

Agriculture Sector Analysis

Chapter 7

7. AGRICULTURAL SECTOR ANALYSIS

Joe Gqabi District Municipality has a two tier agriculture sector. The first is a well-established commercial sector and a small-scale emerging farmer sector. The following section will discuss the current agriculture sector in terms of the main agricultural activities and projects in the district.

7.1 Main Agricultural Activities

The following section provides an overview of the main agricultural activities occurring in the district, focussing on the types of commodities or products farmed and produced in the district. The following main agricultural commodities will be discussed:

- Livestock
- Poultry
- Forestry
- Maize
- Potatoes
- Wool and Mohair
- Aquaculture

7.1.1 Livestock

Livestock farming is the most important farming activity in the District, with many sheep farmers and cattle farming. Sheep, cattle and goats has been identified as one of the district's main commodities.

Sheep

Sheep farming is one of the main commodities farmed in the district. Senqu and Gariiep LMs have been identified by the ECDC as areas for the expansion of lamb production. In 2007, JGDM accounted for 25% of the mutton production in the Eastern Cape. There is currently a gap in the further processing of lamb in JGDM as consumption levels locally and nationally are increasing due to rising income and employment. It is also estimated there is a shortage of supply of lamb in South Africa and that demand is likely to increase in the future. The pooling of activities by sheep farmers can increase collectively bargaining power, particularly for emerging small-scale farmers, and ensure production volumes are sustained for lamb processing activities.

The following opportunities for lamb have been identified for JGDM:

- Strengthening primary breeding stock
- Development of abattoirs in high production areas
- Establishment of micro-butcheries in rural areas
- Promoting small scale natural fodder production linked

The lack of fencing however remains a major constraint for small scale farmers which has led to increased incidences of stock losses and theft.

Beef

Cattle has been identified as another significant commodity in the JGDM agriculture sector. Beef cattle account for approximately 52.6% of all livestock in the Joe Gqabi District Municipality. In 2007, JGDM supplied 18% of the Eastern Cape's beef production. In 2007/2008 beef production and consumption fell in South Africa due to the global economic downturn which saw many people reduce their consumption of beef. In 2010/2011 beef production also fell because of an outbreak of foot and mouth disease which impacted regions all over South

Africa. There are a number of emerging cattle producers primarily in the Elundini Local Municipality that lack market intelligence. JGDM also currently lacks sufficient stud breeders. The absence of such market intelligence means that they are unable to capitalise in the aforementioned supply shortages. The consolidation of emerging beef cattle farmers in the area is necessary to ensure both the dissemination of market intelligence as well as ensuring that sufficient economies of scale are attained to make downstream processing feasible. The following opportunities were identified in the beef cattle sub-sector:

- Development of feedlots
- Animal feed suppliers
- Increasing existing capacity of abattoirs
- Development of new abattoirs
- Long term opportunity for SMME hide processing (tanneries) for the automotive industry

Barriers to entry for cattle farming have been identified as:

- Poor carrying capacity
- Stock Theft
- Poor breeding stock amongst emerging farmers

Goats

The most commonly reared goats for meat and skin production in South Africa are the Boer goat, Savanna and Kalahari Red. Angora goats, which are used for their mohair, are also reared throughout South Africa particularly in the Eastern Cape. Goat farming has become increasingly popular as it requires low initial capital investment and is suitable for small-hold farm conditions. Additional sources of demand for goat meat are coming from the health food sector, restaurants industries with dairy goats fast becoming a stable industry. JGDM produced 5% of chevon and mohair in the Eastern Cape in 2007. The Joe Gqabi District Municipality had an estimated 210 829 goats in 2009, 46.7% of which were located in the Elundini Local Municipality. Other major goat producing areas in the district were the Gariiep (27.7%) and Senqu (23.0%) Local Municipalities. The challenges faced by goat producers in rural areas are the transports cost associated with getting live animals to auction areas; and access to research and new development trends in the goat industry. The access to markets is also a hindering factor for both the commercial and emerging sector.

The following opportunities were identified in the goat sub-sector:

- Expanding goat production for export
- Optimising slaughtering of goats and meat processing
- SMME opportunity in meat and hide processing (butcheries and leather tanneries)
- Multi-purpose feedlots

Barriers to entry into the goat sub-sector have been identified as follows:

- Poor quality of stock
- Stock Theft
- Absence of abattoir

7.1.3 Poultry

Current commercial poultry production in Joe Gqabi DM is comparatively small relative to other districts. The district accounted for 5% of the total gross value generated by the Eastern Cape poultry industry (broilers and eggs), it is however almost exclusively an egg producing area. This is evident by the fact that egg production accounting for 94.6% of the all gross value generated in 2007. Opportunities for the poultry sub-sector in JGDM

include establishing processing facilities that should be linked to existing areas of production while new primary production areas are being established. Areas where processing facilities should be established include:

- Maletswai Local Municipality
- Elundini Local Municipality

The establishment of new production facilities should be explored in:

- Senqu Local Municipality

One of the greatest challenges facing the poultry industry is dumping. Since a dumping producer is simply looking to dispose of excess production in their origin country and recover their input costs, they can sell their product in the South African poultry market at a much lower price than local products. Producers in JGDM currently face challenges in terms of accessing markets for their broilers, thus dumping activities would place further cost pressures on them. High input costs such as electricity, feed, fuel and transport cost also make it difficult to sell birds at a low price which results in local producers being unable to compete with cheaper import/dumped products.

The following opportunities were identified in the poultry sub-sector:

- Expanding existing broiler production
- Inputs - Animal Feed suppliers
- Establishment of poultry abattoirs
- Enhancing informal trading linkages with emerging farmers
- SMME opportunity in meat (butcheries)

7.1.4 Forestry

The total commercial timber plantation area in South Africa in 2011 was 1.2 million hectares, 0.2% higher than in 2010. This equates to only 1.0% of the total land cover in South Africa compared to 0.3% for natural forests. The majority of these plantations are situated in KwaZulu-Natal and Mpumalanga which collectively account for 80.2% of total afforested areas in South Africa. The Eastern Cape accounted for approximately 11.1% (141 413 hectares) of total afforested area in 2011, making it the third largest province in terms of area under plantation. Of these plantations 75.0% are privately owned with the remaining 25% being state owned. Forestry plantations in Eastern Cape are primarily located in the eastern part of the provinces in the Joe Gqabi (Elundini), Alfred Nzo, O.R. Tambo (Mhlontlo, Port St. Johns, Ngquza Hill) and Amathole District Municipalities. Table 7.1 shows the existing forestry plantations in the Eastern Cape.

Table 7.1: Forestry Plantations Eastern Cape, 2011

	Existing hectares	Percentage (%)
Sarah Baartman	32 876	23.2
Amathole	24 140	17.1
Chris Hani	19 402	13.7
Joe Gqabi	27 813	19.7
OR Tambo	32 981	23.3
Alfred Nzo	4 201	3.0
Eastern Cape	141 413	

Source: Forestry SA (2012)

Joe Gabi District Municipality accounts for approximately 19.7% of the total area under forestry plantation in the Eastern Cape.

Areas within the Joe Gqabi DM with the highest potential for increased plantation forestry are:

- Elundini Local Municipality

The following opportunities were identified in the forestry sub-sector:

- Micro saw mills and existing saw mill optimisation
- Treated and dried timber
- Chipboard and floor boards
- Furniture manufacturing
- Charcoal and construction products (doors, windows, etc.)

7.1.5 Maize

Dryland and irrigated maize production is an important national crop as it provides a number of households with staple food consumptions and food security, particularly in rural areas. The maize industry is also an important employer and foreign currency earner due to its multiplier effects. In terms of production, yellow maize is mostly used in animal feed while white maize for human consumption. Maize production levels are dependent on number of factors including environmental conditions, level of irrigation, area planted, maize variety, fertilizer levels etc. The interaction of these factors determines the yield per hectare and subsequently the total volume of maize produced in an area during a given year.

Current maize production within either the Joe Gqabi DM is not sufficient to sustain large scale processing operations. The Joe Gqabi District Municipality accounts for approximately 15.0% of the total maize produced in the Eastern Cape. This maize production is confined to the Elundini Local Municipality. Attempts have been made to cultivate crops in the Gariiep Local Municipality utilising water from the Gariiep Dam however the poor soil quality as well as other climatic conditions have prevented such production.

Barriers to entry for the maize and grain sub-sector:

- Lack of skills
- Silos

7.1.6 Potatoes

Potatoes are mainly produced in Elundini and Senqu LMs. The local market for potatoes is increasing as it is a household commodity and used in local government institutions (schools, hospital) to ensure food security. Potato farmers have the opportunity to increase value of potatoes through semi processing which includes washing, packaging, peeling and cutting. The growing market for convenience food can be exploited by potato farmers through the creation of local brands linked to small-scale processing activities which supply local markets. The benefit of buying locally processed potatoes will reduce travelling cost and will help to create job opportunities in local communities.

The following opportunities were identified in the potatoes sub-sector:

- Frozen (French fries, wedges, baby potatoes)
- Potato crisps and canned potato
- Mixed vegetable processing and packaging
- Expand current potato crops

7.1.7 Wool and Mohair

Wool is one of the district's main commodities. The Senqu Local Municipality is by far the most important wool producing area in the country, with the Barkly East and Lady Grey areas accounting for a significant percentage of both the Eastern Cape and South Africa's wool production. Wool production has declined almost consistently since 1995 when production peaked at 55.4 million kilograms. Although production volumes have fallen, the higher wool price has helped cushion the adverse effects of declining production levels. The gross value of wool production in 2010 was estimated at R 1.3 billion.

The infrastructure associated with the wool industry (i.e. auction houses, buyers, markets) is not present in either the Joe Gqabi DM. The bulk of wool processing such as washing, combing, weaving, knitting etc. occurs in Port Elizabeth close to the major wool auction houses. Some small scale processing does however occur in the Senqu, Elundini and Maletswai Local Municipalities. These products are sold mainly to visiting tourists. There is an opportunity for the expansion of small scale processing of wool products in the district.

Constraints for growth of the sheep sub-sector includes the following:

- Shearing sheds
- Lack of skills

7.1.8 Aquaculture

Aquaculture, which involves the propagation, improvement and rearing of both plant and aquatic based organisms in fresh, sea or brackish waters, is a relatively new production sector in South Africa. Accordingly knowledge about the technologies utilised, business principles and impacts (financial, social and environmental) are still limited. Aquaculture production however does occur in JGDM. Given the relative infancy of the industry both nationally and provincially there are only a limited number of aquaculture facilities currently operating. At present there is only one such facility operating in JGDM. This is in the Senqu Local Municipality that produces varieties of ornamental Tilapia. A freshwater aquaculture project was also developed in the Oviston and Venterstad area of the Gariep Local Municipality, however this project has since ceased operating. Efforts have been made to re-establish the project but with little success.

Climatic conditions do impact the production of certain types of fish, however generally aquaculture can be practised in any area. Optimal sites for freshwater aquaculture include:

- Gariep Local Municipality
- Senqu Local Municipality

The following opportunities were identified in the aquaculture sub-sector:

- All levels of primary production
- Processing (canning, fish oil etc.)
- Export of ornamental fish
- Research opportunities (Wild Coast)

7.2 Current and Proposed Projects in the Region

There are multiple project categories for economic, social and socio-economic development within South Africa. The following section brings to the fore the more common project types, namely REID, RID, CASP, LRAD, Ilima/Letsema, and others, that are applicable to the Joe Gqabi District Municipality.

7.2.1 Rural Enterprise and Industrial Development (REID)

The Rural Enterprise and Industrial Development (REID) was established by the Department of Rural Development. It aims to create an enabling institutional environment for vibrant and sustainable rural communities. REID consists of four units. Each unit is briefly described below.

The social organisation and mobilisation unit, which is responsible for the promotion of participatory approach to rural development.

The technical support, skills development and nurturing units, this unit provides technical support to institutions and organisations in rural communities through skills and capacity building.

The Institutional Building and Mentoring unit is responsible for facilitating, building and mentoring institutions in rural communities.

The rural livelihoods and food security unit, that is responsible for facilitating strategic partnerships that would promote economic and rural enterprise development. Strategic partners are from the private sector, government entities and international organisations. These strategic partnerships also facilitate value added services such as agro-processing and the establishment of village industries and enterprises.

There are 9 REID projects operating in JGDM, 2 in Maletswai LM, one in Senqu LM and 6 in Elundini LM.

7.2.2 Rural Infrastructure and Development Initiative (RID)

The Rural Infrastructure and Development initiative was established and run by the DRDLR in order to facilitate rural infrastructure development strategies for socio-economic growth. The key role of RID is to provide ICT, economic and social infrastructure necessary to uplift rural communities. The functions of the programme include provision of economic and ICT infrastructure and development services; facilitation of social infrastructure, development and adaptation of innovative and appropriate technologies within rural areas.

RID also intends to facilitate access to additional funding to implement infrastructure project services, to provide project management functional specific support to RID in provinces, to provide financial and administrative support services and finally to provide service delivery coordination services.

An example of how RID links with other projects is that it would, for example, provide the fencing for a project area while REID will provide the funding and invest in food gardens.

There is one RID project operating in JGDM, this is in Elundini LM.

7.2.3 Land Redistribution for Agricultural Development (LRAD)

The Land Redistribution for Agricultural Development (LRAD) programme was designed to help previously disadvantaged citizens from African, Coloured and Indian communities to buy land or agricultural implements specifically for agricultural purposes. The LRAD grant is made available as a non-refundable form of funding or financial contribution to help prospective farmers to purchase land by government.

The grants are made available through the Dept. Land Affairs with assistance from the Dept. of Agriculture, Fisheries and Forestry. Funds can be used for the acquisition of land or the financing of land improvements, infrastructure investments, capital assets and short-term agricultural inputs.

LRAD funding is made available to beneficiaries at various levels, these are:

- **Safety-net projects:** This is the level at which beneficiaries will acquire land to produce mainly for own consumption.
- **Equity schemes:** Members of a group will each contribute a certain amount towards accessing the grant. In turn, each member will own a certain percentage of the project according to the degree of their contribution.
- **Production for markets:** Some people will enter the programme at a much higher level than the ones mentioned above. These people will most probably have more farming experience as well as access to additional finance through normal bank loans as well as their own assets and cash to purchase bigger farms and therefore farm on a much larger scale.
- **Agriculture in communal areas:** Quite a number of people in communal areas already have secure access to agricultural land, but may not have the money to start using that land productively. Such people will be allowed to apply for assistance to start putting up productive investments on the land.

There are four LRAD projects in JGDM. Three of these are in the Senqu LM and one in the Gariep LM.

7.2.4 Comprehensive Agricultural Support Programme (CASP)

The Comprehensive Agricultural Support Programme is a Dept. of Agriculture, Fisheries and Forestry project, supported by National Treasury, which seeks to provide agricultural support to land and agrarian reform projects.

The strategic goals of the CASP programme are to create a favourable and supportive agricultural service environment for the farming community, including subsistence, smallholder and commercial farmers. Grants are allocated with the aim of expanding the provision of agricultural support services and the promotion & facilitation of agricultural development by targeting smallholder and previously disadvantaged farmers.

There are eight CASP projects operating in JGDM. One is situated in Gariep LM, three in Maletswai LM, three in Senqu LM and one in Elundini LM.

7.2.5 Ilima/ Letsema

The Ilima Letsema initiative was established in 2008 and reformed in 2013 by the DAFF with the aim of encouraging food gardens among to support food security in rural areas. The funding originated with the special poverty allocations made by National Government for a specific purpose and a conditional grant enables government to ensure that specific projects are targeted. The funding will look to support small emerging black farmers and takes the form of grants given to farmers. The grant is given to farmers who apply and uses a grant framework to assist targeted vulnerable South African farming communities to increase agricultural production and improve farming skills. Some of the funding goes towards strategic interventions like the rehabilitation of irrigation schemes.

The expected outcomes from this project includes:

- Increased production efficiency
- Increased agricultural production for the targeted group
- Improved ability of targeted group to cope with high food prices.
- Improved food production at both household and national level.

In 2012 it is believed that a total of 4 021 farmers had been supported through the Ilima Letsema programme. It is believed that through this programme, farmers will be trained in appropriate agricultural practices, the number of hectares under production will increase and new irrigation schemes will be established.

There are a number of Ilima Letsema projects spread throughout the JGDM.

7.2.6 IDP Projects

District Municipality Integrated Development Plans (IDP) is a super plan for an area that gives an overall framework for development. It aims to co-ordinate the work of local and other spheres of government in a coherent plan to improve the quality of life for all the people living in an area. It should take into account the existing conditions and problems and resources available for development. The plan should look at economic and social development for the area as a whole. It must set a framework for how land should be used, what infrastructure and services are needed and how the environment should be protected.

All municipalities have to produce an Integrated Development Plan (IDP). The municipality is responsible for the co-ordination of the IDP and must draw in other stakeholders in the area who can impact on and/or benefit from development in the area.

Once the IDP is drawn up all municipal planning and projects should happen in terms of the IDP. The annual council budget should be based on the IDP. Other government departments working in the area should take the IDP into account when making their own plans.

The IDP develops projects in conjunction with regional and provincial government departments to aid specific development objectives. Funding for District IDP projects is accessed through these government departments, from the District IDP budget and through other funding avenues and mechanisms.

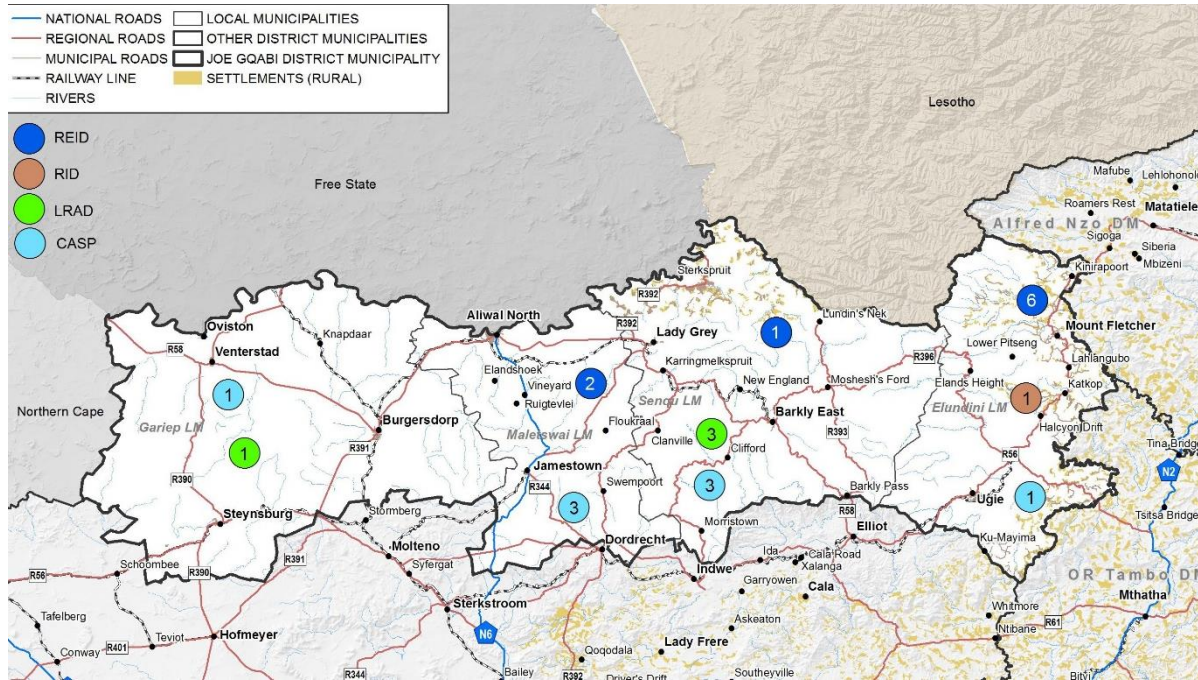
7.2.7 Social Relief Projects

Social relief projects are generally temporary assistance projects for those in dire need of support. In the case of the agricultural sector, social relief projects are generally directed at those who have experienced a natural disaster such as drought, fire or floods. Social relief projects are funded by a number of organisations, including the private sector. There are currently no social relief projects underway in JGDM.

7.2.8 Special Projects

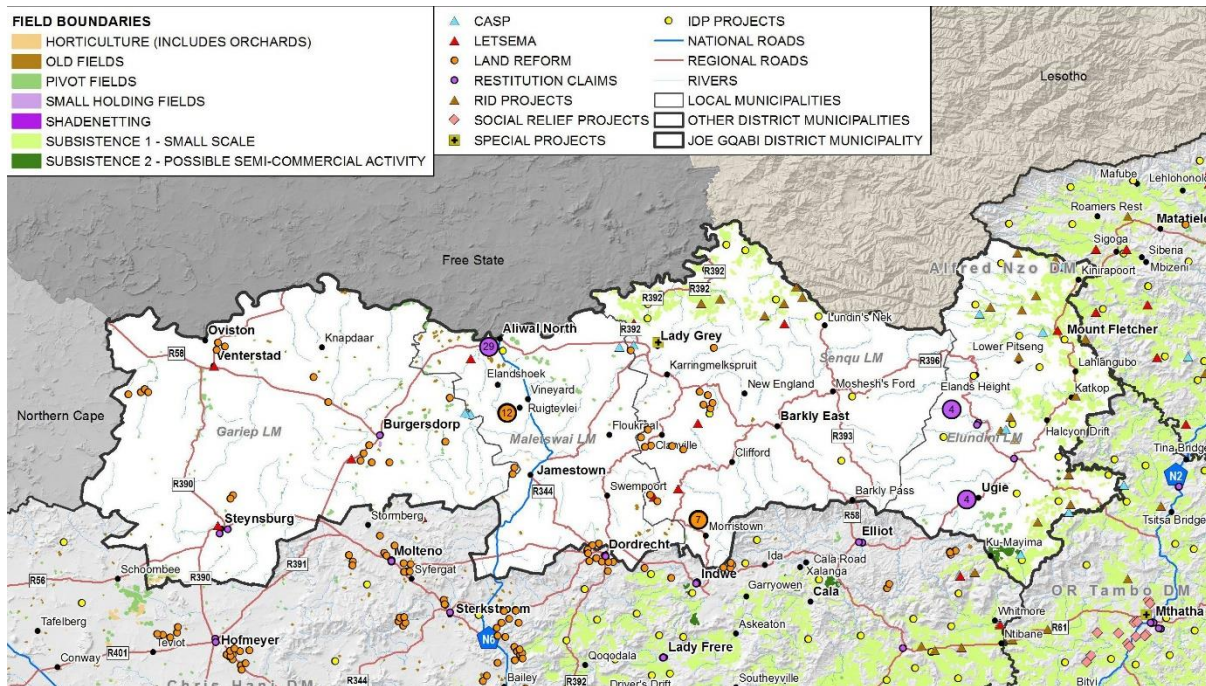
Special projects are projects that are usually large and unique in nature which have specific goals that are linked to national and regional development. Examples of these projects include IDZs and large infrastructure projects such as dams and electricity projects.

Figure 7.1: JGDM DRAR and DRLAR projects



Source: Urban-Dynamics, 2015

Figure 7.2: JGDM Agriculture Projects



Source: Urban Dynamics, 2015

7.3 Environmental Conditions and Resources Analysis

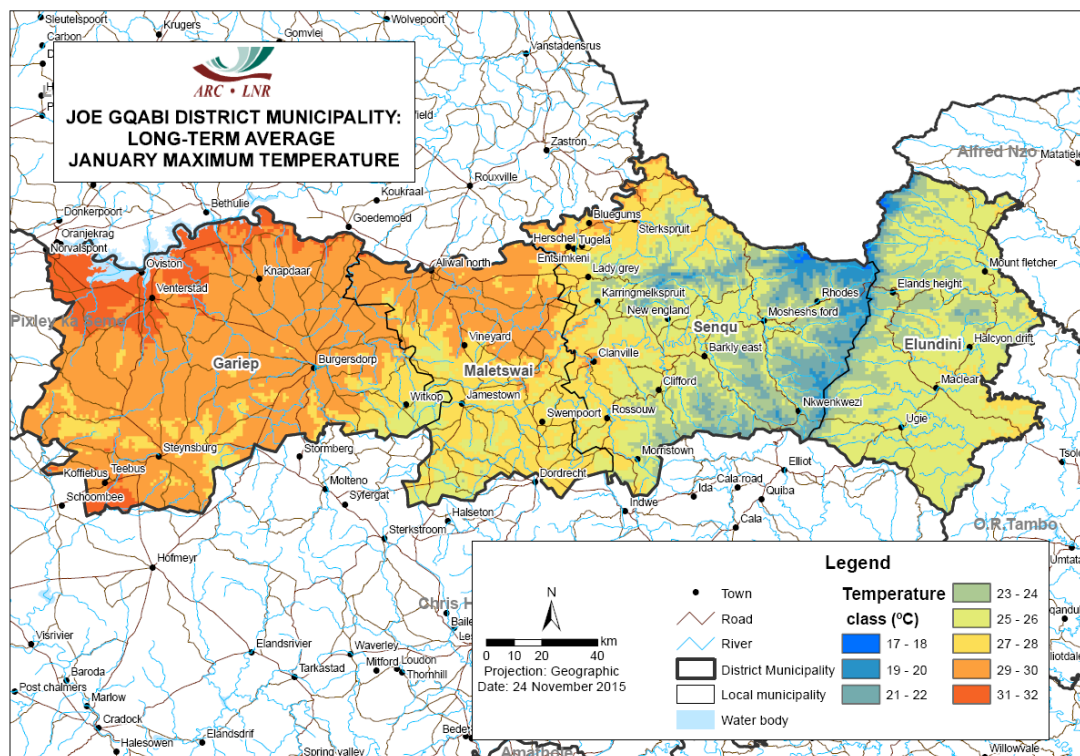
7.3.1. Temperature, frost and heat and chill units

Decadel (ten day period) 1km X1km surfaces were created from temperature data (1920 to 1999) downloaded from the AgroMet databank at the ARC-ISCW (South African Weather Service and ISCW weather stations) from stations with a recording period of 10 years or more. Regression analysis and spatial modelling were utilized taking into account topographic indices such as altitude, aspect, slope and distance to the sea during the development of the surface. Monthly averages were calculated (Malherbe & Tackrah, 2003).

The Joe Gqabi DM is well known for its temperature fluctuations, with temperatures ranging between 42 C and -11 C. On average, there are 150 days of frost during the year, usually between March and November and snow particularly in Senqu and Elundini. The snow has also been known to fall on the higher lying areas of Maletswai and Gariiep local municipalities. The DM is affected by unseasonal frost and cold that has a negative impact on agriculture. The area is only suitable for less sensitive crops due to this harsh climate. Elundini is lower in altitude and experiences warmer winters and this enables this part of the District to be more suitable for cultivation (JGDM, 2015).

The long-term average maximum temperatures for Joe Gqabi DM are mostly between 29^o and 30^oC for January (Figure 7.3) and the long-term average minimum temperatures between -3^o and -2^o for July (Figure 7.4).

Figure 7.3: Long-term Average January Maximum Temperatures



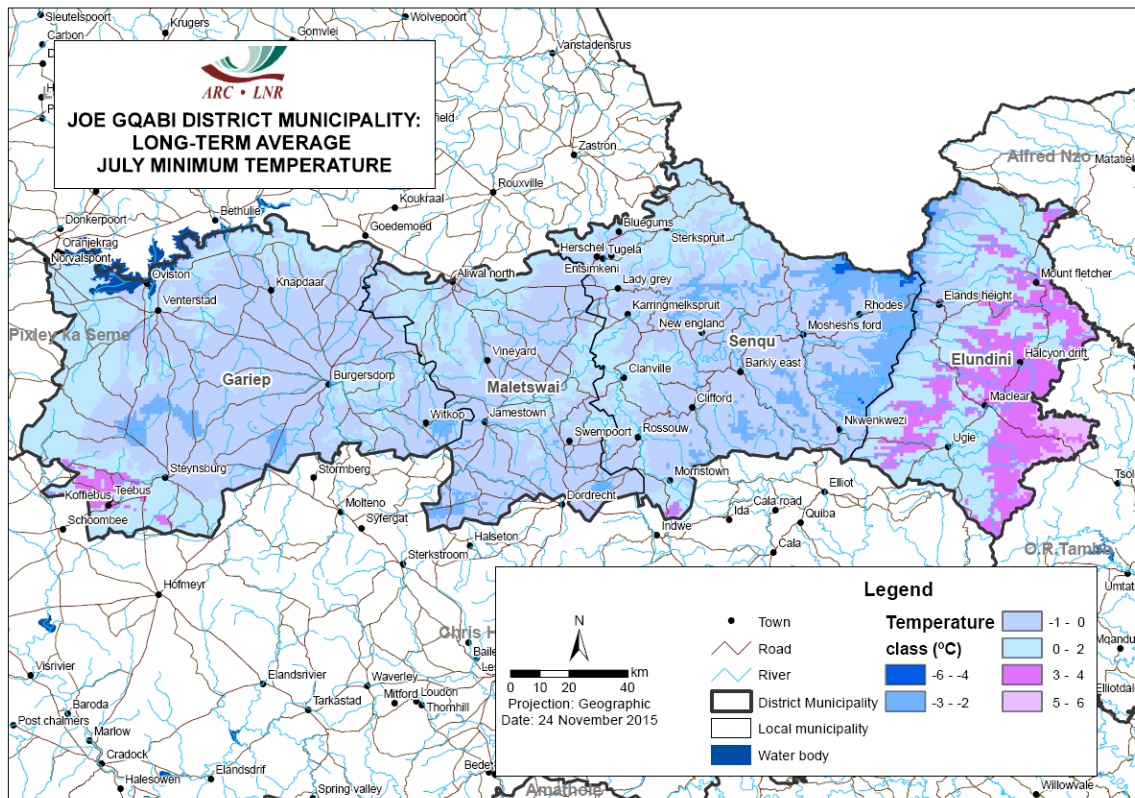
Source: Agricultural Research Council - LNR, 2015

According to Schulze (2008) the heat units (^o days) for January for the area is between 280 in the east to and 380 in the west. The July values is between 100 and 120. The positive chill units for July is mostly between 250 and 350 PCUs for the Joe Gqabi DM.

Specific areas in the Joe Gqabi DM is suitable for the production of temperate crops. Temperate crops prefer a mean temperature for the coldest month of less than 13°C. The main feature of temperate fruits is that they need a cold dormant period (winter chilling) to flower and set fruit satisfactorily in spring. They can withstand severe frosts during their dormant period but are susceptible to late frosts during flowering and early fruiting stages.

These crops are probably suited to the cold Berg areas in the DM e.g. apples, peaches, plums, cherries, apricots, kiwifruit, almonds. Peaches are temperate zone fruit, but grow best and develop better quality fruit in areas with warm summers (<28 °C). Trees flower early (late July) and require a cool, frost-free spring. Flowers can tolerate temperatures of -3°C, while small fruit can only tolerate temperatures of -1°C. Nectarines are particularly susceptible to cracking if heavy rains occur close to harvest. Which require a cool, frost-free spring (best: 15-20°C and 40-60% RH) and mild summer and a cold, winter dormant period. For most temperate crops a warm, dry growing season is required to set and mature the fruit and a rain-free harvest period is necessary to avoid problems of fruit splitting. Winter chilling is vital to ensure enough chill units are received to break winter dormancy and thus allow growth to resume in spring (Kotze, 1987).

