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FINAL BUSINESS PLAN: MASTER AGRI-PARK BUSINESS PLAN FOR THE ILEMBE DISTRICT

rural development & land reform
Department:
Rural Development and Land Reform
REPUBLIC OF SOUTH AFRICA

Official sign-off

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Document Information

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AGRI-PARKS MASTER PLAN ROADMAP – ILEMBE DISTRICT MUNICIPALITY (IDM)

Chapter 1: Introduction

Summary: This chapter provides a background to the project, the project goal and objectives, as well as the purpose of the project. It also presents the project methodology.
Key Words: Introduction, Master Business Plan, Goal, Objectives, Purpose, Agri-Park.
Must read if: The reader does not have any background on the Agri-Park Project.
The reader does not know what the goal and objectives of the Agri-Park are.
The reader would like to know what approach the project team took

Chapter 2: Agri-Park Model

Summary: The chapter provides a general overview of the Agri-Park model that was developed by DRDLR.
Key Words: Definition, Model, FPSU, AH, RUMC, smallholder farmers, commercial farmers.
Must read if the reader is not familiar with: The Agri-Park definition
The Agri-Park model
The three (3) basic units of the Agri-Park

Chapter 3: Policy Review

Summary: Provides an overview of the key policies that will guide the development of the Agri-Park Project
Key Words: National policies, provincial policies, Local policies, implication.
Must read if:

- The reader is not familiar with the policies that has an influence on the Agri-Park project.
- The reader does not know how the Agri-Park aligns with the existing policies

Chapter 4: Location Context

Summary: The chapter provides an overview of the iLembe District Municipality (IDM), the major economic activities and infrastructure, as well as the proposed location of the Agri-Hub.
Key Words: Economic Activities, Gross Value Added (GVA), Agri-Hub, Location.
Must read if:

- The reader does not know where the IDM is located.
- The reader does not know the major economic activities in the IDM
- The reader does know where the Agri-hub will be located in the IDM.

Chapter 5: Main District Role-Players

Summary: Provides a list of the main role players that could potentially be involved in the IDM Agri-Park at varying levels of the development process.
Key Words: Extension services, Financial services, Associations and Organisation.
Must Read if:
The reader wants to know the main role players that the Agri-Park could form private-public partnerships (PPPs) with.

Chapter 6: Economic and Socio-Economic Analysis

Summary:

- Demographic analysis.
- Sectoral analysis.
- Unemployment rates.
- Level of education.
- Income and Poverty level.

Chapter 7: Local Agricultural Industry Analysis

Summary:

- Main agricultural activities.
- Environmental conditions.
- Commodity identification.
- Commodity prioritization – three commodities

Chapter 8: Commodity Analysis: Sub-Tropical Fruit, Vegetables and Poultry (Livestock)

Summary:

- Market assessment.
- Value chain assessment.
- Technology needed.
- Related products.
- Stakeholder.
- SWOT analysis.

Chapter 9: Concept Development

Summary:

- Development concept.
- High–level capital expenditure.

Chapter 10: Organisational Structure

Summary:

- Advisory Structures
- Approval Structures
- Implementation and Monitoring Structures

Chapter 11: Implementation Guidelines

Summary: Implementation guidelines of the IDM Agri-Park.
Key Words: Alignment, Implementation Process, Recommendations, Catalytic Projects, Roll-out Plan.
Must read if: The reader is interested in the implementation of the Master business plan

Executive Summary

The concept, together with the introduction of an Agri-Park for each district municipality, is a relatively new notion to South Africa. This document represents the **iLembe District Municipality (IDM) Master Business Plan** that is intended to serve as a guiding document toward the implementation of the Agri-Park model that was developed by the Department of Rural Development and Land Reform (DRDLR).

Section 1: Introduction

The introduction provides the background information on the concept of an Agri-Park as well as a short description of the project. The section encompasses various elements including methodologies, as well as the goals and objectives of the project. Finally, the section also presents the purpose of the master business plan and outlines the various steps that are undertaken in completing the master business plan.

Section 2: Agri-Park Model

This section provides an insight into the Agri-Park model, provides the definition of the Agri-Park, and describes the three basic units within the Agri-Park. All the basic functions together with how the basic units will interact are also described in this section. The section concludes with the strategic objectives that have been set out by the Agri-Park.

Section 3: Policy Framework and Government Programmes (implications)

In order to achieve set objectives, the Agri-Park Model seeks to align with some of the key government strategies and existing policy frameworks. This section provides an overview of the national, provincial, and local policies that will guide the development of the Agri-Park Project. The policy review section provides a background on the relevant policies; identifies key focus areas and targets; and discusses the implications of the policies for the IDM Agri-Park.

Section 4: Location Context

Details some of the main features and major economic infrastructure that are crucial to the development of the Agri-Park in the IDM. The proposed location of the Agri-Hub, together with some of the existing infrastructure that can be utilised by the Agri-Park, are also described. The section includes maps of the region, details with respect to infrastructural support and what needs to be done to improve the current infrastructure. The section, therefore provides a good understanding of the strengths, weaknesses and the comparative advantages that the district holds in order to establish an Agri-Park in the IDM.

Section 5: Main Role-Players

Outlines the main role-players that could potentially be involved in the IDM Agri-Park at varying levels of the development process and agricultural value chain. The role-players are summarised into three categories: Government and Public Sector; Private Sector and Civil Society; and Associations and Organisations. The purpose of this section is to provide an insight into the possible partnership opportunities with regards to the recommended agricultural.

Section 6: Economic and Socio-Economic Analysis

Details the economy of the IDM in relation to population and economic growth; job creation; and income and poverty level. A sectoral analysis is also provided, setting out the structure of the IDM economy with respect to the different economic sectors and their output and employment contributions to the district's economy. The main sections within the section include demographic analysis, sector profiling, employment analysis and details on income and poverty.

Section 7: Agricultural Industry Analysis

Part of the objectives of the Agri-Park project is to identify the three dominant or most feasible commodities within the district. This section provides an overview of the main agricultural activities occurring in the district, focusing on the types of commodities or products farmed and produced. Part of the purpose of this chapter is to provide relevant information regarding the current agricultural practices, as well as the various opportunities and constraints that the IDM's agricultural sector presents. In addition, the chapter provides an overview of the status quo for agriculture in the district, as well as important agricultural resource availability.

Furthermore, this section identifies the three dominant commodities in the IDM, through a thorough prioritisation process. Products related to the selected commodities are also briefly discussed in this section. The three commodities identified for the district are Sub-Tropical Fruit, Vegetables and Poultry (Livestock).

Section 8: Commodity Analysis

This section provides an analysis of the local, global, and capital, markets for three identified commodities. Other major topics covered in the section include: value chain assessment, agro-processing opportunities, main input suppliers, competitors, stakeholders, technology requirements, job creation opportunities, contribution to food security, regulatory requirements, substitute products and services, societal and cultural trends and SWOT analysis, provided for each individual commodity.

Section 9: Agri-Park Concept Development

This section develops the Agri-Park concept in relation to the identified commodities in the IDM. The purpose of this section is to align the value chain that has been developed for each commodity with the Agri-Park model. The section includes detailed functions, roles and requirements of each of the Agri-Park units including the Farmer Production Support Unit, the Agri-Hub and finally, the Rural Urban Market Centre.

Section 10: Proposed Organisational Structure

Presents a proposed organisational and governance structure for the IDM Agri-Park. This structure comprises various government and civil society stakeholders embedded within the official formal structures established specifically to implement and manage the Agri-Park. It comprises advisory structures, approval structures, and implementation and monitoring structures and proposes the roles and responsibilities that should be performed by each structure. The relationships between structures are presented schematically in order to provide a graphic illustration of the proposed structure.

Section 11: Implementation Guidelines

In this section, the implementation guidelines describe the processes that will be applied in executing the Agri-Park project. The purpose of the implementation guidelines is to provide the relevant stakeholders with a practicable document that will ensure that the project is implemented in an efficient and agreed-upon manner, based on the concept developed in the previous chapters and an implementation process. The implementation guidelines cover areas such as: the implementation process, alignment with government programmes, specific recommendations as well as a proposed roll-out plan.

Agri-Park Component Summaries (namely: The Farmer Production Support Units, Agri-Hub, and the Rural Urban Market Centre) will be illustrated on the following pages in the form of business model canvases.

Farmer Production Support Unit (FPSU)

Key Role/Function

- Input supplies
- Provision of inputs & extension services.
- Mechanisation support
- Facilitation of administrative operations.
- Primary produce collection.
- Field preparation and planting.
- Local market sales.
- Training.
- Logistics support.
- Limited processing.

Potential Locations

1. Mandeni x 2
2. Maphumulo
3. Ndwedwe

Note:
Locations recommended as per workshopping process. Further study is required.

Training

Provides training and extension support to farmers, including:

- Best management and production practices
- Data interpretation
- Marketing
- Crop cultivation
- Animal husbandry
- Business administration

Human Resources

- Agricultural extension officers' / support office;
- Machine operators/ Local mechanisation centre and workshops;
- Agronomists
- Researchers
- Voluntary/Established commercial farmers

Infrastructure & Equipment

- Curing shed
- Sorting facilities
- cleaning, sorting, grading, drying machines
- Weighing and packaging machines
- Small scale processing facilities for local market
- Produce sorting facility
- Auction facility
- Storage facility
- Farming equipment required for farming activities
- Agricultural input distribution and sales centre

Recommended Number of FPSUs: 4

Estimated CAPEX: R131 688 900

Agri-Hub (AH)

Key Role/Function

The AHs have a major function as a processor of agricultural produce and distribution centre. Other auxiliary functions for the AH include:

1. Training;
2. Logistics;
3. Storage/warehousing;
4. Packaging;
5. Labelling; and
6. Product distribution.

Potential Locations

- Mandeni

Human Resources

- Administrative staff
- Quality control personnel
- Processing/floor staff
- Research and demonstration personnel
- Training personnel

Training

- Training of processing staff.
- Training on best practices, based on changing demand and supply.
- Training on new innovations as they surface.

