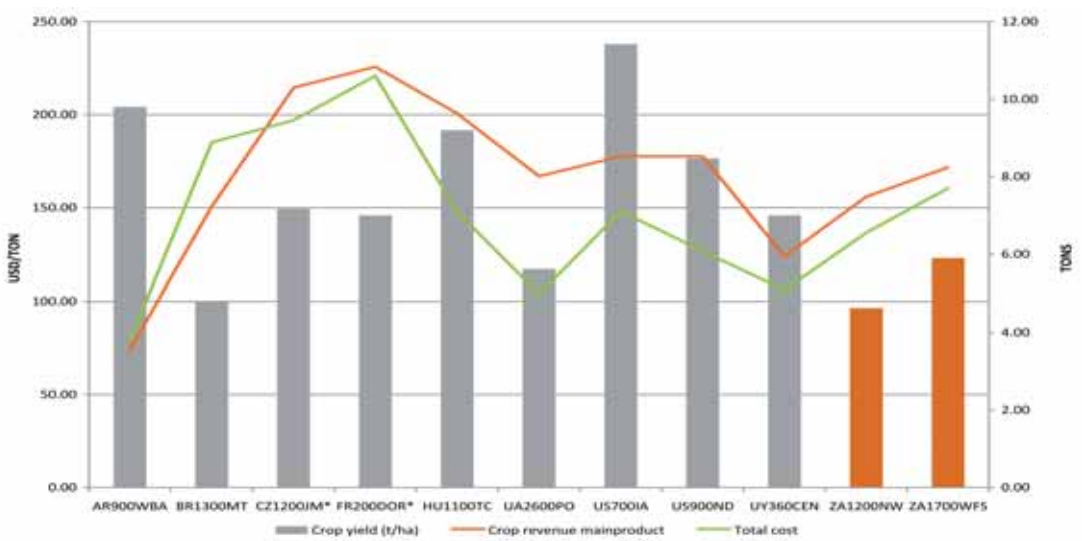

Figure 55: Breakeven analysis for international maize production 2010 (per ton)

Dryland maize yields in the Western Free State are comparable with farms in the Ukraine for the 2010 production year. The representative farm in the North West is comparable with maize yields that realised in Brazil in 2010.The farm in Iowa, United States, had the highest yield in the sample space followed by the farm in Argentina which is situated west of Buenos Aires. The typical farm in France had a yield of almost eight tons per hectare. When considering crop revenue per ton, it seems that maize producers in the Czech Republic, France and Hungary benefit from high maize farm gate prices. South African maize farm gate prices were slightly lower than prices experienced in the United States. Total cost in Brazil and France were

high compared to the rest of the sample space. This is due to higher seed cost, fertilizer application, crop protection cost and labour cost. The South African farms in the North West and Western Free State have a production cost disadvantage when compared to certain European and United States farms.

The reason for the higher cost is mainly due to higher nitrogen and phosphorus expenses in South Africa. Contributing factors are fuel and labour costs, which are higher in South Africa than in the United States and Ukraine. A combination of factors contributes to higher costs in South Africa where the exchange rate and transportation cost play a significant role. Finally, on a per ton basis only two farms in the sample space could not cover production costs. Brazil and Argentina made a loss in 2010 (in 2008-2009 these countries made a profit) where the other farms were profitable, especially in the Ukraine, Hungary and the United States. In the 2010 analysis, the representative farms in the North West and Western Free State had a profit of US$ 20.8 and US$ 11.24 per ton. The reason for the rather small profits is due to low maize farmgate prices in 2010.

Tillage systems in perspective

The purpose of this section is to place different tillage systems in perspective by comparing the associated costs of production. As soil types and production conditions differ between agro-ecological regions, it is not always possible to convert to other production and tillage systems but a better understanding of the potential benefits could improve production capacity and efficiency. It could also have cost benefits, especially in an environment where the oil price is extremely volatile and fuel cost per hectare is high.

The benchmarking exercise was conducted by identifying random international farms, their tillage systems and the related operating costs involved in functioning in such a production system. For the purpose of this exercise only maize and wheat production were included. The following tillage systems was compared and analysed:

- No-tillage (direct seeding)
- Conservation tillage (mulch seed)
- Conservation tillage (with reduced stubble breaking and mulch seed)
- Intensive tillage (Conventional ploughing or deep soil cultivation)

In Figure 56a below, total machinery and diesel cost in the production of maize is illustrated for different tillage systems in a wide range of countries. It is important to keep in mind that the macroeconomic policies, conditions and prices could differ in these countries; however, the trend of these cost structures is important. The primary y-axis in Figure 56a represents total machinery cost (grey area) in US$ per hectare. The secondary y-axis illustrates total diesel cost (lime green line) in US$ per hectare. The x-axis represents the different tillage systems in Brazil, Russia, Ukraine, United States, South Africa, France, Italy and the Czech Republic.

It is noticeable from the figure that diesel cost seems to increase from a no-till approach to conservation tillage and finally intensive tillage. A no-till system will cost a typical farm in Brazil US$ 20 per hectare. The conventional tillage with reduced stubble breaking and mulch seed approach in the sample space cost on average US$ 52.64 per hectare, approximately 152% more than a no-till approach in Brazil. Finally, an intensive tillage with prevailing conventional ploughing or deep soil cultivation approach cost the farmer on average US$ 99.71 per hectare which is almost 90% higher than a conservation tillage approach.

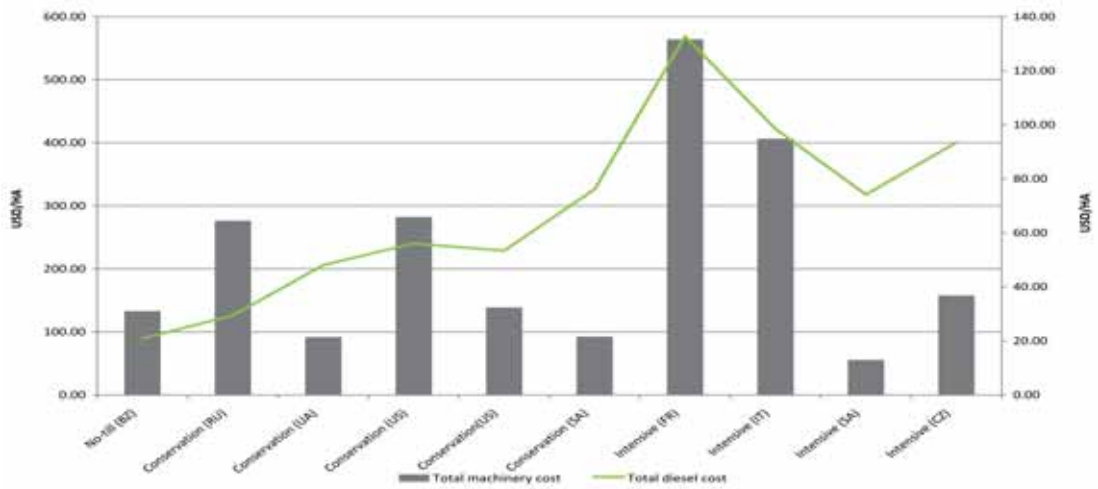

Figure 56a: Cost of different tillage systems in the production of maize (USD/ha)

The definition of machinery cost in this exercise is the cost of depreciation, finance and maintenance of machinery that is allocated to the specific crop. An interesting finding from Figure 56a is that if a trend line were included for total machinery cost, there would have been a marginally upward trend in the cost of machinery from a no-tillage approach to conservation tillage and finally, an intensive tillage approach. The average machinery cost of all farms in the dataset that produces coarse grains was calculated. Total machinery cost on average for a no-tillage approach was US$ 109.29 per hectare. The average machinery cost for a conventional tillage approach was US$ 178.26 per hectare, 63% higher than no-till. An intensive tillage systems on average cost the farmer US$ 246.27 per hectare.

The increase in machinery cost from no-till to conservation and intensive tillage operations is mainly due to higher depreciation, finance equity, finance debt and machinery repairs costs in conventional and intensive tillage approaches.

Figure 56b illustrates machinery and diesel cost per hectare in the production of wheat in different countries. The average cost of diesel for a no-tillage operation is US$ 24.06 per hectare. For a conservation tillage approach the average cost is US$ 71.18 per hectare. The average cost of diesel for intensive tillage is almost US$ 100 per hectare which is nearly 40% higher than the cost per hectare where conservation tillage is used.

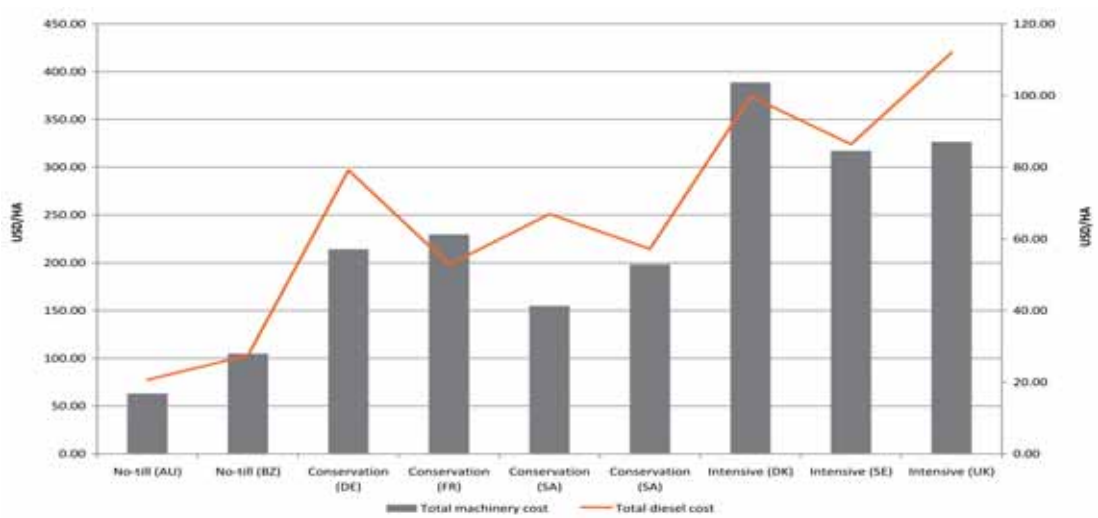

Figure 56b: Cost of different tillage systems in the production of wheat (USD/ha)

From Figure 56b it is clear that total machinery cost is lower in South Africa, relative to other countries that follow a conservation tillage operation. However, the cost of machinery is still less expensive for a no-till approach than for a conservation tillage approach. In Denmark, Sweden and the United Kingdom intensive tillage is used, the average cost is US$ 344 per hectare which is more than 45% higher than a conservation approach.