Figure 7.4: Long-term Average July Minimum Temperatures



Source: Agricultural Research Council - LNR, 2015

7.3.2. Rainfall, Hail Risk, Humidity and Water Availability

Decadel (ten day period) 1km X1km surfaces were created from rainfall data (1920 – 1999) downloaded from the AgroMet databank at the ARC-ISCW (South African Weather Service and ISCW weather stations) from stations with a recording period of 10 years or more. Regression analysis and spatial modelling were utilized taking into account topographic indices such as altitude, aspect, slope and distance to the sea during the development of the surface. Monthly averages were calculated (Malherbe & Tackrah, 2003).

The Joe Gqabi DM can be divided into four rainfall zones. Some of the higher mountain peaks have between 800 mm and 1200 mm of rainfall a year. The eastern part of the District has between 600 mm and 800 mm a year; the central area has between 400 mm and 500 mm; and the western area (Venterstad, Steynsburg and most of Burgersdorp) has less than 500 mm a year (JGDM, 2015).

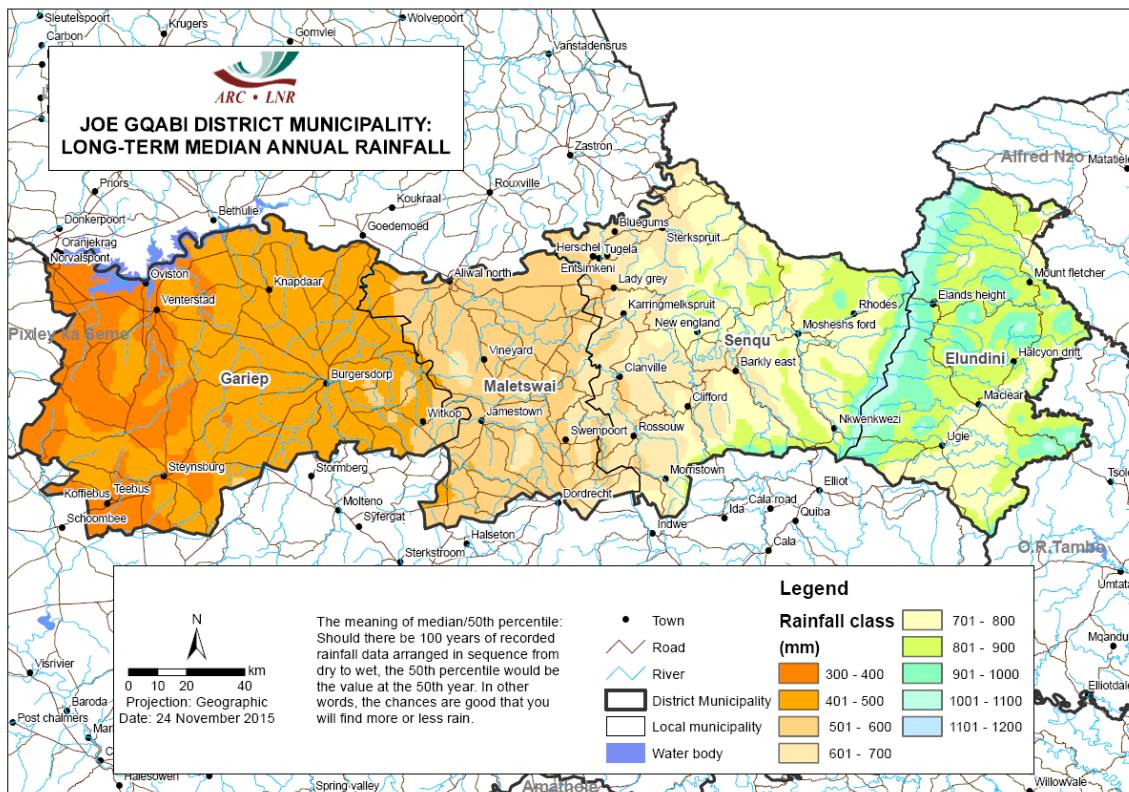
The Orange River is the most important source of water in the district. The Gariep Dam is the largest in South Africa and, together with the Fish River Scheme, is a major source of water for irrigation. Smaller dams also provide the District with water, both for agricultural purposes and human consumption. Boreholes are used by Barkly East, Burgersdorp and Steynsburg to augment supplies, and Jamestown and Mount Fletcher use boreholes for all their water requirements. Many commercial irrigation ventures are fed from groundwater. A study conducted for the Joe Gqabi DM concluded that many places in Senqu and Elundini have very high groundwater development potential (JGDM, 2015).

Intensive crop production in the Joe Gqabi DM is not possible without irrigation. With limited rain-fed arable land for crop production, irrigation schemes and stock farming play a significant role in agriculture. Intensive farming only occurs in areas where water and infrastructure are available. There is some forestry in the Maclear-Ugie area and a large timber processing plant is being built at Ugie.

The eastern part of the district receives between 900 mm and 1100 mm per annum with between 300mm and 400 mm per annum in western part of Joe Gqabi DM (Fig 7.5).

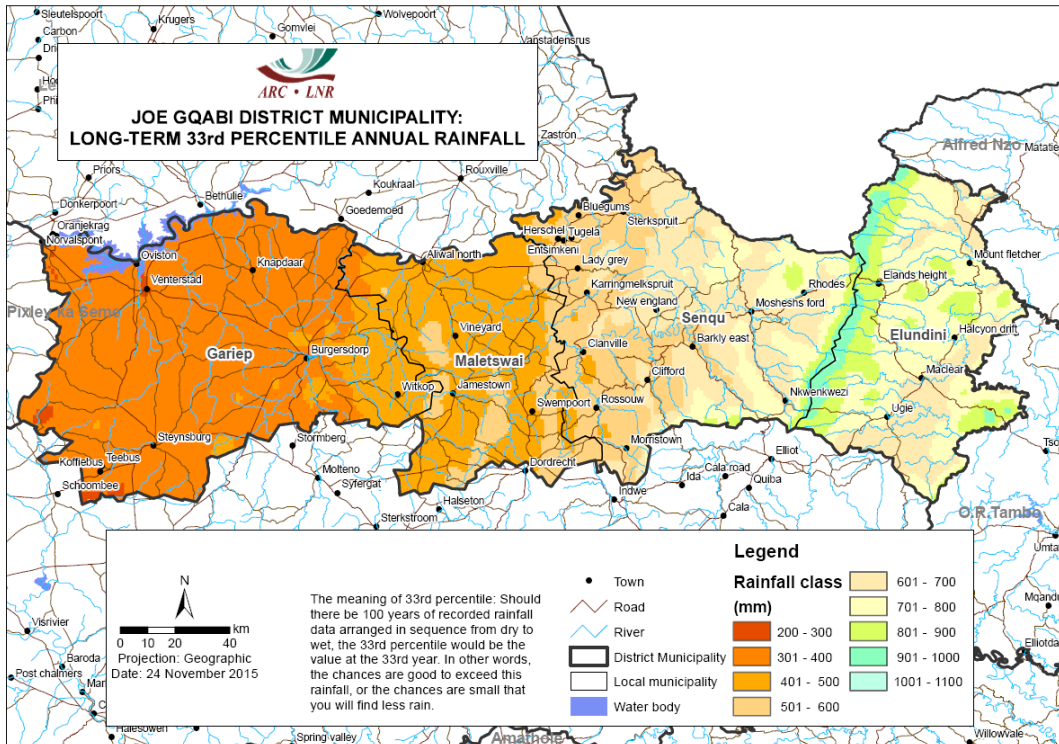
From the long-term 33rd and 67th percentile annual rainfall (Figures 7.5 and 7.6) it can be seen that the eastern part of the DM (Elundini) has the highest probably of high rainfall (900 mm) even during drought conditions.

Figure 7.5: Long-term Median Annual Rainfall



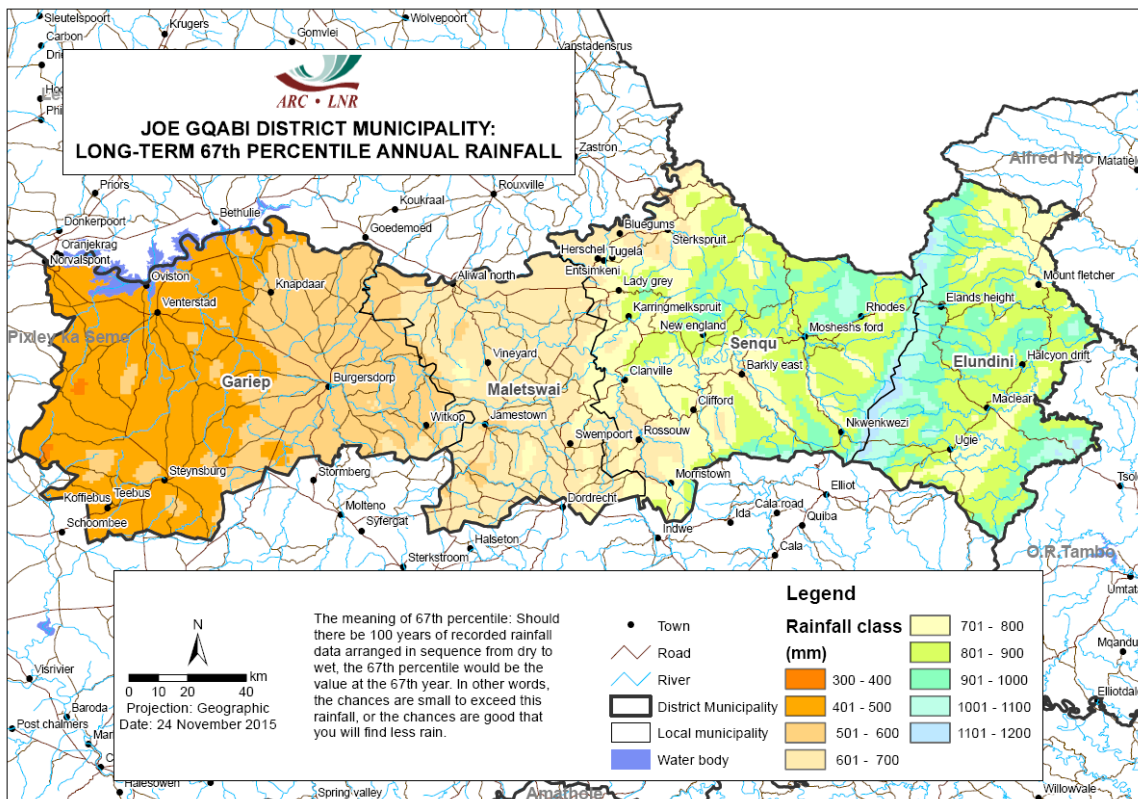
Source: Agricultural Research Council - LNR, 2015

Figure 7.6: Long-term 33rd Percentile Annual Rainfall



Source: Agricultural Research Council - LNR, 2015

Figure 7.7: Long-term 67 Percentile Annual Rainfall



Source: Agricultural Research Council - LNR, 2015

7.3.3. Land and Soil Resources

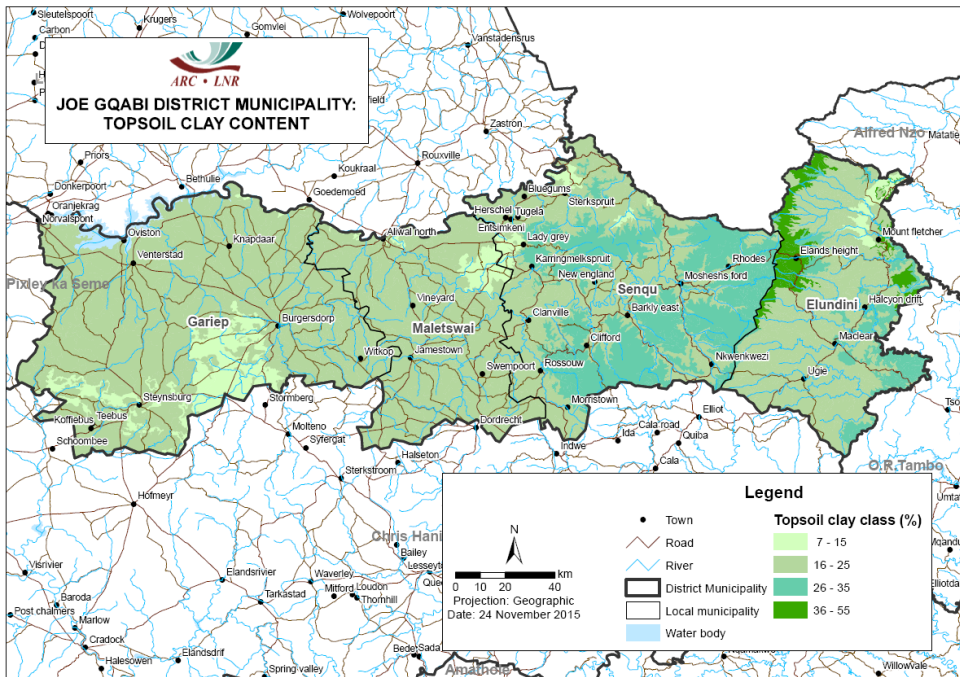
Digital Land type information and the spatial component were used to determine the top soil clay content and the soil depth. Soil depth is recorded as a range for each soil entry. A weighted average was calculated for each land type unit (Land Type Survey Staff, 1972 to 2006).

Soils are generally shallow and weakly developed. Soils in the District are mainly sandy loam and clayey loam. As a broad generalization, there is an increase in soil depth and areas occupied by arable soils from west to east. Crop and horticultural production in Gariiep LM and in most of Maletswai LM is severely limited (even with irrigation) due to the dominant soil types. Elundini local municipality is the only area with soils suitable for cultivation. The Senqu area is one of the most degraded areas in the country due to communal grazing lands not being well maintained or protected under the previous dispensation. Degradation is also high in the communal land areas of Elundini, and in small pockets within the Maletswai and Gariiep local municipalities, with the primary cause found to be the overstocking of livestock and inappropriate grazing methods. The Department of Agriculture estimates that between 300 and 400 tons per hectare of soil are lost annually in the District. In addition to the provision of infrastructure to enable the practice of controlled grazing, it is necessary to prioritize the rehabilitation of severely degraded areas, in particular in the Senqu area (JGDM, 2015).

There is only 233 hectares of high potential arable land (class 1) in the Joe Gqabi DM. Elundini has the highest percentage of arable land (with limitations) in its coverage (42.9%), and this is followed by Maletswai (32.9%). With the low levels of rain-fed arable land for crop production in the District, irrigation schemes and stock farming will play a significant role in agriculture. This is evident in Gariiep where only 0.8% of the land is suitable for rain-fed crop production; however, agriculture contributed 38% to the GGP in 2001, in the form of sheep farming and irrigation-based agriculture along the Orange River and Fish River Tunnel. The District intends supporting the development of irrigation schemes in the areas of Senqu, Maletswai and Elundini local municipalities. It is important to note that although Elundini has the highest percentage of arable land, its agricultural sector has the lowest (4%) of GGP contribution. This is due to the subsistence nature of agriculture in the area and highlights the physical potential for commercial agriculture growth. There is limited land available that can sustain intensive agricultural practices. Land identified as prime and unique agricultural land should be preserved for agricultural use in order to enhance food security and therefore economic welfare. It is therefore important that residential and industrial development does not expend these areas (JGDM, 2015).

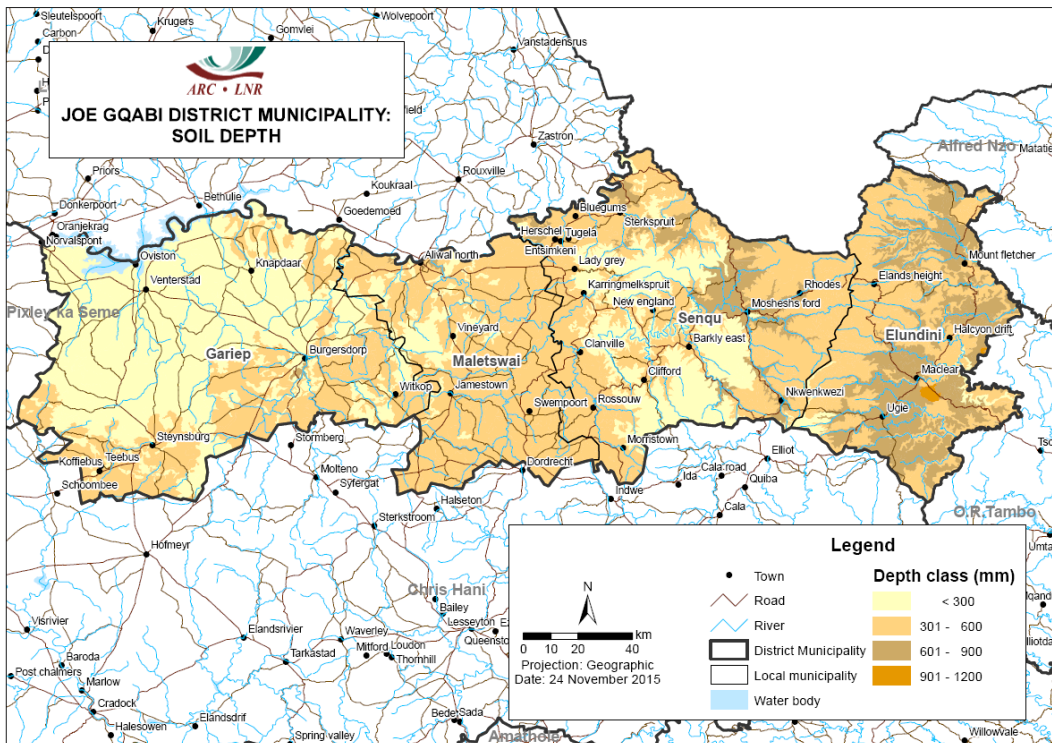
The topsoil clay is mostly between 16 and 25% (Fig.7.8) in the Joe Gqabi DM, an indication of a low infiltration rate and high water-holding capacity. The majority of the area has a relatively shallow soil depth between 300 and 600 mm and even shallower in western part of the DM (Fig.7.9), which is extremely problematic for the production of most crops. The steep slopes in the eastern parts are also problematic for crop production. The erosion potential in the DM is also very high.

Figure 7.8: Joe Gqabi Topsoil Clay Content



Source: Agricultural Research Council - LNR, 2015

Figure 7.9: Joe Gqabi Soil Depth



Source: Agricultural Research Council - LNR, 2015

The Senqu area is one of the most degraded areas in the country due to communal grazing lands not being well maintained or protected under the previous dispensation. Degradation is also high in the communal land areas of Elundini, and in small pockets within the Maletswai and Gariep local municipalities, with the primary cause

found to be the overstocking of livestock and inappropriate grazing methods. The Department of Agriculture estimates that between 300 and 400 tons per hectare of soil are lost annually in the District. In addition to the provision of infrastructure to enable the practice of controlled grazing, it is necessary to prioritize the rehabilitation of severely degraded areas, in particular in the Senqu area (JGDM, 2015).

Approximately 12% of the District area has slopes steeper than 1:8. From Aliwal North large flat plains of land are interspersed with steep mountains and hills. Topography influences the type of agricultural activities that occur. The open flat areas in the west allow for extensive agriculture whereas in the east, agriculture is limited to specific land pockets. Although very little land is suitable for cultivation, grazing for farming stock is feasible. The altitude of the District lies between 1000m and 1500m above sea level. Parts of Senqu and Elundini form part of the southern Drakensberg range. This area, due to its high altitude, is less suitable for farming. From Lady Grey the landscape flattens out towards the west. The mountainous terrain also limits accessibility and therefore hampers service and infrastructure delivery in the region (JGDM, 2015).

7.4 APAP Commodity Selection Criteria

The Agricultural Policy Action Plan (APAP) proposed 5 criteria for the assessment of agriculture ‘sectoral interventions’, referred to in this report as ‘commodities’. These criteria were developed to support outcomes 4, 7 and 10 and the associated objectives set out in the New Growth Path (NGP), National Development Plan (NDP) and the Industrial Policy Action Plan (IPAP).

The 2015 – 2019 APAP report stated the following:

“For APAP to effectively speak to Outcomes 4, 7 and 10, and to the objectives set out in the NGP, NDP and IPAP, it needs to unlock the productive potential of agriculture, forestry and fisheries by considering the nature of their binding constraints, whether these be at the level of primary production, beneficiation, or marketing, or indeed a combination of these. However, different subsectors within agriculture, forestry and fisheries operate according to different dynamics and face distinct challenges, thus there is a need to be selective as to which subsectors or value chains to focus upon in the short and medium term, while also recognising that agricultural commodities in particular are often inter-related, in which case it is more helpful to speak of ‘integrated value chains’. Using the following general selection criteria, this first APAP focuses on a discrete number of value chains identified as strategic in meeting the objectives of the NGP, NDP and IPAP”

The APAP criteria are listed below:

- Contribution to food security
- Job creation
- Value of production
- Growth potential
- Potential contribution to trade balance

7.5 Agri-Park Commodity Prioritisation Matrix

The following sections seeks to describe the commodity prioritisation matrix utilised to determine the main commodities for the Agri-Park. It describes each sub-criteria used in order to provide understanding as to the scores for the commodities. The four major criteria were:

1. Biophysical criteria
2. Enterprise viability criteria
3. Economic development criteria

4. Political / Institutional, social and food security / sustainability criteria

7.5.1 Biophysical Criteria

Some of the most important criteria to consider is the biophysical criteria. If crops or livestock cannot cope in a certain area then the entire project will not be effective and may be too costly to continue. It is important to select crops and livestock that can cope with biophysical environment and use strains and breeds that are already present in the area.

Temperature

Temperature is important to consider as it directly relates to how livestock and crops may grow. Some crops and animals cannot cope in certain temperatures e.g. certain types of grains and cereals cannot have extreme temperatures during their early growth periods and need a temperate climate.

The prioritisation matrix examines the:

- growth temperature during the months of the growing season as required by the particular crop
- frost risk and frost sensitivity or tolerance of the crop
- temperature ranges through the year
- ability of the animal to cope with heat and chills

Water/ moisture

Livestock and crops need to have sufficient water in order to support growth. A reliable source of water or moisture either in the form of precipitation or irrigation needs to be adequate in order for the growth of commodity to be successful. The matrix examined the following sections with regards to water and moisture:

- sufficient rainfall during the months of the growing season;
- sufficient quantity of irrigation water potentially available from surface and/or groundwater resources that can be sustainably abstracted;
- water quality for crops and animals;
- sufficient irrigation infrastructure or schemes already available in the area;
- sufficient quantity of water available from surface and/or groundwater resources for animal watering purposes

Land type, capability and soil

The soil section attempts to ascertain the quality and carrying capacity of the soil for the given commodity. It essentially determines if there are extensive patches of land covered by suitable soil in terms of:

- Texture
- Drainage
- Depth

It also determines land type and capability of the crop and given the land capability of the area is there enough land capable of supporting the crop or animal. Low scoring crops and animals may require finishing or feedlots before they are sold.

Weed, pest, and disease resilience

Weeds, pests, and disease resilience is an important aspect in determining the crops and animals that are chosen. The matrix determines the competitiveness of the crop compared to weeds, if the crop requires extensive pest and disease control or if disease is common in the area. The matrix examines if certain livestock can be maintained in the area based on their resilience to pests and disease and if bush encroachment and unpalatable/poisonous plants are infesting an area that livestock occupy.

Adaptability to adverse conditions

The crops and livestock that were chosen need to be adaptable to adverse conditions. The biggest threats to the long term sustainability of the commodity will be climate change and associated weather conditions. The solution to this is to obtain naturalised varieties and breeds that can compete with exotic breeds and be adaptable to the threat of changing climates.

7.5.2 Enterprise Viability Criteria

Transport, Market Access and Demand Criteria

Distance to Markets and Transport Costs

This section asks the questions: “is the enterprise compatible with the general rule that it is not economically viable to transport bulky, large volume, heavy or low value products over large distances to markets, while high value products can be transported over much larger distances, even tens of thousands kilometres away, considering modes of transport, transportation infrastructure, travel friction, road conditions etc.?” and “Is the enterprise compatible with the general rule that it is not economically viable to transport highly perishable products over long distances unless fast, cost efficient cold chains are available?”

Current Demand

This section tries to determine the current demand for the product and if it is sufficiently strong or large. It also asks if there is an established market for the product, including existing marketing channels and demand amongst customers already having a strong preference for the product. Finally it determines if there is a possibility of creating a demand as the current demand may not be fulfilled.

Future Market Growth Potential

This section attempts to determine the future growth of the commodity given global and local market trends and further marketing potential for example the future of poultry growth in the South African market may be extremely limited based on the recent changes to the AGOA act between South Africa and the USA as cheaper USA imports may flood the market.

Market Openness

Determines the willingness of buyers of the product to purchase goods from new and emerging small-scale farmers. An example of an open market is the wool and mohair industry where the current buyers (BKB and Cape Wool and Mohair) purchase directly from small-scale farmers.

Human, Physical and Financial Capital Requirements

Familiarity and Local Knowledge and Skills

This section determines if the crop or livestock is already familiar amongst farmers in the area or if significant awareness creation be needed. It also attempts to ascertain if local farmers and workers are likely to have the required skills or could fairly easily obtain the required skills to farm with the crop and to add value to it.

Labour Cost and Productivity

This section asks whether or not the local labour cost is competitive and whether the labourers would be willing to perform farm and agro-processing work. It also attempts to decide how productive a labourer would be in this sector.

Implements and Infrastructure

This section ascertains the availability and difficulty the process of obtaining required implements and infrastructure would be for example dairy farming is noted for being a practice that requires large number of complex implements in order to be competitive and to produce enough milk in one day. Thus this activity would score low in the matrix.

Ease to Finance

Determines the ease of obtaining financing for the commodity. It asks the question whether or not an enterprise would be able to secure funding through various means e.g. g be fairly easy, e.g. through tight value chain financing mechanisms, contract farming, equipment leasing rather than ownership etc.

Business strategy, payback period and profitability criteria**Business strategy and positioning**

Determines where or not a business or enterprise can be aligned to a viable business strategy for small scale farmers in order to remain competitive e.g. being a low cost vs good value vs high quality vs highly differentiated producer, and various other competitive and business strategies.

Payback Period

This section determines if there will be a long payback period once the crops or livestock are in in place and how long this may take to pay back any investments. This is particularly important to emerging and small-scale farmers who may not have the funds or access to funds to last a long period without a payback to the farmer e.g. forestry will have an extremely long payback period while vegetables may be a lot less.

Profitability

Attempts to ascertain if the enterprise can become profitable in its particular area. For example a game or flower farm can become exceptionally profitable if managed correctly as there is a large demand abroad for their goods. Maize and Lucerne farming can also become extremely profitable as there is a demand locally for the products produced from them.

7.5.3 Economic Development Criteria**Forward and Backward Economic Linkages and Argo-Processing Opportunities****Forward and Backward Economic Linkages**

Considered the economic linkages of the commodity and whether or not they were high or low. A commodity with high economic linkages will be less vulnerable to changes in economy and can adapt to changes. A commodity with a high number of forward and backward linkages is the forestry industry which has many uses for the products that are produced.

Agro-Processing Opportunities at District Level

This section considers the ability of the district to value add to the product being produced in the area. This includes both primary and secondary agro-processing opportunities to be exploited. These activities will most likely take place at the Agri-Park.

Job Creation

Direct On-Farm Job Creation

This category explains how labour intensive the activity may be. It was considered important to have activities that are sufficiently labour intensive rather than capital intensive as this contributes directly to on farm job creation and rural development.

Direct, Indirect and Induced Job creation through the Value Chain

This category considers whether or not jobs are created or induced through the value chain. Once again it was important to have a commodity that was creating a sufficient number of jobs throughout the value chain e.g. forestry has a very high degree of jobs that it creates throughout the value chain as the product that is produced is used extensively throughout society while lucerne is does not have a large number of induced jobs as it has a limited value chain.

Direct impacts - are the changes in local business activity, employment etc. occurring as a direct consequence of public or private activities in the economy, or public programmes and policies. Furthermore, increased user benefits lead to monetary benefits for some users and non-users (individuals and businesses) within the geographical area:

Indirect Impacts – occur when the suppliers of goods and services to the new business experience larger markets and potential to expand. Indirect impacts result in an increase in job creation, GDP, and household income.

Induced Impacts – represent further shifts in spending on food, clothing, shelter and other consumer goods and services as a consequence of the change in workers and payroll of directly and indirectly affected businesses. This leads to further business growth/decline throughout the local economy.

Job Decency

Job decency is the category that examines the quality of the job that would be created by the farm and value adding process. This category attempted to identify the most skilled positions and rank them higher than semi-skilled or unskilled jobs. Generally quality jobs are created when labourers are integrated in the business and management of the farm in order to create buy in and develop skills around the commodity being farmed.

Local Development

Business Opportunities, Agglomeration Effects and Job Creation at Local or District Level

This category determines the ability of the commodity to create business opportunities and job creation down the value chain and on the farm which could lead to local and economic development. This section asks whether or not the commodity has the ability to create economic opportunities for local small emerging entrepreneurs or will the opportunities be available for distant overseas companies. In this situation wool is an example where once it is sheered and bailed it is then exported for use overseas with very little production occurring in South Africa.

Agricultural Intensification and Increased Local GDP

Determines if the enterprise is characterised by a relative high level of agricultural intensification, and high income per surface area unit. In this situation it was preferred that low intensity agriculture be prioritised as it is associated with higher local GDP due to higher income directly from the enterprise, as well as higher associated incomes from indirect opportunities.

Global Competitiveness and Trade

Global Competitiveness

This section considers if the region is truly globally or at least regionally competitive to produce the crop/animal, or if “cheap imports” likely to be or become a threat. In this category, owing to the recent changes to AGOA, poultry would rank low in this section as it would not be very competitive globally.

Export Potential

Export potential ascertains if the crop and its value added products have strong export potential. This section essentially considers if a crop, once successfully grown and value added, has the possibility of being exported e.g. flowers produced in the Western Cape are produced almost exclusively for the export market and have a high export potential if grown in the Eastern Cape.

Import Substitution Potential

This section determines if the crop or its value adding products present an opportunity to contribute to import substitution, at local, regional or national level e.g. South Africa is a net importer of maize so any maize grown in the country would substitute any maize imported into the country.

7.5.4 Political and Social Criteria

Political and Institutional Criteria

Government Priority Including APAP

Considers if the particular enterprise is regarded as priority by APAP and other policies, strategies, plans or programs. These programmes are given greater scores on the matrix as they align to policy and existing programmes which can be included in the Agri-Parks concept and can be promoted simultaneously.

Existing Successful or Planned Projects

Attempts to ascertain if there already projects in place in the area that the farms with the particular animal/plant, or are there plans for establishment in place that are likely to be successful. Existing successful projects may indicate that the enterprise already “proofed itself” under local circumstances, and additional production may utilize existing marketing channels, infrastructure and may benefit from increasing scale efficiency.

State or Communal Land Suitability of the Likely Business Model

Determines if there are state or communal parcels of land that can be used or if collective models of production can be marketed and applied to the enterprise. Obviously land tenure and availability is a large issue and needs to be examined in detail on a per farm basis.

Social Criteria

Acceptability (Local “buy-in”)

This criteria considers if the farmers will be willing to grow the particular crop/livestock and adopt associated best practices and new technologies, or if they would be resistant to the idea of adopting the product e.g. if an area is already used to production of poultry then adoption of flower production may be resisted by the community.

Income Equality

Considers the economic factors described above and if it will provide significant income associated with the particular enterprise. Attempts to determine if the economic benefits will flow to low income as opposed to higher income households.