Infrastructure & Equipment

- Agro-Processing facilities
- Fruit and Vegetable processing
- Broilers
- Silos
- Packaging facilities
- Retail facility
- Training centre
- Student and staff housing
- Logistics and transport facility
- Large warehouses/ holding facilities
- Cold storage facilities

Recommended Number of Agri-Hubs: 3

Estimated CAPEX R23 123 400

Rural Urban Market Centre (RUMC)

Key Role/Function

Links producers to local and international markets through:

- Provision of market intelligence.
- Identification of product markets.
- Interact and negotiate with buyers
- Undertake/ manage contractual agreements.
- Logistics support

Human Resources

- IT expert/personnel
- Administrative staff
- Training personnel
- Marketing personnel

Infrastructure & Equipment

- Office facilities/ information centre
- ICT
- Distribution centre

Location

- Based within eThekwini Municipality

Training

- Data collection/collation
- Data interpretation and
- Data dissemination

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Acronyms

AAC	Agricultural Produce Agents Council
ADA	Agri-business Development Agency
Agri-BBBEE	Agricultural Broad-Based Black Economic Empowerment
AH	Agri-Hub
AP	Agri-Park
APAP	Agricultural Policy Action Plan
ARC	Agricultural Research Council
CASP	Comprehensive Agriculture Support Programme
CRDP	Comprehensive Rural Development Programme
DAFF	South African Department of Agriculture, Forestry and Fisheries
DAMC	District Agri-Parks Management Council
DAPOTT	District Agri-Parks Operational Task Team
DGDP	District Growth and Development Plan
DLRC	District Land Reform Committee
DM	District Municipality
DTI	Department of Trade and Investment
DWS	Department of Water and Sanitation
EMF	Environmental Management Framework
FPSU	Farmer Production Support Unit
GCM	General Circulation Model (of the atmosphere)
GFSI	Global Food Safety Initiative
GM	Genetically Modified
GVP	Gross Value of Production
ha	hectare
HACCP	Hazard Analysis and Critical Control Points
IDGP	Integrated Growth and Development Plan
IDM	iLembe District Municipality
IDP	Integrated Development Plan
IPAP	Industrial Policy Action Plan
KZN	KwaZulu-Natal province

LDV	Light Delivery Vehicle
LED	Local Economic Development
LM	Local Municipality
M&E	Monitoring and Evaluation
MAFISA	Micro Agricultural Financial Institutions of South Africa
MAP	Mean Annual Precipitation
MTEF	Medium Term Expenditure Framework
MTSF	Medium-Term Strategic Framework
NAAC	National Agri-Parks Advisory Council
NAPOTT	National Agri-Parks Operational Task Team
MCM	Ministerial Coordinating Management committee
NDAC	National Development Approvals Committee
NDP	National Development Plan
NFPM	National Fresh Produce Market
NGP	National Growth Path
NIPF	National Industrial Policy Framework
NLARCC	National Land Allocation and Recapitalisation Control Committee
NTC	National Technical Committee
OECD	Organisation for Economic Cooperation and Development
PAPOTT	Provincial Agri-Parks Operational Task Team
PAW	Plant available water (content of soil)
PEA	Potentially Economically Active population
PGDP	KwaZulu-Natal Provincial Growth and Development Plan
PGDS	KwaZulu-Natal Provincial Growth and Development Strategy
PICC	Presidential Infrastructure Coordinating Commission
PLAS	Pro-Active Land Acquisition Strategy
PSEDS	KwaZulu-Natal Provincial Spatial Economic Development Strategy
PSSCs	Provincial Shared Services Centres
RBIDZ	Richards Bay Industrial Development Zone
RUMC	Rural Urban Marketing Centre
SA	South Africa
SAAGA	South African Avocado Growers Association
SAFVCA	South African Fruit and Vegetable Canners' Association
SALGA	South African Litchi Growers Association
SAMGA	South African Mango Growers Association
SDF	Spatial Development Framework
SEDA	Small Enterprise Development Agency
SEFA	Small Enterprise Finance Agency
SEMP	Strategic Environmental Management Plan
SME	Small and Medium Enterprise
WMA	Water Management Area
WULA	Water Use License Agreement

1 Introduction

1.1 Business Plan Outline

The following document represents the Master Agri-Park Business Plan for iLembe District Municipality and covers the following:

- Section 1: Introduction
- Section 2: Overview of the Agri-marks Model;
- Section 3: Policy Framework surrounding the Agri-Park Concept;
- Section 4: Locational Characteristics of the selected districts;
- Section 5: The main role-players and stakeholders have been identified;
- Section 6: An economic and socio-economic analysis of the district is undertaken;
- Section 7: An analysis of the Agricultural industry as a whole was conducted;
- Section 8: An analysis of the three shortlisted commodities identified.
- Section 9: The unpacking of the Agri-Park concept development;
- Section 10: The Organisational Structure overseeing each Agri-Park; and
- Section 11: The Guidelines to assist with implementation were formulated.

All the information and analysis for this report is based on expert opinions, in-depth market analysis, and projections in the case of commodities that have been identified for the iLembe Agri-Park Programme.

1.2 Short description of the project including the goal and objectives

The National Department of Rural Development and Land Reform (DRDLR) have appointed Urban-Econ Development Economists (UEDE) to undertake the development of a Master Agri-Park Business Plan. The business plans will be comprehensive and specific to each district municipality, with the purpose to operationalise an Agri-Park. Furthermore, the Master Agri-Park Business Plan will identify the three most feasible agricultural commodity value chains within the district. The ultimate goal of the project is to use agricultural development as a catalyst for rural economic transformation by effectively utilising land with high agricultural potential.

The goal of iLembe's Agri-park is to become a viable agricultural community, through adherence to a functional model which meets specific conditions promoting sustainable operations for small-scale, emerging and black farmers, while providing benefits to its stakeholders and the community. The model includes the functional integration of general

conditions, inputs and infrastructure, and other components, which make it desirable for private enterprises, non-profit organisations and the community.

Objectives of this project include:

- Promote growth of the smallholder sector by creating new small-scale producers in the district, as well as new jobs in agro-processing by the year 2020 (as set out in the NGP);
- Promote the skills of, and support to, small-holder farmers through the provision of capacity building, mentorship, farm infrastructure, extension services, production inputs and mechanisation inputs;
- Strengthen existing and create new partnerships within all three spheres of government, the private sector and civil society to develop critical economic infrastructure such as roads, energy, water, ICT and transportation/logistics corridors that support the Agri-Park value chain;
- Enable producer ownership of the majority of Agri-Parks equity (70%), with the state and commercial interests holding minority shares (30%);
- Allow smallholder producers to take full control of Agri-Parks by steadily decreasing state support over a period of ten years;
- Bring underutilised land (especially Communal Areas Land and land reform farms) into full production over the next three years, and expand irrigated agriculture; and
- Contribute to achievement of the NDP's "inclusive rural economy" and target of 1 million jobs created in agriculture sector through creating higher demand for raw agricultural produce, primary and ancillary inputs, as well as generating increased downstream economic activities in the sector.

The goals and objectives of the Agri-Park will be achieved through DRDLR's strategic partnerships and collaboration with key government departments such as the Department of Agriculture, Forestry and Fisheries and the Departments of Cooperative Governance and Traditional Affairs and other spheres of government.

1.3 Purpose of the Master Business Plan

The purpose of the Master Agri-Park Business Plan is to operationalise the Agri-Park model within iLembe. Furthermore, the objectives of the business plan are to:

1. Develop a document that serves as a guideline towards the implementation of the Agri-Park within the iLembe District.
2. Review as much existing documentation, maps, and agricultural potential as possible.
3. Engage with district representatives, government officials, and other related role-players.

4. Align the business plan with existing policies, strategies and relevant development plans.
5. Determine the socio-economic benefits and potential impact that the Agri-Park will have within the district.
6. Identify the existing agro-processing facilities and farmers within each district municipality and to establish possible linkages.
7. Identify current, or potential agricultural activities within the district.
8. Identify three dominant, or most feasible commodities within the district.
9. Identify agro-processing business opportunities for each Agri-Park based on the three commodities.
10. Perform a SWOT analysis that includes a legal, environmental, and technical analysis.
11. Conduct a feasibility and viability assessment of the proposed agro-processing facilities.
12. Identify current agro-processing initiatives and possible synergies, linkages and opportunities to buy into existing businesses.
13. Identify potential public-private partnerships.
14. Develop a district specific operational plan for the Agri-Park.

1.4 Methodology

The figure below presents an illustration of the methodological steps undertaken in this project.

FIGURE 1. METHODOLOGY

2 Agri-Park Model

2.1 An understanding of the Agri-Park Concept

For many years, a key area of government action has been focused on poverty alleviation, especially in rural areas where there is a lack of economic activity. Government has intervened with various anti-poverty programmes, but the impact has been lower than expected. The key issue, however, has not been the programmes themselves, but rather the co-ordination of anti-poverty activities and integrated package services to match the local priorities.

The lack of co-ordination and an integrated package has thus led to the Agri-Parks initiative, a concept relatively new in a South African context. The concept follows an integrated Agri-Parks approach of collective farming efforts, farmer incubation programmes, Agri-Clusters and Eco-Villages; while also contributing to land conservation and preservation. The initiative is similar to that of a traditional agricultural business park or hub model, where multiple tenants and owners operate under a common management structure where a range of enterprises can exist.

The Agri-Parks model is required to have a strong social mobilisation component for the organisation and mobilisation of black farmers and agri-business entrepreneurs to actively support the initiative. Furthermore, the model should strengthen partnerships between government, the private sector and civil society – partnering with DAFF and COGTA is essential.

For the successful mobilisation of the programme the Agri-Parks should:

- Be based on the locational economic and comparative advantages.
- Have all the elements of a value chain (cluster) present for a dominant comparative, or product advantage.
- Be able to lay a solid economic foundation for the development of rural industrialisation.

To ensure the mobilisation of the Agri-Parks programme the following guiding principles should be followed:

- One Agri-Park is to be established in each district.
- The Agri-Parks should be controlled by the local farmers.
- The Agri-Parks are required to be catalysts from which rural industrialisation can take place.
- The Agri-Parks must be government-guided to ensure economic sustainability.
- The Agri-Parks must strengthen partnerships between the public and private sectors in order to increase access to services.