The decision making environment of the apple and pear farmer in the Western Cape

The decision making environment in which the apple and pear farmer operates is uncertain, especially due to amongst others the long term nature of deciduous fruit production and the exposure to international markets. Decision making within such an environment requires effective strategic, operational and tactical management based on relevant management information.The BFAP baseline analyses and projections, as well as scenario evaluation can assist in this by quantifying strategic planning alternatives and evaluating the risks of alternative options.

Decisions like cultivar selection and mix, replacement age of orchards, "quantity" versus "quality" considerations of fruit with the implied effect on the unit price, as well as choice of market segment (export, local, processing and dry) are, but a few of the important parameters that will influence the net return to the farmer and the sustainability of deciduous fruit production. The BFAP farm level FinSim models were developed as decision making tools to assist this kind of farm level managerial decisions.

Analyses and projections for typical apple and pear farms

The FinSim farm level model is capable of analysing a given farm business and then projecting future performance. The model is based on specific assumptions regarding various parameters, like the farm size, inventory and balance sheet, enterprise composition, up to 36 orchard blocks for apples and for pears with variable replacement cycles, age of first bearing and full bearing, as well as variable annual yields, input prices and product prices. Various categories/classes of output for apples and pears are accounted for in the model to accommodate the different prices in the various market segments.

The farm level model is linked to the apple and pear sector model and BFAP macro model via indexes to accommodate simulated projected cultivar prices and changes in the expected inflation rate for input prices, interest rates and other macroeconomic variables.

A typical apple and pear farm was simulated for each of four deciduous fruit producing regions in the Western and Eastern Cape. Each region differs regarding amongst others climate, soil, altitude, availability of irrigation water and thus the composition of cultivars and yield per hectare. The performance of these farms was analysed for the 2010 production period and projected for the period 2011 to 2015.

The area and composition of apple and pear cultivars, as well as the full bearing yield for each cultivar for the typical farms are presented in Table 13. The age of first yield for apples varied between two and five years between regions, and for pears between three and six years amongst cultivars and between regions. The full bearing age of apple orchards varied between six and nine years between regions and for pears between eight and 10 years amongst cultivars and between regions. The replacement cycle for apple orchards was either 25 or 30 years between regions and for pears a replacement cycle of 30 years was assumed.

Table 13: Area, cultivar fruit and full bearing yield of typical farms in various regions								
Cultivar	Elgin / Grabouw		Koue Bokkeveld		Langkloof		Vyeboom	
	Area (ha)	Yield/ha (ton)	Area (ha)	Yield/ha (ton)	Area (ha)	Yield/ha (ton)	Area (ha)	Yield/ha (ton)
Apples:								
Granny Smith	12.8	50	7.0	80	26.3	55	12.5	60
Golden Delicious	11.4	55	16.1	75	18.7	65	10.9	65
Royal Gala	6.1	50	10.5	45	7.5	40	5.9	45
Pink Lady/Cripps Pink	3.5	55	7.0	65	3.8	50	3.6	65
Topred/Starking	6.2	45	7.0	55	11.2	40	5.7	43
Fuji	2.2	55	11.9	70	5.6	55	2.3	60
Braeburn	1.8	60	3.5	65	1.9	70	1.6	70
Other	-	-	7.0	50	-	-	-	-
Total apples	44.0		70.0		75.0		42.5	
Pears:								
Packham's Triumph	3.7	55	8.4	55	8.8	60	2.5	70
Forelle/ Vermont Beauty	3.2	30	12.0	45	8.8	35	2.2	40
Bon Chretien	3.5	40	3.6	40	4.9	45	2.4	60
Abate Fetel	0.6	35	0.9	50	0.6	50	0.4	60
Beurre Bosc	-	-	1.8	55	1.9	50	-	-
Doyenne du Comice	-	-	2.1	40	-	-	-	-
Other	-	-	1.2	50	-	-	-	-
Total pears	11.0		30.0		25.0		7.5	
Other enterprises:								
Onions		-	60.0	75		-		-
Total area cultivated	55.0		160.0		100.0		50.0	

The simulated typical farms differ in various respects due to specific assumptions (as stated in Table 13) and are therefore not directly comparable. The performance measures presented in Figures 57 to 61 should thus be interpreted as such and should also not to be generalized as representative for a specific region.

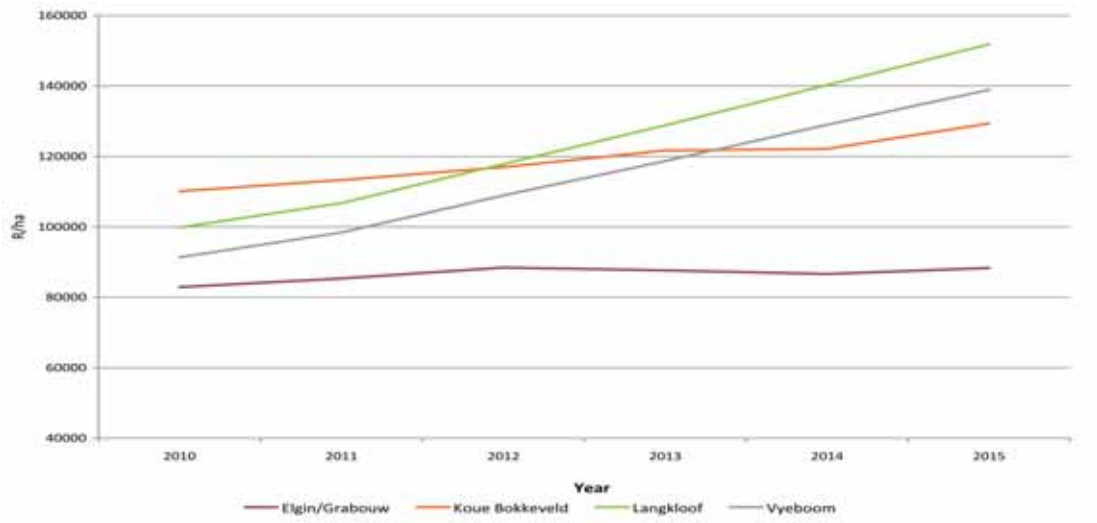

Figure 57: Projected average simulated Gross Production Value for apples on typical apple and pear farms in the Western Cape

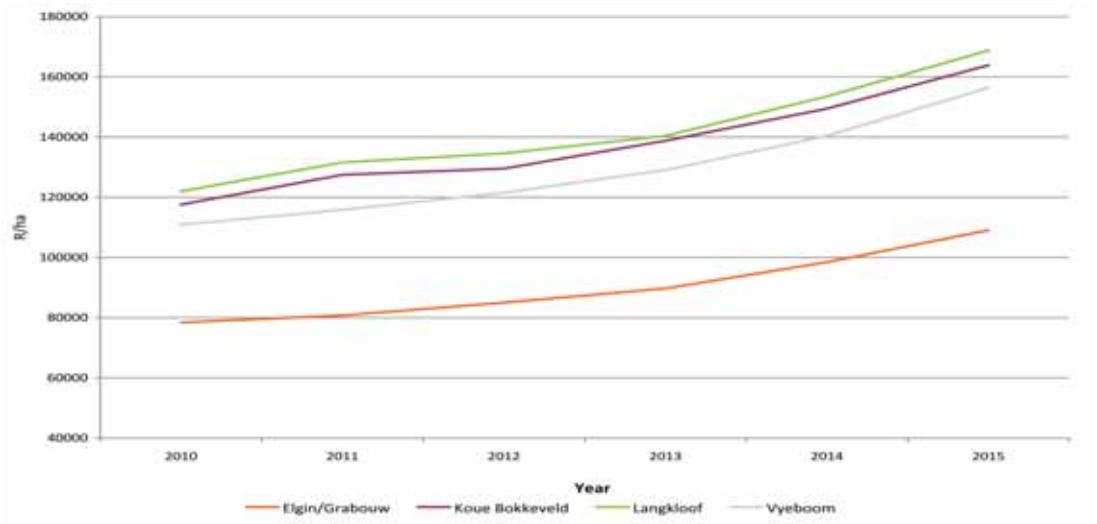

Figure 58: Projected average simulated Gross Production Value for pears on typical apple and pear farms in the Western Cape

From Figure 57 and 58 it is clear that the gross production values (GPVs) for apples and pears display an upward trend for the near future. The differences in the absolute values of the simulated GPV are mainly attributed to differences in the assumed yields of the various cultivars apples and pears for the typical farms in the respective regions.