Emerging Smallholder Suitability

Attempts to ascertain if the enterprise be considered suitable for small farmers. This tries to identify which commodities would be suitable to emerging farmers.

Crime and Vandalism Resilience

This sections determines if the commodity, implements, property and all associated infrastructure is vulnerable to theft and vandalism given the local crime levels. Theft and vandalism is an important consideration to determine as many emerging farmers face this challenge daily. Stock theft is an important aspect in the Eastern Cape as well as vandalism of infrastructure.

Food Security and Sustainability Criteria**Contribution to Food Security**

This section of the prioritisation matrix examined the ability of the crop to contribute to food security nationally, provincially and at a district level. It examined the affordability, distribution of the commodity, biomass production, nutrient density, stability throughout the year and minimisation of food losses. Commodities chosen should provide food security for the community.

Sustainability

Ascertains if the commodity is likely to be sustainably produced, thereby conserving the ability of the region to produce food over the long term and contributing to other social and economic services provided by the landscape.

7.6 Prioritisation Matrix Results

Table 7.2 displays the outcomes for the Agri-Park prioritisation matrix as described in section 7.3. The three top scoring commodities will be discussed in this section according to the criteria against which they were assessed.

Based on the findings of the prioritisation matrix the top three commodities/products for inclusion as the core focus for the Joe Gqabi DM Agri-Park are Wool, Maize and Red meat (including beef, lamb and chevon).

7.6.1 Red Meat

The red meat section specifically looks at mutton, beef and chevon. Although mutton and chevon has been scored separately from beef, the commodities have been selected collectively under red meat because of the close value chains.

All livestock classes showcase well to the local environment. Most areas of JGDM are suitable to the farming of livestock with lamb, beef and goats. Of particular interest is lamb and goats who scored the highest of all assessed commodities in the adaptability to adverse conditions criteria.

Transport, market access and demand has scored highly for red meat. The district is well positioned to access major markets. There are also sufficient commercial centres within JGDM that the red meat industry can rely on. The demand for red meat is high and therefore has potential for future growth. One of the main limiting factors in this industry in JGDM is the inadequate number of abattoirs in the district which hampers processing and value-adding opportunities.

The business strategy and positioning can be adopted by emerging and small-scale farmers. Profitability for red meat is high, however the payback period may be relatively longer than commodities such as wool.

Emerging and small-scale farmers are already farming with cattle, sheep and goats and therefore have the knowledge and familiarity of how to farm with these animals. There is then scope to build on existing knowledge system with specialised training and skills transfer programmes.

Due to the nature of the cattle, lamb and goat farming industry, it scores poorly in areas such as direct on-farm job creation, job quality / decency and local GDP-growth. The increased number and variety of on farm tasks required to manage sheep and pigs lead to a variety of opportunities of job growth and upskilling of employees. On average the livestock sector can create 2.07 jobs for every R1 million spent on production directly on farms, a further 1.61 jobs in the forward and backward linkages industries and 1.88 jobs in the wider economy.

All Red Meat classes score very well in the Political and Social Criteria section of the prioritisation matrix. With the exception of sheep and goats for crime due to the issue of small stock theft. A number of cattle and sheep projects have been identified for JGDM, which further supports the development of the red meat sector in the district. Red meat products contribute greatly to food security.

7.6.2 Wool

Wool is JGDM most significant agricultural sub-sector based on the prioritisation matrix scoring. Wool has scored highly for the district across all four major criteria and was therefore prioritised for the Agri-Park.

Joe Gqabi DM's environmental and biophysical attributes make the region not only suitable for the production of wool, but the climate has contributed to the consistent good quality of wool produced in this area.

Wool scored highly for transport, market access and current demand. This is attributed to the district having easy access to agribusinesses such as BKB and OVK operating within JGDM, this also minimises transport costs. These businesses contribute significantly to high demand for wool in the area and provide farmers with an easily accessible market that is willing to purchase their product. The demand for wool from the JGDM is high because the district has developed a reputation of producing good quality wool. Production in the wool industry has decreased in recent years, while the price of wool remains high. This indicates that there is a strong demand for wool and potential for growth in the number of producers and production quantities in the industry.

The commodity has also scored highly for business strategy, payback period and profitability because emerging and small scale farmers are already somewhat involved in the wool industry in JGDM and therefore more intensive farming and business approach would be relatively easy to adopt. As mentioned earlier, the price of wool is high and therefore is a profitable industry.

Human and financial capacity has scored highly because the district has the human capacity to grow the wool sector in JGDM. Emerging and small scale farmers have the capacity and basic knowledge to go into extensive wool farming. This industry can also be easily financed because of the availability of funders, such as BKB or OVK. Government entities and funds are also easily accessible for the wool sector in this district.

On average the wool sector can create 2.07 jobs for every R1 million spent on production directly on farms, a further 1.61 jobs in the forward and backward linkages industries and 1.88 jobs in the wider economy.

Wool has also scored highly in terms of export potential. This is generally due to the fact that wool is already established as an export good and there is international demand for South African wool.

Wool has scored highly for political and institutional issues because the district municipality has identified wool as a key commodity in the district. Political and institutional support is essential in ensuring success of a project. There are also a number of wool projects such as wool washing feasibility study and wool scouring project developed for JGDM which would support the development of the wool industry in the district.

Crime and vandalism is a major social issue that negatively impacts on the wool sector. Small stock is easily stolen and the lack of fencing contributes to a loss of stock. Income equality and small-scale farmer suitability has however scored highly under social issues.

7.6.3 Maize

Maize is arguably the most important grain in South Africa as it plays a major role in many households diet. Thus, it is regarded as the staple food for the majority of the households. Further, it plays an important role in the livestock sector as a major feed grain, yellow maize which constitutes 40% of the total maize production in SA. It is the second largest produced crop after sugar in the country and plays an integral part in the economy through job opportunities and foreign earnings. Further, it plays a major role in manufacturing sector for food, feed, textile etc. However, its contribution is fluctuating due to its price volatility as its gross value of production depends on the quantity produced and price received.

Maize scored average in terms of the biophysical features of the district. While there are pockets of areas that maize production may be well suited, the most positive biophysical feature is the adaptability to adverse

conditions. It is also noted that this is a district analysis and that there are areas within local municipalities which are ideally suited to Maize production.

As mentioned, maize is a staple food in many households in South Africa. Consumer demand is therefore always high for maize. South Africa currently consumes more maize than it produces, indicating that the demand far exceeds the supply and that there is potential for future market growth. Farmers and producers are able to easily access markets because maize can be sold to a number of outlets for a range of purposes and therefore finding a market is relatively simple in comparison to other commodities.

The high demand and ease of growing maize has contributed to the high scores for payback period and profitability. The business strategy and positioning of maize is not beyond the abilities of emerging and small-scale farmers to adopt and has therefore scored highly.

Maize is not as well-known in JGDM as wool. Currently production of maize is limited to the Elundini LM and has therefore scored average in terms of familiarity in the district. Implements and infrastructure has scored higher because of the limited capital investment required for maize farming.

Maize has significant number of forward and backward linkages. Providing a number of opportunities for maize farmers.

Job creation, local development and global competitiveness have not scored as highly. Maize is not a labour intensive commodity. It does however have a role to play in agro-intensification but may only contribute to the local GDP in a small way. On average the maize sector can create 3.49 jobs for every R1 million spent on production directly on farms, a further 1.34 jobs in the forward and backward linkages industries and 1.91 jobs in the wider economy.

South Africa does import maize and therefore may not be as globally competitive. Locally produced maize can however substitute imported maize and has therefore scored highly.

Maize has been identified by the district as a key commodity for the Agri-Park. It has political and institutional support. There is however limited maize projects currently underway in JGDM and limited land availability.

In terms of social issues, maize only scored low on crime and vandalism because it is an easy product to steal. Local buy-in, smallholder suitability and income equality has scored highly. Food security and sustainability has also scored highly because of the important role maize plays in South African household consumption.

7.7 Summary

Based on the above discussion on the outcomes of the prioritisation matrix it was identified that that Wool, Maize and Red Meat are the three agricultural commodities / products that should form the key focus of the Joe Gqabi Agri-Park located in Lady Grey. Chapters 8 - 10 now follow with in-depth discussions of these three commodities / products.

Red Meat

Chapter 8

8. RED MEAT

8.1 Red Meat Market Assessment

The South African red meat market covers several commodities, most important to the local market being: beef (cattle), lamb (sheep), chevon (goat) and pork (pig).

8.1.1 Global Markets

Global red meat production was 191 million tons (including beef, pork, mutton and chevon) in 2013. With red meat production per region as follows:

- Asia 87 million tons (45.5%).
- North America 25 million tons (13.3%).
- Central America 4 million tons (2.3%).
- South America 21 million tons (11.2%).
- Europe 39 million tons (20.2%).
- Africa 10 million tons (5.2%).
- Oceania 5 million tons (2.4%).

Table 8.1 provides global livestock production figures by region and heads of stock for 2013. African livestock producers are a significant contributor to global mutton and chevon production. The main global regional producers of beef are South America and Asia. Whilst the main pork producer globally is Asia.

South Africa leads Southern Africa production, producing 1.2 million tons of red meat, or 12.5% of Africa's total.

Other notable producers of red meat across the continent are Ethiopia (5.0%), Egypt (6.0%), and Nigeria (11.3%), with these three countries contributing 31.5% of Africa's total production. In table 10.3 the production of red meat in South Africa is compared to neighbouring trading partners in SADC, namely Botswana, Lesotho, Mozambique, Namibia, Swaziland, Zambia and Zimbabwe.

South Africa is a major red meat producer within SADC, dwarfing its neighbours in terms of beef, mutton, and total production. Mozambique produces a relatively large amount of pork, almost 10% of the African total. Southern African chevon production is relatively small compared to its production of other red meat products. The African continent is the 2nd largest producer of chevon globally, behind Asia, and chevon produced within South Africa is primarily for the export market.

Table 8.1: Global Red Meat Production (2013)

	Beef		Pork		Mutton		Chevon		Total	
	(Tons)	% of Total	(Tons)	% of Total	(Tons)	% of Total	(Tons)	% of Total	(Tons)	% of Total
Africa	5 694 271	8,9%	1 304 128	1,2%	1 687 934	19,7%	1 301 339	24,2%	9 987 672	5,2%
Asia	14 373 105	22,5%	64 448 557	57,0%	4 254 075	49,5%	3 805 643	70,8%	86 881 380	45,5%
Europe	10 140 072	15,8%	27 121 641	24,0%	1 130 148	13,2%	112 260	2,1%	38 504 121	20,2%
North America	12 754 389	19,9%	12 486 933	11,0%	90 280	1,1%	2	0,0%	25 331 604	13,3%
Central America	2 502 264	3,9%	1 804 085	1,6%	74 155	0,9%	52 342	1,0%	4 432 846	2,3%
South America	15 617 999	24,4%	5 371 205	4,8%	242 076	2,8%	73 491	1,4%	21 304 771	11,2%
Oceania	2 901 429	4,5%	498 264	0,4%	1 110 589	12,9%	27 329	0,5%	4 537 611	2,4%
World	63 983 529	100,0%	113 034 814	100,0%	8 589 257	100,0%	5 372 407	100,0%	190 980 007	100,0%

Source: FOASTAT (2015)

Table 8.2: Global Livestock Populations (2013)

	Cattle		Pigs		Sheep		Goat		Total	
	Heads of Cattle	% of Total	Heads of Pigs	% of Total	Heads of Sheep	% of Total	Heads of Goat	% of Total	Heads of Livestock	% of Total
Africa	304 746 910	20,8%	35 732 880	3,7%	328 450 262	28,2%	347 957 726	35,7%	1 016 887 778	22,2%
Asia	494 982 171	33,7%	589 902 648	60,4%	511 796 697	44,0%	571 051 689	58,5%	2 167 733 205	47,3%
Europe	122 048 722	8,3%	184 006 466	18,8%	129 945 891	11,2%	16 527 388	1,7%	452 528 467	9,9%
North America	101 515 311	6,9%	77 654 800	7,9%	6 246 750	0,5%	2 841 350	0,3%	188 258 211	4,1%
Central America	55 632 189	3,8%	24 735 788	2,5%	11 744 464	1,0%	12 367 813	1,3%	104 480 254	2,3%
South America	348 401 875	23,7%	60 060 193	6,1%	68 340 324	5,9%	21 096 760	2,2%	497 899 152	10,9%
Oceania	40 221 546	2,7%	5 181 471	0,5%	106 351 147	9,1%	3 960 537	0,4%	155 714 701	3,4%
World	1 467 548 724	100,0%	977 274 246	100,0%	1 162 875 535	100,0%	975 803 263	100,0%	4 583 501 768	100,0%

Source: FOASTAT (2015)

Table 8.3: African Red Meat Production (2013)

	Beef		Pork		Mutton		Chevon		Total	
	(Tons)	% of Total	(Tons)	% of Total	(Tons)	% of Total	(Tons)	% of Total	(Tons)	% of Total
South Africa	851 000	14,9%	216 000	16,6%	143 750	8,5%	35 450	2,7%	1 246 200	12,5%
Botswana	47 000	0,8%	500	0,0%	1 876	0,1%	5 760	0,4%	55 136	0,6%
Lesotho	13 500	0,2%	3 700	0,3%	4 250	0,3%	2 240	0,2%	23 690	0,2%
Mozambique	25 500	0,4%	129 600	9,9%	1 008	0,1%	22 200	1,7%	178 308	1,8%
Namibia	35 800	0,6%	4 675	0,4%	13 200	0,8%	3 840	0,3%	57 515	0,6%
Swaziland	17 100	0,3%	1 310	0,1%	526	0,0%	1 782	0,1%	20 718	0,2%
Zambia	197 827	3,5%	35 244	2,7%	882	0,1%	9 000	0,7%	242 953	2,4%
Zimbabwe	103 750	1,8%	31 900	2,4%	448	0,0%	13 200	1,0%	149 298	1,5%
Africa	5 694 271	100,0%	1 304 128	100,0%	1 687 934	100,0%	1 301 339	100,0%	9 987 672	100,0%

Source: FOASTAT (2015)

Table 8.4: African Livestock Populations (2013)

	Cattle		Pigs		Sheep		Goat		Total	
	Heads of Cattle	% of Total	Heads of Pigs	% of Total	Heads of Sheep	% of Total	Heads of Goat	% of Total	Total	% of Total
South Africa	14 000 000	4,6%	1 600 000	4,5%	25 000 000	7,6%	6 200 000	1,8%	46 800 000	4,6%
Botswana	2 500 000	0,8%	13 500	0,0%	290 000	0,1%	1 700 000	0,5%	4 503 500	0,4%
Lesotho	665 000	0,2%	81 000	0,2%	1 230 000	0,4%	850 000	0,2%	2 826 000	0,3%
Mozambique	1 690 000	0,6%	1 800 000	5,0%	250 000	0,1%	4 350 000	1,3%	8 090 000	0,8%
Namibia	2 370 000	0,8%	72 500	0,2%	2 930 000	0,9%	2 235 000	0,6%	7 607 500	0,7%
Swaziland	635 000	0,2%	35 000	0,1%	36 000	0,0%	270 000	0,1%	976 000	0,1%
Zambia	4 026 658	1,3%	1 098 951	3,1%	240 000	0,1%	2 500 000	0,7%	7 865 609	0,8%
Zimbabwe	5 150 000	1,7%	650 000	1,8%	375 000	0,1%	2 750 000	0,8%	8 925 000	0,9%
Africa	304 746 910	100,0%	35 732 880	100,0%	328 450 262	100,0%	347 957 726	100,0%	1 016 887 778	100,0%

Source: FOASTAT (2015)

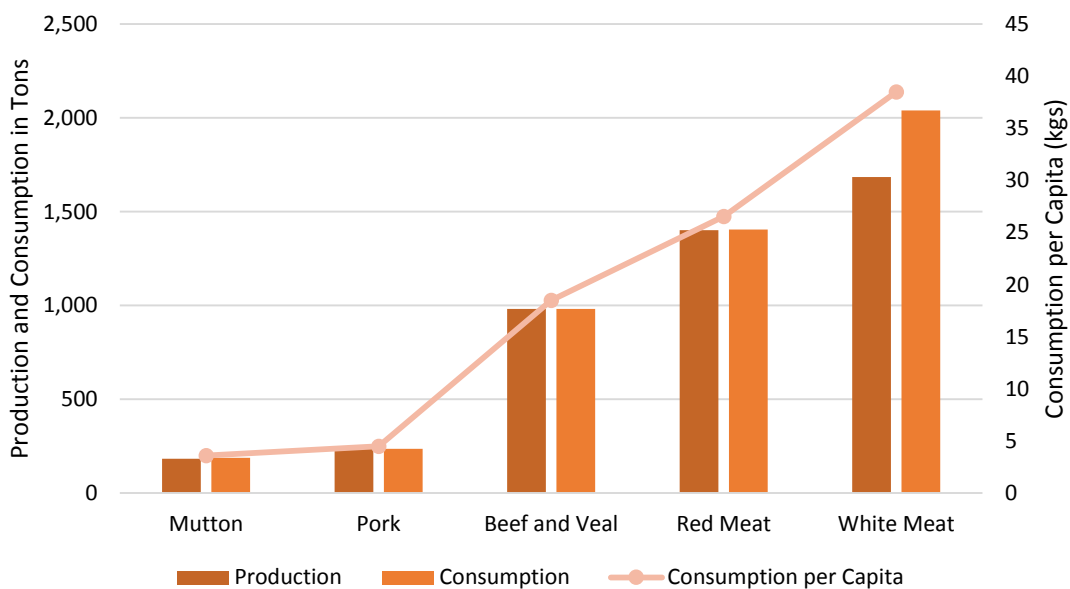
8.1.2 National Market

The South African red meat industry is well established and remains one of the most important agricultural sub-sectors in the country. It contributed approximately 14.0% to the gross value of agricultural production in the SA during 2013/14. It is estimated that the total number of cattle, pigs and sheep slaughtered increased by 9.5%, 3.1% and 11.2% respectively from 2012/13 to 2013/14.

The cattle and calves slaughtered market earned R 25.449 billion between April 2014 and March 2015, with the sheep slaughtered market earning R6.008 billion over the same period. In comparison, poultry meat earned R35.573 billion, and the animal product market as a whole earned R105.420 billion.

South African red meat production is largely in line with red meat consumption, with the short fall imported into the country. This is presented graphically in Figure 8.1. In recent years, the quantity of red meat imported for consumption has been on the decline, especially in the 2013/14. Mutton imports have declined over the 10 year period from 34 800 tons to a mere 7 100 tons, while beef imports have likewise dropped considerably from 56 000 tons to 20 000 tons. Pork import figures were unavailable, however South Africa produced 300 tons more pork than was consumed in 2013/2014. Imports of red meat decreased from 43 120 tons in 2012/13 to 23 010 tons in 2013/14, a decrease of 46.6%.

Figure 8.1 South African Red Meat Production, Consumption and Consumption/Capita, 2013/14

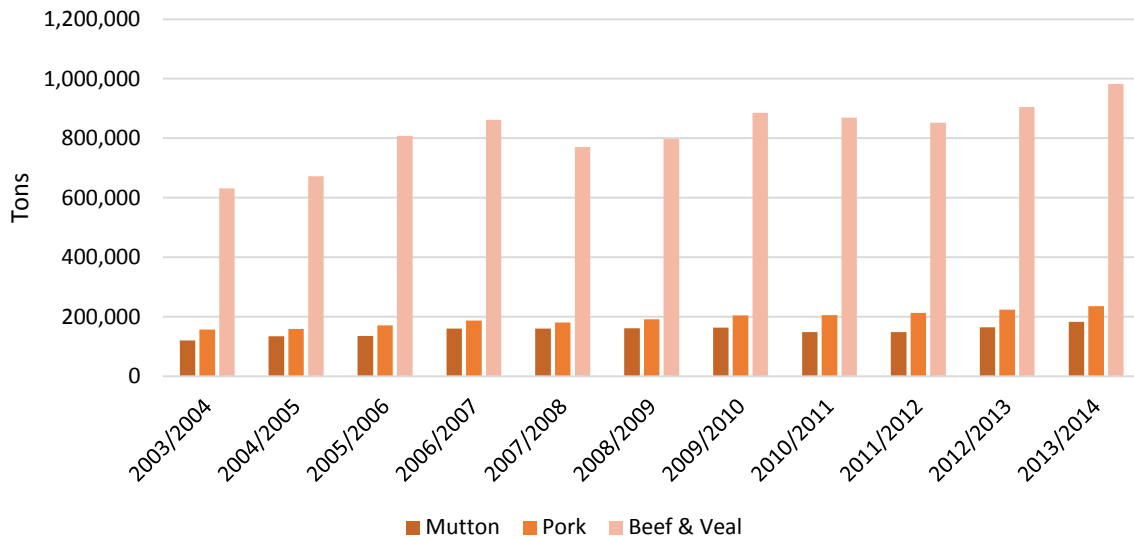


Source: DAFF (2015A)

8.1.3 Production

Figure 8.2 illustrates the growth in production of beef, pork and mutton¹ since the 2003/04 season. Red meat production has increased steadily year on year over the 2003/04-2013/14 period, with mutton production increasing by 52.5%, pork production increasing by 50.7%, and beef & veal production increasing by 55.5%.

Figure 8.2 South African Red Meat Production



Source: DAFF (2015A)

8.1.4 Production by Province

Major production of certain livestock is concentrated in certain provinces, and the provincial production dynamics are discussed in this section.

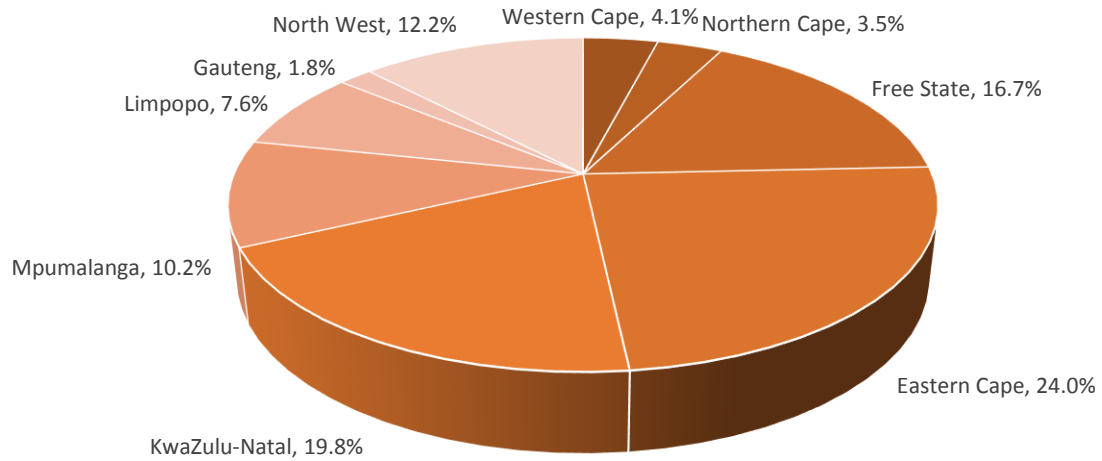
Cattle

Cattle populations are found throughout the country, but predominantly within the Eastern Cape (24.0%), KwaZulu-Natal (19.8%), Free State (16.7%) and North West (12.2%) provinces. Herd sizes vary according to type of cattle. Beef cattle herds range from fairly small herds of less than 20 heads of cattle, to large farms and feedlots environments with well over 1 head of cattle. The production of weaners for the feedlot industry is the most frequent form of cattle farming in South Africa, such that feedlots account for approximately 75% of all beef produced in the country.

The total number of cattle in South Africa at the end of August 2014 is estimated at 13.81 million, comprising various international dairy and beef cattle breeds as well as indigenous breeds such as the Afrikaner and the Nguni. Beef cattle contribute approximately 80% of the total number of cattle in the country, translating into an estimated 11.04 million animals, while dairy cattle make up the remaining 20%.

¹ Chevon, while produced within the country, is primarily for export and is not included in the statistics for consumption and production. Goat populations peaked in 1987, with 2 989 000 goats in the country, and has since been on a general decline, with average annual growth of goat herds between 2005 and 2014 as low as -0.7%. Goat herds have dropped below 2 million animals in 2014, to 1.987 million, the lowest value in the provided record (1980 to 2014).

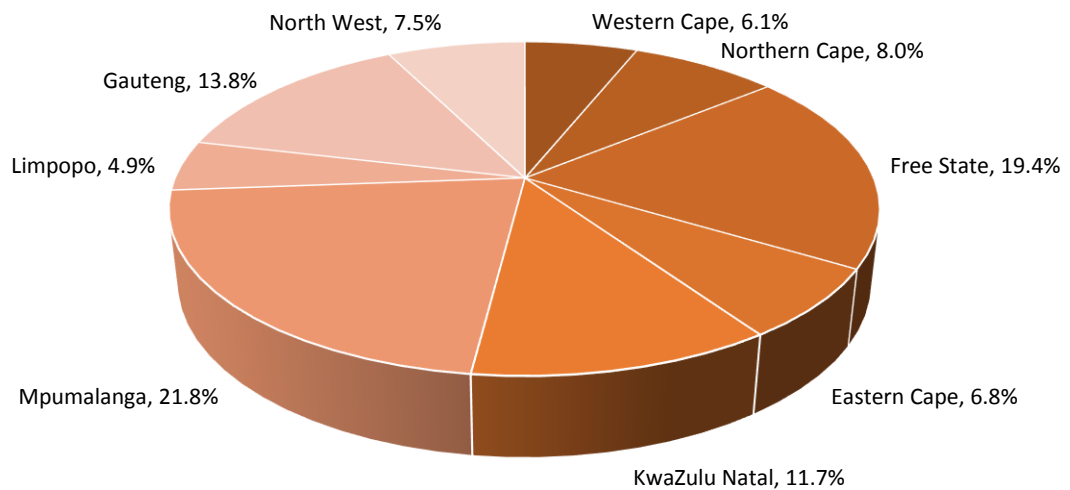
Figure 8.3 Distribution of cattle by province



Source: DAFF (2015B)

In terms of production, 2.707 million cattle were slaughtered in the 2014 season, with the 1.116 million of these slaughtered in Mpumalanga and Free State. Cattle slaughtering statistics, when compared to those of sheep and pigs indicate that the slaughtering of cattle is shared somewhat evenly, especially when compared to sheep, between provinces. The provincial breakdown can be seen in Figure 8.4.

Figure 8.4 Slaughtering of Cattle by province

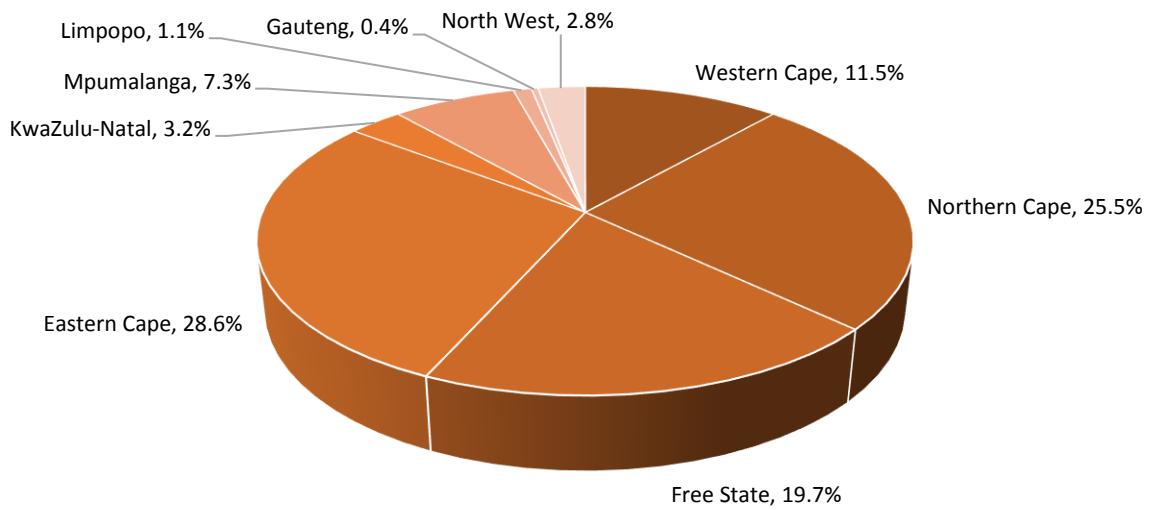


Source: Red Meat Levy Admin (2015)

Sheep

Sheep farms are found in all provinces, however, the majority are concentrated in the more arid regions of the country. The total number of sheep in South Africa at the end of August 2014 was estimated at 24.38 million, 0.6% lower than the previous year. The provinces with the largest sheep populations are the Eastern Cape (28.6%), Northern Cape (25.5%), Free State (19.7%) and the Western Cape (11.5%).

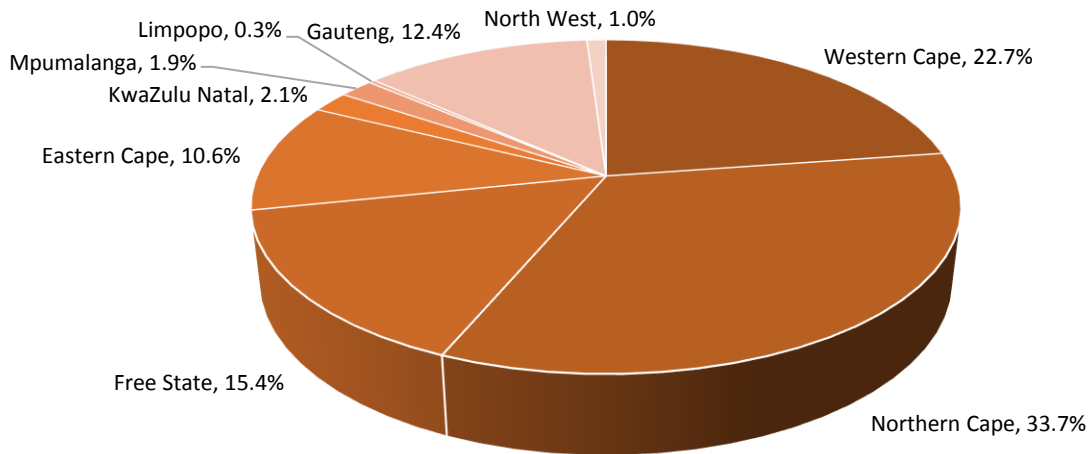
Figure 8.5 Distribution of Sheep by Province



Source: DAFF (2015B)

In terms of production, 5.492 million sheep were slaughtered in 2014, with main provinces in which this was undertaken the Northern Cape, the Western Cape and the Free State. The provincial breakdown can be seen below.