- The Agri-Parks must maximise access to markets for all farmers with a bias towards emerging farmers and rural communities.
- The Agri-Parks must maximise the use of high-value agricultural land.
- The Agri-Parks must maximise the use of existing support services and industries.
- The Agri-Parks should support growing towns and the revitalisation of rural towns in the way of economic and population growth, as well as promote rural-urban linkages.

2.1.1 Definition and background to Agri-park model

The Agri-Parks system is a relatively new concept to South Africa, but the idea draws from existing models locally and abroad, including educational/experimental farms, collective farming, farmer-incubator projects, clusters, eco-villages, and urban-edge allotments, as well as market gardens. These models exist in both a public and private capacity, serving as transition or buffer zones between urban and agricultural uses. The naming of the concept as a "Park" is intended to convey the role that the Mega Agri-Park (nationwide network) will play in open space preservation.

Although the term "Agri-Parks" suggests permanent land conservation and recreational use that is synonymous with the description "public park", it brings to the fore a more traditional model of an agricultural "business park", or "hub", where multiple tenants and owners operate under a common management structure. The Agri-Parks are intended to provide a platform for networking between producers, markets and processors, while also providing the physical infrastructure required for the transforming industries.

The focus of the Agri-Park is primarily on the processing of agricultural products, while the mix of 'non-agricultural' industries may be low or non-existent. Of prime importance is access to viable agricultural land, where a range of productive horticultural enterprises may exist.

The Agri-Park Programme forms part of Government's undertaking to review all land reform policies as enunciated in the 2011 Green Paper on Land Reform. The approach will include the selection and training of smallholder farmers, as well as selecting farms per province for the placement, incubation and training of unemployed agricultural graduates and other agro-entrepreneurs.

The Agri-Parks will be farmer-controlled with the model having a strong social mobilisation component so that black farmers and agri-business entrepreneurs are actively mobilised and organised to support this initiative.

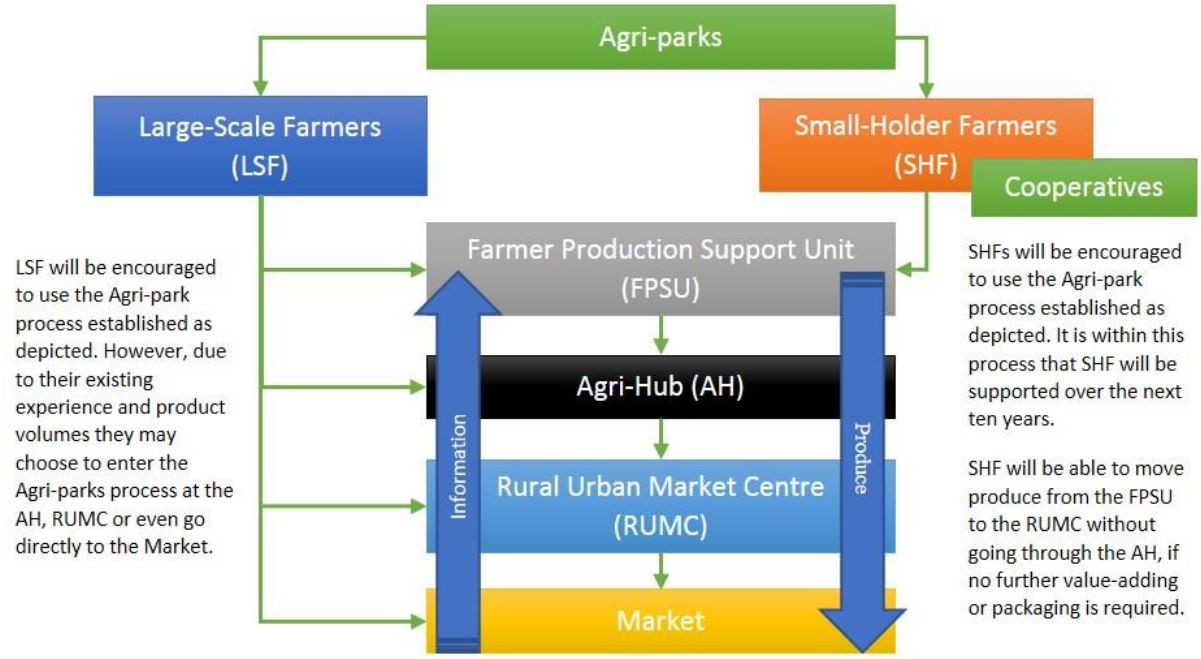
For the success of the initiative the DRDLR's will be required to develop strategic partnerships with key government departments such as DAFF, COGTA and other governmental bodies. In addition, state land will be brought into use for both production and processing.

In summary: an Agri-Park is an innovative system of agro-production, processing, logistics, marketing and training, and extension services located in District Municipalities. As a network, it enables a market-driven combination and integration of various agricultural activities and rural transformation services. The Agri-parks contain three basic units:

1. The Farmer Production Support Unit (FPSU). The FPSU is a rural outreach unit connected with the Agri-Hub. The FPSU does primary collection, some storage, some processing for the local market, and extension services including mechanisation.
2. Agri-Hub Unit (AH). The AH is a production, equipment hire, processing, packaging, logistics and training (demonstration) unit.
3. The Rural Urban Market Centre Unit (RUMC). The RUMC has three main purposes;
    i. Linking and contracting rural, urban and international markets through contracts.
    ii. Acts as a holding-facility, releasing produce to urban markets based on seasonal trends.
    iii. Provides market intelligence and information feedback, to the AH and FPSU, using latest Information and communication technologies.

The figure below presents a visual representation of the envisaged flows of information and produce with the Agri-Park model.

FIGURE 2. AGRI-PARK PRODUCE AND INFORMATION FLOWS



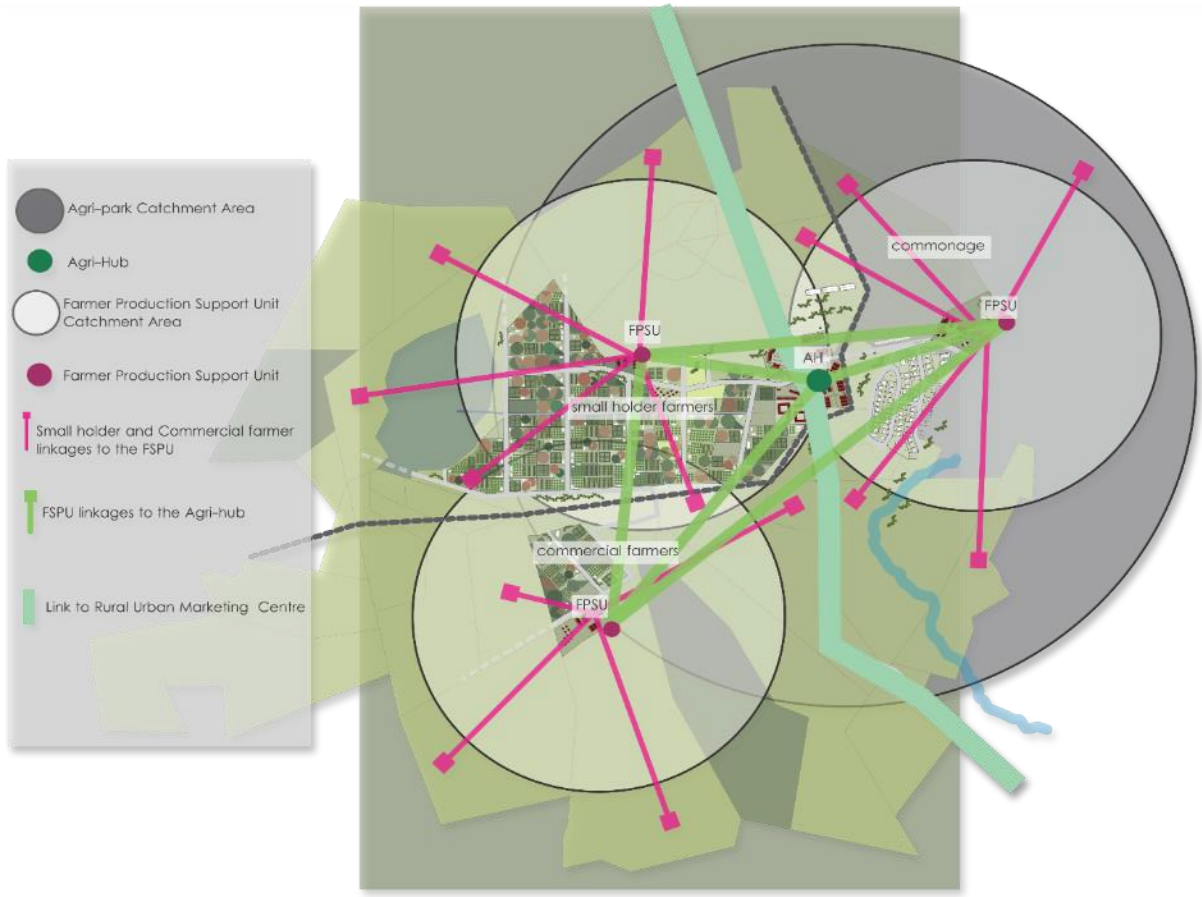
Farmer Production Support Units (FPSU): the centres (more than one per district) of agricultural input supplies, extension support, mechanisation support, local logistics support, primary produce collection, and through-put to Agri-Hubs. The FPSUs have limited sorting, packaging, storage, and processing for local markets with through-put of excess products to Agri-hubs.

Agri-Hub: Agri-Hubs are located in central places in a District Municipality, preferably places with sufficient physical and social infrastructure to accommodate storage/warehousing facilities; Agri-processing facilities; packaging facilities; logistics hubs; agricultural technology demonstration parks; accommodation for extension support training; housing and recreational facilities for workers. Agri-hubs receive primary inputs form FPSU's for processing, value adding and packaging, which is through-put into the Rural Urban Market Centres or exported directly to markets.

Rural Urban Marketing Centre (RUMC): RUMCs are located on the periphery of large urban areas, these facilities provide market intelligence assist farmers, processors in managing a nexus of contracts. With large warehousing and cold storage facilities to enable market management. Both FPSU's and Agri-hubs provide inputs to the RUMC. Agri-Parks may at times share their RUMCs.

The figure below illustrates the strategic representation of the Agri-Park model. This model is to be duplicated in each district across the country, essentially creating a Mega Agri-Park. Each Agri-Park, however will be developed based on its own comparative advantages and its strengths, in order to develop each district level economy.