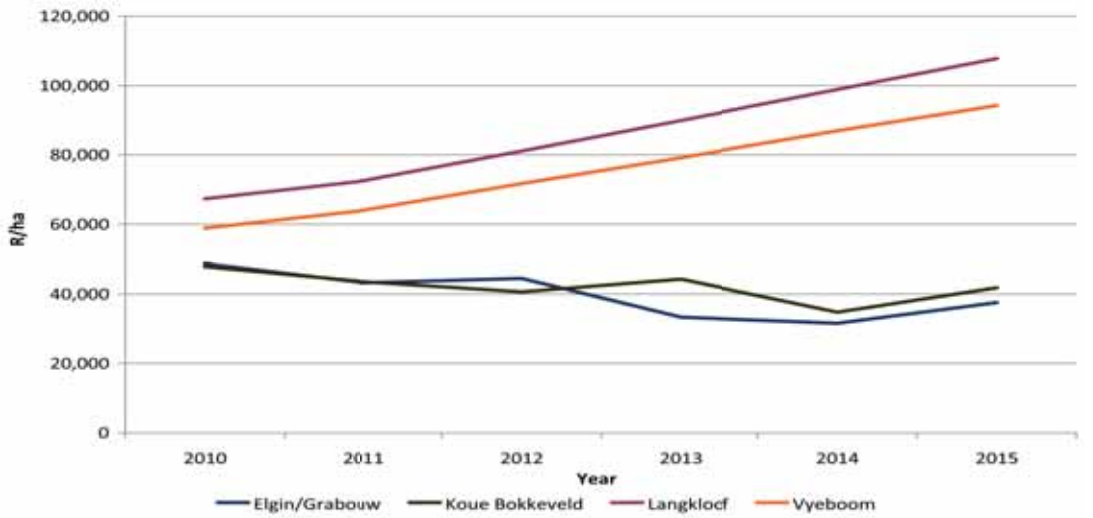

Figure 59: Projected average simulated Gross Margin for apples on typical apple and pear farms in the Western Cape

According to Figures 59 and 60, the gross margin per ha for pears appears to be higher than for apples. This is due to relatively higher GPVs for pears than for apples and due to the fact that the projected variable cost for apples is higher. Furthermore, the projected variable cost for apples and pears for the typical farm in Koue Bokkeveld were substantially higher than for the other typical farms. The establishment cost for new orchards is a further contributing factor to variability in the projected gross margins.

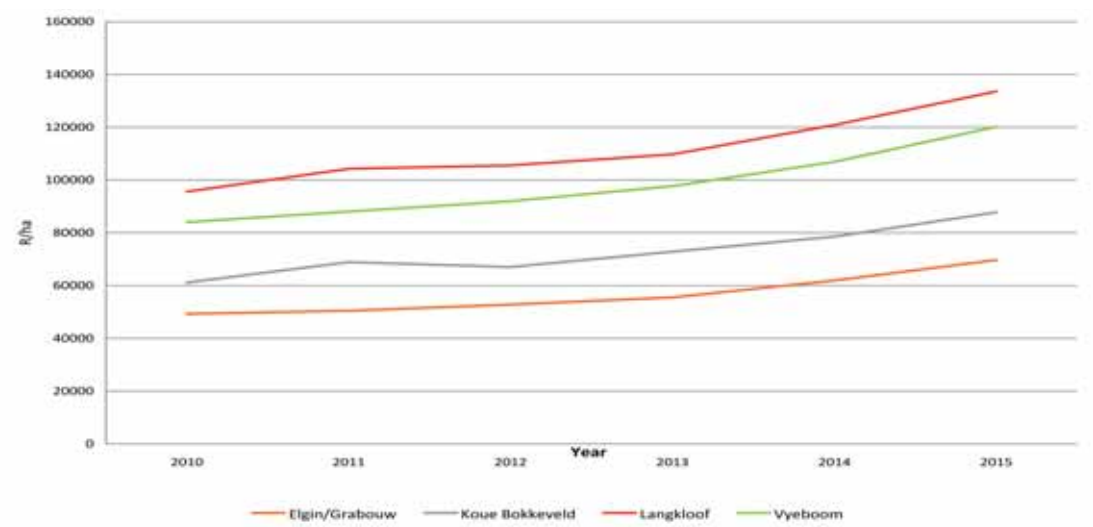

Figure 60: Projected average simulated Gross Margin for pears on typical apple and pear farms in the Western Cape

Figure 61 represents the net farm income (NFI) for the typical farms in the various regions. Due to differences in the farm sizes, the absolute values will differ. The NFI for two typical farms show an upward trend, while the NFI for the typical farm in the Elgin/Grabouw region exhibits a decline. This is due largely to the relatively lower projected yields per ha.

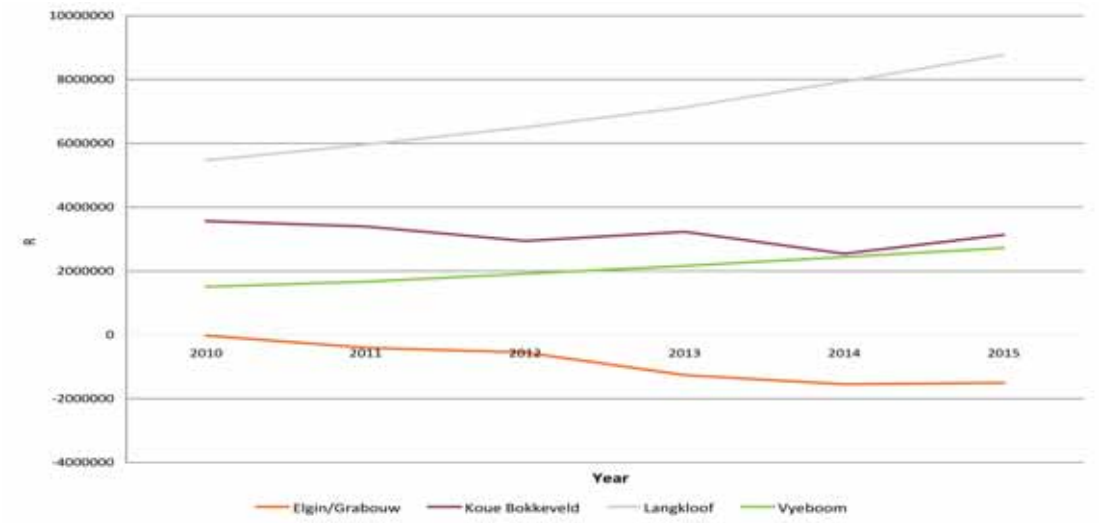

Figure 61: Projected average simulated Net Farm Income (NFI) for typical apple and pear farms in the Western Cape

COMPETITION FOR ARABLE LAND: REGIONAL IMPLICATIONS

Introduction

Structural changes within the global food markets over the past decade or so have resulted in a growing concern about the level and volatility of food commodity prices. Volatility within the food market results in increased uncertainty and risk for farmers, traders, consumers as well as governments and can have a negative impact on the agricultural sector, food security and overall economic growth.

According to the OECD-FAO Agricultural Outlook 2011 – 2020, key drivers underlying food price levels and volatility include not only climate change, stock levels, energy prices, exchange rates, trade restrictions and market speculation, but also rising global demand and resource pressures. Fundamentally, if productivity growth rates are impeded by resource constraints, demand will outpace supply and there will be upward pressure on commodity prices. Given Africa's abundance in natural resources, there has been increasing global competition for arable land within the continent. Estimates in Figure 62 generated by the International Land Coalition, indicates that of the approximate 79.9 million hectares of land subject to some form of negotiation with a foreign investor, more than half is in Africa (Economist, 2011).

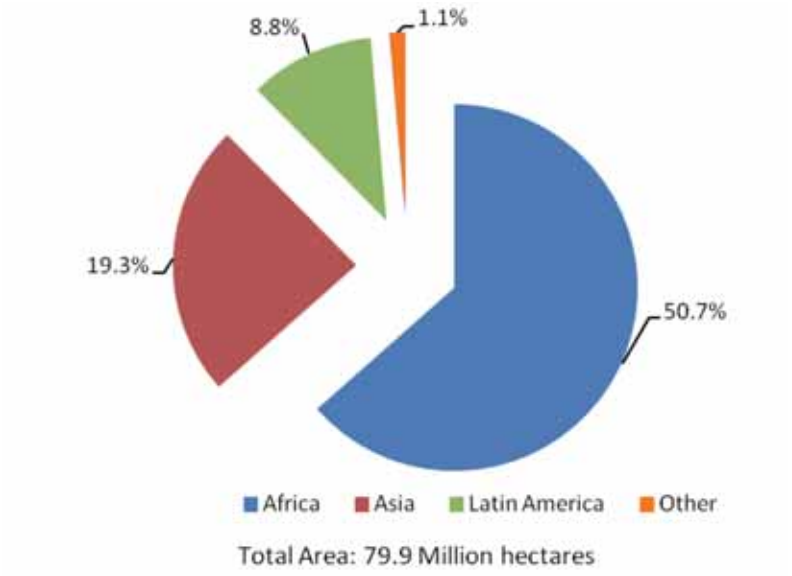

Figure 62: Total area of reported land deals; 2001-2011
Source: Oxfam, CIRAD, CDE at University of Bern, International Land Coalition

When first proposed, land deals were seen as a vehicle for economic growth for developing countries through job-creation, improved infrastructure and increased tax revenues. However recent reports on actual and proposed large farmland acquisition by large investors have raised concerns about the degree to which such transactions can provide long-term benefits to local populations and contribute to poverty reduction and sustainable development (World Bank, 2011). Given these concerns, there is a need for reliable empirical evidence in order to inform decision-makers, particularly within developing countries.

Through the expansion of the BFAP activities in the region, BFAP is to identifying and tracking changing global trends while analyzing the implication of these trends for South African and Southern Africa agricultural sectors. BFAP has established strategic partnerships with institutions such as FAPRI, FAO and Michigan State University Food Research Group (MSU_FSRP) in Zambia. The following discussion draws largely on research conducted by FAO, MSU_FSRP and BFAP. It is divided into three sections; the first and second sections look at demand and supply conditions currently shaping agriculture within the region, using the maize subsector as a case study. The third section highlights the key implications for South African Agriculture.