Figure 8.6 Slaughtering of sheep by province

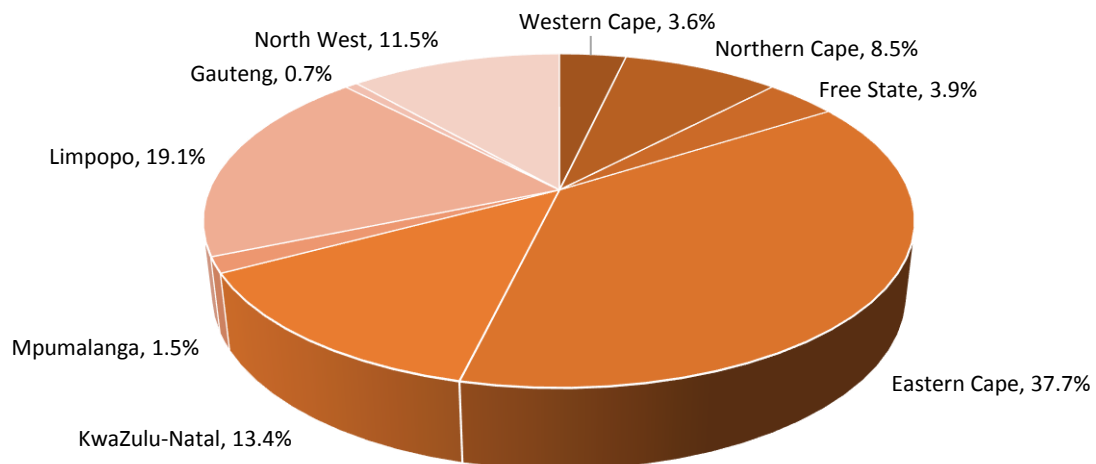


Source: Red Meat Levy Admin (2015)

Flock sizes vary between less than 50 and 1 800 animals, with the larger herds found in the Eastern, Western and Northern Cape provinces.

Goats

Goat populations are found mainly in the Eastern Cape (37.7%) followed by Limpopo (19.1%), KwaZulu-Natal (13.4%) and North West (11.5%) provinces. Estimates indicate that there was a decrease of 0.9% in the number of goats between August 2013 and August 2014, to 5.976 million in August 2014.

Figure 8.7 Distribution of goats by province

Source: DAFF, 2015B

Flocks of goats intended for meat production are usually smaller than sheep flocks, averaging approximately 300 goats per farm. Angora goats are kept primarily for mohair production, while Boer goats are for meat production, and both are included in the above statistics. Some producers have adopted a market differentiation strategy by producing goat's milk and these producers are increasing in numbers. Chevron is not consumed in significant quantities locally, however there is a large export market contained within the African continent, that South African goat producers cater towards.

8.1.5 Local Consumption

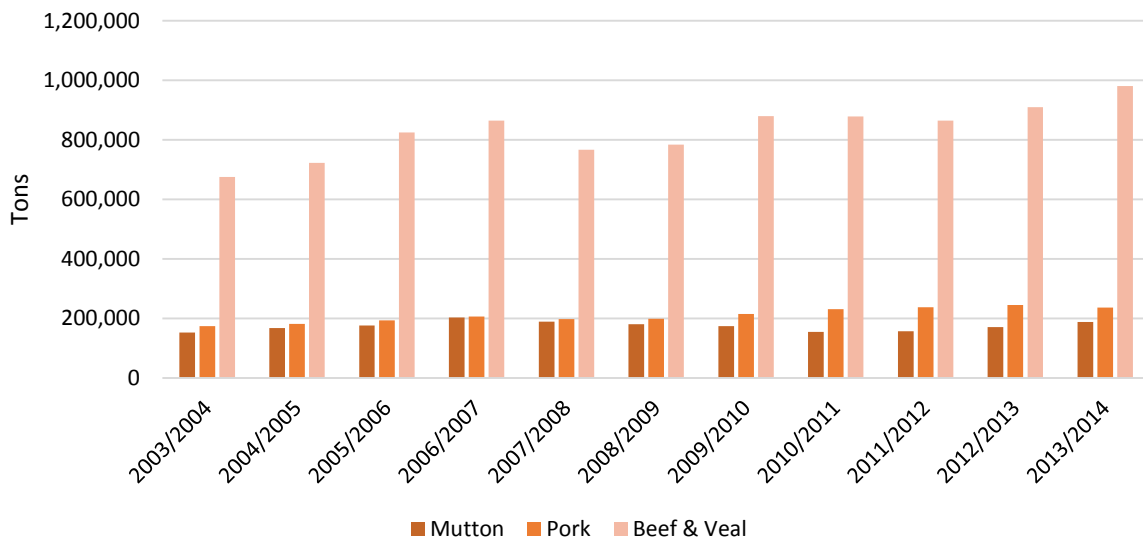
The industry is experiencing pressure from various sources, most notably increased competition from overseas producers and changes in consumer preferences towards poultry and other substitute goods. This has resulted in red meat consumed per capita remaining relatively stagnant over the last few years, fluctuating between 24kg and 26kg per capita. This can be linked to the declining per capita disposable income, which encourages the substitution of red meat for other products, such as poultry.

Although per capita consumption is stagnant, total consumption in tons has increased over the 2003/04-2013/14 period. In 2014 national consumption of red meat totalled 1 405 000 tons, including 188 000 tons of mutton, 236 000 tons of pork and 981 000 tons of beef & veal. The consumption of white meat is 45% higher than that of red meat, with 2 040 000 tons consumed in South Africa in 2014.

Figure 8.8 provides red meat consumption over a ten year period. Mutton consumption was higher than production by some 32 700 tons in 2003/04, with consumption increasing to 188 000 tons in 2013/14, with a deficit of only 4 600 tons. Mutton consumption grew 9.9% between 2012/13 and 2013/14, whilst production increased by 11.6% in the same period.

Pork production increased by 5.4% over the 2012/13 to 2013/14 period, whilst consumption decreased by 3.7%. Beef & veal production increased by 8.6% whilst consumption grew 7.6% in the same period. Since 2003/04 consumption has grown on all products with mutton, pork, beef & veal growing by 22.9%, 35.6% and 45.3% respectively.

Figure 8.8 South African Red Meat Consumption



Source: DAFF, 2015A

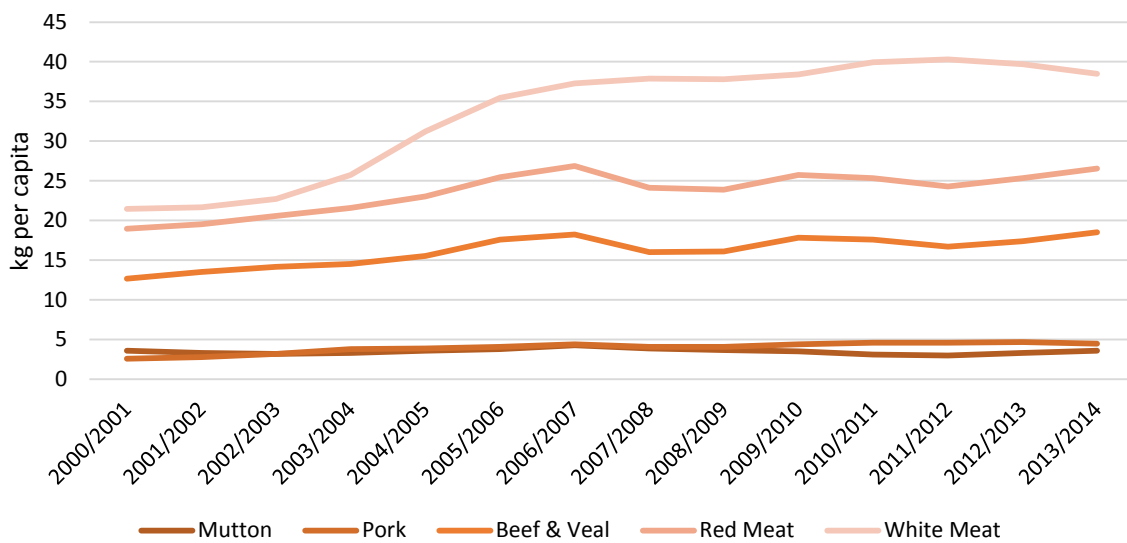
South African per capita consumption of meat products shows consumption relative to the population size, as indicated in Figure 8.9. The changes in the red meat per capita consumption were largely attributed to changes in consumption of beef & veal, which increased by 45.9% since 2000. In comparison white meat consumption per capita increased by 79.2% over the same period. Red meat consumption per capita can be seen to mirror the beef graph line very closely, also increasing by 39.9% over the 2000/01 – 2013/14 period. Red meat consumption per capita peaked at 26.87kg per capita in 2006/2007, higher than the current consumption per capita in 2014 at 26.53kg per capita.

Mutton consumption per capita has remained fairly stable, with 3.6kg per capita consumed in both 2000/2001 and 2013/2014, a zero percentage change. Pork consumption per capita increased by 73.1%, from 2.6kg to 4.5kg over the 2000/01 – 2013/14 period.

In 2014 consumption per capita grew for that year by 6.4% for beef & veal, 9.1% for mutton and -4.3% for pork. Red meat consumption per capita in total grew by 4.7% in 2014, in contrast to white meat, which dropped by 3.0%.

White meat consumption per capita has increased sharply since 2004/05 as can be seen when compared to the earlier years. Per capita consumption of white meat started to deviate significantly from the red meat consumption trends during that year and this trend has continued since that point. Indicating the increased competition Red Meat has received from substitute products.

Figure 8.9 South African Meat Consumption per Capita



Source: DAFF, 2015A

8.1.6 Local Market Developments

The most significant development in the red meat industry has been vertical integration, occurring through feedlots entering the red meat market; the marketing regime; and the major expansion of the abattoir industry.

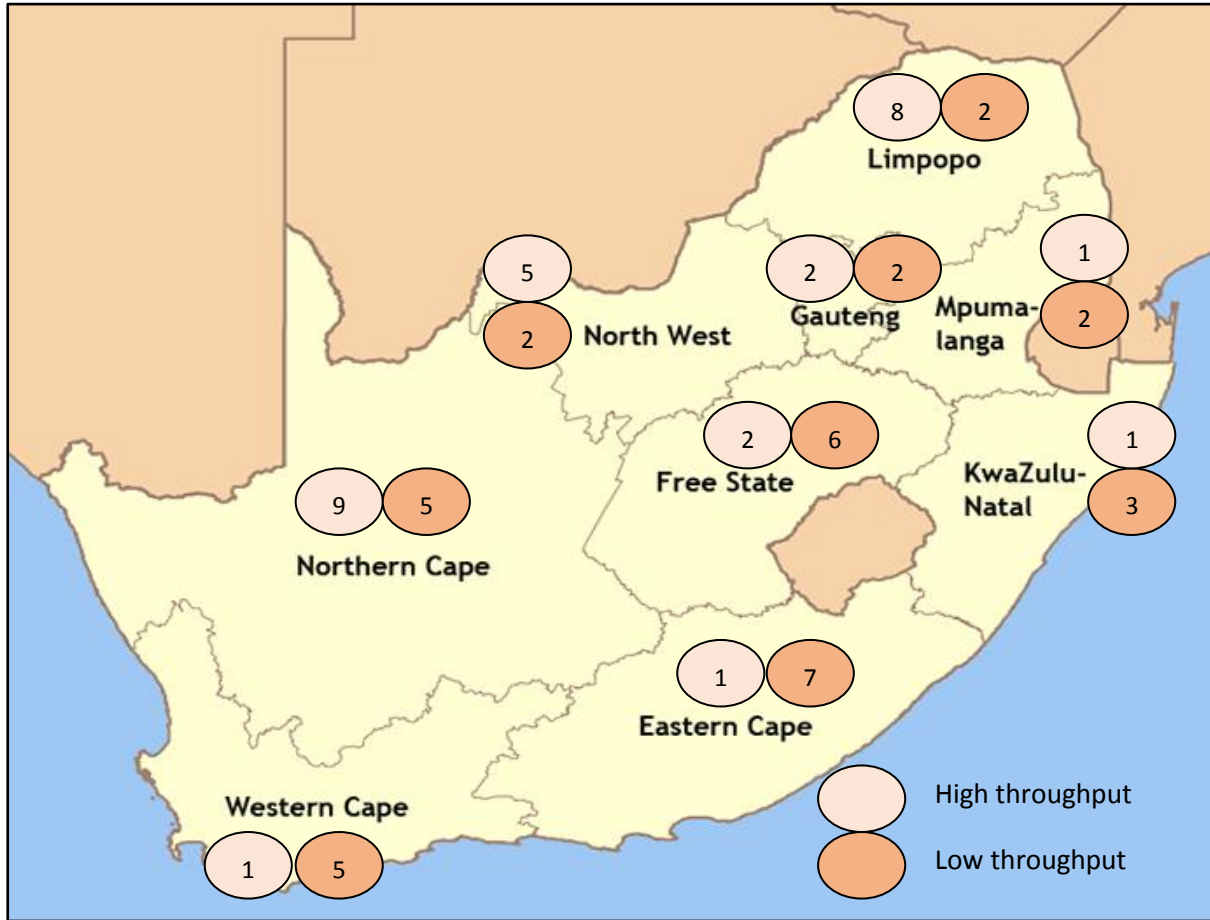
Vertical integration has characterised the industry over recent years, mainly through larger feedlots establishing their own abattoirs. Furthermore, some feedlots have included further integration down the value chain and sell directly to the customer through their own retail outlets, for example Eskort.

The previous market regime only allowed meat wholesalers to purchase carcasses on a wholesale system. Now, wholesalers can source live animals (excluding weaners) directly from farmers and feedlots on a willing buyer/willing seller basis. This allows the wholesaler to take ownership of the animal prior to slaughtering. The animals are then distributed to an abattoir of the wholesalers’ choice from which point the carcasses are distributed to various retailers.

The deregulation of the red meat industry in the early 1990s has seen a significant expansion in the number and capacity of abattoirs. The industry can be further divided into those abattoirs linked to feedlots, the wholesale sector, or municipal owned, and those that are owned by farmers and small, medium and micro-sized enterprises (SMME’s).

Approximately 449 red meat abattoirs currently operate in South Africa. According to the Department of Agriculture, Forestry and Fisheries (DAFF) approximately 60% of all slaughtering is carried out by abattoirs that are highly regulated with a high throughput capacity. Other large-scale abattoirs, known as low throughput abattoirs also operate within the province, with approximately 34 spread throughout the country. Many of these abattoirs have linkages with feedlots. Approximately 60% of the 80% of livestock that go through feedlots are slaughtered by abattoirs that are vertically integrated. The remaining abattoirs are considerably smaller, servicing small livestock producers and localized population centres, most commonly known as butchers and rural throughput abattoirs.

Figure 8.10 Abattoir distribution by province

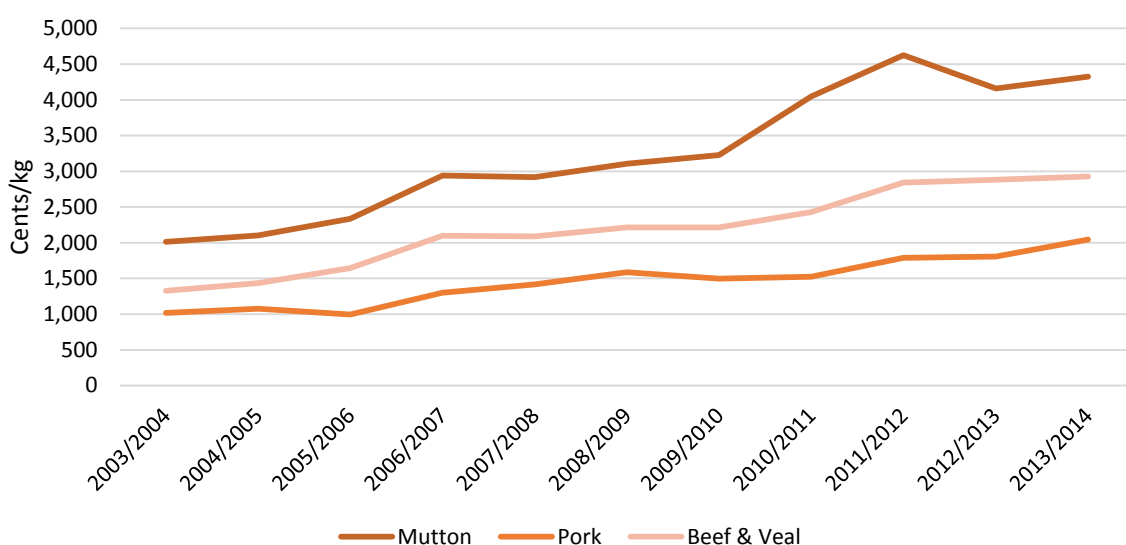


Source: DAFF, 2013

8.1.7 Price

South African market price is measured through the price per kilogram of the chilled carcass post slaughter. As can be seen within the graph below, all three commodities have seen an increase in their price over the 2003/04 to 2013/14 period. Prices increased for all products in 2006/07 and 2011/12. Mutton prices have been the most vulnerable to these price increases. Pork prices are the most stable of the three, with beef and veal prices performing between the two. In terms of total growth, cattle carcasses experienced the greatest increase in value between 2003/04 and 2013/14, increasing by 120.9%. Sheep carcasses increased by 114.8%, while pig carcasses increased by only 100.5% over the same period. In the most recent period, of 2012/13 – 2013/14, the inverse is true, with pork prices increasing by 13.2%, mutton by 4.0%, and beef & veal by only 1.6%.

Figure 8.11 South African Price per Chilled Carcass



Source: DAFF, 2015A

Abattoirs generally purchase livestock from producers or feedlots at a price that is based on the cold carcass weight of the animal. The price paid for the carcass further depends on the age and type of slaughtered animal, as well as fat content. The carcass is first classified according to a classification system, and a price is then determined.

The classification system is derived from two characteristics, namely age and carcass fat content. Animal carcasses are classified into four different groups according to age which is determined by the number of permanent incisors. The carcasses are then further classified according to subcutaneous fat content on a scale of 0 to 6 (i.e. 0 = no fat, 6 = high fat content).

Table 8.5 summarises the South African carcass classification described above. Animal suppliers are penalised with lower prices for older aged animals with high fat contents.

Table 8.5: South African Carcass Classification System

Trait	Beef/Sheep/Mutton							
Age	A		AB		B		C	
# Permanent Incisors	0		1-2		3-6		>6	
Roller Mark	AAA		ABAB		BBB		CCC	
Colour	Purple		Green		Brown		Red	
Tenderness	Most Tender		Tender		Less Tender		Least Tender	
Fat Grade	0	1	2	3	4	5	6	
Beef (Fat thickness mm)	0	<1	>1<3	>3<5	>5<7	>7<10	>10	
Sheep (Fat thickness mm)	0	<1	>1<4	>4<7	>7<9	>9<11	>11	

Source: Olivier, 2004

Abattoirs and meat processors sell products that are priced according to meat cut and quality. Typically, A-grade meat products fetch a higher price than C-grade products do. Lower grade products, however, can go through a value adding process in order to increase margins. For example, lower grade meats marinated, spiced, pre-cooked, or minced to produce burger patties and meat balls.

Hides are also produced from the abattoir, predominantly cattle hides, although a few sheep, goat and pig skins will also be produced. The prices for the hides are determined by hide quality and weight. Cattle hides currently trade at between R14.00 and R15.00 per kilogram, while sheep pelts trade for between R70.00 and R120.00.

8.1.8 Industry Associations

The Red Meat Producers' Organisation (RPO) and the National Emergent Red Meat Producers' Organisation (Nerpo) represent producers in the commercial and emerging agricultural sectors respectively for the red meat production market. The Red Meat Abattoir Association (RMAA) also serves as a centralized point organising training sessions, to ensure hygiene and legislation adherence, as well as an information source for established and emerging abattoirs within the country.

The South African Pork Producers' Organisation (SAPPO) is the official association of pork producers in South Africa. The organisation is primarily concerned with administration, liaison with government, the promotion of pork and pork products and matters of national interest such as health and research.

Sheep producers are represented by organisations that govern and assist the mutton and the wool industry. The sheep industry also has various breeders' associations, with the Dorper Sheep Breeders' Society of South Africa and Merino SA being the most prominent. Cape Wools SA and the National Wool Growers Association serve to protect and promote farmer's interests and protect the wool industry and legislative environment. Cape Mohair and Wool serves as a wool market.

8.2 Value Chain Assessment

The following section provides an overview of the red meat value chain. It describes each step of the value chain, the structure of the value chain and the nature of inputs and outputs at various stages. The value chain assessment has been divided by the goat and sheep value chain and cattle value chain.

8.2.1 Goat and Sheep

The Eastern Cape is regarded as South Africa's livestock province with significant numbers of cattle, sheep and goats. Domestic and foreign markets are available in terms of organic livestock production, product beneficiation and livestock bi-products (leather). The agricultural opportunities in the province for livestock, if harnessed, could yield significant returns in terms of the following:

- Organic meat production - organic meat supply is becoming a global trend. The Eastern Cape provides opportunities for investment in primary and secondary organic meat farming for both the domestic and international market.
- Livestock farmers - the province is looking to establish new commercial livestock enterprises. Interested investors can partner with community-based organisations and agricultural co-operatives to utilise local skill and knowledge around livestock farming in the Eastern Cape.

Sheep and goat breeding - sheep and goat breeding, as part of community agricultural development, has significant opportunities in the rural areas. Opportunities exist in supply of young sheep and goats to rural farmers, meat production, hide beneficiation and the provision of alternative breeding stock.

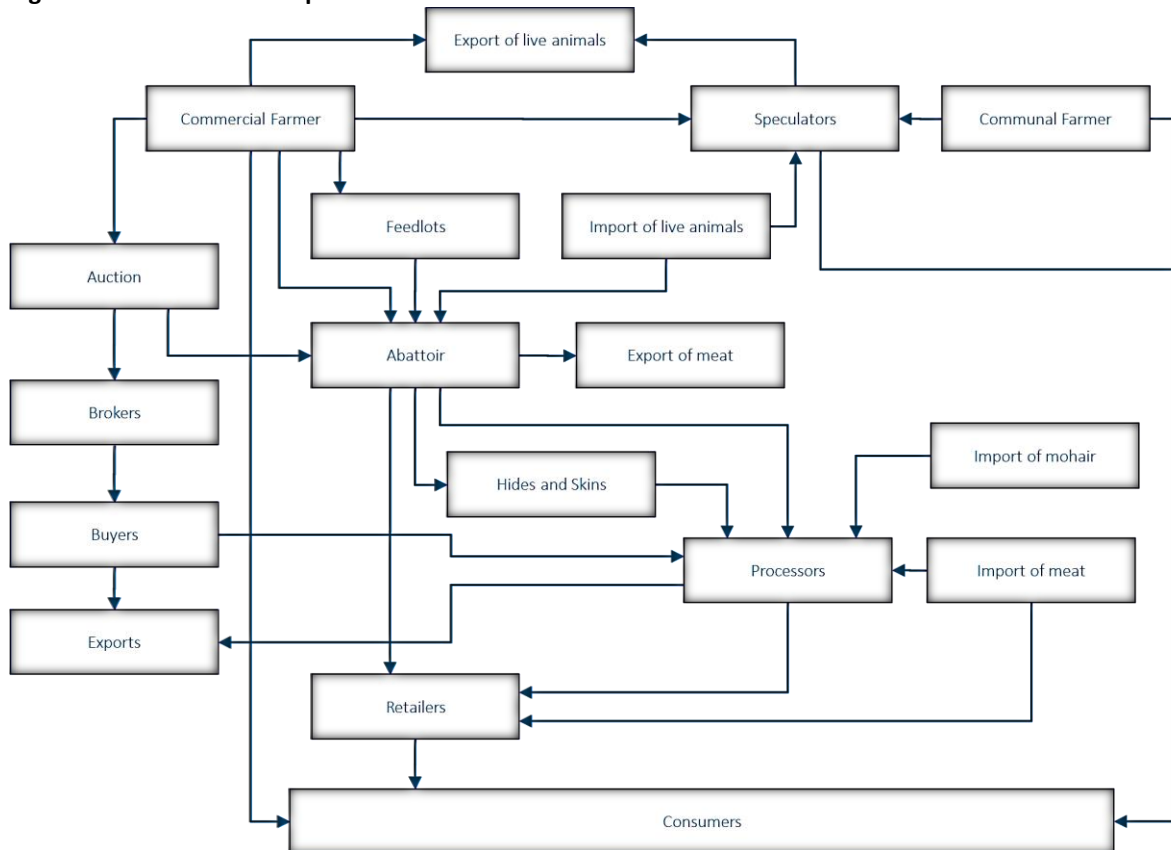
Upstream activities

As goat and sheep production is classified as primary production the Upstream activities relevant to the value chain are primarily the input supplies used in the production system. The major inputs for livestock production

include animal genetic resources, feeds and forages, veterinary drugs, vaccines, machinery equipment as well as skills. Most of these inputs are supplied by Agricultural Co-operatives in the respective areas. The Eastern Cape province has three major Agricultural Co-operatives namely:

- OVK – TRADE
- Humansdorp Ko-op
- East Cape Agri – Co-op Ltd / BKB LTD

Figure 8.12: Goat and sheep value chain



Source: Urban-Econ, 2015

Primary production activities

Goats are farmed throughout South Africa. In regions where bush encroachment is rife goats are farmed together with cattle. The robust Boer goats and hardy African goats fare well in these combined production systems. In the dry North West region, extensive ranching of goats is done together with Karakul, Persian and Dorper sheep. Angora goats are an important industry in the Eastern Karoo. Farming with Angoras extends into the temperate regions and to the Lesotho highlands. Milk goat farming is not a major industry. However, given the high occurrence of cow milk allergy, there are considerable opportunities for this industry to expand.

Goats make a valuable contribution to the livestock industry in southern Africa. In the rural, economically deprived regions goats are a ready source of cash-income and food and social security. The greatest need for research into the constraints in livestock production lies in these regions.

There are various marketing channels

- Auctions
- Production sales
- Contract Selling

- Direct Sales

Lambs are marketed at between six months and two years in order to obtain the best prices for quality animals. The slaughter market generally requires an animal weighing between 30kg and 45kg on the hoof.

Downstream activities

Products

The main products from goats are meat, milk, hides and fibres. The main products from sheep are mutton, wool and diary.

Meat products

The Boer goat is regarded as the only breed of goat on earth that is bred exclusively for meat. Slaughter-masses vary from 35 to 40 kg for rams, and from 30 to 35 kg for ewes and adult animals.

Milk production

- It is claimed that goat's milk is better than cow's milk for human consumption.
- A comparison of goat's milk and human breast milk shows the following:
- The protein content of goat's milk is higher than that of breast milk - 25% in the case of goat's milk, against 7% for humans.
- The total fat content in both cases is virtually identical.
- Goat's milk contains more than the required amounts of calcium and phosphate for babies, but without any detrimental effects on the child.
- As in the case of cow's milk, untreated goat's milk can also transmit diseases such as brucellosis, but not tuberculosis, since goats do not readily succumb to tuberculosis.
- Goat's milk tends to be more suitable for the treatment of stomach ulcers.
- In poor countries where the consumption of meat is low, goat's milk provides for an important daily intake of protein, phosphorus and calcium which would not otherwise have been available due to the severe shortage of cow's milk.

Fibre production

Boer goats produce both fine and coarse fibre. A very fine fibre known as cashmere, develops on the skin beneath a longer type of hair. The long hair is combed. Any long-tooth comb may be used. Comb downwards by holding the head of the goat in the standing position. A woolly neck gives an indication that the goat has the potential to produce more cashmere.

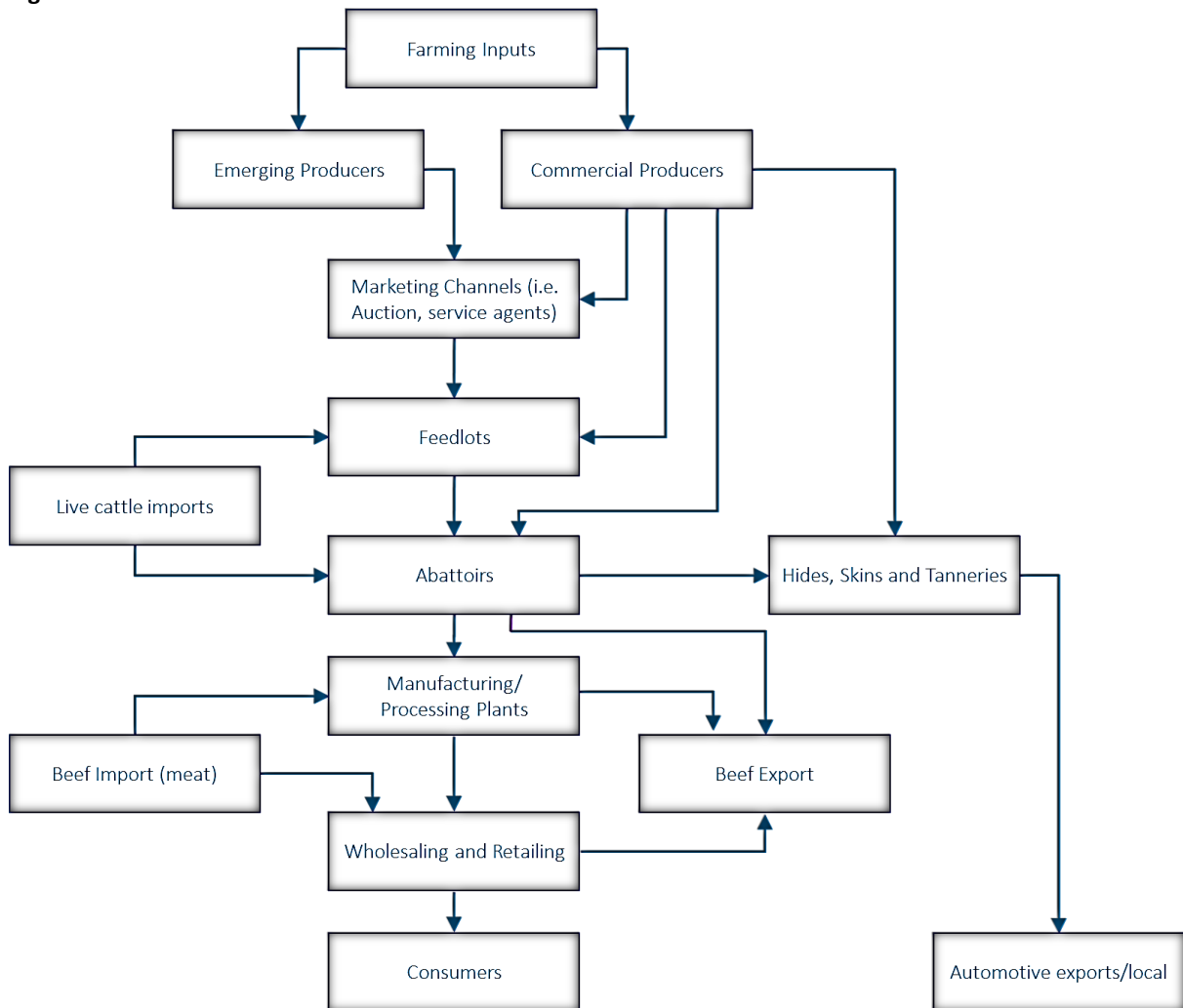
The lighter (whiter) the colour and the lower the thickness of the fibre, the higher the price it will fetch. The downy hair grows from December until June to provide protection against the winter's cold, while moulting takes place during the early spring. All animals in a herd or flock do not moult simultaneously. Cashmere can be harvested from the age of six months.

Agro-processing opportunitites

Livestock: Abattoirs to be utilised with sufficient throughput. Distance from market important. Capacity to management abattoirs. The district should also consider processing of lower grade beef.