FIGURE 3. STRATEGIC REPRESENTATION OF THE AGRI-PARK MODEL



The figure above depicts the catchment area of the Agri-park in the grey circle, essentially illustrating the size and contents of the Park that includes farmers, FPSU's, AH's and RUMC's. The Agri-Hub, or AH, forms the central point of the Agri-park that is linked to the FPSU's. There will be more than one FPSU per district, which is intended to provide a supporting role between the AH and the farmers. All these components of the Agri-Hub are interlinked, providing a streamlined and integrated approach to agricultural and rural development. Table 1 provides the relevant detail of the catchment of each component.

TABLE 1. STANDARDS OF MEASURE FOR AGRI-PARKS

Component	Proposed catchment area in areas of low density population	Proposed catchment area in areas of high density population
FPSU	30km	10km
Agri-Hub	120km	60km
RUMC	250km	150km

The FPSU is designed to have catchment areas of 30km in low density areas and 10km in high density areas, indicating that there will be several per district. The AH is designed to have catchment areas of 120km in low density areas and 60km in high density areas, indicating fewer AH's than FPSU's. The RUMC is designed to have the largest catchment areas of 250km in low density areas and 150km in high density areas.

The Agri-Parks Programme seeks to achieve a rural economic development through an inclusive approach to development focused on developing agricultural value chains that are linked nationally. The programme will also be able to address issues of employment, skills development and productivity of land.

The Agri-Parks programme is viewed as a programme that will address issues of rural economic development, one of government's key areas to address. Government has previously intervened with various anti-poverty programmes, but with a lower impact than expected. The Agri-Parks model, however, is expected to coordinate anti-poverty activities, providing an integrated package

3 Policy Framework and Government Programmes (Implications)

This section of the business plan provides an overview of the national, provincial, and local policies that are considered to have a direct influence on the development of the iLembe's Agri-Park concept.

3.1 National policies

The following national policies and programmes are considered relevant to the establishment of iLembe's Agri-Park.

3.1.1 New Growth Path (NGP) 2010

Government adopted *the NGP in 2010* as the driver of the country's job creation strategy. The NGP suggests that in order to achieve growth and transformation of economic imbalances, firm choices and shared determination are required from every structure within the South African society. The goal is to grow employment by five million jobs by 2020; to ensure that half of the working-age population in South Africa will be employed and that unemployment would be reduced from 25% to 15%. The NGP is also formulated to reduce inequality and eliminate rural poverty by identifying areas where long-term structural and feasible changes can be made.

STRATEGIC PRIORITIES / FOCUS AREAS
The strategic focus of the NGP is to support employment creation. Efforts will be prioritised in key sectors such as infrastructure, the agricultural value chain, the mining value chain, green economy manufacturing, tourism, and certain high- level services. To achieve these objectives, the framework seeks to: • Identify areas that have potential for large scale employment creation. • Develop a policy package to facilitate employment creation in the areas identified. • Create a consensus on the new local and global opportunities, and see how these opportunities can be seized in order to achieve socially desirable and sustainable outcomes. • Strengthen the domestic and regional agricultural markets by supporting smallholder farmers. • Broaden the markets for South African goods and services through a stronger focus on exports. • Provide quality basic and secondary education. • Invest in health including effective measures to address HIV/AIDS.
IMPLICATIONS FOR THE AGRI-PARKS DEVELOPMENT
The agricultural value chain has been prioritised to play an important role in the provision of job opportunities and improve the standard of living of farm workers. The NGP targets opportunities for 300 000 households in agricultural smallholder schemes, plus 145 000 jobs in agro-processing by 2020, while there is potential to upgrade conditions for 660 000 farm-workers. It can be concluded that the NGP supports the development of the Agri-parks.

3.1.2 National Development Plan (NDP) – 2030 (2010)

South Africa's first National Planning Commission was set by President Jacob Zuma and inaugurated in May 2010. The objective posed to the National Planning Commission was to take an independent view of South Africa, and from that, derive a Vision and a Plan that is focused on enabling a much better quality of life for all South Africans by 2030. The primary channels through which improvement in quality of life are likely to come about, are through eliminating poverty and reducing inequality - the two single biggest problems in South Africa. These aspects affect every other aspect of development and every aspect of life for the citizens of this country. As both a cause and result of these primary problems, the NDP has identified nine specific and predominant challenges:

1. Too few people work.
2. The quality of school education for black people is poor.
3. Infrastructure is poorly located, inadequate, and under-maintained.
4. Spatial divides hobble inclusive development.
5. The economy is unsustainably resource-intensive.
6. The public health system cannot meet demand or sustain quality.
7. Public services are uneven and often of poor quality.
8. Corruption levels are high.
9. South Africa remains a divided society.

STRATEGIC PRIORITIES / FOCUS AREAS

The three broad frameworks identified to ensure the proposed vision set out by the NDP is achieved are the following:

1. Raising employment through faster economic growth.
2. Improving the quality of education, skills development, and innovation.
3. Building the capability of the state to play a developmental, transformative role.

Given the complexity of national development, the plan sets out six interlinked priorities by which the main challenges will be addressed:

- Uniting all South Africans around a common programme to achieve prosperity and equity.
- Promoting active citizenry to strengthen development, democracy, and accountability.
- Bringing about faster economic growth.
- Higher investment and greater labour absorption, focusing on key capabilities of people and the state.
- Building a capable and development state.
- Encouraging strong leadership throughout society to work together to solve problems.

IMPLICATIONS FOR THE AGRI-PARKS DEVELOPMENT

The NDP views agriculture as critical to employment and food security. It is estimated that agriculture would potentially create a million jobs by 2030. Agri-parks will serve as important mechanisms to execute the NDP's proposed rural development strategy due to their potential for supporting small-scale agricultural production and stimulating agro-processing in rural areas.

One core element of this approach is conducting commodity and value-chain analyses and mapping exercises to determine the best areas to establish Agri-parks based on the growth potential of value-adding commodities. As such, each Agri-park will focus on specific prioritised commodities that have the highest prospect of succeeding in their region. This is directly in line with the NDP's approach of targeting high value commodities (most of which are labour intensive) to stimulate industrial growth,

accompanied by measures that ensure sustainable production on redistributed land and an improved institutional support system.

In this regard, the NDP identifies certain agricultural sub-sectors that have the most potential for development, which are categorised into large labour-intensive industries, smaller labour-intensive industries, and large existing industries with significant value-chain linkages. For instance, small-scale labour intensive agriculture, including macadamia, pecan nut, rooibos tea, olive, fig, cherry, and berry industries, are found to have the greatest expansion potential due to the significant market demand for these products. The NDP projects that approximately 80 000 jobs can be created by further developing these particular areas of small-scale agriculture. By providing the necessary inputs, facilities, institutions, market-linkages, and partnerships, Agri-parks can enable small-scale producers and rural residents to create new, and expand existing enterprises in these industries, which will have positive growth impacts on the rural economy.

The NDP states that in South Africa a highly centralised, vertically integrated agro-processing sector already exists for staple foods such as maize, wheat, sugar, sunflower oil, tea, flour, peanut butter, cigarettes, beer, fruit juices, and canned goods. Key proposals identified for the agriculture and agro-processing sectors include the following:

- Greater investment in providing innovative market linkages for small-scale farmers in communal and land-reform areas.
- As part of a comprehensive support package for farmers, preferential procurement mechanisms should be put in place to ensure that new agricultural entrants can also access these markets.
- Growth in agricultural production has always been fuelled by technology, and the returns to investment in agricultural research and development are high. Technology development should therefore, be prioritised.
- Policy measures to increase intake of fruits and vegetables, and reduce intake of saturated fats, sugar and salt, as recommended in the South African food dietary guidelines, to accompany strategies to increase vegetable and fruit production.

3.1.3 Industrial Policy Action Plan (IPAP) (2013/14–2015/16)

The *Industrial Policy Action Plan (IPAP) (2013/14-2015/16)* is in its fifth iteration and is the apex policy document of the Department of Trade and Industry (DTI). It is drawn from a range of visions set out by successive industrial policies such as the NDP, NGP, and National Industrial Policy Framework (NIPF). The IPAP sets out an industrial policy framework with overriding interventions that will prevent industrial decline and support growth, as well as diversifications of South Africa's manufacturing sectors. IPAP will ultimately lead to a restructured economy with more value-adding, labour intensive, and environmentally sustainable industrial activities.

STRATEGIC PRIORITIES / FOCUS AREAS

IPAP focuses on building on, and fulfilling, the plans set out in IPAP 2012/2013 in its transversal and sector-specific interventions. These transversal interventions are in the areas of:

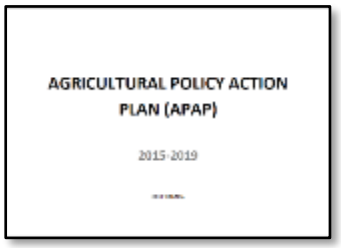
- Public procurement
- Competition policy
- Innovation and technology
- Skills for the economy
- Industrial financing
- Developmental trade policy
- Regional integration
- Special economic zones

IMPLICATIONS FOR THE AGRI-PARKS DEVELOPMENT

IPAP identifies the agro-processing industry as a sector with potential to spur growth and create jobs, because of its strong backward linkage with the primary agricultural sector. The agriculture and agro-processing value chain represents an important source of labour intensive growth. In addition, this value chain is central to the rural development and smallholder farmer development objectives of government.

- The key-programmes identified for agro-processing within the IPAP are the following:
- Development of a Food-processing Strategy and Action Plan with the objective of accelerated growth in the food-processing sector.
- Development of a small-scale milling industry to enable small-scale maize milling enterprises to produce for local markets at competitive prices.
- Enhancement of competition in the fruit and vegetable canning industry - The creation of a sustainable platform for the long-term growth and competitiveness of the industry.
- Development of a Soybean Action Plan promoting market linkages between primary agricultural producers and processors.
- Development of the organic food sector – The development of a competitive organic sub-sector producing high-quality food products for both local and export markets.
- Supporting the Public-Private Partnership (PPP) for Food Security – Entails smallholder farmer access to formal retail chains, Government procurement, and small scale processing opportunities.