Demand-Side

Africa's food consumption patterns will change dramatically over the coming decades. Studies, conducted by MSU FSRP, on changing household consumption patterns within the region have found evidence of rising urbanization and growing per capita incomes. These trends in urbanization and income growth are expected to double the marketed volumes of foodstuffs and ramp up demand for high-value foods (dairy, meat and fresh fruits and vegetables), processed foods, packaged convenience foods and prepared foods (see Figure 63).

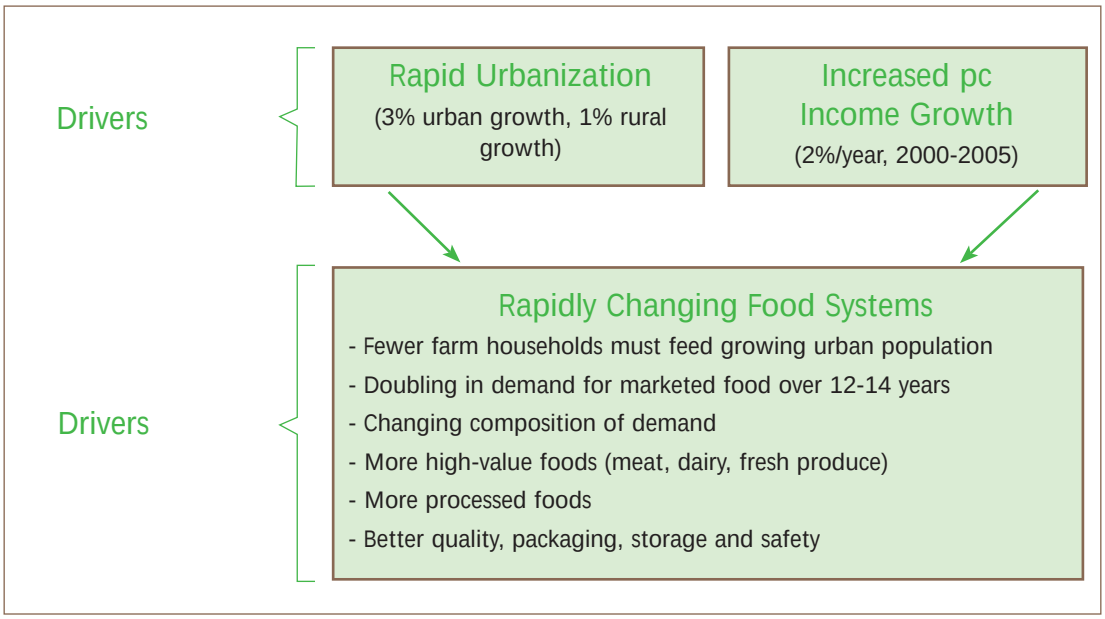

Figure 63. Changes in African Food Systems

The growth path of any economy typically involves a reduction in the primary agricultural sector's contribution to GDP and an expansion of the downstream processing sector. Globalization and the increasing interdependence of the world economy have created opportunities to both expand and diversify Africa's economic base, which in many countries hinges on the agricultural sector. However despite the growing international and regional demand for higher-value processed agro-industry products, Africa is yet to make significant progress locally toward adding value to its primary agricultural commodities (UNIDO/FAO, 2009). On average, African countries contribute less than 10% to the global value addition and Africa's international trade is dominated by primary commodity exports, which represent almost 60% of total export value (UNIDO/FAO, 2009). While production agriculture contributions to the GDP of national economies are slowly declining on the continent, there still remain growth opportunities within the downstream processing stages of the food supply chain (UNIDO/FAO, 2009).

As a result of the downstream processing gap combined with increasing urbanization and rising incomes, South African trade in agricultural products into the SADC region has increased significantly. Figure 64 shows that between 2007 and 2010, agricultural exports more than doubled from US$ 0.7 billion to approximately US$ 1.6 billion, indicating an increasing share of agriculture in total exports into the region (United Nations Statistical Division, 2011).

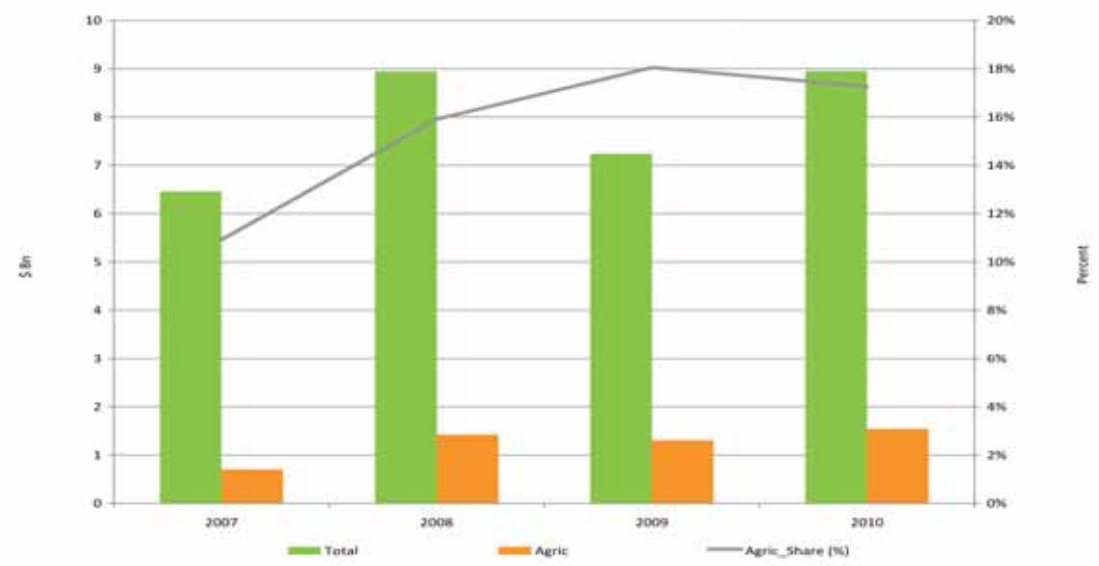

Figure 64: South African Exports of all and agricultural products to Rest of SADC
Source: United Nations Statistical Division, 2011

A key driver is the trade expansion in higher valued processed products. Exports of processed agricultural products into SADC during the 2007 to 2010 grew from US$ 0.42 billion in 2007 to US$ 0.89 in 2010 (United Nations Statistical Division, 2011). Processed products account for approximately 60 percent of the value of agricultural exports into the region. Combined with semi-processed agricultural products, this share increases to 90% (Figure 65). Overall, raw commodity exports into the region have, despite a sharp increase in 2008 and a subsequent decline, remained relatively constant between 2007 and 2010, while processed agricultural exports have trended upwards.

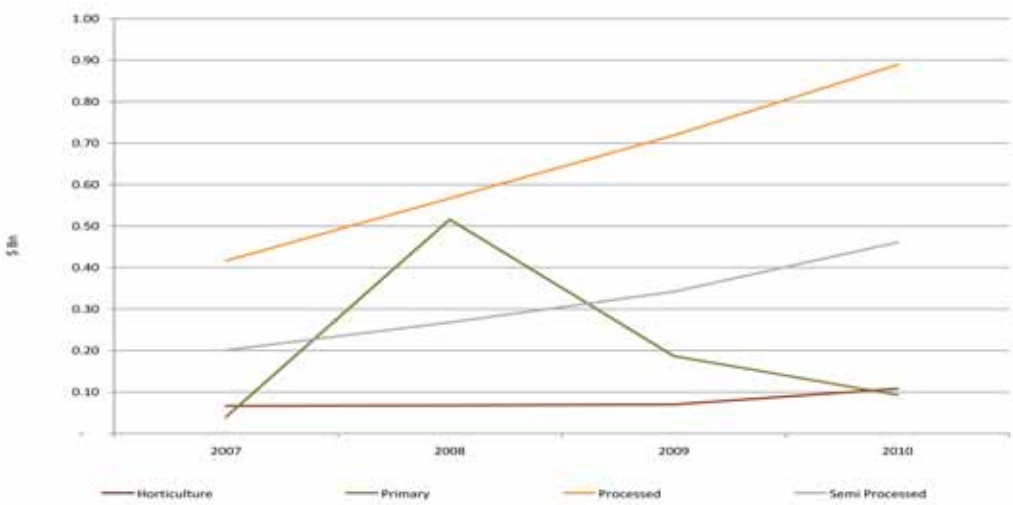

Figure 65: South African Agricultural Exports to the Rest of SADC disaggregated by the processing levels.
Source: United Nations Statistical Division, 2011

Supply-Side

Meeting the challenges posed by high levels of poverty, unemployment, and food insecurity in Africa remains a major focus of African governments, as well as to the regional and international development communities. Sustained agricultural productivity growth requires increased public goods investment as well as an enabling policy environment that encourages private investments in input, output and financial markets.

Throughout most of the 1980's and 1990's SADC Member States under-went crucial structural adjustment programs where agricultural markets were liberalized and there was a strong push towards more market orientated economies. In step with ongoing structural adjustment programs SADC nations developed a number of policy and/or institutional structures with the aim of promoting agricultural growth and poverty reduction within the region. Table 14 below provides a brief chronology of key policies implemented within SADC between 1996 and 2010.