8.2.2 Cattle

Figure 8.13: Cattle Value Chain



Source: Urban-Econ, 2015

Upstream activities

As beef production is classified as primary production the upstream activities relevant to the value chain are primarily the input supplies used in the production system. The major inputs for livestock production include animal genetic resources, feeds and forages, veterinary drugs, vaccines, machinery equipment as well as knowledge. Most of these inputs are supplied by Agricultural Co-operatives in the respective areas. The Eastern Cape Province has three major Agricultural Co-operatives namely:

- OVK – TRADE
- Humansdorp Ko-op
- East Cape Agri – Co-op Ltd / BKB LTD

Primary production activities

Beef is produced throughout South Africa. The amount of beef produced depends on the infrastructure such as feedlots and abattoirs, not necessarily by the number of cattle available in those areas. South Africa has highly developed transport infrastructure that allows movement of cattle and calves from one area to another, even from other countries such as Namibia. For these reasons, Mpumalanga commands the greatest share of beef

production in South Africa accounting for 23% of the beef produced in 2009 followed by Free State and Gauteng taking up 20% and 13% respectively.

Downstream activities

The red meat industry evolved from a highly regulated environment to one that is less regulated today. Various policies, such as the distinction between controlled and uncontrolled areas, compulsory levies payable by producers, restrictions on the establishment of abattoirs, the compulsory auctioning of carcasses according to grade and mass in controlled areas, the supply control via permits and quotas, the setting of floor prices, removal scheme, etc., characterised the red meat industry before deregulation commenced in the early 1990s. Since the deregulation of the agricultural marketing dispensation in 1997, the prices in the red meat industry are determined by demand and supply forces. Prices of beef increased significantly from 1999/00 to 2008/09 mainly due to increased consumption caused by rising living standards of larger number of consumers and low domestic production. There was an increase of R13.77/Kg in 2008/09 compared to 1999/00.

The market players in the beef industry are vertically integrated. They have their own feedlots, abattoirs, processors and distributors. It is estimated that there are approximately 50 000 commercial farmers currently farming with livestock. This includes producers that keep livestock as their main enterprise and those that keep livestock as a secondary enterprise. They own around 8.2 million cattle. There are 240 000 small-scale farmers and 3 million subsistence farmers that own around 5.69 million cattle.

The beef supply chain has become increasingly vertically integrated. This integration is mainly fuelled by the feedlot industry where most of the large feedlots own their own abattoirs, or at least have some business interest in certain abattoirs. In addition, some feedlots have integrated further down the value chain and sell directly to consumers through their own retail outlets. Some abattoirs have also started to integrate vertically towards the wholesale level. Under the previous marketing regime, wholesalers mostly bought carcasses through the auction system. Currently, many wholesalers source live slaughter animals (not weaners) directly from farmers or feedlots on a bid and offer basis, i.e. they take ownership of the animal before the animal is slaughtered. The animal is then slaughtered at an abattoir of the wholesaler's choice, where after the carcass is distributed to retailers. In some instances, the public can also buy carcasses directly from wholesalers. The abattoir industry has expanded tremendously in number and in capacity. In this regard, it is important to note that this industry can be divided into those abattoirs that (i) are linked to the feedlot sector and the wholesale sector, or are owned by municipalities and (ii) those that are mainly owned by farmers and SMME's. The former abattoirs are mainly class A and B abattoirs, whereas the latter are usually classified as C, D and E class abattoirs. The beef industry produces around 808 800 tons of meat and imports around 7 059 tons while exporting 3 537 tons. Per capita consumption is around 20.87 kg and number of consumers is around 48.6 million.

Major beef feedlots active in the in the Eastern Cape Buying Markets:

- Austin Evans Feedlot – Somerset East
- ADAM AGRI – Colesburg
- BEEFCOR – Bronkhorstspuit
- Beefmaster – Christiana
- Chalmar Beef – Wingate Park
- DC Louw Feedlot – Adelaide
- Karan Beef – Heidelberg
- Sparta Beef – Marquard

Agro-processing opportunities

Livestock: Abattoirs to be utilised with sufficient throughput. Distance from market important. Capacity to management abattoirs. Consider processing of lower grade beef.

8.3 Competitors

While there are numerous established commercial farmers in the District competition is seen as an advantage rather than a disadvantage in this situation. Commercial farmers have established contacts and networks that they can take advantage of. This information can be accessed through various government programmes which encourage mentorship of farmers. The benefits of farming in areas that already have a strong presence of farmers is possibly more of a benefit than a disadvantage. The largest form of competition will come in the form of cheaper imports of poultry from the USA as part of the AGOA act that was recently amended.

8.4 Stakeholders

There are a number of organisations involved in the red meat value chain in South Africa. One of the key organisations is Red Meat Producers Organisation (RPO). RPO is service organisation that acts as mouthpiece for South African commercial red meat producers. It is an independent producer's organisation that strives to dynamically promote the sustainability and the profitability of the red meat industry in South Africa. Table 8.6 shows other key stakeholders in the red meat sector in South Africa.

Table 8.6: Red Meat Stakeholders

Stakeholder	Description
Red Meat Abattoir Association (RMAA)	The RMAA is an independent membership-based organisation. Its primary aim being training at all abattoirs in South Africa. The Association is a representative forum for red meat abattoir owners in South Africa and aims to establish communication and co-operation between the members of the Association.
Livestock registering federation	The principal business and purpose of the Livestock Registering Federation shall be to unite, promote and protect its members acting as Independent Registering Authorities (animal Improvement Act 62 of 1998), into an affiliated federation.
South African Meat Industry Company (SAMIC)	SAMIC is a quality assurance company which was created by the Red Meat Industry of South Africa to ensure the quality and safety of meat in South Africa.
National Emergent Red Meat Producers' Organisation (NERPO)	The primary aim of NERPO is to commercialise the developing agricultural sector and ensure meaningful participation of black individuals within the mainstream commercial agribusiness sector, hence ensuring the long term sustainability of the agricultural sector in South Africa.
Red Meat Industry Forum	The Red Meat Industry Forum of South Africa represents all the most nationally representative sector specific role player organisations within the red meat value chain.
South African Feedlot Association (SAFA)	The SA feedlot industry was started during the 1960s by a few entrepreneurial cattle farmers in the grain producing areas who were forced, due to a lack of grazing, to "over-winter" their stock on grain and/or potato by-products and hay of inferior quality.

Stakeholder	Description
International Quality Assurance Services (IMQAS)	IMQAS services the hygiene and quality needs of the meat industry in South Africa on an independent basis. Their services are available to primary producers, abattoirs and processing establishments.
South African National Halaal Authority (SANHA)	SANHA is a non-profit organisation promoting professionalism in the certification of Halaal products.
South African Pork Producers' Organisation (SAPPO)	SAPPO is the official association of pork producers in South Africa. The organisation is primarily concerned with administration, liaison with government, the promotion of pork and pork products and matters of national interest such as health and research.
Red Meat Research & Development SA	The specific aim of the RMRD SA and its Project Committee is to co-ordinate and fund research projects.

8.5 Technology

Agri-Park farmers can make use of a wide variety of technology to improve their access to markets and the efficiency of their production. Emerging farmers in South Africa have traditionally lagged behind in the usage of technology in their production and marketing activities. There is however more information and initiatives available today to connect emerging farmers with the latest technology. The areas in which innovation is improving efficiencies in small holder agriculture include nanotechnology, genetically modified crops, GIS and remote sensing, cellular phones, information technology and applications etc. As with any technology, it is important to strike a balance of mechanisation and job creation which improves skills and creates meaningful jobs.

To farm and manage livestock various equipment and infrastructure will be needed such as management and farming software, boreholes, water pumps and storage, animal reproduction, handling, feeding, watering & health equipment and training, veld management techniques to prevent soil erosion, security technology, and other innovations.

Recent developments in farming will have to be considered in order for any farming activity to be competitive in the future. Three areas in which technology is impacting on the livestock industry is in animal health practices, veld management and automated refilling water troughs.

Animal Health

Animal health practices are important in livestock farming to guarantee the survival of the animal and the quality and acceptability of the product for the commercialised market structures. There are two major methods in managing the health of animals: via vaccinations and via anti-biotics. Both of those methods are practiced within commercial operations, however the importance of these activities have not fully penetrated the small-scale market.

Vaccines contains inactive parts (usually the capsid) or molecules that resembles surface proteins of a pathogenic virus or bacterium, which are introduced into the animal's blood stream so that antibodies can be developed. This will enable the animal to develop immunity and to be protected against the pathogen when and if exposed to it later in life. New vaccines are constantly developed therefore it is important to consult with an animal health professional on the most appropriate vaccination program. Vaccines have a highly positive effect on disease control and even eradication. Vaccinated animals normally exhibit high returns on investment, as

there is less likelihood of losing the animal during the raising process. Costs associated with vaccination are normally low, and they require low levels of training to implement successfully.

Anti-biotics have two main applications in agriculture. The first is to treat infections, which is an important application, but too specialised a field to discuss in detail. Infection treatments are predominantly taken care of by animal health professionals. Secondly, anti-biotics serve as a routine feed supplement to animals in intensive farming systems (feedlots, piggeries, chicken houses, fisheries etc.) which can be considered a dangerous and unsustainable practice. This second method occurs as anti-biotics encourage increased growth rates and resistances against disease. However, the cost to society could be large and devastating, due to extensive untested treatment of medication to animals not necessarily requiring prolonged exposure to the chemicals. Prolonged exposure to the anti-biotics encourage drug resistance strains to develop that can potentially be carried over to the human population via consumption. The drugs are cheap to acquire, however to correctly implement, via the trained veterinary profession, does require substantial service charges.

Veld Management

Veld management practices serve two primary functions. Firstly, they prevent the encroachment of indigenous brush onto grazing areas, and, secondly, they enable land rehabilitation to other purposes. Two ways in which this can occur is by brush removal for input into related markets, and land rehabilitation practices.

A good example of brush removal is the potential contained within bush-to-feed converters. Brush removal enables production feed pellets from shrubs and trees. It also enables minor forestry production with thick branches and tree stems that cannot be converted into feed, can be sold as fire wood or converted to biochar. The practice is centred on converting a liability (bushes that reduce the carrying capacity of the veld) into a valuable asset (feed for game and cattle). And could serve as an effective method of bush encroachment control. The process requires some skills training and is moderately expensive to obtain and operate.

Land rehabilitation covers a range of technological processes, that can differ in complexity from as simple as brush packing to as complex as production of biodegradable or long lasting soil cloths and mesh materials. The main purpose of the rehabilitation is to stabilise soil, control or reverse existing erosion damage and restore degraded land so that it can again be utilised for agricultural purposes. Land rehabilitation also serves as a preventative measure for future soil degradation, by enabling vegetation on the land, preventing future problems. Depending on the type, extent and location of the rehabilitation, the required expenditure skills range from low to moderately high.

Automated-refill watering troughs

Providing water for livestock can be a drain on communal water resources and put unnecessary strain on communities, especially in times of drought. If animals are scattered in rural areas, it may be time consuming or difficult to access their water troughs to keep refilling them. Automated-refill water troughs seek to manage livestock water usage, by utilising water troughs fitted with a small reservoir and low pressure floating valves to enable automated re-filling.

These water-provision systems would be more resilient to evaporation, and when properly maintained ensure sufficient levels of water provision of animals, by minimising water contamination and the risk of wastage. Furthermore, the systems are consistent, preventing livestock tampering, and easy to clean. The cost of the system is relatively low, requiring an investment of a few thousand rand, and are also relatively simple to operate.

8.6 Demand and Needs Analysis

The following section discusses the demand for red meat in the Joe Gqabi DM market, based on historical consumption figures.

Opportunities exist for the following in the red meat market:

- Production/supply of animal feed
- Increasing existing capacity and development of new abattoirs
- Development of cattle feedlots
- Increasing herd size of beef cattle
- Long term opportunity for SMME cattle hide processing (tanneries) for the automotive industry

It is possible to provide an estimate for demand based on historical consumption figures and populations. The table below provides a summary on estimated demand on a national and provincial level.

At an average per capita consumption for red meat of 25.5kg per person (beef at 17.6kg, mutton at 3.3kg and pork at 4.6kg), there is a clear demand for red meat products in South Africa. Demand for red meat on a national level is approximately 1 320 149 million tons. In Joe Gqabi DM the demand for red meat is approximately 8 919 tons.

Table 8.7: Annual demand for red meat (kg tons)

Area of Demand	Estimated Demand
South Africa	1 320 149
Eastern Cape	167 332
Joe Gqabi District	8 919
Elundini	3 523
Senqu	3 421
Maletswai	1 117
Gariep	859

Source: Quantec 2013, Census 2011

The table below show the value of consumption on red meat annually in South Africa, the Eastern Cape as well as the JGDM and its local municipalities.

Table 8.8: Annual expenditure on red meat

Area of Demand	Estimated Demand
South Africa	R21 419 891 399,36
Eastern Cape	R1 569 235 619,09
Joe Gqabi District	R62 547 469,68
Elundini	R18 479 606,60
Senqu	R21 423 538,19
Maletswai	R13 193 961,14
Gariep	R9 450 363,75

Source: Quantec 2013

8.7 Socio-Economic

The Agri-Park project vision, as discussed in Chapters 1 and 2, outlines the importance of socio-economic development as an objective of the Business Plan. Socio-economic progress and development can be measured

in various ways, however the primary method of measurement selected for livestock commodity is job creation. Job creation is measured via the use of commodity labour multipliers, measuring the number of jobs created per R1 million produced directly into commodity production. The three relevant multipliers for the Joe Gqabi DM Red Meat Market are the:

- Direct Multiplier
- Indirect Multiplier
- Induced Multiplier (See Chapter 7)

The direct employment multiplier, is relatively low, with only 2.07 jobs created per million produced. The indirect multiplier is likewise low, at 1.61 jobs, and the induced multiplier is only 1.88 jobs (OABS Development, 2015). Therefore, according to the above, the total job multiplier is 5.56 jobs created per R1 million produced.

Table 8.9: Direct, Indirect and Induced Jobs Created in the Red Meat Industry

Sector	Direct	Indirect	Direct + Indirect	Induced	Total
Livestock Products	2.07	1.61	3.68	1.88	5.57

The three multipliers measure the total numbers of job created in an ideal economic environment for the Red Meat Market. However as the economic environment diverges away from the ideal environment, so do the multipliers. Livestock farming is not as labour intensive at small-scale production levels. The cattle commodity specifically does have an extensive value chain with job opportunities at production, processing, retailing and service level. Joe Gqabi District Municipality does not engage in large scale processing for red meat in the current environment, with only a few abattoirs in the district. Job multiplication in the current environment can be expected to marginally higher, as a result of the numerous small-scale producers in the region each requiring their own staff. Alternatively, due to the already established abattoir, indirect job multipliers can be expected to be marginally lower, until the need for additional abattoirs arise. Induced job creation from the income already received in the direct and indirect multiplier phases, however, could be increased, due to the receptiveness of the area to low-income earners. This is important to note for the development of the Agri-Park.

Information that is available on the District's livestock production and the potential number of hectares, together with the Bureau for Food and Agriculture Policy, have been used to estimate the employment opportunities that livestock production can contribute in the 10-year period. The Agri-Park can provide approximately 540 employment opportunities from the programme. It must be noted however that these figures are purely indicative and will change through the development of the Agri-Park.

8.8 Contribution to Food Security

DAFF launched a Zero Hunger Policy in 2012 in order to curb poverty and improve food security for vulnerable communities who are in need of support. The Zero Hunger Policy was created to uphold Section 27,1 (b) of the bill of rights which states that every citizen has the right to food and water and Section 28,1 (b) which states that every child has the right to basic nutrition shelter and basic care and social services. The policy suggest that adult daily calorie should be 1792 kcal (7502kj) per day for an adult and sets a food poverty line of R260 per individual expenditure for food every month (DAFF, 2002). Meat consumption is based largely on availability, price and tradition. Meat production is a very complex operation depending not only on demand (which is usually based on price and income) but on many social and economic influences such as official policy, price support mechanisms, and interrelations such as the interaction between beef and milk production etc. (FAO, 2002). While it is clear that meat is not essential in the diet the inclusion of animal products makes it easier to ensure a good diet. Many diets in developing countries are based on cereals or root crops and are relatively bulky, especially where fats are in short supply, and this can limit the total energy intake (FAO, 2002). The importance

of meat in the diet is as a concentrated source of protein which is not only of high biological value but its amino acid composition complements that of cereal and other vegetable proteins (FAO, 2002).

Meat is an adequate source of protein in the human diet and it is assumed that between 55g of meat per day provides enough protein. The quality of the meat however plays a role as the lower the quality, the more meat is needed to make up the 55g. Meat and meat products are important sources of all the B-complex vitamins including thiamin, riboflavin, niacin, biotin, vitamins B6 and B12, pantothenic acid and folacin (FAO, 2002). The last two are especially abundant in liver which, together with certain other organs is rich in vitamin A and supplies appreciable amounts of vitamins D, E and K. Meats are excellent sources of some of the minerals, such as iron, copper, zinc and manganese, and play an important role in the prevention of zinc deficiency, and particularly of iron deficiency which is widespread (FAO, 2002).

There are issues associated with consumption of large quantities of meat and having an unbalanced diet. Issues such as coronary disease and cholesterol are well known effects of eating an unbalanced diet of large quantities of red meat (FAO, 2002).

Income earned from the red meat industry can also be used to purchase food goods in order to be more food secure as well.

8.9 Regulatory Requirements

There are numerous legislation documents governing the production of red meat. These range from regulations as to the production inputs (National Water Act), to those governing production (Meat Safety Act) and to production standards and consumption. The most pertinent of the acts are contained in Table 8.10

Table 8.10: Red Meat Governing Legislation

Act	Description
1. The Meat Safety Act, 2000 (Act No. 40 of 2000)	The abattoir is responsible for the conversion of livestock to meat. The process remains critical to ensure a safe and wholesome product reaches the consumer. The Meat Safety Act addresses measures to promote the safety of meat and animal products and to establish and maintain essential national standards in respect of abattoirs. Red meat regulations regulate processes and procedures under the Meat Safety Act.
2. Animal Health Act, 2002 (Act No. 7 of 2002)	To provide for measure to promote animal health and to control animal diseases; to assign executive authority with regard to certain provisions of this Act to provinces; to regulate the importation and exportation of animals; to establish health schemes; and to provide for matters connected therewith.
3. Animals Protection Act, 1962 (Act No. 71 of 1962)	The act encompasses the prevention of cruelty towards animals. The act further encompasses the code of best practices for the handling and transport of livestock.
4. Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947)	The act provides for the appointment of a Registrar of Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies; for the registration of fertilizers, farm feeds, agricultural remedies, stock remedies, sterilizing plants and pest control operators; to regulate or prohibit the importation, sale, acquisition, disposal or use of fertilizers, farm feeds, agricultural remedies and stock remedies; to provide for the

Act	Description
	designation of technical advisers and analysts; and to provide for matters incidental thereto.
5. National Water Act, 1998 (Act No.36 of 1998)	This act encompasses laws relating to water resources and the use thereof.
6. Occupational Health and Safety Act, 1993 (Act No.85 of 1993)	The act aims to provide for the health and safety of persons at work and the health and safety of persons in connection with the activities of persons at work and to establish an advisory council for occupational health and safety.
7. Basic Conditions of Employment Act, 1983 (Act No. 3 of 1983)	The act encompasses those regulations associated with fair labour practices.
8. Municipal By-Laws and Regulations, where relevant	Municipal by-laws will need to be investigated with regard to the establishment of the abattoir in a municipal area.
9. Marketing Act, 1968 (Act No. 59 of 1968)	The Act has authorised an establishment and enforcement of regulatory measures to intervene in the marketing of agricultural products, including the introduction of levies on agricultural products.
10. Agricultural Products Standards Act, 1990 (Act No. 119 of 1990)	The act controls and promotes specific product standards from mainly a quality point of view for local as well as export purposes. A list of products for which standards have been set through regulations is promulgated under the act by the minister of agriculture.
11. Stock Theft Act, 1959 (Act No. 57 of 1959)	This Act encompasses those laws associated with the theft of animal stock and produce.
12. Consumer Protection Act (Act No68 of 2008)	To promote a fair, accessible and sustainable marketplace for consumer products and services and for that purpose establish national standards relating to consumer protection.

Source: Government Gazette (1947; 1959; 1962; 1968; 1983; 1990; 1993; 1998; 2000; 2002; 2008)

The abovementioned legislation outlines the legal framework pertaining to the Agri-Park. The Agri-Park is intended to operate as an Agribusiness and therefore must adhere to the abovementioned legislation.

8.10 Substitute Products and Services

Substitutes are products that can replace the product that is grown or produced. In the red meat value chain various products can be replaced. Red meat is often substituted by white meat products. This has increased as a result of the growth in popularity in white meat and the perceived benefits of white meat over red meat (FAO, 2014). Chicken and pork is often also eaten more as they are a cheaper source of protein compared to red meat. Some groups do not eat red meat at all and substitute red meat with vegetable rich diets and with soy based alternatives such as soya-mince (FAO, 2014).

Products such as leather and hides have been increasingly replaced by cheaper plastic based textiles. Leather has increasingly been used as a luxury item for textiles and the clothing industry (FAO, 2014).

8.11 Barriers to Entry

Barriers to entry are obstacles that make entry into a given market difficult such as regulations, high infrastructure costs or competition in the given area. This section will discuss the barriers to entry of the red meat industry. This is important to note for the development of the Agri-Park.

Table 8.11: Red Meat Barriers to entry

Constraint	Description	Level Of Influence
Capital, Raw Materials And Production Issues		
Poor carrying capacity	In many parts of the district the natural carrying capacity of the veld has been reduced due to unsound grazing practices (mainly overstocking).	-
Input Costs	There has been an upward trend in input costs, over the last several years particularly feed and electricity. This has an adverse impact on farmers bottom-line.	-
Stock Theft	The theft of stock is an ongoing challenge for both commercial and emerging/small scale farmers.	Provincial, District
Start-up costs	There is a high capital cost associated with setting up fixed structures, installing requisite technology and also the financing of the first production and the initial stock of weaners	-
Poor breeding stock amongst emerging farmers	Poor quality breeding stock and a lack of quality weaners amongst emerging and small scale farmers means that they are not able to improve the overall level of their herd which in turn negatively impacts profits.	Provincial, District
Disease and high mortality rates	The expansion of game farming in the Eastern Cape has resulted in the spread of diseases that affect sheep and goats. Sheep must be dipped regularly to avoid catching diseases. Due to a lack of technical skills, emerging and traditional farmers especially have problems with disease and mortality rates.	Provincial
Availability of land for farming	There are good opportunities for sheep and goat production, however limited land availability. Sheep farming has to compete with ostrich, cattle, and goat farming for production space. The costs and returns on each should be considered sufficiently before engaging in any of the options.	Provincial
Infrastructure		
Roads	The poor road network and lack of connectivity within the district hampers the cattle industry, particularly given that animals have to be transported out of the area for finishing.	Provincial, District
Fencing	The lack of fencing leads to an increased incidence of stock losses, theft and poorer quality products. The provincial government does have a programme in place to address the issue of fencing; however the resources of the Department of Agriculture are spread amongst a number of priority areas and are limited.	Provincial, District
Competition And Access To Markets		

Constraint	Description	Level Of Influence
Consumer preference	Red meat production faces stiff competition from poultry meat; per capita consumption in this sector is not rising as fast as in the poultry sector. Within the sector, pork production and consumption are generally growing faster than beef and lamb.	National
International (SADC) competition	Increasing competition from Southern African Development Community (SADC) and international producers with comparative advantage due to subsidies.	-
Compliance with international standards	Meeting international standards of sanitary and quality (especially proving that South Africa does meet the required standards). In short, the challenge is lack of a traceability system and a national quality assurance scheme.	Provincial
Popularity of chevon	Chevon is not as popular as beef or chicken amongst South African consumers which means that it has difficulty in finding a large domestic consumer base. It is a popular export, but the Eastern Cape currently does not contribute.	National

Source: Urban Econ, 2015

8.12 Societal and Cultural Trends

In selection of priority commodities for the Joe Gqabi District Municipality Agri-Hub, key consideration were given to commodities with cultural significance to the rural communities. Beef cattle production remains spatially important and is a multifunctional livelihood strategy in rural South Africa. This is especially true in marginal and remote areas with poor agricultural lands and minimal economic opportunities.

It has been estimated that 5.6 million cattle (40 % of the total cattle population) are owned by 240 000 small-scale farmers and 3 million subsistence farmers. For the livelihoods of these small-scale producers, cattle farming has multiple functions. Non-commercial motives include economic functions (e.g. wealth storage), agro-economic functions (e.g. provision of draught power), agro-ecological functions (e.g. provision of manure), nutritional (e.g. provision of milk for infants) and socio-cultural functions (e.g. dowry) (Ndoro et al., 2014).

The sustainability of cattle-based livelihoods, however, is threatened by the competition for natural resources such as land and water, and decreasing grazing areas. Despite this, cattle production has increased by a million from 1994 to 2004 (Republic of South Africa, 2011). The increase owes to recent developments in breeding, nutrition and animal health that has contributed to potential production, efficiency and genetic gains (Ndoro et al., 2014).

Goats have long been seen as a culturally important animal in southern Africa. They are specifically used as ceremonial animals and have various connotations attached to them based on different cultural groups. Goats also have a negative connotation with consumers based on various cultural backgrounds (Roets, 2014). The goat is seen by consumers to represent cultural and traditional practices and is not eaten unless for a specific ceremony. Today these perceptions are changing but at a slow pace (Roets, 2014). Goat meat consumption is far more acceptable outside of South Africa. Thus goats and goat meat products may be difficult to sell to local consumers in South Africa.

The reason for the lack of awareness of goat consumption stems from multiple sources including the lack of research into goats during apartheid (Roets, 2014). Other livestock such as sheep and cattle were far more researched and studied. Research that was completed was not done in conjunction with commercial farmers which led to slow adoption of new farming practices. For the cultural aspects of goats weight, milk, or meat production quality may not be as important as the goat itself, its colour, sex, or the use to which it will be put traditionally (Roets, 2014).

8.13 SWOT Analysis

The following section discusses the Strengths, Weaknesses, Opportunity and Threats of the Red-Meat commodity value chain in the Joe Gqabi DM. Strengths and weaknesses refer to the positive and negative internal factors affecting the growth of the industry; whereas threats and opportunities refer to the external factors affecting the industry. The SWOT analysis is structured under the prioritisation matrix headings – biophysical, enterprise viability, economic development and political and social goals, where applicable.

8.13.1 Strengths

Biophysical:

- Most areas of the JGDM exhibit good suitability for Red Meat / Livestock production.
- Local breeds of cattle, goat and sheep – suitable for small and emerging farmers – are resilient to many common livestock diseases.

Enterprise viability:

- Due to the nature of livestock farming, JGDM production can easily access regional markets far removed from the point of production.
- Local meat markets are fully accessible to new entrants; any production of the sufficient quality can be sold through local and or regional channels.
- Many local communities are very familiar with the husbandry of cattle and sheep making it easy to develop farming concerns in these areas.
- Livestock farming is relatively light on infrastructure requirements for new entrants.

Economic development:

- All livestock classes should contribute greatly to the reduction of meat imports into the JGDM.
- Red Meat product classes contribute significantly to job creation when considering the indirect and induced impacts on the local economy.

Political and social goals:

- Government departments and the JGDM are already active in supporting agricultural, commercial and emerging farmers in the district.
- Livestock farming is highly suitable for rural communities and emerging farmers.
- Livestock farming contributes greatly to food security in the JGDM and greater Eastern Cape region.

8.13.2 Weaknesses

Biophysical:

- The cold temperature may be difficult for livestock to adapt to.
- The area is prone to spells of water-shortages that may pose significant threats to small and emerging farmers without adequate water infrastructure.

Economic development:

- Cattle and goat farming do not contribute greatly to on-farm job creation.

- Job quality / decency of cattle and goat farming is relatively low, with predominantly low-skilled job opportunities.
- Cattle and goat farming's direct contribution to local GDP is relatively low.

8.13.3 Opportunities

Biophysical:

- There are numerous areas in the JGDM where livestock farming can be expanded into or established at either small, medium or commercial scale.

Enterprise viability:

- Strengthening primary breeding stock
- Development of abattoirs in high production areas
- Establishment of micro-butcheries in rural areas
- Promoting small scale natural fodder production linked
- Development of feedlots
- Animal feed suppliers
- Increasing existing capacity of abattoirs
- Long term opportunity for SMME hide processing (tanneries) for the automotive industry
- Expanding goat production for export
- Optimising slaughtering of goats and meat processing

Economic development:

- There are clear opportunities for new entrants, specifically black owned enterprises to enter the JGDM Red Meat market.

Political and social goals:

- Potential for massive increase of black participation in the agricultural economy

8.13.4 Threats

Biophysical:

- Climate change poses a significant threat to the future of the JGDM agriculture sector, particularly in terms of changes in temperature and access to water.
- Livestock in the district faces threats from weed, pest and diseases.
- Overgrazing has also been identified as a threat for small-scale farmers.
- The recent drought in South Africa has posed a serious threat to livestock farming

Enterprise viability:

- There has been an upward trend in input costs over the last several years particularly of feed and electricity. This has an adverse impact on farmers' bottom-lines.

Economic development:

- High transport costs and poor road conditions hamper the livestock industry in terms of transporting animals for processing.

Political and social goals:

- Stock theft is a particular challenge to small-scale farmers and has an impact on the profitability of farms

Wool Market

Chapter 9

9. WOOL

9.1 Wool Market Assessment

The sheep and wool industry is one of the oldest agricultural industries in South Africa. South Africa has a well-established wool and sheep farming sector. The industry has consistently produced high quality products for the international markets.

This section provides an overview of the wool industry in South Africa. The global wool industry will be discussed in brief as it pertains to the South African wool industry before a more thorough analysis of production and price trends at a national level. Lastly the Joe Gqabi DM wool industry will be discussed to provide context for future discussions surrounding wool's inclusion into the Agri-Park and any projects / programmes that may follow.

9.1.1 Global Wool Industry

Amongst the first animals to be domesticated, and the first wearable textiles produced in human history, sheep farming has grown to be an extremely important global industry in the modern world. Wool is at present the leading animal natural fibre. Its complex structure produces some extremely valuable characteristics such as exceptional resilience and elasticity compared to other natural and synthetic fibres making it still highly sought after for a variety of applications in the modern world of textiles where designer synthetic materials are constantly being developed. Wool varies from super fine Merino fibre similar to cashmere, to very coarse hairy wools. The diameter of the fibre determines its final use and value. Some 37% of world production is classed as fine wools, 22% as medium wools, and 41% as coarse wools. The majority of the world's wool production ($\pm 62.5\%$) is used in the manufacture of garments, and $\pm 32.5\%$ in the manufacturing of carpets, upholstery and rugs. Industrial uses of wool accounts for about 5% of the total.

Approximately 1 billion sheep comprise the global wool flock and are farmed on a commercial scale in over 100 countries world-wide. The world's largest producers of wool are Australia, Argentina, China, India, Iran, New Zealand, Russia, South Africa, United Kingdom and Uruguay. The size of wool producers operations vary from country to country from small farming collectives to large scale commercial operations.

Australia is by far the largest producer of wool with $\pm 20\%$ of global wool production with ± 2.1 million tons per year. Australia's dominance is smaller now than in the recent past when it produced more than a quarter of the global wool clip.

China, the United States of America and New Zealand are the next largest producers of wool. They produce in the region of $\pm 10 - 15\%$ of global wool production annually with Chinas wool market growing steadily.

It is expected that in the near future China will be both the largest producer and purchaser of wool. The other major wool producing countries, including South Africa produce between 1% and 3% of annual global production.

In the global context, although South Africa finds itself amongst the top ten wool producing countries in the world it is a relatively small contributor to the global wool market. It is thus a follower of market trends and has little impact itself over wool pricing, industry practices and major wool market trends.