With infrastructure investment as one of its main components, upon which all other proposed actions rest, the Agri-park Programme is key in advancing the objectives of IPAP. The Agri-parks Programme will further promote an approach to land reform and rural development consisting of comprehensive spatial planning, appropriate categorisation of land and beneficiaries to ensure sustained agricultural development, associated/ targeted skills development, employment creation, significant infrastructural expansion, improved public service delivery, more dedicated investment in agriculture through a targeted approach, and the increased involvement of the private sector in land reform and rural development initiatives.



3.1.4 Agricultural Policy Action Plan (APAP) (2015-2019)

The *Agricultural Policy Action Plan (APAP) (2015-2019)* aligns itself to other existing national plans such as the NGP, NDP, and the IPAP. These plans were geared towards providing decent employment through inclusive growth, rural development, food security/ protection, as well as enhancement of environmental assets and rural resources; with key job drivers identified as agriculture, infrastructure, mining, manufacturing, tourism, and the green economy. The APAP sets an action plan for a five-year period (2015-2019), and seeks to translate the high-level responses offered in the *Integrated Growth and Development Plan (IGDP)* into tangible, concrete steps.

STRATEGIC PRIORITIES / FOCUS AREAS

The APAP seeks to provide both a long-term vision, and focused interventions in a 5-year rolling schedule, to be updated annually. APAP is based on Sectoral Key Action Programmes (commodities) and Transversal Key Action Programmes (e.g. research and innovation). It furthermore, presents institutional arrangements and processes for achieving this objective – especially to integrate planning, Monitoring and evaluation (M&E) between DRDLR and DAFF across 3 spheres of government. The APAP has 4 policy levers which are:

1. Equity and Transformation:
   - Ensuring a more producer-friendly (and consumer-friendly) market structure
   - Accelerating implementation of the Charters and the Small-scale fisheries policy;
   - Promoting local food economies; and
   - Investment in agro-logistics

2. Equitable Growth and Competitiveness:
   - Promoting import substitution and export expansion through concerted value chain/commodity strategies;
   - Reducing dependence on industrial and imported inputs;
   - Increasing productive use of fallow land; and
   - Strengthening R&D outcomes.

3. Ecological Sustainability:
   - Climate Smart Agriculture

4. Governance:
   - Support services;
   - Skills development;
   - Research and development;
   - Knowledge and information management (integrated spatial economic planning);
   - Market access, information and regulation; and
   - Institutional arrangements

IMPLICATIONS FOR THE AGRI-PARKS DEVELOPMENT

The evaluating measurements used within the APAP to meet its short- and medium-term in objectives are the following:

1. Contribution to food and security
2. Job creation
3. Value of production
4. Potential contribution to trade balance

The APAP informs the Agri-parks Business Plan through the identification of the following specific sub-sectors for key action programmes:

- Poultry/ Soybeans/ Maize integrated value chain
- Red meat value chain
- Wheat value chain
- Fruits and vegetables
- Wine industry
- Forestry
- Small-scale fisheries

The development of Agri-parks is aligned with the APAP policy levers and would help in achieving its stated goals.

3.1.5 Department of Agriculture, Forestry and Fisheries Agro-processing Strategy (2012)

The *Department of Agriculture, Forestry and Fisheries Agro-Processing Strategy* was developed to create a strategic direction on agro-processing for both national and provincial government. The strategy seeks to provide a response on the agro-processing job creation and related government priority targets set out in existing policy frameworks such as the NGP and IPAP.

STRATEGIC PRIORITIES / FOCUS AREAS
The strategic objective is to articulate how government should intervene to support and develop Small and Medium Enterprises (SMEs), agro-processing in the local and global agricultural sector, as well as forestry and fisheries value chains. The following strategic interventions are set out by this strategy: • Facilitate access to incentives and support packages • Facilitate access to infrastructure • Promote value chain linkages • Support technical and managerial training • Facilitate access to appropriate technology • Facilitate access to business development services The implementation of this strategy is to be aligned with the implementation of the Smallholder Development Programme, the Zero Hunger Plan, and the Marketing Strategy of the DAFF to realise its intended objectives.
IMPLICATIONS FOR THE AGRI-PARKS DEVELOPMENT
Developing and supporting the currently underserviced agro-processing SME has been identified as key to achieving government's priority targets of promoting job creation, economic growth, and equity. The findings of the Department of Agriculture, Forestry and Fisheries Agro-processing Strategy forms a vital input in formulating the Agri-parks Master Business Plans due to the scope of agro-processing in the national economy.

3.1.6 Strategic Plan for the Department of Agriculture, Forestry and Fisheries (2013/14 -2017/18)

The *Strategic Plan for the DAFF* was guided by other key policies such as NGP, NDP, IPAP and the work of the Presidential Infrastructure Coordinating Commission (PICC); aimed at tackling the challenges of poverty, inequality, and unemployment. The Strategic Plan for the DAFF sets out programmes of action and projects for a period of five years (2013/14 – 2017/18), and is formulated to improve and develop production by means of entrepreneurship promotion in the AFF sectors.

STRATEGIC PRIORITIES / FOCUS AREAS
The Strategic Plan of the DAFF aims to address the social and economic challenges that the AFF sectors are faced with. It further sets new opportunities for service delivery with relation to job creation, food security, rural development, and skills development. The opportunities or action areas highlighted for key policy development include the following: • Food security production programmes • Strategic plans for supporting small producers • Aquaculture programmes • Agro-processing strategic frameworks The strategic goals set out in the document are the following: • Increased production of food, fibre, and timber products by all categories of producers. • Sustained management of natural resources. • Effective national regulatory services and risk management systems. • A transformed and united sector. • Increased contribution of the sector to economic growth and development. • Effective and efficient governance.
IMPLICATIONS FOR THE AGRI-PARKS DEVELOPMENT
The Strategic Plan of the DAFF supports the development of the Agri-parks development. Agro-processing is highlighted to play a key role in ensuring an equitable food-secure economy. Interventions should focus on developing processed agricultural products, while at the same time targeting increased export-trade. Investment in agro-processing should be increased as a means of reinvigorating specific strategic value chains such as soya beans, rooibos, beverages, fruit and vegetables, as well as forestry. An equitable food-security economy will improve access to markets, especially for smallholder farmers.

3.1.7 National Policy Framework on the Development of Small and Medium Agro-Processing Enterprise in South Africa

The *National Policy Framework on the Development of Small and Medium Agro-Processing Enterprise* in *the Republic of South Africa* was initiated by the DAFF.

STRATEGIC PRIORITIES / FOCUS AREAS
The objectives of this document are the following: 1. Rural industrialisation through the establishment of agro-processing industries that are closer to production areas. 2. Local economic growth through increased trade in rural areas. 3. Job creation through the establishment of SME agro-processors to improve livelihoods of both smallholder agro-processors and producers. However, the specific challenge that this policy aims to address is the limited active participation of rural-based SMEs agro-processors in the agro-processing mainstream value chain. The strategic objective is to create a profitable, competitive and thriving small and medium agro-processing industry. To achieve this, the policy seeks to: • Provide entrepreneurial support to small and medium agro-processors. • Support enterprise development through facilitating access to markets, finance, incubation, and mentorship. • Facilitate agro-processing industry research and technology transfers. • Facilitate infrastructure investment specifically within rural areas.
IMPLICATIONS FOR THE AGRI-PARKS DEVELOPMENT
The major constraints to developing the thriving agro-processing value chain identified in the framework are lack of appropriate technology, inadequate infrastructure, access to finance, and low levels of technical and entrepreneurial skills. The Agri-parks developments will focus on providing continuous support to small and medium scale agro-processing enterprises. Continuous support will assist in increasing the number of enterprises and address the challenges they face with integrating and actively participating in the mainstream economy.

3.1.8 Strategy for the Development of Small and Medium Agro-Processing Enterprises in South Africa (2014 – 2019)

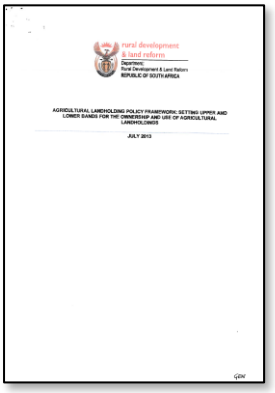
The *Strategy for the Development of Small and Medium Agro-processing Enterprises in the Republic of South Africa* was developed to support increased participation of small and medium scale agro-processing enterprises in the agro-processing sector. The strategy aims to support the vision of the DAFF, which aligns with the NDP and IPAP, while linking directly to the outcomes of the Medium Term Strategic Framework (2009).

STRATEGIC PRIORITIES / FOCUS AREAS
The strategy seeks to articulate how the small and medium agro-processing enterprises within the agriculture, forestry and fisheries sector in South Africa can be supported and developed at all levels of government (national, provincial, and local).
IMPLICATIONS FOR THE AGRI-PARKS DEVELOPMENT
The *Strategy for the Development of Small and Medium Agro-processing Enterprises in the Republic of South Africa* informs the Agri-parks Master Business Plan through identifying the following four intervention pillars needed to for the development of Small and Medium Agro-processing Enterprises: • Entrepreneurial support • Enterprise development (Access to finance, market access and incubation) • Industry research and technology transfer • Infrastructure investment

3.1.9 DAFF: Integrated Growth and Development Plan 2012

The *Integrated Growth and Development Plan (IGDP)* was developed for the Medium Term Expenditure Framework (MTEF) (2011/12–2014/15) with the aim of providing a long-term strategy for the growth and development of the agricultural, forestry and fisheries sector in South Africa. The IGDP seeks to address the current realities and challenges that these sectors face, and to develop a common vision that will ensure equitability, productivity, competitiveness, and sustainability.

STRATEGIC PRIORITIES / FOCUS AREAS
The strategic priorities of the IGDP for the agricultural, forestry, and fisheries sector are the following: 1. Attaining equity and transformation 2. Equitable growth and competitiveness 3. Environmental sustainability 4. Good governance
IMPLICATIONS FOR THE AGRI-PARKS DEVELOPMENT
The IGDP identifies that in terms of agro-processing, there is a need to support South African exporters to position their products better in fast-growing, developing country destinations and Africa. This may require focused export intelligence and marketing support, as well as intergovernmental assistance to ensure that South African products are not unfairly subject to nontariff barriers. Greater emphasis and investment is required in the understanding and managing of international trade standards and regulations, especially in the areas of food safety and sanitary and phytosanitary measures.