Table 14: SADC: Chronology of Regional Marketing and Trade Policy Decisions and Implementation

Year	Policy Framework	Instrument/Institutional Purpose
1996	SADC Trade Protocol	Aims to monitor trade, implement compliance mechanisms, and harmonize tariffs within the region. Includes specifications on; Regional SPS measures and standards Regional Food Safety measures
2003	SADC Land Reform Support Facility (SLRSF)	Established in order to support Member States in developing and/or implementing agrarian land reform policies and programmes
2006	African Union Abuja Declaration on Fertilizers for an African Green Revolution	Aim is to realize substantial growth in fertilizer use within the region by 2015
2007	SADC Harmonized Seed Regulatory System	Aim is to increase number of seed varieties, promote investment within the seed sector, and provision of variety testing, release, certification, and quality control in the seed trade.
2007	Committee for Regional Input Procurement and Distribution	Established under COMESA
2007	Draft Africa Fertilizer Financing Mechanism	Established under the African Development Bank (AfDB)
2008	Multi-Country Agricultural Productivity Program (MAPP)	Under FANR and aims to support agricultural technology generation and dissemination.
2008	Agricultural Information Management System (AIMS)	Under development and it includes: Early Warning System for Food Security Regional Vulnerability Assessment & Analysis System
2010	Centre for Agricultural Research and Development for Southern Africa (CARDESA)	Established in order to implement the MAPP programmes

Despite these steps, sustained agricultural development within the region remains elusive. State intervention in food and input markets appear to be on the rise in Africa. In general food and input markets within the region continue to be hampered by unpredictable state operations, trade barriers and sudden entry and retreat from markets (Jayne et al., 2010). This high degree of policy uncertainty creates major market risks and impedes private investment from flowing into the agricultural sector.

For example, in 2010 the combined effect of input subsidies, output price incentives as well as favourable weather conditions resulted in a major supply response of Zambian maize farmers. The policy response to the bumper harvest involved an announcement of the Food Reserve Agency (FRA) purchase price of ZK 65,000 per 50-kg bag (approximately US$ 262 per metric tons) as well as a purchase target aimed at absorbing the marketed surplus. Given the world prices of US$ 160 at the time, the FRA price was significantly higher and if transportation and marketing costs were added, domestic maize processors could have purchased relatively inexpensive maize grain from South Africa (Nkonde, et al., 2011). Figure 66 below illustrates nominal maize grain price movements between May 2010 and March 2011 within Zambia.

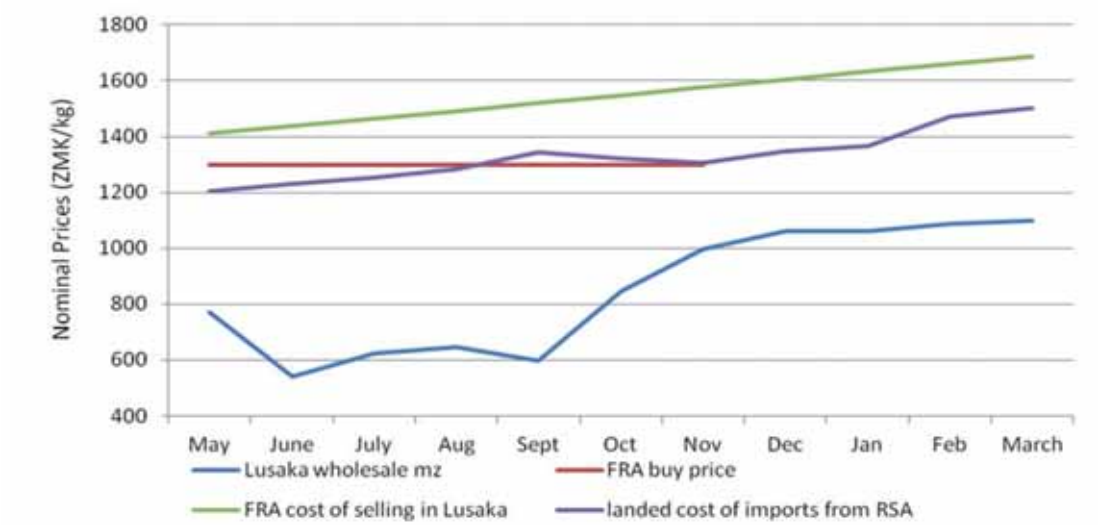

Figure 66: 2010/2011 Maize Prices: Lusaka wholesale, FRA Purchase Price, and c.i.f. from South Africa

Source: Nkonde, *et. al,* 2011

Note: FRA discontinued maize purchases in November 2010.

Overall, the impact of FRA's purchasing activities on the Zambian maize subsector of included (Nkonde, 2011);

- Accumulation of large, inadequately stored maize stocks – by the end of October 2010, FRA's maize stock amounted to 878,570 Million Tons of which approximately 400,000 Million tons has been sold at a financial loss. It is estimated that through its purchasing practices in 2010, FRA has imposed a ZK1.5 trillion cost on the Zambian government.
- Zambian millers were able to source relatively cheaper maize grain from South Africa since the FRA maize buying price was set at import parity levels (see Figure 66 above).
- Higher maize meal prices for urban and rural maize consumers
- Crowding out of private traders
- Financial loss of between US$ 91 to US$ 177 per ton on FRA exports into regional markets such as the DRC, Zimbabwe and Mozambique.

Another country in the region that has exhibited phenomenal increases in maize production over the last 5 years is Malawi; driven largely by the input fertilizer subsidy program that, was established in the 2005/06 cropping season, and currently provides subsidized inorganic fertilizer to approximately 65 percent of the rural population (Takane, 2011) most of which is used for smallholder maize production. Projections show that both domestic maize production and domestic human consumption of maize in Malawi will continue to rise in the next four years (Figure 67). Increases in domestic production will be mainly driven by yield improvements arising from continued and increased use of inorganic fertilizer.

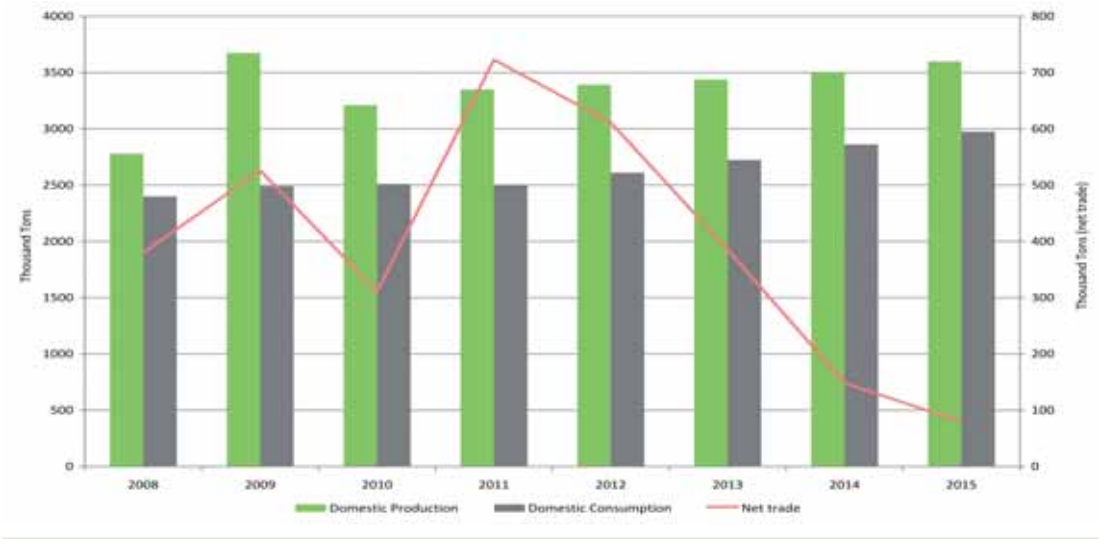

Figure 67: Malawi maize production, consumption and net trade

As a result of the increased maize production, the country has been a net exporter of maize in the years prior to the baseline period (from the 2007/08 season). This trend continues over the baseline period. However the degree of net trade dwindles over the baseline period with net exports decreasing each subsequent year.

Domestic maize consumption on the other hand will be driven mainly by a rising population with domestic maize consumption rising from 2.5 million tons in 2011 to about 2.9 million tons by the end of the baseline period. Therefore the country will need to sustain the high production levels in order to feed the growing population. However, given the high costs and the budgetary burden associated with the fertilizer subsidy program combined with the withdrawal of donor funds, it is unlikely that the country will be able to sustainably continue with the program (Morris et al., 2007). Figure 68 below presents a scenario in which the fertilizer subsidy program is removed. As illustrated, domestic maize production will reduce dramatically in the absence of the fertilizer subsidy program. However the decrease in domestic production will not fall below domestic maize requirements for human consumption assuming favourable climatic conditions and improved capacity of rural producers' to produce enough maize to meet food requirements. This however entails that in the face of unforeseen climatic variability or increases in population growth rate (greater than 3.2% per annum) there will inevitably be supply shortage.

In general, the policy environment will clearly influence the impact of public investments in agricultural growth and poverty reduction and the degree of private sector investment in both primary and agribusiness sectors in the region. Sustained agricultural productivity growth and poverty reduction requires increased public goods investment as well as an enabling policy environment that encourages private investments in input, output and financial markets. However, sustained agricultural development within the SADC region remains elusive since there is no consensus on what the 'right' mix of public investment and/or policy frameworks entails.