The trend globally over recent decades has been towards a reduction in total wool production. This is largely due to the massive reduction in production of the Australian market. This has been due to increased factor prices within the Australian sheep farming industry.

It is important to note that this decrease in production is not indicative of a decrease in demand for wool. Thus it has been the trend that since 1990, with a reduction of total supply within the market, prices have been steadily rising. A positive trend for South Africa who is itself facing increased factor prices and reduction in wool production.

Demand for wool has been strong over the past two decades but is currently in period of contracted growth. China is the dominant player in the international wool market purchasing the bulk of the world's wool. Over 75% of Australia's wool, 50% of New Zealand's wool and 36% of South Africa's wool is purchased by China as this country is the largest wool processor and producer of wool textile products.

The majority of the wool purchased by China is in a 'greasy' or unwashed state. Wool is shorn in-situ at farms, sorted and sent to large wool market hubs where the wool is further graded and sorted, before being bailed and auctioned off. This greasy wool is then washed, carded and spun into a usable skeins for use in textile manufacturing.

Wool washing, or scouring, is an involved process whereby the grease is separated from the raw wool via a variety of chemical treatments. In commercial wool processing facilities wool is washed with detergents, treated with acidic chemicals and often treated through a process of chemical carbonisation. The wool washing process produces clean wool for textile manufacturing as well as Lanolin which is extracted from the wool grease and which itself is a valuable commodity.

As the largest purchaser of raw 'greasy' wool China is by extension the largest processor of wool with the largest wool washing facilities found in this country.

As a result of the large growth of China into a major player in the international wool market the economics of wool washing has changed drastically over the past few decades. Where many countries once washed and processed their own wool, now only China and Czech Republic process wool at a large scale. This is due to, in the case of China, extremely low input prices and low wages as well as the general decline in international wool production resulting in the economies of scale moving against smaller wool processors (Cape Wools SA, 2015).

9.1.2 National Wool Industry

Almost the entirety (91%) of South African wool is produced in four provinces, the Eastern Cape, Western Cape, Northern Cape and Free State. The Northern Cape accounts for over 10% of the national wool clip producing 6 million kg of wool in the 2013/2014 season. The largest producer of wool is the Eastern Cape with 15.5 million kg per year.

Following international trends production of wool has decreased sharply in South Africa over the past 4 decades, with much of this drop in production occurring between 1991 and 1995 which saw annual wool production drop from 101.6 million kg to 57.5 million kg.

Wool prices have increased steadily over this period, and continue to do so at present with wool prices increasing 5-fold between 2000 and 2014. Although wool production is far less today than it was in the late 1980's, wool production has remained relatively stable since 2000 hovering around the 45 million kg/year mark. In recent years production has increased up to a maximum of 50 million kg in 2014.

The majority of SA wool (95%) is exported to China (36%), Czech Republic (26%), India (18%) and other countries and is done so in greasy state. South Africa used to process the majority of its own wool, when production was around the 100 million kg mark. With the decline in domestic wool production wool washing facilities were

forced to either import wool to fill the loss in supply to their facilities, or to optimise their facilities for these lower volumes of wool. With increasing factor prices, labour costs and unfavourable trading conditions into South Africa most of these wool washing facilities were unable to reduce their volumes and remain economically viable. The last fully integrated wool washing facility was closed 15 years ago as the 50 million kg's of wool produced annually in South Africa. At present only one wool washing facility is in operation in South Africa – Cape of Good Hope Wool Washing & Combing situated in Uitenhage in the Eastern Cape and this facility is itself operating below full capacity.

South Africa processes on average 2.5 million kg of 'greasy' wool annually. China processes in the region of 400 million kg of wool every year.

The national wool market is centred in the Nelson Mandela Bay Municipality in the Eastern Cape Province. The majority of the SA wool clip is transported to Port Elizabeth and graded, sorted and baled by the two major wool providers BKB & CMW before being auctioned off.

These two wool handling companies handle \pm 90% of the South African clip and provide in addition to their services of wool handlers and auctioneers, agricultural services, project funding, mentorship, skills development and agricultural research.

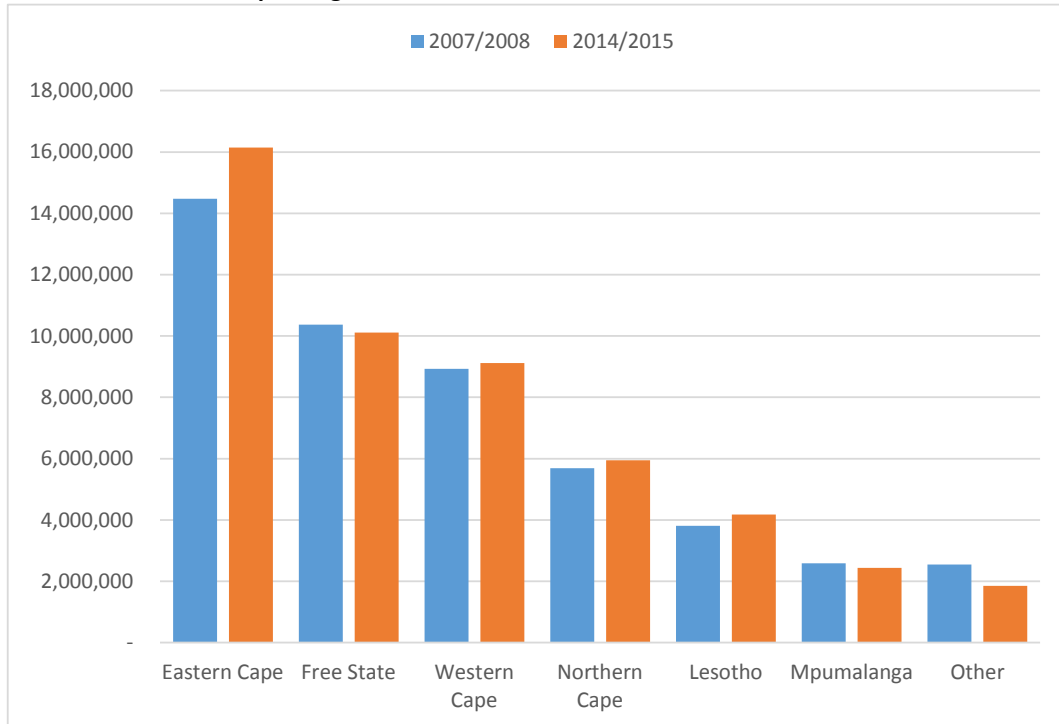
9.1.3 Production

The composition of wool sheep in South Africa is mainly Merino and Karakul. Approximately 74% of the total wool sheep in South Africa is dominated by Merino sheep. The production season of wool is between August and June of the following year and each sheep is shorn twice during the production season.

Wool is produced throughout the country with largest proportion coming from Eastern Cape and Free State provinces over the past decade. The largest proportion of the South African wool clip is from harsh, low-rainfall areas (for example the Karoo) than in the higher rainfall areas of the coastal belt and the Highveld.

During the 2014/2015 season the Eastern Cape contributed 32% towards the total South African wool production. (Figure 9.1) Joe Gqabi district contributed 7% to South Africa's total wool production during the 2013/2014 season.

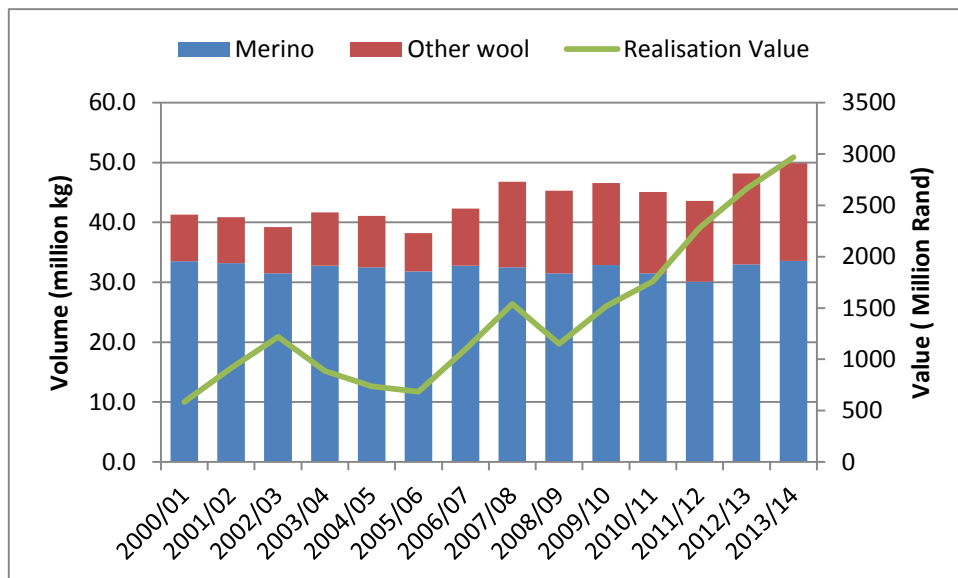
Figure 9.1: Wool Production per Region



Source: Cape Wools SA, 2015

During past decade, South African wool production fluctuated between 44 and 50 million kg showing a slight increasing trend. See figure 9.2.

Figure 9.2: Wool Sales and Price



Source: DAFF, 2015A

An analysis of wool sold at auction shows that the South African clip has fined up considerably over the past 10 years. The volume of wool with 19 microns and finer sold at auction has increased from 7% in 1998/99 to 15% in 2008/09. The 20 to 21 micron-category rose from 33% to 53% in 1998/99. The most significant change was in the 22 to 24 micron-category that decreased sharply from 56% to 30% over the past decade (AMT 2010).

9.1.4 Marketing Channels

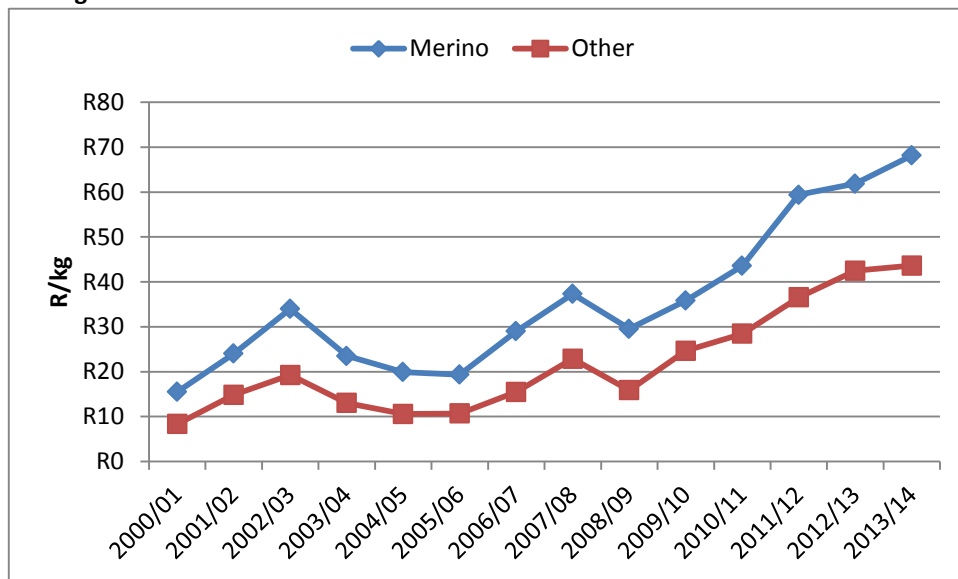
Wool is traded either through auctions or by private treaty, with the largest percentage of the national clip being sold through the auction system. Wool auctions, coordinated by the South African Wool Exchange, centralised in Port Elizabeth, occur once a week during the wool-selling season. Wool brokers facilitate sales of wool at the auction. The main wool brokers are Cape Mohair and Wool (CMW) and BKB Pty Ltd.

Alternatively wool producers can sell their wool directly to small wool buyers, who either organize smaller wool auctions or export wool directly. There are nine major wool buyers in South Africa, i.e.: Lempriere SA, New England Wool SA, G. Modiano SA, H Dawson Sons & Co, Standard Wool SA, Stucken & Co., Segard Masurel SA, Chargeurs Wool SA, and CMW Operations. G. Modiano SA specializes in the export of greasy wool, whereas the rest export greasy as well as semi-processed wool (Cape Wools SA).

9.1.5 Price Trends

During the sales from July 2013 to June 2014, the average price for Merino wool reach a record high of R68.16/kg, which is 10% higher than the 2012/2013 average price of R61.88/kg. (See figure 9.3). The average price for other wool (other white wool, course and coloured and karakul) was R43.63kg.

Figure 9.3: Average Price of Wool Sales at Auctions



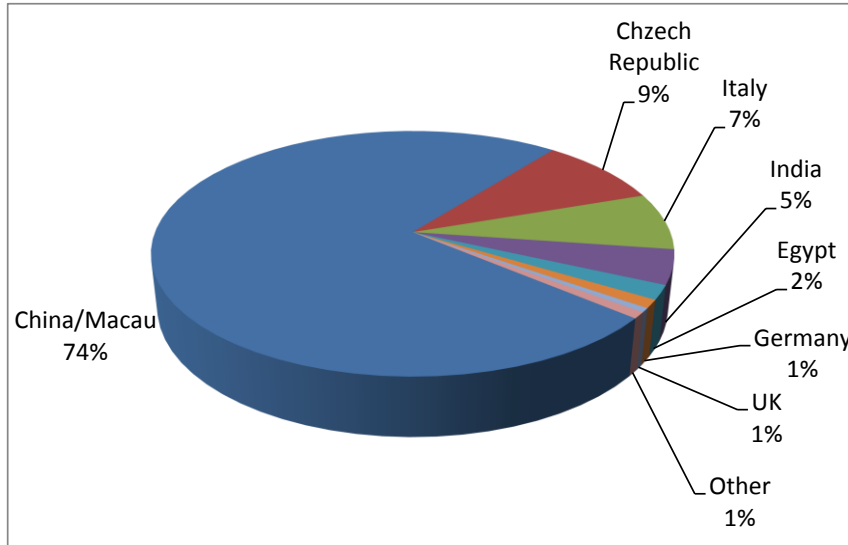
Source: Cape Wools SA, 2015

9.1.6 Exports

Wool plays an important economic role as an earner of foreign exchange for South Africa. As an export product, more than 90% of the total production is exported either as greasy wool or in semi-processed form as scoured and wool top.

During 2014 marketing season, South Africa exported approximately 46 151 tons of wool (not carded or combed) to different regions of the world. China is the biggest export market for South African wool accounting for 74% market share, followed by Czech Republic at 9%, Italy at 7%, India at 5%, Egypt at 2%, Germany at 2% and United Kingdom 1%.

Figure 9.4: SA Wool Destinations



Source: Cape Wools Monthly Report, 2015

In value terms, the total FOB value of exports came to R2 946 million, a 6% decrease compared with R3 141million for the 2013/2014 season. Total shipments to China (including Hong Kong and Macau) represent 70% of the FOB value of total exports of 2014/2015 compared to 60% during the 2013/2014 season.

9.1.7 Outlook

International wool production is expected to continue to grow as production margins remain favourable. Locally, wool prices reacted positively and climbed by 2% on average, fuelled by the weaker Rand/US Dollar exchange rate. Short wool with a minimal seed content were the best sellers. Driven by the weakening rand, domestic prices are expected to continue to strengthen in spite of some weakness in the Australian wool price.

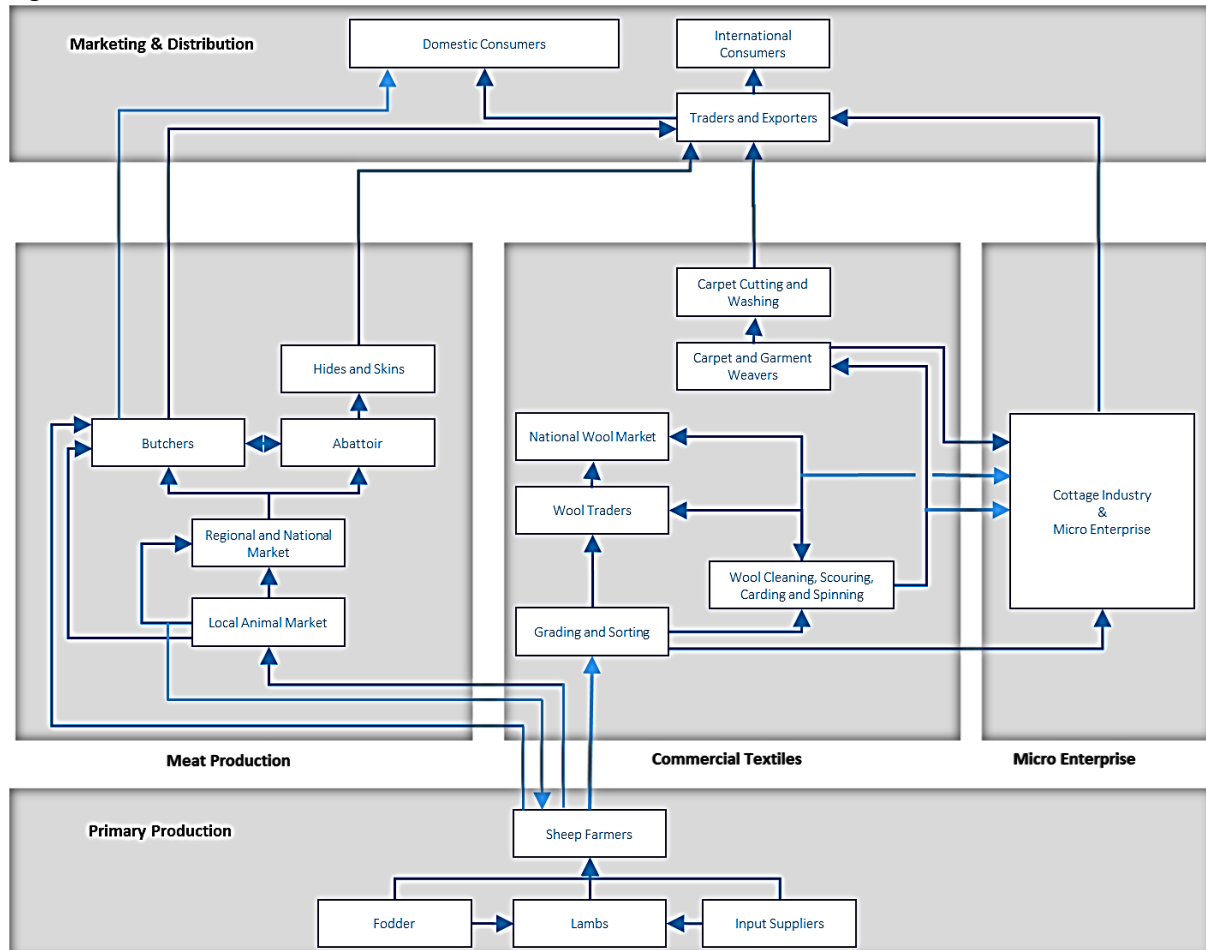
It is projected that the higher domestic price will continue to drive production expansion in wool. The Australian Eastern Market Indicator for wool is expected to average around 1,075 cents per kilogram in 2015-16.

Wool prices in China are expected not to drop much in the near term. The wool cut in Australia is forecast to drop in 2015/2016, according to the Australian Wool Production Forecasting Committee. Besides, it is expected that China's domestic demand for wool will remain strong.

9.2 Value Chain Assessment

The following section provides an overview of the wool value chain. It describes each step of the value chain, the structure of the value chain and the nature of inputs and outputs at various stages.

Figure 9.5: Wool Value Chain



Source: Urban-Econ, 2015

Upstream activities

As Wool production is classified as primary production, the upstream activities relevant to the value chain are primary input supplies used in the production system. The major inputs for livestock production include animal genetic resources, feeds and forages, veterinary drugs, vaccines, machinery equipment as well as knowledge. Most of these inputs are supplied by Agricultural Co-operatives in the respective areas. The Eastern Cape has three major Agricultural Co-operatives namely:

- OVK – TRADE
- Humansdorp Ko-op
- East Cape Agri – Co-op Ltd / BKB LTD

Primary production activities

Wool is produced throughout South Africa, but the main production areas are situated in the drier regions of the country. On a provincial basis, the Eastern Cape is the largest wool-producing region, having produced 27% of the national clip, followed by the Free State, Western Cape, Northern Cape and Mpumalanga. Wool price

increases have been unprecedented and are mainly driven by the increasing shortage of Merino wool for apparel and resulted in strong competition on primary processing level for wool to keep mills running. Although supply concerns were the main driving force behind the price increases, exchange rates also played a significant role. The currencies of most of the major wool-exporting countries, but particularly that of South Africa and Australia, fell to their lowest levels ever against the US dollar, which helped to boost prices. South Africa is mainly producing a Merino clip, which comprises over 80% of all lots offered for sale. Mean fibre diameter is the major price determinant for Merino wool, with finer micron categories normally commanding a premium over medium and strong wool.

Downstream activities

The marketing of wool in South Africa is free from statutory intervention. Wool is traded primarily via the open-cry auction system. Alternative selling mechanisms such as contract growing, forward deliveries and futures, have not yet been established in South African wool industry. The global price for apparel wool is determined in Australia where the largest volumes of wool are traded. South Africa, with its relatively small clip, is therefore a market follower or price-taker. Wool auctions are characterised by many sellers and few buyers. Buyers normally have to compete for wool over a number of auctions to make up processing batches to meet their clients' contract specifications in terms of price, quantity and delivery date. Contracts in foreign currencies, such as the euro or the US dollar, have to be converted to buying limits in Rand and the buyer carries the risk. Cape Wools of South Africa promotes the interests of the South African wool industry. It is a non-profit company established and owned by farmers and other directly affected industry groups registered with the Wool Forum, the official policy-making body of the industry. Direct proportionately represents these groups and is selected from the Forum. Cape Wools acts as the executive arm of the Forum and started operating on 1 September 1997.

The company has since been granted statutory measures for the collection of statistics for the wool industry, which enables it to create a wool statistics data bank from which a national market indicator and other information regarding the industry can be made available locally as well as internationally. Its service portfolio comprises market information and statistics, research and development, transfer of wool production, and promotion. Cape Wools is funded by the Wool Trust from funds having been transferred from the former Wool Board.

'Exports Wool' is an export product with over 90% of total production exported in either greasy or semi-processed form (scoured and wool top). The main export destination countries are Italy, France, Germany, the UK, South Korea, Japan, China and Taiwan. Wool is an export product with over 90% of total production exported in either greasy or semi-processed form (scoured and wool top). The main export destination countries are Italy, France, Germany, the UK, South Korea, Japan, China and Taiwan.

Agro-processing opportunities

Wool washing plant could be considered, but it should be noted that most of South African raw wool is exported and there is limited scope for this activity. The main market where wool is sold is in Port Elizabeth. Most of the international buyers buy from this platform. With regards to wool processing; South Africa is currently not internationally competitive (high processing cost). Weaving on a small scale may however be a processing opportunity.

Niche Wool Processing

A micro enterprise can be developed to manufacture woollen goods. Many such projects have been implemented around the country but very few with any real economic value. These enterprises usually take the

form of employing staff (usually women) to knit, sow or weave woollen products from wool purchased from an external source and sold locally in informal markets or to small local private sector businesses for low prices. The reason these enterprises fail to achieve greatly is due to their common elements as described above; they are:

- Wool purchased too expensive – Purchasing wool to use in manufacturing reduces profits.
- Sold locally for low prices – Exporting takes advantage of exchange rates to secure prices for products far higher than is possible domestically, especially if targeting high end markets.

With the Agri-Parks concept there is scope to develop an enterprise, using newly available technology to process wool on a small scale, and produce high quality wool products for high end international markets. The economics of wool processing (including wool washing) does not make sense in the South African context. This is true for generic wool processing usually done on a commercial scale, where raw greasy wool is processed and sold on to markets as clean wool. A small operation cannot process the wool cheaply enough to remain competitive with international prices for clean wool.

It is feasible, however, for a cottage industry micro enterprise to process wool on a small scale and knit or weave the lower quality wool it produces into a finished product for sale. This integrates and shares the costs of processing across the entire enterprise. New technology is available to process small batches of wool cheaply into a high quality fibre for use in certain types of textile manufacture. If the final product is then sold for a high enough price, then the enterprise can reach profitability. These high quality, high end wool products can fetch large amounts of money in international fashion outlets.

A micro enterprise solution can thus be viable if:

- Wool is processed using the appropriate technology to effect cost savings and produce high quality fibre.
- Finished products are marketed effectively abroad.

9.3 Competitors

Joe Gqabi DM is well-known for its commercial wool farming sector. The commercial wool farmers in the area will be the Agri-Hubs largest competitor. Competition from the commercial farmers can however also be considered as positive for the industry. Healthy competition can lead to increased efficiencies through decreasing input costs in order to remain competitive in the wool market. The commercial wool farmers can also provide emerging farmers with mentorship and partnerships that would grow the entire wool industry in the district. The existing of commercial wool sector will also create cluster and agglomeration opportunities reducing the costs and barriers to entry.

9.4 Stakeholders

There are a number of organisations operating in the wool industry. The most important of these being Cape Wools South Africa. **Cape Wools SA** is a non-profit organisation that provides services such as information and statistics collection, research and development, extension services and training, and promotion. The **South African Wool and Mohair Buyers' Association (SAWAMBA)** represent the wool buying industry in South Africa. The majority of its members are shareholders in local early stage scouring and combing facilities, or are associated with international wool trading houses. The **Wool Testing Bureau of South Africa (Pty) Ltd** is an International Wool Textile Organisation (IWTO) accredited test house responsible for all independent objective measurement testing services to the trade. Another major stakeholder is the **Wool Textile Council**, this is the South African National Committee which represents the buying, processing and exporting industry on the IWTO. Other stakeholders in the wool industry are shown in table 9.1.

Table 9.1: Wool Industry Stakeholders

Sector	Stakeholder
Wool Buyers	A Dewavrin Freres (Pty) Ltd Beier Finance (Pty) Ltd Chargeurs Wools (SA) (Pty) Ltd Fibres International (Pty) Ltd Modiano SA (Pty) Ltd New England Wool (SA) Segard Masurel (Pty) Ltd SA Wool Exporters (Pty) Ltd Stucken & Co (Pty) Ltd
Wool Processors	Cape of Good Hope Wool Combers Gubb & Inggs Ltd Beier Finance (Pty) Ltd
Wool Brokers and Traders	BKB Ltd Cape Mohair and Wool (CMW) Van Lill Woolbuyers Trust (CC) Junior Steenkamp - Wool & Mohair Lanata (Pty) Ltd Wool/Mohair Broker Bruce, Lappersonne & Saunders
Woolgrower Organisation	National Woolgrowers' Association of SA (NWGA)

Source: Cape Wools SA, 2015

9.5 Technology

National Wool Growers' Association of South Africa (NWGA) is responsible for the Production Advisory Services. The aim of this is to ensure an efficient and profitable wool industry for South Africa. Cape Wools continues to invest in production advice and development at the NWGA programmes to ensure South African wool complies with the quality, environmental and animal welfare criteria demanded by the market.

The **Clip Fault Report** monitors levels of contamination and affords the industry a mechanism of communication to continually improve the clip and maintain South Africa's impeccable reputation. Cape Wools' vision of improving the communal clip produced from communal flocks and maintained in traditionally communal areas of South Africa, continues to guide programmes including flock improvement through genetic improvement.

New entrants to the wool industry have difficulty accessing information on wool sheep farming. To combat this challenge the **bi-monthly management calendar** has increased the wool industry visibility online. Wool farmers are able to download a comprehensive wool sheep management calendar from the NWGA website as well as participate in industry discussions on Facebook.

Shearer training programmes provide a pool of trained shearers from which growers, shearing contractors and brokers are then able to source labour for harvesting the wool. Supporting activities are designed to promote shearing as a viable and attractive profession. The wool industry is fully cognisant of the challenges facing producers in accommodating prescribed shearer requirements and the structural change this will require at farm level now.

The Springbok Head provided training through accredited instructors following specific guidelines and supported by a technical committee (Cape Wools SA, 2015).

It is also important to take renewable energy into consideration in the Agri-Hub. Much of the waste products from the agro-processing could be used to power **biogas installations**. Recycling can lead to sustainability of the Agri-Hub and Agri-Park as a whole.

Numerous smartphone apps also exist for the convenience of the farmer. *Pantheon Farming* from App Lab allows farmers to enter all data directly on location, which is synchronized with a main database. This reduces the possibility of errors and eliminates duplicate data entries. *eFarmer* is a simple app designed for the agricultural industry that allows users to construct an electronic map of fields to create a database of various crops in the fields. The app also allows users to take notes on the fields as points of interest, keep the location of specific objects on the farm and keep a diary of the operations for each field users own. *AgriApp* is an Android app that enables farmers to access large pool of relevant information related to agriculture and specific crops and animals.

Specifically for the livestock industry, the Merck Veterinary Manual Mobile App, is available for both Android and Apple and contains guidelines for the diagnosis, treatment, and prevention of animal disorders and diseases.

Online resources also exist which can be accessed through a phone, tablet or PC which is connected to the internet. Sites such as *FAO:Ecocrop* provides detailed crop requirement information for almost any crop that are cultivated throughout the world, including its uses and requirements for temperature, rainfall/water, soil type, soil depth, soil pH, salinity, altitude etc. It also include hundreds of forage crop species for extensive animal farmers. Another site *My Agriculture Information Bank* provides a variety of general agricultural information to farmers.

9.6 Demand and Needs Analysis

The majority of wool produced in South Africa is exported to international markets. The following section aims to provide an indication of international demand based on the historical value and quantity of wool exported. For the 2013/14 season, China was the largest importer of South African wool. The table below shows the value and quantity of exports by major destination.

In 2014, Cape Wools SA recorded that China was the main importer of South African wool. For the 2013/2014 season China imported 19 181 858kgs (63.2%) of wool, making it the largest importer by a significant margin. The significant amount of wool exported indicates that there is a large international demand for this commodity.

Table 9.2: Exports by Major Destination, on weight, 2013/2014 (Clean)

Destination	Clean Weight (kg)	% of Total weight
China	19 181 858	63.2%
Czech Republic	4 202 052	13.8%
Italy	3 132 445	10.3%
India	1 724 518	5.7%
Germany	826 165	2.7%
Egypt	608 733	2.0%
UK	302 223	1.0%
Portugal	106 693	0.4%
Mauritius	129 906	0.4%
Other	147 416	0.5%
Total	30 362 008	100%

Table 9.3: Exports by Major Destination, on value, 2013/2014 (Greasy)

Destination	Total FOB Value (R)	% of Total FOB Value
China	1 894 879 784	60.3%
Czech Republic	453 782 986	14.4%
Italy	374 765 914	11.9%
India	170 988 059	5.4%
Germany	86 243 409	2.7%
Egypt	78 655 829	2.5%
UK	36 147 752	1.2%
Portugal	15 331 917	0.5%
Mauritius	14 908 184	0.5%
Other	16 219 634	0.5%
Total	3 141 923 468	100%

Source Cape Wools SA, 2014

9.7 Socio-Economic

Socio-economic development can be measured in various ways, however the primary method of measurement selected for wool commodity is job creation. Job creation is measured via the use of commodity labour multipliers, measuring the number of jobs created per R1 million produced directly into commodity production. The three relevant multipliers for the Joe Gqabi DM Wool Market are the:

- Direct Multiplier
- Indirect Multiplier
- Induced Multiplier (See Chapter 7)

The table below shows the direct employment multiplier, is relatively low, with only 2.07 jobs created per million produced. The indirect multiplier is likewise low, at 1.61 jobs, and the induced multiplier is only 1.88 jobs (OABS Development, 2015). Therefore, according to the above, the total job multiplier is 5.56 jobs created per R1 million produced.