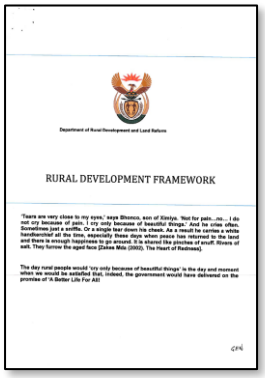


3.1.10 Agricultural Landholding Policy Framework

The mandate of the Agricultural Landholding Policy Framework rests with the DRDLR. The framework generates a platform which creates and maintains equitable and sustainable land dispensation and is intended to act as a catalyst for rural development in order to reverse the skewed distribution of land ownership as well as the discriminatory land laws which were developed during the Apartheid era. The context of the framework is aligned to the reversal of the Natives Land Act of 1913, the Constitution, and the Green Paper on Land Reform, NDP and MTSF.

STRATEGIC PRIORITIES / FOCUS AREAS
The focus areas provided by the framework and overall aim and objectives include eradicating poverty through job creation and the promotion of equity in the agriculture sector through the: 1. Facilitation of entry of small scale into main stream agricultural activities. 2. Redistribution of land from large agricultural holdings to co-operatives and family owned land holdings. 3. Increasing efficiency, sustainability and competitiveness amongst all agricultural holdings.
IMPLICATIONS FOR THE AGRI-PARKS DEVELOPMENT
The Agri-Parks development aligns itself with the main objectives of the framework, which focuses on the redistribution of wealth to small scale developing farmers and commonage and subsistence farmers alike through the creation of employment opportunities to be realised and assisted by the Agri-Park. Through this combination, small scale farmers will attain the exposure and experience higher levels of productivity, encouraging commodity sustainability and ensuring fair competition between commercial and small scale farmers.

3.1.11 Rural Development Framework (2013)



The Rural Development Framework (RDF) is concerned with the effects of the dispossession of land and systematic deprivation of land use rights, culture and social cohesion of rural black South Africa. This framework looks at reversing the damages and inequality caused by the 1913 Natives Land Act, which has not only caused a dispossession of land but an erosion of culture, livelihoods and even resulted in land degradation impacting on the agricultural capabilities of these areas. The setting of the framework is aligned to the reversal of the Natives Land Act of 1913, the advent of the Bantustan System, the Agrarian Transformation Strategy, the Constitution, the MTSF and Comprehensive Rural Development Programme CRDP.

STRATEGIC PRIORITIES / FOCUS AREAS
There are no specific strategic priorities of the RDP. Rather it consolidates all relevant priorities concerning rural development and creates a framework document. As such it restates the strategic priorities of the RDF are a rehash of the CRDPs and NDP etc.
IMPLICATIONS FOR THE AGRI-PARKS DEVELOPMENT
Given the policies upon which the RDF is built, alignment with the Agri-park is guaranteed.

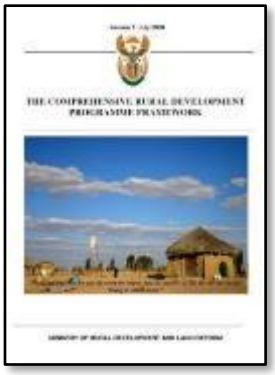
3.2 Linkages to national government programmes and initiatives

The Agri-parks concept will be in support of existing rural development and programmes and initiatives implemented by government. A description of the key programmes are provided.

3.2.1 Department of Rural Development and Land Reform (DRDLR)

rural development & land reform
Department:
Rural Development and Land Reform
REPUBLIC OF SOUTH AFRICA

3.2.1.1 Comprehensive Rural Development Programme



The *Comprehensive Rural Development Programme (CRDP)* is aimed at being an effective response against poverty and food insecurity through maximising the use and management of natural resources to create vibrant, equitable, and sustainable **rural communities**. A CRDP must improve the standards of living and welfare, but also rectify past injustices through rights-based interventions and address skewed patterns of distribution and ownership of wealth and assets. The strategic objective of the CRDP is therefore, to facilitate integrated development and social cohesion through participatory approaches in partnership with all sectors of society. This document therefore, serves as the policy framework document for the Comprehensive Rural Development Programme. The document thus, aims to set out the programme principles.

rural development & land reform
Department:
Rural Development and Land Reform
REPUBLIC OF SOUTH AFRICA

STRATEGIC PRIORITIES / FOCUS AREAS

The vision of the CRDP is to create vibrant, equitable, and sustainable rural communities include: contributing to the redistribution of 30% of the country's agricultural land; improving food security of the rural poor; creation of business opportunities, de-congesting and rehabilitation of over-crowded former homeland areas; and expanding opportunities for women, youth, people with disabilities, and older persons who stay in rural areas.

The ultimate vision of creating vibrant, equitable, and sustainable rural communities will be achieved through a three-pronged strategy. The components of this three-pronged strategy are also the key elements that characterise the CRDP and are as follows:

1. Coordinated and integrated broad-based **agrarian transformation**,
2. Strategically increasing **rural development**,
3. Improved **land reform**.

IMPLICATIONS FOR THE AGRI-PARKS DEVELOPMENT

The types of priorities that are typically catered for in the CRDP, categorised according to the three key strategies mentioned above, include – but are not limited to – the following:

Economic Development

Agrarian Transformation

- Livestock farming and related value chain development (exploring all possible species for food & economic activity).
- Cropping and related value chain development (exploring all possible species, especially indigenous plants for food and economic activity).

Rural Development

- The establishment of business initiatives, agro-industries, cooperatives, cultural initiatives, and vibrant local markets in rural settings.

Social Development

Rural Development

- The empowerment of rural communities, especially women and the youth, through facilitating and mediating strong organisational and institutional capabilities and abilities to take full charge of their collective destiny.
- Capacity building initiatives, where rural communities are trained in technical skills, combining them with indigenous knowledge to mitigate community vulnerability to, especially, climate change, soil erosion, adverse weather conditions and natural disasters, hunger and food insecurity.

Physical and Infrastructure Development

Rural Development

- Revitalisation and revamping of old, and the creation of new economic, social, and information communication infrastructure and public amenities and facilities in villages and small rural towns.

Institutional Development

Land Reform

Projects will be linked to the acquisition of, and access to, land through the three land reform programmes (redistribution, tenure, and restitution). All projects implemented through the three programmes will be implemented efficiently but in a sustainable manner linked to the strategic objective of the CRDP.

3.2.1.2 Other Programmes

Other programmes implemented by the DRDLR are the following:

1. LAND REFORM PROGRAMME

The Land Reform Programme aims to initiate a sustainable land reform programme in South Africa, based on the following three strategic objectives:

- Strategically located land acquired
- Farm development support provided to smallholder farmers
- Functional system and institutional arrangements

2. RECAPITALISATION AND DEVELOPMENT PROGRAMME

The Department of Rural Development and Land Reform's Recapitalisation and Development Programme seeks to operationalise the policy on the same name, published 23 July 2014. It focuses

on human (capacity development), infrastructure development and operational inputs on properties in distress or that are newly acquired through the land reform redistribution, restitution and other programmes since 1994, as well as other agricultural properties in distress acquired without grant funding. The approach is to ensure that the enterprises are profitable and sustainable across the value chain in line with the Business Plan, which stipulates comprehensive development requirements of targeted properties over a 5-year recapitalisation and development cycle.

3. PROVINCIAL SHARED SERVICES CENTRES

Provincial Shared Services Centres (PSSCs) are established to coordinate land reform programmes. The PSSC's focus on the following services:

- Redistribution in terms of the Pro Active Land Acquisition Strategy (PLAS)
- Tenure (ESTA, IPILRA)
- Recapitalisation
- State Land Administration

3.2.2 Department of Agriculture, Forestry and Fisheries

The following rural development programmes are driven by DAFF:

1. COMPREHENSIVE AGRICULTURE SUPPORT PROGRAMME (CASP)

To ensure the commercial viability of emerging farmers from a household food security level to a commercial level, a farmer-to- farmer mentorship policy has been developed. The department regards skills development as one of its critical focus areas and this obviously includes providing hands-on training to emergent farmers in various fields of farm management.

2. MICRO-AGRICULTURAL FINANCIAL INSTITUTIONS OF SOUTH AFRICA (MAFISA)

The Micro-Agricultural Financial Institutions of South Africa (MAFISA) encourage partnerships between established agricultural enterprises and emerging farmers and entrepreneurs by providing access to finance for farmers, especially beneficiaries of the land restitution, redistribution, and land tenure reform programmes. The Land Bank administers the credit scheme on behalf of the department and provincial departments provide assistance to access the scheme. Four development finance institutions are currently participating in the disbursement of MAFISA funds in the provinces.

3. ILIMA-LETSEMA

The grant provides for farmers who lack access to credit to be assisted to access agricultural production inputs. The inputs are necessary to increase agricultural production and hence, to improve household and national food security. Jobs are sustained and new ones created when farm enterprises are made operational, and this requires provision of the production inputs

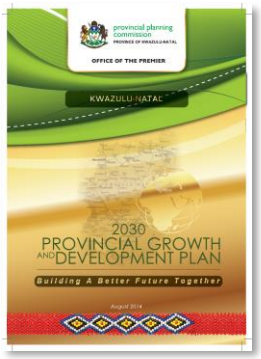
4. AGRICULTURAL BROAD-BASED BLACK ECONOMIC EMPOWERMENT (Agri-BBBEE)

The Agri-BBBEE Charter seeks to provide direction on the integration of emerging participants into mainstream agriculture by creating linkages, partnerships, and networks for balanced, mutually benefiting results for all concerned. It specifically encourages partnerships between established agricultural enterprises and emerging farmers and entrepreneurs. It seeks to ensure enhanced competitiveness and sustainable development with improvement/expansion of the existing businesses, rehabilitation of ailing agricultural business concerns, and expanded entry for new businesses in the sector.

3.3 Provincial policies

The following provincial policies and programmes are considered relevant to the establishment of iLembe's Agri-park.