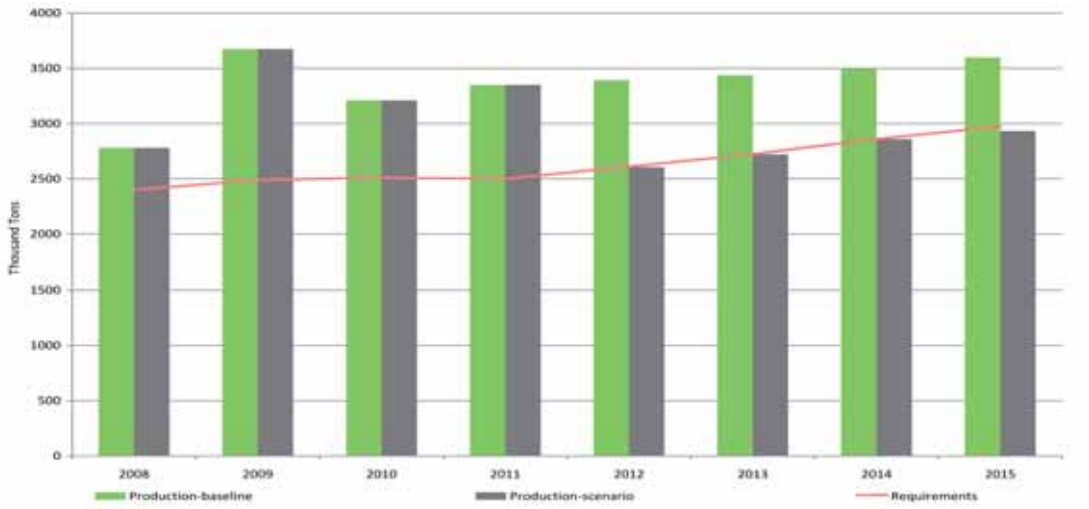

Figure 68: Simulation analysis-removal of input fertilizer subsidy program in Malawi

Implications for South Africa Agriculture

Given global as well as regional trends in both demand and supply of agricultural goods and services, the implication of these trends for the South African agricultural sectors includes;

- Demand-side:
  - Rising incomes and growing demand for high-valued products implies growth potential in processed food output markets within the region.
  - However, over the past 3 years or so, South Africa's share of processed agricultural markets has fallen from 72% in 2007 to 41% in 2010 (Figure 69 below).
  - Given this loss in market share, there is a need to identify areas of growth in processed food markets within the region.

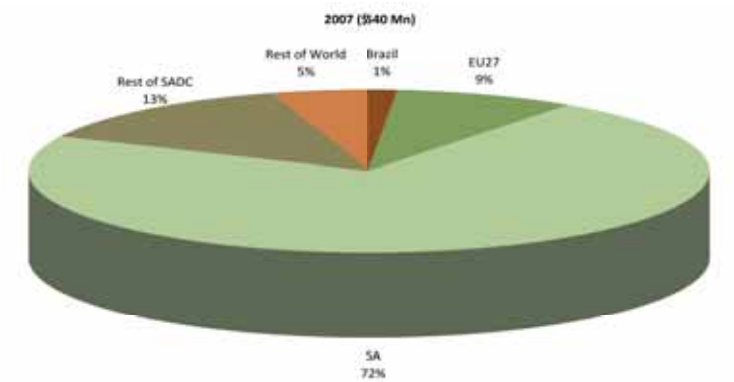

Figure 69a: Competition for the processed product markets in the region

Source: United Nations Statistical Division, 2011

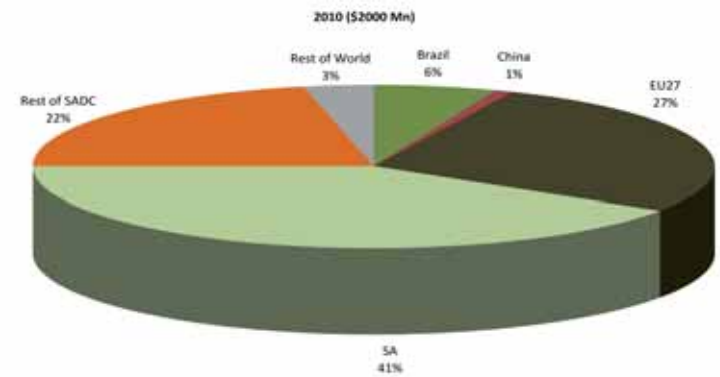

Figure 69b: Competition for the processed product market in the region

Source: United Nations Statistical Division, 2011

- Supply side:
  - Despite pockets of surplus production (Zambia and Malawi) the policy environment raises serious concerns regarding the sustainability of such production.
  - This implies continued potential export market opportunities for South African raw commodities into the region.

There is growing competition in the processed products from the EU and Brazil while China is a potential and strong competitor.

NATURAL RESOURCE USE AND EMPLOYMENT IN SOUTH AFRICA

Introduction

The quest for creating more jobs is strongly emphasised by the New Growth Path as laid out by Minister Ebrahim Patel. The role that agriculture can play in job creation should not be underestimated. The objective of this chapter is therefore to provide a first attempt to quantify the employment growth potential in agriculture in South Africa towards 2020. At the heart of the problem of job creation possibilities in this industry, lie the natural resources available for agricultural production and possible expansion in production. The section will therefore be organized into two subsections. The first is a so-called "stock take" of natural resources. This section aims to answer the following questions:

- How much land and water is available for agricultural production?
- How much land and water is currently being utilized?
- Can agricultural production be expanded by using natural resources, such as water, more efficiently?

The second section will elaborate on industries that are relatively employment intensive that could be expanded by making use of un- or underutilized resources. These industries are referred to as "winners" in the rest of this chapter, since these industries are employment intensive, and given the right environment, could be successfully expanded with the available resources identified in the first section. This section goes to show that in the competition for hectares, non-profit related issues such as political agendas, of which job creation is an example, could also be considered.

The natural resource base for agriculture in South Africa

The first part of this section will identify potentially suitable and available agricultural land in South Africa, both for agricultural as well as grazing purposes. The second section will focus on irrigation potential. The analysis is based on data from various sources such as the Agricultural Geo-reference Information System (AGIS), the Water Research Commission (WRC), the Department of Agriculture, Forestry and Fisheries (DAFF),

the Department of Water Affairs (DWA) and the Encyclopaedia of the Earth (EOE). Often the data from the various sources do not correspond: in most cases the most recent data were chosen unless otherwise informed by industry experts.

The potential of arable land in South Africa

There is some dispute over the exact amount of agricultural land available in South Africa and as a result the most recent figure as reported by AGIS (2008) is given in Table 15. There is however greater agreement on the total amount of arable land . The most recent figure as reported by AGIS (2008) is 15 138 062 ha. The Development Bank of Southern Africa recorded arable land in South Africa as 16 737 672 ha. The discrepancy of 1.6 million hectares between these two figures is consistent with the reduction in area planted to field crops that took place after the deregulation of the marketing system and represents land that currently lies fallow because it never had the potential for cultivation (Vink, 2003). The hectares as determined by AGIS, 2008 are therefore broken down into the nine provinces and are represented, in percentage of total area terms, in Table 15.

Table 15: Land per province as % of total land, for classes I-III

PROVINCE	Total area of South Africa (ha)	Agricultural area (ha) area (AGIS 2008)	Arable land per province as a % of total SA area (ha) (AGIS 2008)	Cultivated land (ha)
Eastern Cape	16,896,596	11,631,053	7.7	1,619,559
Free State	12,982,514	12,279,665	17.6	3,771,961
Gauteng	1,654,778	887,107	55.7	314,936
KwaZulu-Natal	9,436,132	5,159,644	30.7	589,911
Limpopo	12,575,297	7,347,712	17..5	1,267,308
Mpumalanga	7,649,464	4,998,979	39.0	993,301
Northern Cape	37,288,942	33,100,713	0	262,000
North West	10,651,210	7,141,869	14.2	2,283,736
Western Cape	12,946,217	11,996,550	7.1	1,985,698
Total	122,081,150	94,543,292	12.6	13,088,410

The arable land per province is given in percentage terms based on calculations done with land class and capability as obtained from AGIS (2008). The land capability scale ranges from 1 to 8, with 1 being the best in terms of agricultural capability and 8 being totally unsuited for agricultural production. Classifications 1 to 3 can be regarded as arable land and the definitions for each of these classifications are given Table 16. This can also be used as a legend for the map (Figure 70) that follows. The colours in column one can be used to find the respective areas on the South African capabilities map.

[2]The FAO defines arable land as land that can be used for growing crops. It includes all land under temporary crops (double cropped areas are counted only once), temporary meadows for mowing or pasture, land under market, kitchen gardens as well as land temporarily fallow (for less than five years) (FAOSTAT, 2011).

Table 16: Arable land classes in terms of capability	
Class	Concepts
I	Land in class one has few limitations that restrict its use; it may be use safely and profitably for cultivated crops; the soils are nearly level and deep; they are easily worked and are either fairly well supplied with plant nutrients or are highly responsive to inputs of fertilizer; when used for crops, the soils need ordinary management practices to maintain productivity; the climate is favourable for growing many of the common field crops.
II	Land in class two has some limitations that reduce the choice of plants or require moderate conservation practices; it may be used for cultivated crops, but with less latitude in the choice of crops or management practices than Class I; the limitations are few and the practices are easy to apply.
III	Land in class III has severe limitations that reduce he choice of plants or require special conservation practices, or both; it may be used for cultivated crops, but has more restrictions than class II; when used for cultivated crops, the conservation practices are usually more difficult to apply and to maintain; the number of practical alternatives for average farmers is less than that for soils is class II.