Table 9.4: Wool Employment Multipliers

Sector	Direct	Indirect	Direct + Indirect	Induced	Total
Livestock Products	2.07	1.61	3.68	1.88	5.57

While it is estimated that job creation in the wool/small stock farming sector will be low. There are opportunities for job creation further along the wool value chain. The JGDM Agricultural Sector Plan also identifies the opportunities for job creation in the tourism sector as farmers sell processed goods to tourists. This is important to note for the development of the Agri-Park.

Information that is available on the District's wool production and the potential number of hectares, together with the Bureau for Food and Agriculture Policy, have been used to estimate the employment opportunities that wool production can contribute in the 10-year period. The Agri-Park can provide approximately 2700 employment opportunities from the programme. It must be noted however that these figures are purely indicative and will change through the development of the Agri-Park.

9.8 Contribution to Food Security

Wool has no direct contribution to food security in Joe Gqabi DM. Wool does however have an indirect contribution. Given the large contribution wool has to the local economy, it provides JGDM residents with

income that is partially used on food consumption. Many subsistence farmers' wool has quality and quantity issues which means their wool does not fetch a good price.

9.9 Regulatory Requirements

The local wool market is governed by a number of policies and legislation. This ranges from inputs to production. The most significant of these Acts to the wool industry is the Agricultural Products Standards Act, 1990 Act. This Act outlines the standards wool producers need to adhere to, including the quality (class) of the wool. The most pertinent of the Acts are shown in Table 9.5.

Table 9.5: Wool Governing Legislature

Act	Description
1. Animal Health Act, 2002 (Act No. 7 of 2002)	To provide for measure to promote animal health and to control animal diseases; to assign executive authority with regard to certain provisions of this Act to provinces; to regulate the importation and exportation of animals; to establish health schemes; and to provide for matters connected therewith.
2. Marketing Act, 1968 (Act No. 59 of 1968)	The Act has authorised an establishment and enforcement of regulatory measures to intervene in the marketing of agricultural products, including the introduction of levies on agricultural products.
3. Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947)	The act provides for the appointment of a Registrar of Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies; for the registration of fertilizers, farm feeds, agricultural remedies, stock remedies, sterilizing plants and pest control operators; to regulate or prohibit the importation, sale, acquisition, disposal or use of fertilizers, farm feeds, agricultural remedies and stock remedies; to provide for the designation of technical advisers and analysts; and to provide for matters incidental thereto.
4. National Water Act, 1998 (Act No.36 of 1998)	This act encompasses laws relating to water resources and the use thereof.
5. Occupational Health and Safety Act, 1993 (Act No.85 of 1993)	The act aims to provide for the health and safety of persons at work and the health and safety of persons in connection with the activities of persons at work and to establish an advisory council for occupational health and safety.
6. Basic Conditions of Employment Act, 1983 (Act No. 3 of 1983)	The act encompasses those regulations associated with fair labour practices.
7. Municipal By-Laws and Regulations, where relevant	Municipal by-laws will need to be investigated.
8. Agricultural Products Standards Act, 1990 (Act No. 119 of 1990)	This act aims to standardise quality norms for agricultural and related products by establishing the criteria for such norms and distributing the information to all interested parties. These criteria may include the quality, packaging, marking and labelling as well as the chemical composition and microbiological contaminants of the products.
9. Stock Theft Act, 1959 (Act No. 57 of 1959)	This Act encompasses those laws associated with the theft of animal stock and produce.

Act	Description
10. Consumer Protection Act (Act No68 of 2008)	To promote a fair, accessible and sustainable marketplace for consumer products and services and for that purpose establish national standards relating to consumer protection.

The abovementioned legislation outlines the legal framework pertaining to the Agri-Park. The Agri-Park is intended to operate as an Agri-business and therefore must adhere to the abovementioned legislation.

9.10 Substitute Products and Services

Substitute goods are two goods that could be used for the same purpose. If the price of one good increases, then demand for the substitute is likely to rise. Wool has a number of textiles substitutes, these include cotton, cotton flannel, polyester fleece, synthetic shearling and mohair. The substitutability of wool implies that wool must remain competitive in order for the demand to be high.

9.11 Barriers to Entry

Barriers to entry are obstacles that make entry into a given market difficult such as regulations, high infrastructure costs or competition in the given area. This section will discuss the barriers to entry of the wool industry. This is important to note for the development of the Agri-Park.

Table 9.6: Barriers to Entry: Wool

Constraint	Description	Level Of Influence
Environmental Issues (Land, Waste, Water)		
Availability of Water	Although sheep are renowned for their ability to survive in relatively dry climates, they do require a constant source of water which makes boreholes and or dams imperative. Water is also required for dipping processes and initial washing of clips before transportation, if required.	District
Availability of land for farming	There are good opportunities for sheep and goat production, however limited land availability. Sheep and goat farming has to compete with ostrich, cattle, and goat farming for production space. The costs and returns on each should be considered sufficiently before engaging in any of the options.	Provincial
Capital, Raw Materials And Production Issues		
Poor quality of stock	The quality of emerging and small scale farmers' stock is of a low quality due to a lack of good breeding animals.	Provincial, District
Disease and high mortality rates	The expansion of game farming in the Eastern Cape has resulted in the spread of diseases that affect sheep. Goats must be dipped regularly in avoid catching diseases and angora goats are particularly sensitive to disease and adverse weather conditions.	Provincial
Stock theft and vermin	Stock theft is particular challenge to small-scale farmers and has an impact on the profitability of farms. Proper security to keep out unwanted invaders is paramount.	-

Constraint	Description	Level Of Influence
Infrastructure		
Fencing	The lack of fencing leads to an increased incidence of stock losses, theft and poorer quality fibre. The provincial government does have a programme in place to address the issue of fencing, however the resources of the Department of Agriculture are spread amongst a number of priority areas and are limited.	Provincial, District
Shearing sheds	Each farm should have access to a shearing shed that should provide for classing barrels and bins. In recent times, shearing is done by mohair broker teams and conducted twice per year in line with growing periods. This constraint is particularly applicable to emerging farmers that do not have access to market infrastructure such as shearing sheds, dipping tanks, shearing, weighing and baling equipment, etc. The provincial government does have a programme in place to address this constraint but it is underfunded.	Provincial, District
Human Resource Issues		
Lack of skills	Animal husbandry requires highly skilled farmers and workers and there is a lack of appropriate skills in the Eastern Cape.	Provincial, District
Competition And Access To Markets		
Access to market	Road and or rail linkages are also an important consideration for a wool grower, as the bulk of wool in unprocessed form is bought at auction in Port Elizabeth.	Provincial
International competition in mohair and wool production	Turkey, Argentina and Lesotho pose strong competition to South Africa's wool production. The local focus should be on skills development in management, husbandry and mohair production. Investment in research and development could pay off, as new technologies integrated in mohair production will increase the yield and quality of produced fibres.	-
Influx of cheap imported goods:	Rapidly increasing imports of cheap textile and clothing goods pose a serious competition for mohair and wool, due to the fact that goods made of mohair and wool are more expensive	National

Source: Urban Econ, 2015

9.12 Societal and Cultural Trends

Wool is not a commodity with strong societal or cultural importance in South Africa. There are however certain societal and cultural factors that should be noted in terms of small stock farming. This includes commonage farming, which is prevalent in JGDM.

Agriculture on the commonage is intended as a livelihood option for the poorest residents of a municipality (Atkinson et al., 2004). Due to its shared nature the land supports livelihood needs; such as livestock grazing, fuelwood collection, wood collection for building materials, vegetable production and the collection of various other natural resources (Anderson & Pienaar, 2003; Ingle, 2006: 47). The commonage however is land that is invariably not managed and not invested in, the resulting management failure or ‘tragedy of the commons’, has meant limited productivity on the land and that commonage agriculture not being a route out of poverty (Martens, 2009).

The management failure of the municipal commonage is underscored by the fact that it is a resource that is used communally by a large number of people, with growing livestock; and this places pressure on the land to sustainably cater for the group’s needs. (Atkinson, 2005: 2). Poor management and absence of adequate resource-use rules has resulted in an open-access situation whereby the powerful and wealthy dominate access to the land (Anderson & Pienaar, 2003: 15). Open access systems are unsustainable as the lands become increasingly overgrazed, leading to long term questions on the sustainability of commonage use. This was acknowledged by the Department of Land Affairs in a 2005 review of the commonage programme that most of the commonage projects visited by them showed that unsustainable land-use practices are leading to degradation of parts of the land (DLA, 2005: 29; Martens, 2009)).

The limited numbers of commonage farmers that have graduated to commercial operations is a concern DLA, 2005:20). As the public sector tries to improve guidelines and programmes to assist these farmers to graduate, there are a number of key constraints that are still evident for these farmers:

- Very few earn any profits from their activities
- Farmers face exorbitant fees
- Farmers cannot access credit or funding in order to purchase their own land
- Shortage of grazing and forage resources
- Poor condition of livestock
- Prevalence of disease
- Vulnerability to drought and extreme weather conditions
- Knowledge and capital constraints to marketing and selling produce
- Poor transport infrastructure and networks
- Distance from markets
- Lack of agricultural infrastructure

(Masiteng et al., 2003: 90; DLA, 2005: 20; Govender-van Wyk & Wilson,2006: 10)

9.13 SWOT Analysis

The following section discusses the Strengths, Weaknesses, Opportunity and Threats of the wool commodity value chain in the Joe Gqabi DM. Strengths and weaknesses refer to the positive and negative internal factors affecting the growth of the industry; whereas threats and opportunities refer to the external factors affecting the industry. The SWOT analysis is structured under the prioritisation matrix headings – biophysical, enterprise viability, economic development and political and social goals, where applicable.

9.13.1 Strengths

Biophysical:

- The conditions in JGDM make for good quality wool. The area is not generally thorny which can sometimes lead to poorer quality wool.

Enterprise viability:

- The demand for wool from agribusinesses remains high.
- There are a number of agribusinesses operating in JGDM that are willing to purchase local farmers' wool.
- Short distances to markets or well-established transport links to major markets.
- Local farmers (small-scale and emerging) are very familiar with wool farming.

Economic development:

- Wool industry has a number of forward linkages.
- South Africa wool market is globally competitive and exports a significant proportion of total wool produced in the country.

Political and social goals:

- Commercial wool industry is well-established in the district.
- JGDM has a reputation for producing good quality wool.

9.13.2 Weaknesses

Economic viability

- Start-up capital costs for infrastructure and equipment, such as shearing equipment, may hamper the growth for emerging farmers.

Economic development:

- There are limited processing and value-adding activities for wool in JGDM.
- South African wool can easily be substituted by cheaper global imports.

9.13.3 Opportunities

Biophysical:

- Availing state land for the expansion of the wool sector.

Enterprise viability:

- Wool farmers can create partnerships with agribusinesses and commercial wool farmers in order to source funding.

Economic development:

- Wool industry can create a number of jobs further up the value chain.
- There is significant potential for exporting JGDM wool.
- Given the reputation and quality of the wool, the district's wool sector can consider branding.
- Processing facilities, such as shearing sheds.

Political and social goals:

- There is an opportunity for commercial farmers to pass their skills and expertise down to emerging farmers through mentorship programmes.

9.13.4 Threats

Biophysical:

- Weeds, pests and diseases pose the biggest biophysical threat to small stock and the wool sector.
- The recent drought in South Africa has posed a serious threat to all livestock farming

Economic development:

- The wool processing sector is already well-established outside the district and would therefore be difficult to compete with.

Political and social goals:

- Small stock theft is one of the biggest social threats in the district.
- The wool sector does not directly contribute to food security and small-scale farmers may prefer farming with commodities that can directly provide them with food.

Maize

Chapter 10

10. MAIZE

10.1 Maize Market Analysis

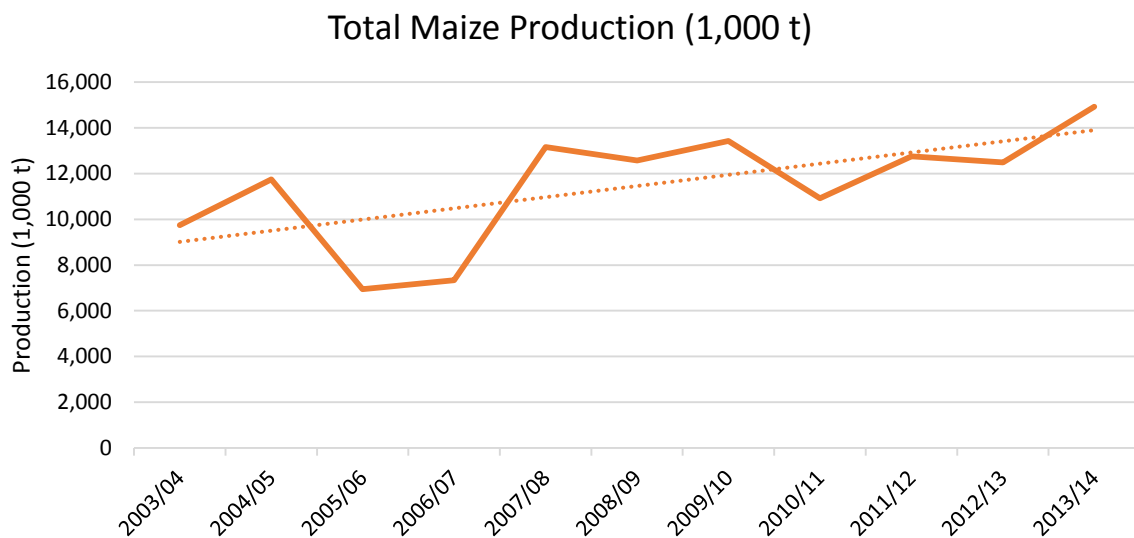
Maize is one of the most important grain crops in South Africa and is the staple food of a large portion of the population. The South African maize industry was deregulated in 1997 and is operating in a free-market environment where producers sell to whomever they wish and the prices are determined by supply and demand.

10.1.1 Production

Maize is produced throughout the country in various environments. The production is dependent on rainfall that exceeds 350 mm per year.

Figure 10.1 provides an overview of the production of maize in South Africa between 2003/04 and 2013/14.

Figure 10.1: Total Production Volumes, 2003/04 – 2013/14

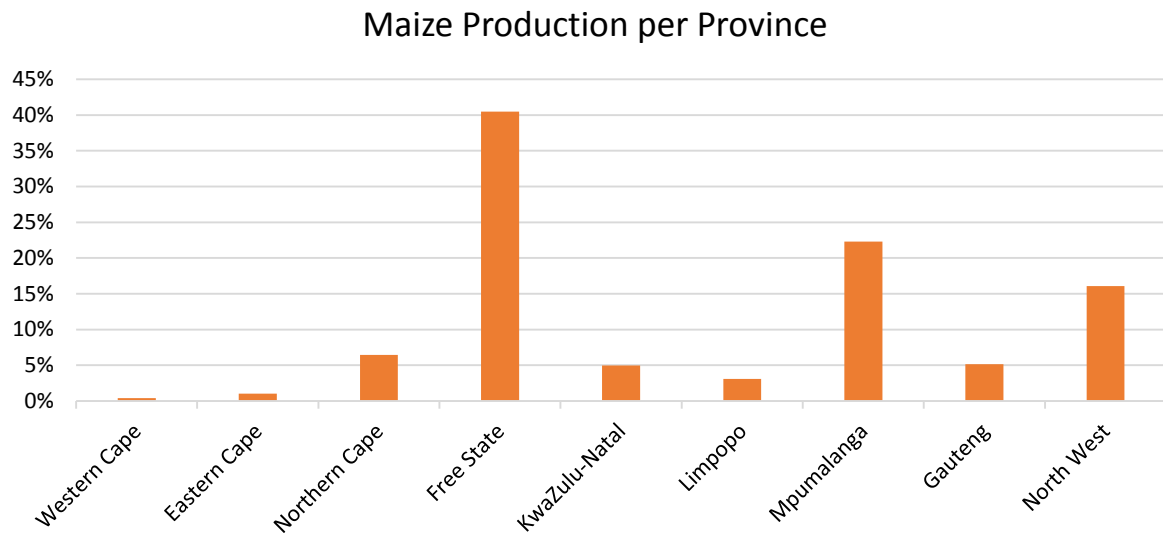


Source: DAFF, 2015

The total maize production for 2013/14 was 14,925,000 tons. The production volume increased by 19.5% between 2012/13 and 2013/14.

Figure 10.2 indicates the maize production per province throughout South Africa for 2014/15.

Figure 10.2: Maize production per province, 2014/15

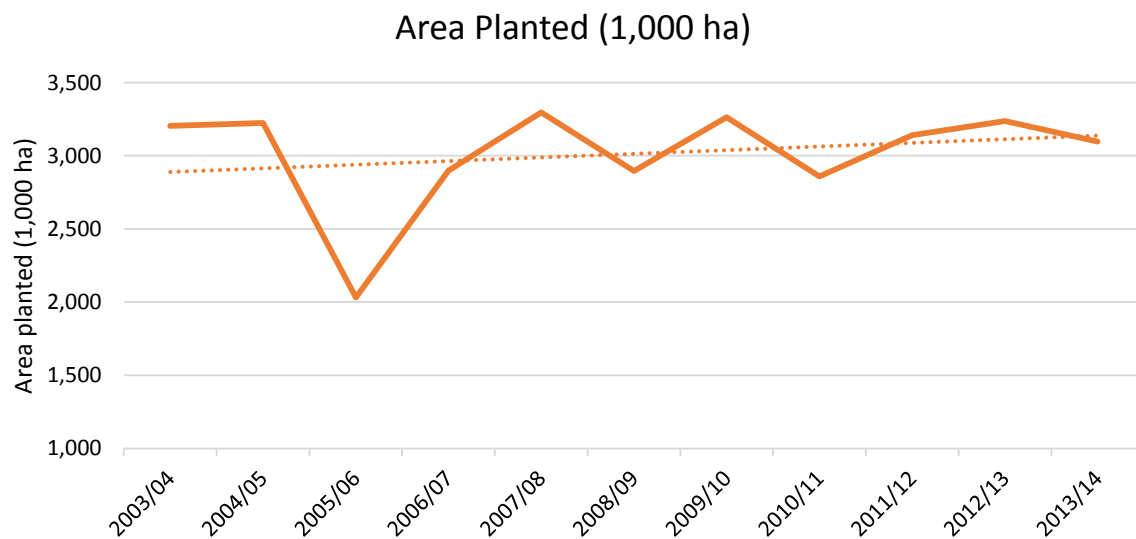


Source: DAFF, 2015

The three provinces that made the largest contribution to maize production in South Africa in 2014/15 were the Free State (40.5%), Mpumalanga (22.3%) and the North West Province (16.1%). These three provinces together contributed a total of 78.9% of South Africa’s maize production.

Figure 10.3 indicates the area planted within South Africa for the period 2003/04 to 2013/14.

Figure 10.3: Area planted, 2003/04 – 2013/14

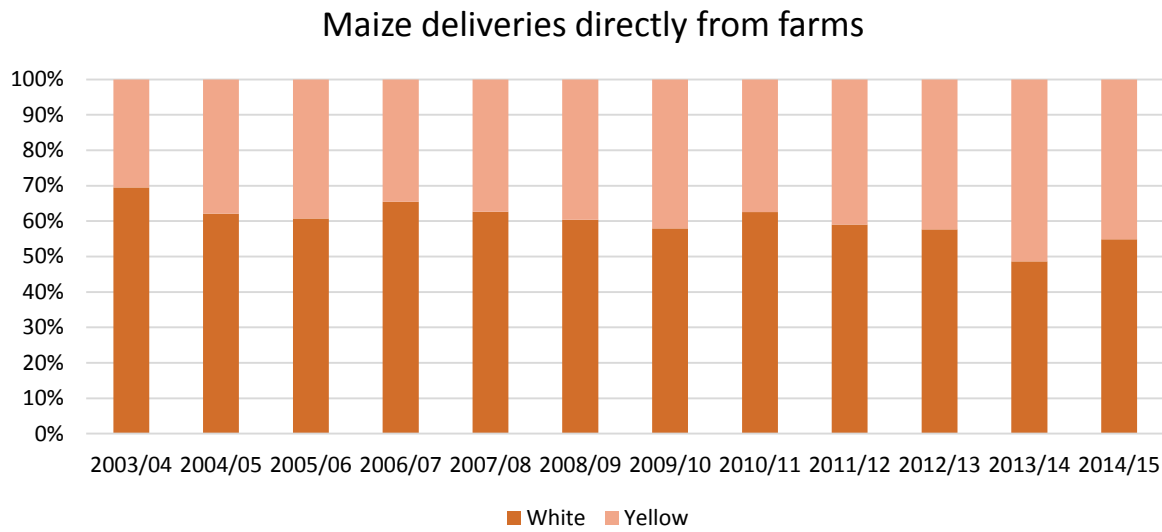


Source: DAFF, 2015

Between the period 2003/04 to 2013/14, the area planted stayed fairly constant between around 2,800,000 ha and 3,300,000 ha except for 2005/06 when it was at a low of 2,032,000 ha. The area planted in 2013/14 was 3,096,000 ha.

Figure 10.4 provides an overview of the split between white and yellow maize that was delivered directly from farms in South Africa for the period 2003/04 to 2014/15.

Figure 10.4: White and yellow maize deliveries directly from farms, 2003/04 – 2014/15



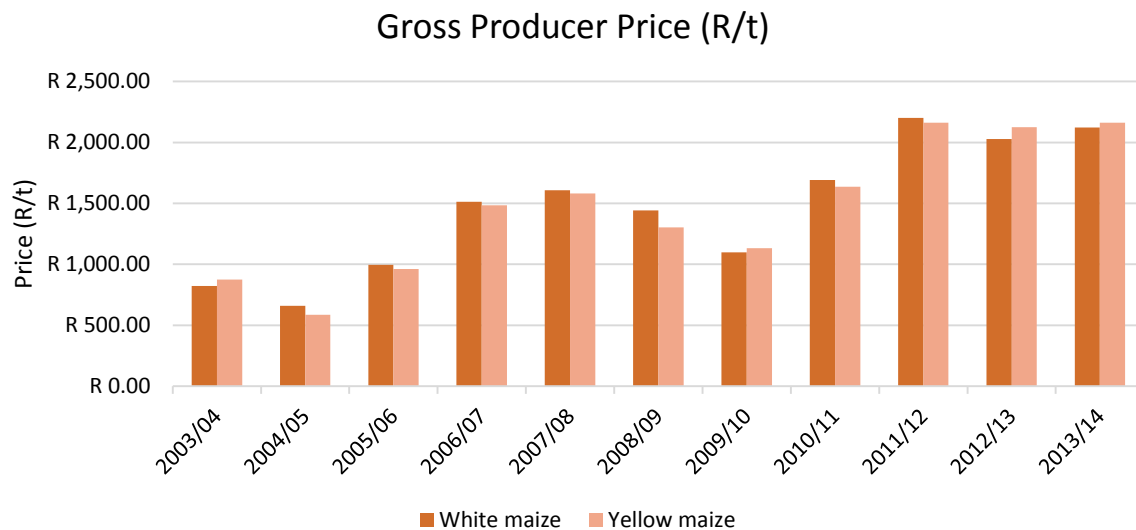
Source: South African Grain Information Service, 2015

There has been a noticeable change in the split between white and yellow maize. In 2003/04, 70% of maize was white maize, while 30% was yellow maize. The contribution of yellow maize has increased over the years to such an extent that in 2013/14 yellow maize contributed 51%. In 2014/15 55% of maize was white maize, while 45% was yellow maize.

10.1.2 Price

Figure 10.5 indicates the gross producer price for white and yellow maize between 2003/04 and 2013/14.

Figure 10.5: Gross producer price, 2003/04 – 2013/14

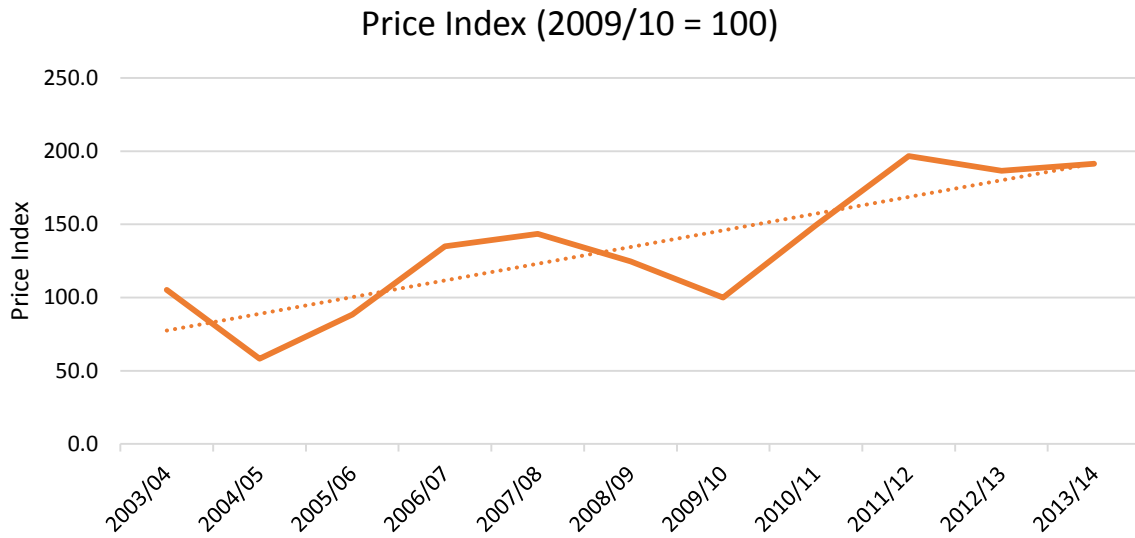


Source: DAFF, 2015

The gross producer price for white maize was R 2,122 per ton in 2013/14 and R 2,160 per ton for yellow maize.

Figure 10.6 indicates the price index for maize between 2003/04 and 2013/14.

Figure 10.6: Price index for maize, 2003/04 – 2013/14



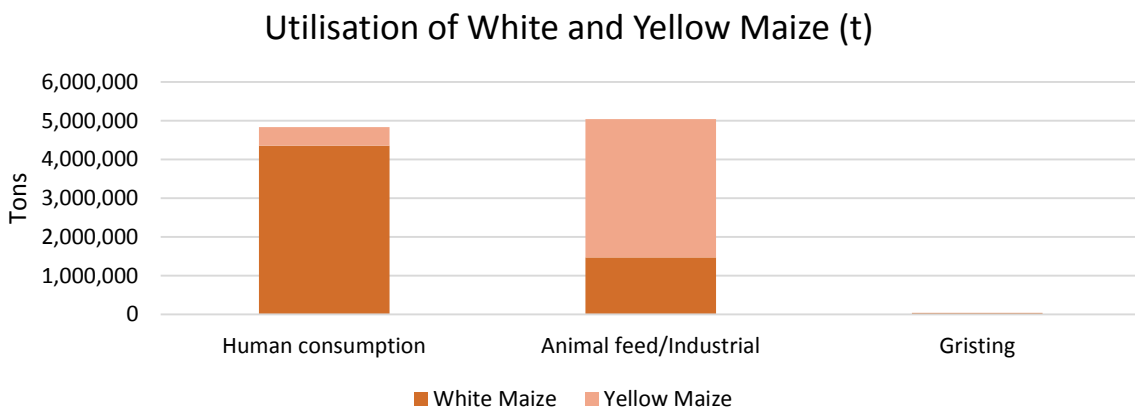
Source: DAFF, 2015

From figure 10.6 it is evident that the price for maize has increased by an average of 6.2% per annum between 2003/04 and 2013/14. The price index stood at 191.5 in 2013/14.

10.1.3 Utilisation & Consumption

Figure 10.7 provides an overview of the utilisation of maize that was processed for the local market in 2014/15.

Figure 10.7: Utilisation of maize, 2014/15

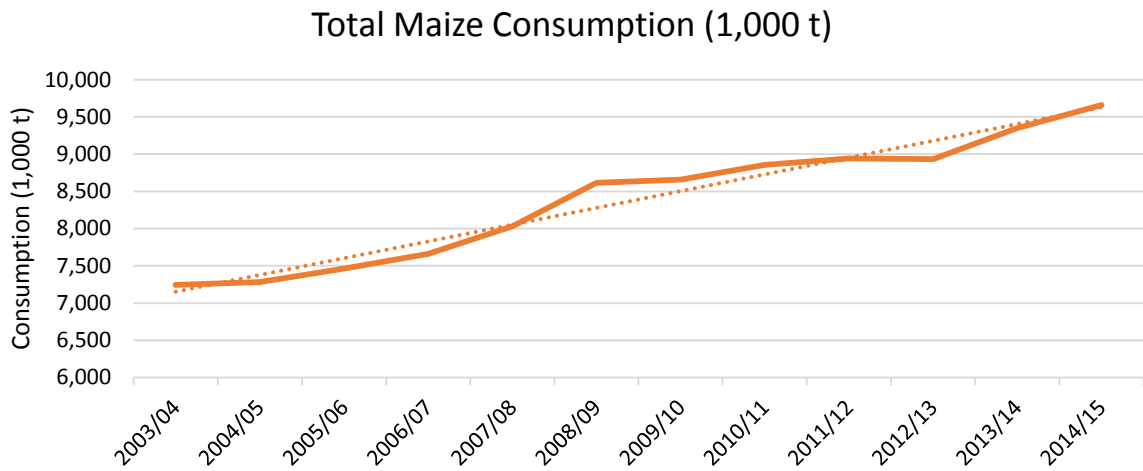


Source: South African Grain Information Service, 2015

The majority of maize (50.8%) is utilised for animal feed or industrial uses, while 48.8% is utilised for human consumption (maize processed for drinkable alcohol included). Only 0.5% of maize was utilised for gristing and no maize was utilised for biofuel. The majority of white maize was utilised for human consumption, while the majority of yellow maize was utilised for animal feed or industrial uses.

Figure 10.8 shows the total commercial maize consumption in South Africa between 2003/04 and 2014/15.

Figure 10.8: Total commercial maize consumption, 2003/04 – 2014/15

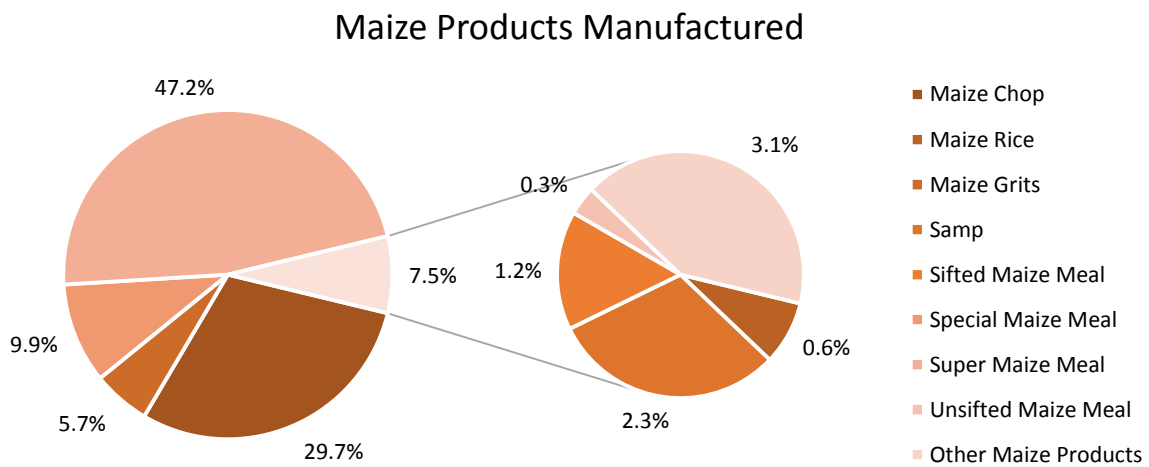


Source: DAFF, 2015

South Africa has seen a steady increase in the amount of maize consumed with an average increase of 2.9% per annum between 2003/04 and 2014/15. In 2014/15, a total of 9,659,000 tons of maize was consumed.