3.3.1 KwaZulu-Natal Provincial Growth and Development Strategy and Plan (PGDS and PGDP)



The Provincial Growth and Development Strategy provides a high-level view of key issues, mechanisms and interventions necessary to achieve continued balanced growth in the province for the 30 year time horizon. It provides KZN with a reasoned strategic framework for accelerated and shared economic growth through catalytic and developmental interventions, within a coherent equitable spatial development architecture, putting people first, particularly the poor and vulnerable, and building sustainable communities, livelihoods and living environments. It aligns itself to the Millennium Development Goals (MDGs), the NGP, the NDP, and various other national policies and strategies. The *Provincial Growth and Development Plan* is the implementation framework for the PGDS and provides a number of proposed interventions.

STRATEGIC PRIORITIES / FOCUS AREAS
The strategic focus of the PGDS is "*…to build on the smart province concept, through improving all growth sectors enhancing their employment generating potential, transformation of the economic sector in respect of representivity of our population, appropriate provision of economic and social infrastructure and building of sustainable communities in our Province, and contributing to this on a nation and Continental level.*" There are seven strategic goals of the PGDS, all of which have a direct bearing on economic development: • Goal 1: Job Creation • Goal 2: Human Resource Development • Goal 3: Human & Community Development • Goal 4: Strategic Infrastructure • Goal 5: Environmental Sustainability • Goal 6: Governance and Policy • Goal 7: Spatial Equity
IMPLICATIONS FOR THE AGRI-PARKS DEVELOPMENT
Strategic Goal 1, Job Creation, focuses on the economic development and investments necessary to address inequality, unemployment and poverty. The strategic objectives of the Agri-park Programme are all focused on creating employment opportunities for smallholder farmers and revitalising rural towns by creating urban-rural linkages that will drive economic growth. Furthermore, the focus on rural-urban linkages seeks to address the spatial disparities of inequality present in KZN. Thus, there is a strong alignment between the PGDS, its implementation framework, the PGDP and the Agri-park Programme.

3.3.2 KwaZulu-Natal Provincial Spatial Economic Development Strategy (PSEDS)

The *Provincial Spatial Economic Development Strategy (PSEDS)* provides a spatial framework for economic investment by utilising a nodes and corridors approach in support of the objectives of the PGDS and PGDP. It recognises the spatial disparities inherent in social and economic development which result from the spatial distribution of natural resources, historical imperatives and cultural factors. It further recognises that these spatial disparities were aggravated by apartheid spatial planning, resulting in a disjuncture between where people live and where social and economic opportunities are concentrated. The main objective of the PSEDS is to provide a spatial interpretation of economic

development opportunities and spending priorities based on an understanding of the economic drivers and comparative and competitive advantages of the different districts in the province. The successful implementation of the PSEDS is dependent on local level implementation.

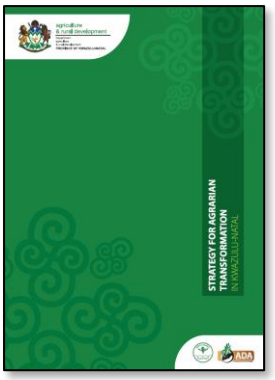
STRATEGIC PRIORITIES / FOCUS AREAS
The PSEDS identifies the following sectors of the provincial economy as the drivers of the economic growth which is necessary to address the particular nature of inequality and poverty in KZN: • Agriculture - including Agri-industry. • Industry - including heavy and light industry and manufacturing. • Tourism - including domestic and foreign tourism. • Service sector - including financial, social, transport, retail and government.
IMPLICATIONS FOR THE AGRI-PARKS DEVELOPMENT
As a key driver of economic growth and development, the agricultural sector has an important role to play. Through its core focus on primary commodity production and The Agri-parks Programme aligns with the PSEDS from the perspective of focusing on both primary commodity production and also agro-processing opportunities, both of which have the potential to create employment opportunities and significantly increase the contribution of agriculture to the provincial economy.

3.3.3 KwaZulu-Natal Department of Agriculture and Rural Development Strategic Plan (2015–2020)

The Department of Agriculture and Rural Development Strategic Plan, 2015-2020 is guided by other key policies such as the NGP, NDP, Medium-Term Strategic Framework 2015-2020 (MTSF), APAP, IDGP, Operation Phakisa, PGDS, PGDP and PSEDS. Its mission is "to promote, through partnerships, sound agricultural practices that stimulate economic growth, food-security and advancement of rural communities in KZN". The strategic plan for KZN DARD describes three programmes of action and associated objectives, targets and measurable indicators over a period of three years (2015/16-2017/18).

STRATEGIC PRIORITIES / FOCUS AREAS
The KZN DARD Strategic Plan sets four strategic goals for the Department: 1. Provision of sound and transparent corporate and financial management systems. 2. Maximising agricultural development and output in the province. 3. Promotion of environmentally sustainable agricultural development. 4. Improve access to services in rural areas through coordination. These goals are further disaggregated into strategic objectives at a programme level: 1. Programme 1: Departmental line function support 2. Programme 2: Agriculture 3. Programme 3: Rural Development
IMPLICATIONS FOR THE AGRI-PARKS DEVELOPMENT
The establishment of the Agri-parks Programme and associated strategic objectives are incorporated into Programme 2 (Agriculture) and 3 (Rural Development), ensuring that there is alignment between the Department's Strategic Plan and the roll-out of the Agri-parks Programme. The stated purpose of the Agricultural Programme is to "engage, empower and transform our communities to participate in sustainable agricultural and environmental practices in order to realise economic development and food security", whilst the goal of the Rural Development Programme is "transformation of eth rural economy". Both of these focus on the need to leverage the economic growth potential of an optimised agricultural sector by establishing Agri-parks and facilitating social mobilisation within rural economies by creating linkages to urban economies.

3.3.4 Strategy for Agrarian Transformation



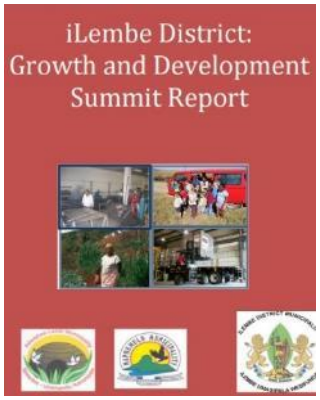
The *Strategy for Agrarian Transformation* sets out a detailed approach for the transformation of the agricultural sector in KZN. It proposes that an agrarian transformation strategy, supported by an integrated approach to rural development, will in turn contribute towards addressing food security, job creation and the growth of the provincial economy. This strategy is guided by key policies such as the MTSF, NGP, National Development Plan NDP, PGDS, Rural Development Framework (RDF), APAP and Operation Phakisa.

STRATEGIC PRIORITIES / FOCUS AREAS
The *Agrarian Transformation Strategy* focuses on all critical aspects of supporting the development of farmers and assists farmers in the drawbacks associated with subsistence farming compared with sustainable commercial agriculture. The Agrarian Transformation programme is based on: 1. The provision of basic services and social amenities for rural communities. 2. Food security support. 3. Interventions in crop and livestock production. 4. Supporting a sustainable land reform programme. In terms of the provision of services, KZN DARD will play a coordination role within KZN to ensure that gains in agricultural development are accompanied by access to schools, health, transport infrastructure, housing and social amenities from relevant sector departments. This strategy is focused on the provision of agricultural support to a range of clients in the sector, from households on communal land to new entrant black commercial farmers and claimants who have accessed land through the land reform programme.
IMPLICATIONS FOR THE AGRI-PARKS DEVELOPMENT
The establishment of the Agri-parks concept plan and associated strategic objectives are integrated into Agrarian Transformation Strategy through its second pillar which is the Agri-Village model. This reformed approach takes into consideration the: • Agro-Processing Model; • Business Model; • Commodity Approach; and • Scientific Research, Technology Development and Extension All the above elements have been incorporated and addressed as part of Agri-parks core objectives, which focuses on Agro-Processing Opportunities for the designated districts, business models which can successfully applied and are tailor made to suite each districts dynamics, Commodity Analysis which details the appropriateness of each commodity relative to its district and looking at Technological Advancements in commodity production, processing and storage.

3.4 Local policies

The following local (District) policies and programmes are considered relevant to the establishment of iLembe's Agri-park.

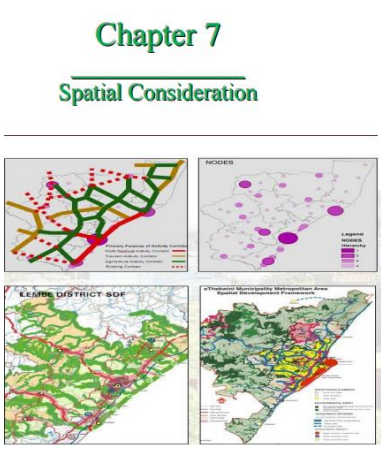
3.4.1 District Growth and Development Plan (2008)



The *iLembe District Growth and Development Plan* is a District-wide implementation plan developed as a requisite in terms of the PGDS. It is recognised as playing a key role in integrating and aligning the intentions of the NDP and the PGDP with the activities and interventions of local government operating at the coalface of implementation and interaction with constituent communities. Its aim, therefore, is to translate the PGDP into a detailed implementation plan at a District level, inclusive of clearly defined targets and responsibilities which will enable KZN to measure progress in achieving the accepted growth and development goals. Additionally, the PDGP sets out to propose specific milestones in targeted priority sectors.

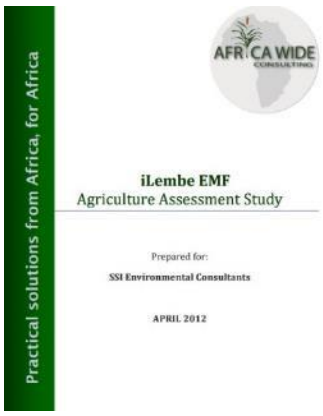
STRATEGIC PRIORITIES/ FOCUS AREAS
The long-term vision of the DGDP is far-reaching and is articulated as five separate visions each targeted at a specific focal area: 1. Infrastructure and quality of life 2. Economic development 3. Demographic profile 4. Education 5. Natural resources, spatial development and governance Six strategic goals are set to realise this vision: Goal 1 – Coordinate role-players around common focus areas Goal 2 – Create an enabling environment for agricultural development Goal 3 – Improve access to resources Goal 4 – Improve sustainable access to land and water for agriculture Goal 5 – Improve human capacity in the sector
IMPLICATIONS FOR THE AGRI-PARKS DEVELOPMENT
The DGDP recognises the pivotal role to be played by an optimised agricultural sector in driving economic development and creating economic opportunities for the District's residents and has set this as one of its primary strategic goals. Through alignment, the following objectives will be realised; • Improved communication between role-players to prevent duplication • Defined production focus (primary production and agro-processing) to ensure alignment with other LED initiatives such as the proposed Biodiesel plant and the Dube Trade Port. • Strengthen support provided to farmers and contractors, improved access to markets for agricultural products and value added products, reduced Crime and improved access to finance. • Improved access to infrastructure (including irrigation), machinery and equipment and inputs. • Improved tenure security for farmer operating on Ingonyama Trust Land and access to freehold agricultural land within traditional council areas for emerging commercial farmers. • Securing of high potential land for agricultural purposes and increasing environmental awareness and implement best practice examples of sustainable land and water use.