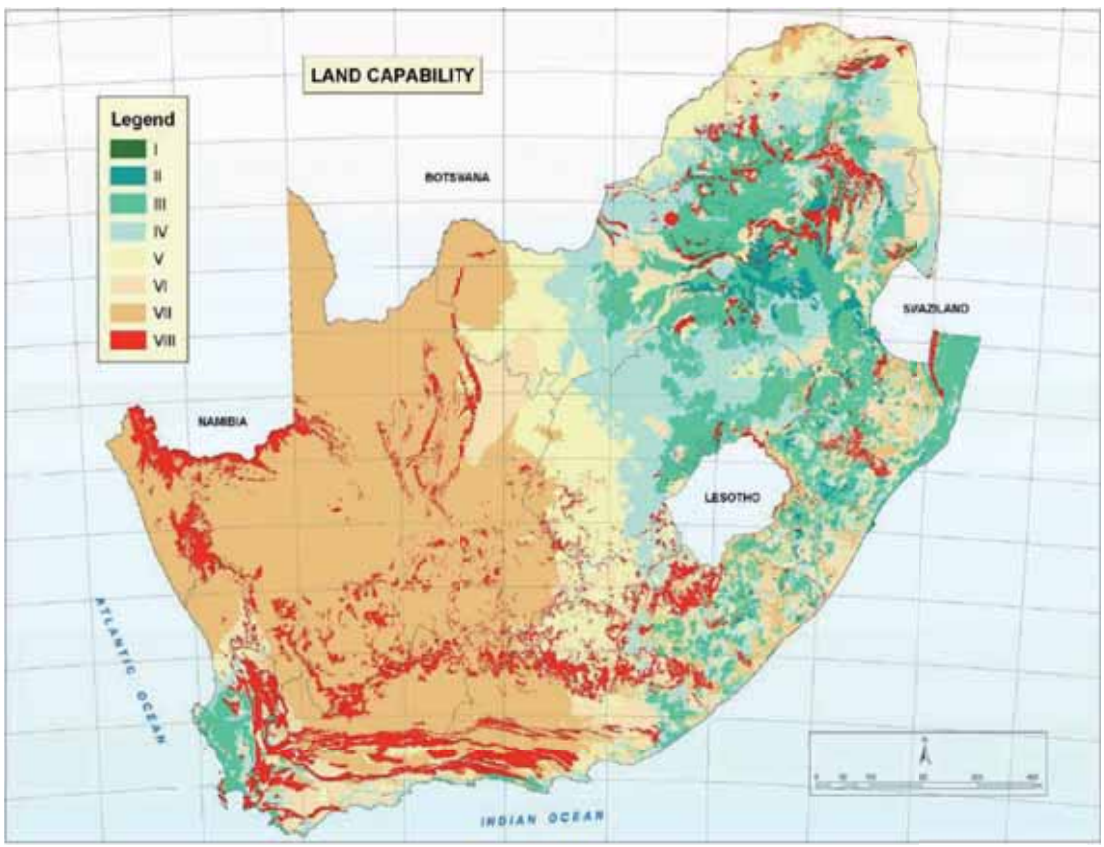

Figure 70: Land capabilities of South Africa
Source: AGIS, 2008

From the tables and the map above it can be concluded that approximately 13% of total land area in South Africa is suitable for arable farming and 86% of total agricultural land can be used for grazing. It is however important to note that this does not necessarily mean that the land is available for agricultural use as it can be utilized by other industries, for example mining. This is especially prevalent in Mpumalanga where a large proportion of arable land is used for mining.

Reconciliation of availability and use

In order to determine the expansion potential in terms of land that is currently unutilized it is necessary to reconcile available land area with the area currently being used. The sections below splits this between land used for cultivation and for grazing.

- Cultivation
  The area cultivated per province is depicted in Table 15. The grand total for area currently being cultivated adds up to approximately 13 million hectares. As mentioned in the discussion on cultivation potential in the previous section, land cultivation was as high as 16.7 million ha in the 1980's. However some of the cultivated fields should never have been cultivated due to their low fertility, unsuitable gradient and soil structure. Considering this, a conservative figure with regard to arable land amounts to approximately 15 million ha, implying that a maximum of 2 million ha are available for expansion. A large proportion of land available for expansion is located in the former homelands.
- Grazing
  According to the Department of Environmental Affairs and Tourism (2006b:93) livestock densities currently exceed the capacity of grasslands to sustain long-term grazing norms. Cattle numbers have been stable at between 12 and 13.5 million head of cattle since 1980, but degradation and over-grazing are evident in many areas (Collett, 2008:51).

The irrigation potential of South Africa

The Encyclopaedia of the Earth shows that 35% of the country has precipitation of 500mm or more, while 44% has precipitation of 200-500mm and 21% less than 200mm. It can thus be said that 65% of the country does not receive sufficient rain for proper rain-fed cash crop production. In areas of insufficient rain irrigation practices could be used in the production of agricultural products given adequate water supplies. The available water, usage and potential expansion of the various water management areas are given in Table 17. From this it can be seen that South Africa has limited irrigation potential. It is estimated that it is currently possible to irrigate a maximum of 1.6 million hectares, with water availability being the main limitation, while in some areas, mainly the south-east, limited irrigable soil is the main factor.

Table 17: Water Management Areas of South Africa

Water Management Area	Potential water available (million m³/a)**	Agricultural usage (%)	Mining & Forestry usage (%)	Urban & Rural usage (%)	Agricultural expansion potential (ha)	2025 expansion program (million m³/a)
1) Limpopo	-23	74.5	6	19	0	8
2) Luvuvhu & Letaba	-36	74.5	13.2	12.3	1100	102
3) Crocodile (west) & Marico	43	37.6	13.1	49.3	0	0
4) Olifants	-192	57.7	28.7	13.6	0	239
5) Inkomati	-260	70.1	19.2	10.7	0	104
6) Usutu to Mhatuze	319	60.3	27.2	12.5	19000	110
7) Thukela	-103	61.1	14.1	24.8	0	598
8) Upper Vaal	19	10.9	24.2	59.23	0	50
9) Middle Vaal	17	43	23.2	33.8	0	0
10) Lower Vaal	30	81.6	1	17.4	0	0
11) Mvoti to Umzimkulu	-240	26	17.3	56.7	0	1018
12) Mzimvubu to Keiskamma	459	50.8	12.6	36.6	23300	1500
13) Upper Orange	320	80.6	0.2	19.2	24000	900
14) Lower Orange	-8	95	1	4	0	150
15) Fish to Tsitsikamma	90	84.9	0.9	14.2	7600	85

Table 17: Water Management Areas of South Africa (continued)

Water Management Area	Potential water available (million m³/a)**	Agricultural usage (%)	Mining & Forestry usage (%)	Urban & Rural usage (%)	Agricultural expansion potential (ha)	2025 expansion program (million m³/a)
16) Gouritz	-64	75.4	6	18.6	0	110
17) Olifants/Doorn	-35	95.4	1	3.6	0	185
18) Breede	37	91.1	0.9	8	2000	124
19) Berg	-28	42.7	0	57.3	0	127
TOTAL	345				77000	5 410
TOTAL (ha)						335 420

Source: National Water Resource Strategy 2004 by the Dept Water Affairs and Forestry & compiled by BFAP.

Notes:* The hectare allocation was done using the potential water availability and sub-dividing it through the different sectors given their current proportionate usage, with the final amount divided by 10 000m³ (average irrigation usage). Only surface water was used in the potential for expansion, not groundwater.

**The Baseline potential for 2025 involves the building of new dams, lifting dam walls and improved water transfers.

Therefore, the outer bound irrigation potential for South Africa is an additional 90 000 hectares from existing water storage capacity, 282 000 hectares from efficiency gains, and 335 000 hectares from investment in additional storage capacity, giving 707 000 hectares. Because investment in bulk water supply is a long-term process, it is safe to assume that no more than half of the additional capacity could be in place within 20 years, i.e. a more realistic estimate would be approximately 500 000 hectares, or an expansion of a third over the existing area under irrigation. As mentioned these figures represents the outer bound of irrigation potential. A conservative estimate might therefore be that irrigation can be expanded by 145 000 by at least ha over the next ten years.

Lastly, ground water is not taken into consideration in this report. The Groundwater Strategy 2010 of the Department of Water Affairs refers to the study of Middleton and Bailey (2009) where it is estimated that groundwater could be in the same league, volumetrically, as stored surface water resources and that only a maximum of 40% of the groundwater is utilized. Under drought conditions it is estimated that South Africa has 7 500 million m³ per annum available. If 40% is already utilized, 4 500 million m³ per annum are left. Assuming agriculture uses 60% or 2 700 m³ of the groundwater that is available, it implies that approximately 270 000 ha can potentially be irrigated using groundwater.

Employment

The question that now beckons is how the resources available for expansion should be utilized to ensure the highest employment growth possible in agriculture. Stated differently, which commodities should be produced on the additional land and with the additional water, discussed in the previous section, to obtain adequate employment growth? In order to determine this, the matrix below shows industries that are so called 'winners'. Winners are industries that are employment intensive, and with high market growth or growth potential and are depicted in quadrant 2 of the matrix below.

For the purpose of this study the key issue of selecting the winners, such as those identified in quadrant 2, is that production and processing has to be sustainable in the long run. In other words, the expansion must not only be driven by higher levels of productivity, but also has to be supported by domestic and/or

[3]This consists of the 77 000 ha identified in Table 15 plus the provision that has been made for a further 13 000 ha in the Eastern and Northern Cape and the Free State for emerging farmers.

international markets. In the absence of these markets increased production will decrease prices which can be detrimental for job creation. The obvious point of departure for identifying the winners was to analyse the main net exporting industries, since these industries are competing on international markets and prices in these markets are largely determined by world prices and the exchange rate. Similarly, commodity prices in industries where South Africa is a major importer are also influenced by world prices and the exchange rate and to a lesser extent by local supply and demand dynamics. However, in this case a question has to be raised regarding the relative competitiveness of the industry and in most cases expansion will mainly be induced either through a shift in productivity of the local industry or through policy interventions. Substituting imports with locally produced commodities can trigger a range of upstream and downstream multipliers and thereby contribute to the creation of jobs, but can also lead to inefficiency in protected industries in the longer run.