Figure 10.9 indicates the breakdown of the various maize products manufactured per month based on the average between July and September 2015.

Figure 10.9: Breakdown of maize products manufactured per month



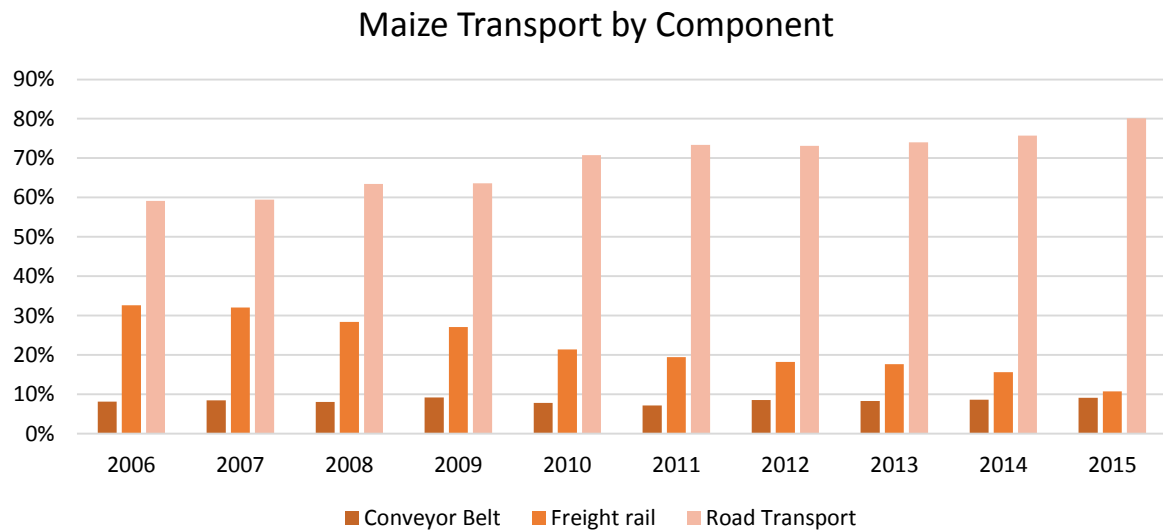
Source: South African Grain Information Service, 2015

The top maize products manufactured are Super Maize Meal (47.2%), Maize Chop (29.7%), Special Maize Meal (9.9%) and Maize Grits (5.7%).

10.1.4 Transport

Figure 10.10 indicates the means by which maize was transported in South Africa between 2006 and 2015.

Figure 10.10: Maize Transport by component, 2006 - 2015



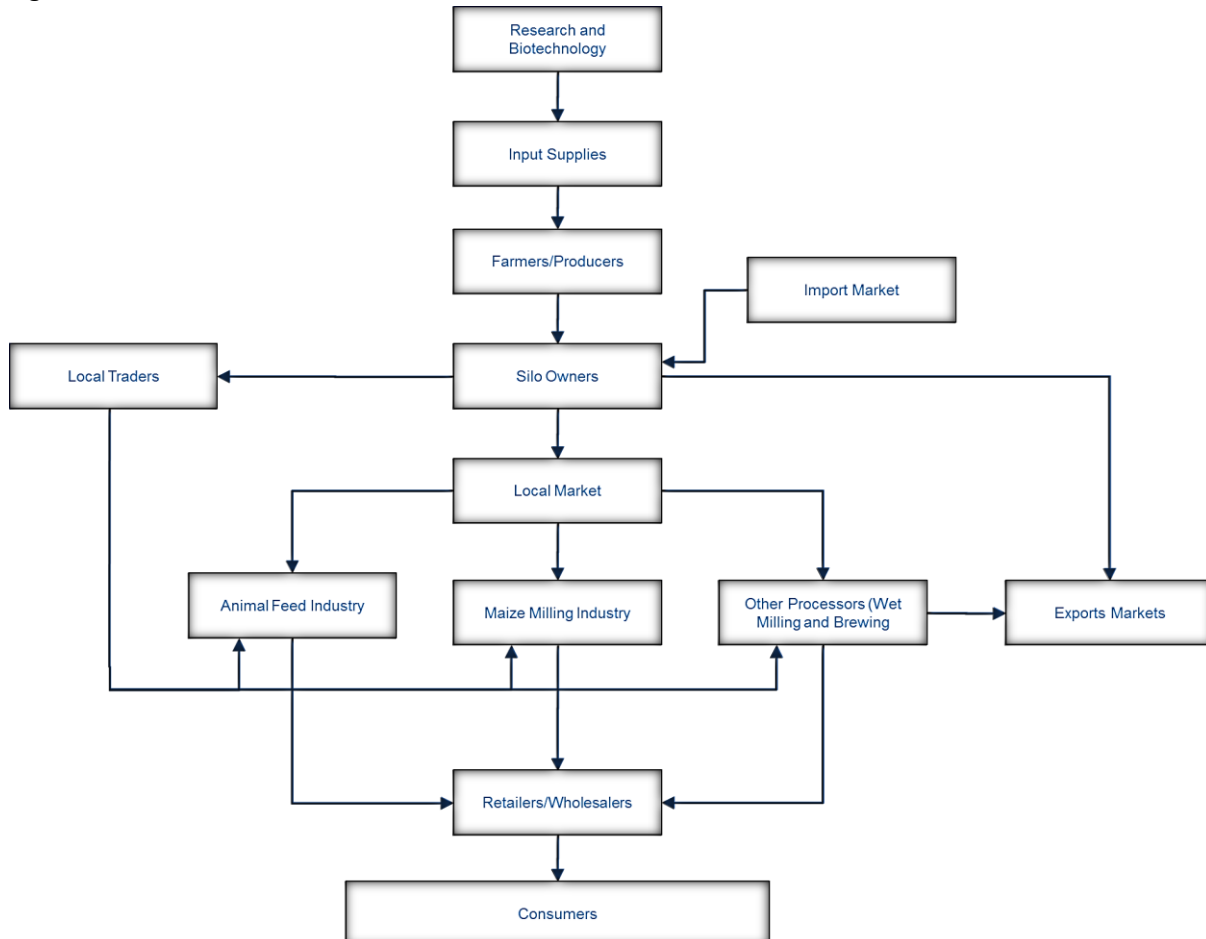
Source: South African Grain Information Service, 2015

The percentage of maize transported by road has increased from 59.2% in 2006 to 80.1% in 2015, conversely, the percentage of maize transported by freight rail has decreased from 32.7% in 2006 to a mere 10.8% in 2015. The percentage of maize transported by conveyor belt has stayed fairly constant fluctuating between 7.2% and 9.3% over the period.

10.2 Value Chain Assessment

The following section provides an overview of the value chain of maize describing each step of the value chain, the structure of the value chain and the nature of inputs and outputs at various stages.

Figure 10.11: Maize Value Chain



Source: Urban-Econ, 2015

Upstream Activities

As Maize production is classified as primary production the upstream activities relevant to the value chain are primary the input supplies used in the production system. The major inputs for livestock production include animal genetic resources, feeds and forages, veterinary drugs, vaccines, machinery equipment as well as knowledge. Most of these inputs are supplied by Agricultural Co-operatives in the respective areas. The Eastern Cape Province has three major Agricultural Co-operatives namely:

- OVK – TRADE
- Humansdorp Ko-op
- East Cape Agri – Co-op Ltd / BKB LTD

Primary production activities

Experts suggests that the Eastern Cape has the potential to produce 1.2-million tons of maize a year. In Grain SA's revised crop estimate for the 2015-16 season, it is estimated that the current drought situation might lead to SA having to import an estimated 1.29-million tons of maize this year.

Production figures indicate that Eastern Cape farmers have the potential to participate in mainstream commercial maize farming. The NCE figures indicate that in 1990 the Eastern Cape's maize production was 62,000 tons and 111,000 in 2014, a growth of 79%. This growth can be attributed to improved agricultural practices and technological improvements, but most importantly, to the contribution made by organised agriculture. When facing situations such as the current drought, where 75% of SA's maize production is at risk, the Eastern Cape farmers are enjoying fairly stable climatic conditions allowing for acceptable production levels.

The province has a strong rural character: with a large proportion of the population living in rural areas with only a third living in towns. In contrast to the rest of South Africa, a significant percentage of Eastern Cape households are involved in agriculture: more than 37 percent of the population reside in households that engage in some form of economic activity related to farming. In most cases, this activity is not an important source of income for these households; rather, they engage in farm production to supplement income from other sources (Provide 2005).

With respect to land access, 28 percent of the province's households have access to land. Plot sizes are relatively small and tenure is derived from tribal authority allocation (General Household Survey 2007). Households that engage in farming tend to be poorer than non-farming households in income terms (Provide 2005). Furthermore, data from the most recent General Household Survey (2007) found that Eastern Cape households that have access to land reported a higher incidence of adults and children going hungry when compared with households that do not have access to land.

The agro-ecological base of the Eastern Cape, while prone to degradation, is fairly robust. In 2003, the Eastern Cape Department of Agriculture estimated that the province had approximately 500 000 hectares of moderate to high potential, rain-fed cropland available for development while only 15 000 hectares was under production.

Downstream activities

It is estimated that the Eastern Cape has the potential to produce 1.2 million tonnes of maize per annum. In a typical year, Eastern Cape-based maize millers purchase 15 000 tonnes of maize grain and 80 to 90 percent of this is sourced outside the province. If maize grain could be produced in the Eastern Cape and delivered to local millers at below the cost of intra- provincial imports, maize meal prices for local consumers may be reduced. This could have a strong impact on reducing poverty since the ultra-poor in South Africa spend more than 50 percent of their monthly income on food. Of this amount, approximately 20 percent is spent on maize meal (Traub and Jayne, 2006). Despite high poverty levels among small scale farmers in the Eastern Cape, crop farming activities undertaken by rural households in the former Transkei and Ciskei areas of the province have declined steadily since the 1960s.

Agro-processing opportunities

Maize: Opportunity for storing (silos), milling (animal feed and maize meal for human consumption) and processing to various alternative produce. Packaging, transporting and branding are important requirements. Require sufficient supply - economies of scale. Require high level management capacity. It should be noted that there are various mills in area e.g. Elliot and should be taken in consideration before establishing new facilities.

Soya: Bio Fuel plant - Biofuel manufacturing could create processing opportunities. Long term potential and requires contracts.

Potatoes: Washing and packing plant.

10.3 Competitors

The maize sector in JGDM is not as well-established as the wool or red meat sector. Competition from commercial farmers within the district should therefore be relatively low in comparison to the other commodities. The JGDM maize sector will however face substantial competition from the maize sector in OR Tambo DM, where there are a number of producers. The implications of this is that the JGDM Agri-Park can easily penetrate the local market to meet the demand for maize within the district. The JGDM Agri-Park can also create linkages with the O.R. Tambo maize sector in order to grow the maize sector in the region.

10.4 Stakeholders

There are a number of organisations involved in the maize value chain in South Africa. One of the key organisations is Grain SA. Grain SA is a voluntary association that provides commodity strategic support and services to South African grain producers to support sustainability. Table 10.1 shows other key stakeholders in the maize sector in South Africa.

Table 10.1: Maize Sector Stakeholders

Stakeholder	Description
Marketing/Trade	
SA Grain Information Service (SAGIS)	SAGIS is a section 21 company founded in November 1997, after the deregulation of agriculture in South Africa, to provide certain agricultural industries with vital marketing information.
Industry bodies	
AFMA (Animal Feed Manufacturers Association)	AFMA represents the animal feed industry on various committees and platforms where it is necessary to enhance or protect the interests of Industry.
GOSA (Grand Handling Organisation of Southern Africa)	The main objective of this organisation is to create an environment in which all institutions and individuals who are directly involved in the handling, storage, marketing, financing, distribution and processing of grain and related industries can fulfil their roles effectively.
NCM (National Chamber of Milling)	NCM is a trade association not for gain, representing the interest of the South African flour and maize milling industry. The organisation promotes, encourages and assists in the common interest of the milling industry in South Africa.
Industry trusts	
Maize Trust	The Maize Trust provides funding for the benefit of the maize industry in South Africa and more specifically to financially support market- and production-related scientific and/or technical research in respect of maize and market access in respect of South African maize.
Grading equipment	
Ronin Grain Management Services	Ronin Grain Management Solutions supplies grain management system solutions, analytical grading equipment and grain handling services to the Southern African Grain Handling and Storage Industry.
Laboratories	
SA Grain Laboratory (SAGL)	This non-profit company delivers market driven analytical laboratory services.

Stakeholder	Description
International grain industry bodies	
Grain Elevator and Processing Society (GEAPS)	GEAPS has dedicated itself to becoming the Knowledge Resource of the Grain Handling Industry through its strategic plan, and the Core Competencies that GEAPS developed to define those areas of skills and technologies that are most relevant to GEAPS members and their industry.
World Grain	The grain and grain processing information site

Source: AgbizGrain, 2015

10.5 Technology

Agricultural research and technological innovation have been attributed to the African continent's higher than expected agricultural productivity rate (at 1.8%) over the last three decades (Juma, 2011). Small holder farmers linked to the Agri-Park will have an opportunity to make use of leading technology to support the production, marketing, logistics and processing of their commodity. Maize as with other commodities has benefited from developments in genetics, nanotechnology, GIS and remote sensing, information systems and communication technology.

The basic equipment required by farmers involved in the Agri-Park, to produce maize will include tractors, trailers, ploughs, planters (seeds), irrigation, fencing, basic farming implements (spades, hoes etc.) and trucks or Light Delivery Vehicles (LDVs) for transporting goods.

Recent developments in farming will have to be considered in order for any farming activity to be competitive in the future. Two such major considerations must be acknowledged for maize industry, this is mechanisation and farm energy.

Mechanisation

Mechanisation is the process of using agricultural machinery to industrialise work in the agricultural sector, leading to increased farm productivity. The advancements in mechanisation for maize have been:

- New generation small hand tools
- Small-scale implements and tractors: New generation of farming implements and tractors tailored for small-scale farming

Many farming activities, especially repetitive day-to-day work, can be greatly enhanced by hand tools designed for the particular task, speeding up production and reduce health and safety risk. This is especially suited to small-scale farmers. Farmers benefit from modern mechanisation and large leaps in productivity even though they farm at small scale, and at a much lower cost compared to conventional implements used by large commercial farmers. The cost of small-scale implements and tractors may be high enough to prohibit small-scale farmers.

Farm Energy

This refers to new sources of energy being incorporated in the agriculture process, this includes renewable energy. The advancements in farm energy in relation to maize has been:

- Wind energy: Wind energy has been used for a long time in South Africa in the form of wind pumps. New generation wind technology allows for uses beyond wind driven water pumping, including electricity generation at micro or farm level scale.
- Solar technology incl. photovoltaic and thermal panels and solar drying and cooking: There are two main forms of solar energy harvesting, i.e. photovoltaic panels that produces electricity, and thermal

solar panels or tubes that heat water. Solar energy is also widely used on farms for solar drying and solar cooling.

Wind is a renewable form of energy and some areas in South Africa do have sufficient wind development potential, especially when micro-climatic and small-area topographic factors are considered which is appropriate for very small-scale operations. Wind energy is also less vulnerable to theft compared to solar panels. Solar is a renewable form of energy that should be considered if wind development potential is not sufficient.

Other technological advancements in the maize sector that should be considered for the Agri-Park are:

- Recombinant DNA technology and genetic modified varieties: The process of natural selection by traditional breeders can be accelerated by deliberate insertion of genes that code for a particular trait into the host organism, thereby it is possible to develop crop varieties that have more desirable traits.
- No-till or conservation tillage: Land preparation for crop production without tilling the land at all, or just partially breaking up of the soil.
- Remote sensing: Interpreting satellite images to make farming decisions. Satellite images provide valuable information on biomass production, soil and air mass temperature, soil moisture, plant stress levels, fire warnings etc.
- Integrated weed and pest management incl. biological control agents: Pests and weeds are major threats to farmers and food security. Chemical control has been effective for some pests and diseases but it is expensive and causes harm to human health and the environment. Consumers and governments locally and to export markets place increasing pressure on farmers to adopt integrated management practices to reduce reliance on only chemical control. Especially important is biological control where the natural enemy of the weed or pest are released locally to control population levels. It is not only applicable to crop farmers but to all extensive and semi-intensive animal farmers as well (pasture or veld management).

Recombinant DNA technology and genetically modified varieties can lead to large gains in traits such as drought, pest, pathogen or herbicide tolerance, superior yields, nitrogen uptake ability, taste and texture etc. It is particularly important to sustain future expanding populations and to compensate for climate change effects such as drought and salt tolerance, nitrogen metabolism and even fixation, herbicide tolerance (to facilitate weeding, a major agricultural problem) and general yield improvements. No-till conservation tillage can have significant cost savings in terms of diesel, increased moisture retention and reduced soil erosion. Remote sensing enables the farmer to make well informed decisions based on information that otherwise would have been too difficult or expensive to obtain. It provides complete information of the entire farm and some information is provided daily or instantly. Integrated weed and pest management is generally more effective and sustainable than chemical control on its own (Maastraat, 2015).

10.6 Demand and Needs Analysis

Maize is a critically important agricultural product for South Africa both for its use as food and as a major input into the red and white meat value chains in the form of animal feed. Maize is produced throughout the country in various environments. The production is dependent on rainfall that exceeds 350 mm per year and is very susceptible to drought. Low rainfall figures and other adverse weather conditions experienced during the critical points of the growing season can see maize production levels for a season drop drastically worsening food-security and – through its various value-chain linkages – result in a sharp rise in food prices, particularly in the prices of meat.

Much of this vulnerability is due to maize growing being centred in the Free State, Mpumalanga and North West provinces. Increasing the production of maize in other parts of the country will assist in sheltering the maize market, and other agricultural markets, from this risk.

Maize is grown in South Africa primarily for local consumption. Production of both white and yellow maize has increased steadily over the past decade and expectations are that demand for maize will remain strong across the country in the medium to long term.

It is recommended that maize is marketed collectively in the JGDM and that the Agri-Hub acts as a silo business. In the short-term the most promising channels will be to supply to existing silos and/or to sign forward contracts with large feedlots, piggeries and poultry producers that are situated as near as possible to the production areas. It is possible to provide an estimate for demand based on historical consumption figures and populations. The table below provides a summary on estimated demand on a national and provincial level.

At an average per capita consumption of maize at 82.13kg, there is a clear demand for maize and maize products in South Africa. Demand for maize on a national level is approximately 4.25 million tons. In Joe Gqabi DM the demand for maize is approximately 28 726.45 tons.

Table 10.2: Annual Demand for Maize (tons)

Area of Demand	Estimated Demand
South Africa	4 251 916,11
Eastern Cape	538 941,42
Joe Gqabi DM	28 726,45
Elundini	11 345,51
Senqu	11 017,78
Maletswai	3 597,31
Gariep	2 765,86

Source: Quantec 2013, Census 2011

10.7 Socio-Economic

Socio-economic progress and development can be measured in various ways, however the primary method of measurement selected for wool commodity is job creation. Labour input is a key element of the production process and one of the main production factors in any economy. The table below displays the sectoral labour multipliers applicable to the maize industry, i.e. the number of the job opportunities created at different levels for every additional R1-million production. The table below indicates that maize creates 3.49 direct on farm jobs, 1.34 indirect jobs and 1.91 induced jobs for every R1 million produced.

Table 10.3: Maize Employment Multipliers

Sector	Direct	Indirect	Direct + Indirect	Induced	Total
Other Agricultural Products	3.49	1.34	4.83	1.91	6.74

The three multipliers measure the total numbers of job created in an ideal economic environment for the maize commodity. Small-scale production is notorious for utilising more labour per unit produced than large-scale commercial production endeavours. Small-scale production requires a small to medium investments in infrastructure and farming implements, while large-scale operations would require significant investments for planting, harvesting, storage and potentially processing, increasing the direct labour multiplier above that of the identified 3.49 jobs. Maize processing is likely to occur within the Agri-Hub at the Lady Grey processing facilities,

leading to the expected increase in indirect job creation. Induced multiplier job creation within the district can be as expected. This is important to note for the development of the Agri-Park.

Information that is available on the District's maize production and the potential number of hectares, together with the Bureau for Food and Agriculture Policy, have been used to estimate the employment opportunities that maize production can contribute in the 10-year period. The Agri-Park can provide approximately 6 700 employment opportunities from the programme. It must be noted however that these figures are purely indicative and will change through the development of the Agri-Park.

10.8 Contribution to Food Security

In October 2013, the government launched the food security programme, Fetsa Tlala, with funds of R2 billion made available. The programme is managed by DAFF.

The government's Integrated Food Security Production Intervention Programme was introduced in 2012 to afford smallholder farmers, communities and households the ability to increase production of basic food. This intervention will be managed over a period of 10 years from 2012 to 2022. The programme is intended to promote self-sufficiency and food security by getting communities to plant their own food (Department of Government Communications and Information Systems, 2014).

Maize, wheat and rice are some of the most important staple foods in developing countries. According to CIMMYT (2011), between 2011 and 2050, the demand for maize will more than double. By 2025 maize will have become the crop with the greatest production globally and in the developing world. It was estimated that current levels of maize productivity growth will still fall short of demand and millions of farm families will remain in poverty. The report therefore provides a strategy that should improve food security and the livelihoods of the resource-poor (CIMMYT & IITA, 2011).

Rice, wheat and maize have been identified as global food security crops. While it is recognised that the world does not only consume rice, wheat and maize, challenges facing these crops should be addressed to avoid major negative implications for the poor. Climate change challenges has resulted in lower expected growth in maize production over the next few decades (IFPRI, 2010). Climate change challenges have been felt in 2015, with large parts of South Africa experiencing droughts, resulting in a considerable drop in production and an increase in prices. For food prices to remain relatively constant, annual yield gains must increase. It was estimated that maize yields should be increased internationally from 1.6% to 2.4%, using the same level of resources/inputs (IFPRI et al, 2010).

10.9 Regulatory Requirements

There are numerous legislation documents governing the maize sector. These range from regulations as to the production inputs, to those governing production. The pertinent of the acts are contained in table 10.4.

Table 10.4: Maize Regulatory Requirements

Regulation	Description
1. Agricultural Product Standards Act, 1990 (ACT No. 119 OF 1990)	<ul style="list-style-type: none"> • Regulations relating to the grading, packing and marking of maize products intended for sale in the Republic of South Africa. • Maize quality is determined by official grading regulations promulgated under the Agricultural Products Standards Act, which governs the classification and grading of maize based on several qualitative factors. The quality of the maize destined for export is confirmed with an export certificate issued by the Perishable Products Export Control Board (PPECB) as the official assignee of DAFF.
2. Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947)	<ul style="list-style-type: none"> • The act provides for the appointment of a Registrar of Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies; • for the registration of fertilizers, farm feeds, agricultural remedies, stock remedies, sterilizing plants and pest control operators; • to regulate or prohibit the importation, sale, acquisition, disposal or use of fertilizers, farm feeds, agricultural remedies and stock remedies; • To provide for the designation of technical advisers and analysts.
3. National Water Act, 1998 (Act No.36 of 1998)	<ul style="list-style-type: none"> • This act encompasses laws relating to water resources and the use thereof.
4. Conservation of Agricultural Resources Act No. 43 OF 1983	<ul style="list-style-type: none"> • Control over utilization of natural agricultural resources • Promote conservation of soil • Promote conservation of water sources • Promote conservation of vegetation • Combating of weeds and invader plants
5. Genetically Modified Organisms Act	<ul style="list-style-type: none"> • Promote the responsible development, production, use and application of genetically modified organisms. • To limit possible harmful consequences to the environment. • To give attention to the prevention of accidents and the effective management of waste. • To limit, evaluate and reduce potential risks. • To establish a council for GMO's • To ensure GMO's do not present a hazard to the environment. • To establish appropriate procedures for the notification of specific activities involving the use of GMO's.
6. Marketing of Agricultural Products Act	<ul style="list-style-type: none"> • To establish and enforce regulatory measures to intervene in the marketing of agricultural products, including the introduction of levies. • To establish a National Agricultural Marketing Council
7. Plant Breeders Rights Act	<ul style="list-style-type: none"> • Plant breeder's rights are granted for certain kinds of plants. • Establish rights to be complied with to grant the rights. • For the protection of rights and exercise thereof.

Regulation	Description
8. Plant Improvement Act	<ul style="list-style-type: none"> To provide for the registration of premises from which the sale of certain plants or the cleansing, packing and sale of certain propagating material may be undertaken. To prescribe the conditions for such plants, or propagation material to be sold. To provide recognition for such plants. To provide for a system of certification with the objective of maintaining quality. Control of imports and exports
9. Agricultural Pests Act	<ul style="list-style-type: none"> To provide for measures by which agricultural pests may be prevented and combated.
10. Foodstuffs, Cosmetics and Disinfectants Act (Act No. 54) of 1972	<ul style="list-style-type: none"> To control the sale, manufacture and importation of foodstuffs, cosmetics and disinfectants.
11. Occupational Health and Safety Act, 1993 (Act No.85 of 1993)	<ul style="list-style-type: none"> Aims to provide for the health and safety of persons at work and the health and safety of persons in connection with the activities of persons at work and To establish an advisory council for occupational health and safety.
12. Basic Conditions of Employment Act, 1983 (Act No. 3 of 1983)	<ul style="list-style-type: none"> Encompasses those regulations associated with fair labour practices.
13. Marketing Act, 1968 (Act No. 59 of 1968)	<ul style="list-style-type: none"> The Act has authorised an establishment and enforcement of regulatory measures to intervene in the marketing of agricultural products, including the introduction of levies on agricultural products.

The abovementioned legislation outlines the legal framework pertaining to the Agri-Park. The Agri-Park is intended to operate as an Agribusiness and therefore must adhere to the abovementioned legislation.

10.10 Substitute Products and Services

Maize and maize products do not have many substitutes. Maize serves as a staple food within the district, with the agricultural community revolving around subsistence production of the commodity. Maize production and processing often serve as substitutes to products further down the value chain.

10.11 Barriers to Entry

Barriers to entry are obstacles that make entry into a given market difficult such as regulations, high infrastructure costs or competition in the given area. This section will discuss the barriers to entry of the maize industry. This is important to note for the development of the Agri-Park.

Table 10.5: Barriers to Entry: Maize

Constraint	Description	Level Of Influence
Capital, Raw Materials And Production Issues		
Climatic conditions	The prevailing climatic conditions determine where maize can be grown effectively, limiting production to only certain areas in the district.	-
Farmland availability	The identification of sufficient vacant land within the district on which to begin/expand maize production is a challenge for the industry. In the homeland areas, various land uses create a challenge. Related to this are the land tenure issues that will need to be addressed if land in these areas is to be released for commercial production.	Provincial
High production costs	A large proportion of production inputs are imported, resulting in relatively high input and capital costs. There are also significant costs associated with transporting maize to major markets.	-
Human Resource Issues		
Lack of skills	Skill levels in JGDM are relatively poor and there is a need for appropriate skills transfer programmes to improve production practices and subsequently, yields.	Provincial, District
Infrastructure		
Silos	Since maize production is a once a year activity, harvested maize has to be stored in silos until utilised. This adds to the cost of the price of grain for the consumer, millers and the industry. There is also currently insufficient maize storage capacity in the Joe Gqabi District Municipality.	Provincial, District
Competition And Access To Markets		
Industry price setting	The price of maize in South Africa is controlled by the import and export parity prices. The revenue received by individual farmers can therefore vary significantly, making it difficult for farmers to properly manage their cash flow.	-

Source: Urban Econ, 2015

10.12 Societal and Cultural Trends

Maize has an important cultural significance within the rural areas, with many households producing subsistence levels of production to supplement their diets. Maize has historically been produced at subsistence levels within the region. Socially, maize still provides important usages, substituting large parts of the rural household's diet with production produced locally, with multiple uses, such as food for the household and the livestock, corn-bread, maize meal, etc.

10.13 SWOT Analysis

The following section discusses the Strengths, Weaknesses, Opportunity and Threats of the maize commodity value chain in the Joe Gqabi DM. Strengths and weaknesses refer to the positive and negative internal factors affecting the growth of the industry; whereas threats and opportunities refer to the external factors affecting the industry. The SWOT analysis is structured under the prioritisation matrix headings – biophysical, enterprise viability, economic development and political and social goals, where applicable.

10.13.1 Strengths

Biophysical:

- Maize has the ability to adapt to the JGDM environment.

Enterprise viability:

- The demand for maize is extremely high.
- The markets are fairly open and allow for emerging farmers to sell their goods to established local chains.
- The payback period for maize is low and income can be made after one season.
- Implements and infrastructure used for maize farming is not excessive. It is accessible to emerging farmers.

Economic development:

- Maize has a large degree of forward and backward linkages which indicates that maize is useful in a number of sectors.
- The nature of maize farming allows for agglomeration of industries and creates local opportunities for employment.
- It is likely that any maize grown locally will substitute any imports of maize from other regions and countries.

Political and social goals:

- Maize plays a significant role in food security.
- Maize is well supported by government and as the buy-in from the district municipality.
- Smallholder and emerging farmers can easily become involved in extensive maize farming.

10.13.2 Weaknesses

Biophysical:

- The availability of water in the district is often an issue.
- There are only small pockets of land suitable for maize farming in the district and cannot therefore be farmed across JGDM.

Enterprise viability:

- The contribution of maize to the local GDP may be small due to the limited volumes the district will be able to produce.

Economic development:

- The number of direct jobs maize farming can create is relatively low.

10.13.3 Opportunities

Enterprise viability:

- The demand for maize exceeds the supply in South Africa, expansion of maize production in JGDM can tap into this demand.
- There is an opportunity to exploit the open market for maize.
- Local farmers can easily access the local markets.

Economic development:

- There is an opportunity to create an agro-processing industry around the District based on the maize industry.
- The benefit of buying locally processed maize produce will reduce travelling costs and will help to create job opportunities in local communities.

Political and social goals:

- There is an opportunity for government to support and fund the development of the maize industry in JGDM.
- Food security in the district can be achieved by developing emerging farmers and communities.

10.13.4 Threats

Biophysical:

- Climate change poses a significant threat to the agriculture sector particularly in terms of rainfall and access to water.
- New pests introduced from other countries are an ever present threat to the agricultural sector
- The recent drought in South Africa has posed a serious threat to maize farming. Maize farmers have been particularly affected by the lack of rainfall in the area.

Enterprise viability:

- The majority of processing for JGDM harvests is outside of the district, meaning that the profits associated with these value-adding activities are not captured by the district.

Economic development:

- A lack of silos and infrastructure may negatively influence the growth of the maize industry.
- Since South Africa already imports maize, locally produced maize may find it difficult to enter the market at a competitive price.

Political and social goals:

- Benefits from the expansion of the maize industry in the district may only be limited to the Elundini LM.