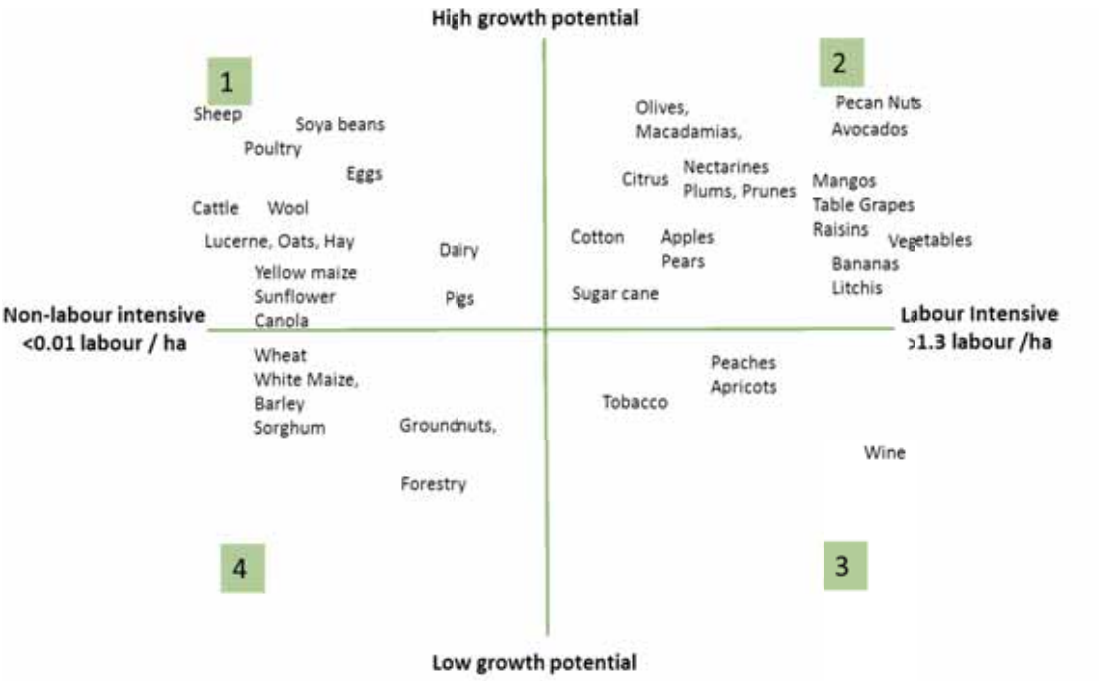

Figure 70: The Employment creation matrix

The remainder of this section will focus on products such as those identified in quadrant 2. It should however be acknowledged that these are not the only products that have a role to play in job creation in agriculture. It is estimated that the less labour-intensive field crop sector can create approximately 10 000 on-farm opportunities, and allied to these roughly 5 000 jobs in up- and downstream industries. Finally, livestock industries, which are also not labour intensive, can potentially create a total of 40 000 additional job opportunities, with an allied 25 000 jobs in the upstream and downstream sectors. An extensive list of the labour intensive winners with the associated growth potential is given in Table 18. The potential for expansion is based on expert opinions, basic market analyses and long-run projections in the case of commodities that are captured in the BFAP Sector Models.

Table 18: Labour-intensive winners

Commodity	Current area (2010/11)	Potential expansion (%)	Potential expansion Ha	Labour multiplier	Additional jobs on farm	Linkages multiplier	(Up) Downstream jobs
Sugar cane	380 000	6%	22 800	1.00	22 800	0.30	6 840
Citrus	60 000	25%	15 000	1.00	15 000	0.66	9 900
Grapes	23 526	20%	4 705	1.62	7 622	1.07	5 031
Apples	21 100	12%	2 532	1.25	3 165	0.83	2 089
Pears	11 435	3.3%	377	1.26	475	0.83	314
Plums	4 227	25%	1 057	1.46	1 543	0.96	1 018
Prunes	431	25%	108	1.46	157	0.96	104
Peaches	8 348	5%	417	1.20	501	0.79	331
Nectarines	2 028	25%	507	1.25	634	0.83	418
Avocado Pears	13 250	70%	9 275	2.00	18 550	1.32	12 243
Mangos	7 583	20%	1 517	1.40	2 123	0.92	1 401
Litchis	1 163	20%	233	1.40	326	0.92	215
Bananas	12 000	30%	3 600	2.00	7 200	1.32	4 752
Guavas	990	20%	198	1.50	297	0.99	196
Pawpaws	2 710	25%	677	2.00	1 355	0.60	406
Cotton	7 000	100%	7 000	1.00	7 000	0.30	2 100
Tobacco	4 000	10%	400	2.20	880	1.45	581
Potatoes	53 472	12%	6 417	0.80	5 133	0.56	3 593
Tomatoes	9 537	50%	4 769	3.50	16 690	1.05	5 007
Onions	6 814	60%	4 088	0.98	4 007	0.29	1 202
Carrots	3 280	70%	2 296	3.00	6 888	0.90	2 066
Pumpkins	5 725	45%	2 576	2.10	5 410	0.63	1 623
Green mielies	18 667	20%	3 733	1.00	3 733	0.30	1 120
Pecan Nuts	14 000	100%	14 000	1.30	18 200	0.65	9 100
Macadamia Nuts	17 100	70%	11 970	0.80	9 576	0.32	3 830
Olives	2 500	600%	15 000	0.75	11 250	0.50	7 425
Rooibos	5 000	100%	5 000	1.00	5 000	1.00	5 000
Pomegranate	1 200	300%	3 600	1.30	4 680	0.86	3 089
Strawberries	213	110%	235	2.30	540	1.52	356
Flowers	545	100%	545	13.00	7 085	8.58	4 676
Cherries	230	240%	552	3.00	1 656	1.98	1 093
TOTAL	698 074		145 184		189 476		97 120

Table 19: Non-labour intensive field crops							
Commodity	Current area	Potential expansion %	Potential expansion on Ha	Labour multiplier	Additional jobs on farm	Linkages multiplier	Up/down-stream jobs
White maize	1 481 000	8	118 480	0.01	1 185	0.005	592
Yellow maize	954 000	25	238 500	0.01	2 385	0.005	1 193
Wheat	610 000	10	61 000	0.01	610	0.005	305
Barley	83 000	8	6 640	0.01	66	0.008	53
Soybeans	418 000	90	376 200	0.01	3 762	0.007	2 633
Sunflower	642 000	15	96 300	0.01	963	0.005	482
Canola	40 000	12	4 800	0.01	48	0.005	24
TOTAL	4 228 000		901 920		9 019		5 282

Table 20: Non-labour intensive livestock							
	Current production	Potential expansion %	Potential expansion Tonnes	Labour multiplier	Additional jobs on farm	Linkages multiplier	Up/down-stream jobs
Poultry	1 327 000	50%	663 500	0.0222	14 744.44	0.0143	9 479
Eggs	386 440	50%	193 220	0.0400	7 728.80	0.0143	2 760
Dairy	2 613 674	20%	522 735	0.0286	14 935.28	0.0154	8 042
Beef	628 000	45%	282 600	0.0143	4 037.14	0.0071	2 019
Pork	171 430	15%	25 715	0.0185	476.19	0.0093	238
Sheep meat	98 200	120%	117 840	0.0083	982.00	0.0071	842
Wool	45 500	45%	20 475	0.0083	170.63	0.0083	171
TOTAL			1 826 084		43 074		23 550

Conclusion

From the discussions above it is apparent that there are potentially 2 million hectares of arable land available for agricultural expansion. Since South Africa has a limited area that has sufficient precipitation for rain fed cash crop production, irrigation water is a key natural resource to consider. The outer bound of irrigation potential is almost 700 000 ha. This is however based on the provision that additional storage capacity needs to be built. This is a long term scenario and as a result a more conservative expansion, over the period considered (up until 2020), is 145 000 ha. Evidently, much of the expansion in 'winner' industries (some 150 00 ha) will be on this land. Based on the labour multipliers as depicted in Table 18, the 'winners' can contribute an estimated 200 000 direct employment opportunities with 100 000 down stream jobs in value chains. In addition, non-labour intensive industries such as field crops and livestock can provide 50 000 direct opportunities with 30 000 downstream jobs.

This section has not elaborated on the potential inherent in the better utilization of redistributed land and better land access to farmers in the former homelands. It is estimated that at the very least a further 300 000 improved livelihoods (as farmers or farm workers) can be created here, with a further 200 000 down stream value chain jobs.

Based on the analysis done on natural resource stocks and employment intensive industries that could potentially utilize these stocks, it seems fair to say that an additional 1 million jobs could be created in primary agriculture and the associated agro-processing and farm input industries given reasonably conservative estimates of the availability arable land and irrigation water.

There are however some caveats to the calculations as discussed above:

- There is a certain degree of double counting because the expansion of 'winner' industries will happen on irrigated land and the irrigation potential lies largely in the Eastern Cape were a large proportion of small holder farmers are to be found.
- The calculations are based on the assumption that output growth in the 'winner' industries will lead to net growth in employment opportunities. However, at least some of this growth replaces existing agricultural production, with the result that net growth in agriculture could be smaller.
- The calculations done here are based on ideal circumstances. Expansion in hectares and specifically in employment is not something that will happen without a favourable social, political and economic environment. Various restrictions associated with this, such as the limitations of local infrastructure or barriers into foreign markets have not been taken into account.

Nevertheless, the overall calculation can still be regarded as conservative because of the conservative estimates used for the natural resource stocks. This study provides a stock take of the natural resources available for agricultural expansion and possible employment opportunities that can be created as a result of this expansion. This serves as an example of the possibilities given the state of natural resources in South Africa and the political will to put some faith into all South Africa's farmers, including prospective farmers.

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