3.4.2 KwaDukuza Spatial Development Framework Review



The KwaDukuza (iLembe) Spatial Development Framework Review is the central focus of the current Integrated Development Plan (IDP) for the Municipality, put forward a clear vision for the KwaDukuza area. It is this future vision for KwaDukuza that must drive the approach taken in the current review process, to ensure that the spatial structure and related planning mechanisms are aligned to the projects and programs that form the basis of the IDP. The aim for this SDF Review is: "By 2030, KwaDukuza shall be a vibrant city competing in the global village both economically, socially, politically and in a sustainable manner."

STRATEGIC PRIORITIES / FOCUS AREAS
The SDF utilises the well-known system of identifying Nodes and Major roads at the 3 level categorisation, although the nodes are not distinguished by their size and function according to the hierarchy of centres. The concept underpinning the current SDF, which is reflected in the plan overleaf, is driven by the: • Analysis of the existing situation, • Vision and directive to advance KwaDukuza Town as an administrative node • Implicit requirement that each of the existing towns should be subject to integration and compaction. • Each existing town would share the growth imperatives of the municipality.
IMPLICATIONS FOR THE AGRI-PARKS DEVELOPMENT
The PSEDS indicates that KwaDukuza can contribute to the provincial economy by focusing on Agriculture within its western part. The DM is identified as an area of high potential for agriculture and Agri-processing, and it is evident that the south-western portions of the municipality have been identified as areas which could make a significant contribution towards agricultural production at a provincial scale. The SDF also maps out the Agricultural corridor as well as indicating areas of high potential for agricultural production. The Maphumulo – Ndwedwe corridor focuses on developing agricultural potential and strengthening nodes in Ndwedwe and Maphumulo as service and Agri-processing nodes linked to Dube Tradeport opportunities.

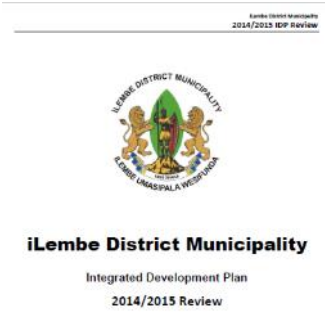


3.4.3 Environmental Management Framework (EMF), 2014

The *iLembe District Environmental Management Framework (SDF), 2014* is a high level environmental overview of iLembe. The main driver behind the development of the EMF is the need to provide environmental support for decision makers in the Municipality. The purpose of this EMF is to provide a framework which will inform the Integrated Development Plan (IDP) process and Spatial Development Frameworks (SDF) within the District.

STRATEGIC PRIORITIES / FOCUS AREAS
The SDF employs a nodes and corridors approach and sets objectives based on the following focus areas to facilitate planned infrastructural and economic development and investment that will enable the DM to realise its 2050 vision of: 1. Unlocking rural economy through agriculture and tourism 2. Linking rural population to opportunities 3. Harnessing and promoting natural assets 4. Linking rural areas to opportunities through services 5. Integrating the DM's, and unlocking state land for productive usage
IMPLICATIONS FOR THE AGRI-PARKS DEVELOPMEN
The focus of the EMF will be to identify areas of natural resource importance, ecological sensitivity, as well as transformation pressures in order to formulate a spatial environmental plan to guide decision making and relevant spatial development plans. The EMF will also be a tool to guide development and focusing on the major backlogs in housing, and infrastructure and service provision without compromising environmental resilience. The EMF focuses on Land Reform which is directly aligned to the Agri-Park model, which makes land available with the purpose of unlocking highly productive land for farming of crops and vegetation.

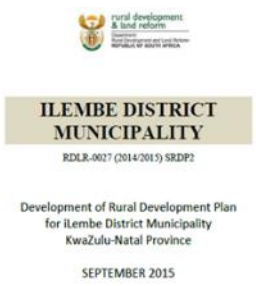
3.4.4 Integrated Development Plan (IDP), 2014/2015



The Integrated Development Plan Review (IDP), 2014/2015 for iLembe is a strategic planning tool that guides development within the DM. It aims to promote and sustain integrated service delivery and infrastructure development that facilitates economic growth and development. Included in the plan is a five-year capital investment plan that identifies strategic infrastructure projects.

STRATEGIC PRIORITIES / FOCUS AREAS
The IDP sets the following nine key priority areas for iLembe for the period 2014/15: 1. Water and Sanitation 2. Transport Infrastructure and Linkages 3. Energy 4. Access to Community Facilities 5. Human Settlements 6. Telecommunications 7. Local Economic Development 8. Financial Viability and Management 9. Good Governance and Public Participation In terms of Agri-Hub development, iLembe's vision includes sourcing more vegetables to generate more jobs and to create a critical mass of agricultural skills in the District.
IMPLICATIONS FOR THE AGRI-PARKS DEVELOPMENT
The Agri-park model's focus on inclusion of smallholder farmers and creating rural-urban linkages will assist iLembe will assist the district to source more vegetables thereby creating more jobs assisting the DM with its vision to enhance agricultural skills. The establishment of agro-processing facilities will create agro-processing opportunities that can add value to primary commodities and generate employment opportunities and economic growth. Furthermore, the IDP's identification of the need to develop telecommunications infrastructure within the DM is a promising sign for the Agri-park which will be very dependent on a good telecommunications network to relay information and market intelligence.

3.4.5 iLembe District Rural Development Plan (Draft), 2015



The *iLembe District Rural Development Plan (DRDP)* is a planning tool that aims to "promote rural economic transformation through fostering agricultural development as well as other existing economic sectors" with the intention of improving the quality of life for communities in the DM. it is informed by a number of national and provincial planning policies and documents, such as the NDP, CRDP, PGDS and PDGP, and APAP, as well district and local LEDs, IDPs and SDFs.

STRATEGIC PRIORITIES / FOCUS AREAS
The DRDP sets the following strategic objectives: 1. To serve as an instrument for coordinating rural strategic spatial planning. 2. To serve as rural economic transformation instrument. 3. To promote land use management and productivity. 4. To promote rural-urban linkages and functionality. Central to the DRDP is the rationale that a more efficient agricultural sector is an effective vehicle for delivering rural economic transformation.
IMPLICATIONS FOR THE AGRI-PARKS DEVELOPMENT
The Agri-Park model is entrenched in the DRDP which interprets it as the foundation of agrarian rural economic transformation. The DRDP and Agri-parks Programme are closely aligned and establishment of an Agri-park in iLembe will promote rural economic transformation, the core aim of the DRDP.

3.5 Synopsis

The overall objectives of the above policies communicate the aim of not only reducing poverty, achieving equity, and increasing economic growth but also the importance of leveraging agricultural development to assist with food security, reducing unemployment and poverty and contributing to economic growth. The development of the Agri-Park is aligned with the policy framework and will contribute to the various objectives of these policies.

4 Location Context

4.1 Description of the District

The iLembe District Municipality (DC29) is located in the eastern region of KwaZulu-Natal (KZN) and it is approximately 3 269 km² in geographical extent. It is a Category E municipality located in the centre of the KZN province, sharing borders with the eThekwini Municipality to the south, uMzinyathi to the west and uThungulu to the north. iLembe is situated along the KZN coastline and is hence the most eastern district in its area. It is the second smallest district in KZN and is made up of four local municipalities, namely:

- KwaDukuza
- Ndwedwe
- Mandeni
- Maphumulo

The following spatial and physical characteristics will also be examined:

4.1.1 Main Transport Routes

In this section the trends in road infrastructure, road vehicles, airport trends and port movements in iLembe, KZN and South Africa are examined.

Air

Passenger movement at King Shaka International Airport (KSIA) experiences the least passenger traffic at an average of 400 000 passengers per month, which is the lowest of the international airports (O.R Tambo – Johannesburg and Cape Town). However, passenger numbers are increasing by 1% per annum.

Sea

Port Movement relies on the Ports of Richards Bay and Durban, which contribute approximately 60% of all port movements in South Africa. This is economically significant for municipality as it is situated between these two ports and therefore, the activity of these two ports is a good measure of economic activity in the area in general. The port linkages and relatively minimal distance to these ports ensure that transport and logistics costs are minimised.

***Although the Port of Durban and the KSIA are not located within iLembe's boundaries, they are still in relatively close proximity to facilitate cost effective cargo movement.**

Road

Vehicle registrations in iLembe experienced the highest increased witnessed in the two preceding years of 796 vehicles to 40 769.

The Road Infrastructure Department of Transport (NDOT) has embarked on a maintenance programme to maintain the major corridor roads towards iLembe and its municipal areas. Roads affected and now currently in the process of rehabilitation are the R 74 and R102 which are the main carriers within iLembe. Funds were allocated to deal with the roads and contracts have been awarded to rehabilitate accordingly.

iLembe Municipality has strong North-South linkages via the N2 and Provincial road R102. These roads provide a basis for linking the main coastal nodes and the provincial economic hubs of eThekwini and uMhlathuze. There are also distinct East-West linkages via the R74 and R614, these serve as a basis for connection of inland and coastal nodes, as well as other municipalities within iLembe District.

Rail

Metrorail is the backbone of public transport in KwaDukuza with approximately half (49%) of the inland population not having access to any formal mode of transportation. An integrated transportation plan has been developed by iLembe District Municipality. Lack of maintenance and storm–water management have contributed towards poor road condition highlighting some of the municipality's cause for concern.

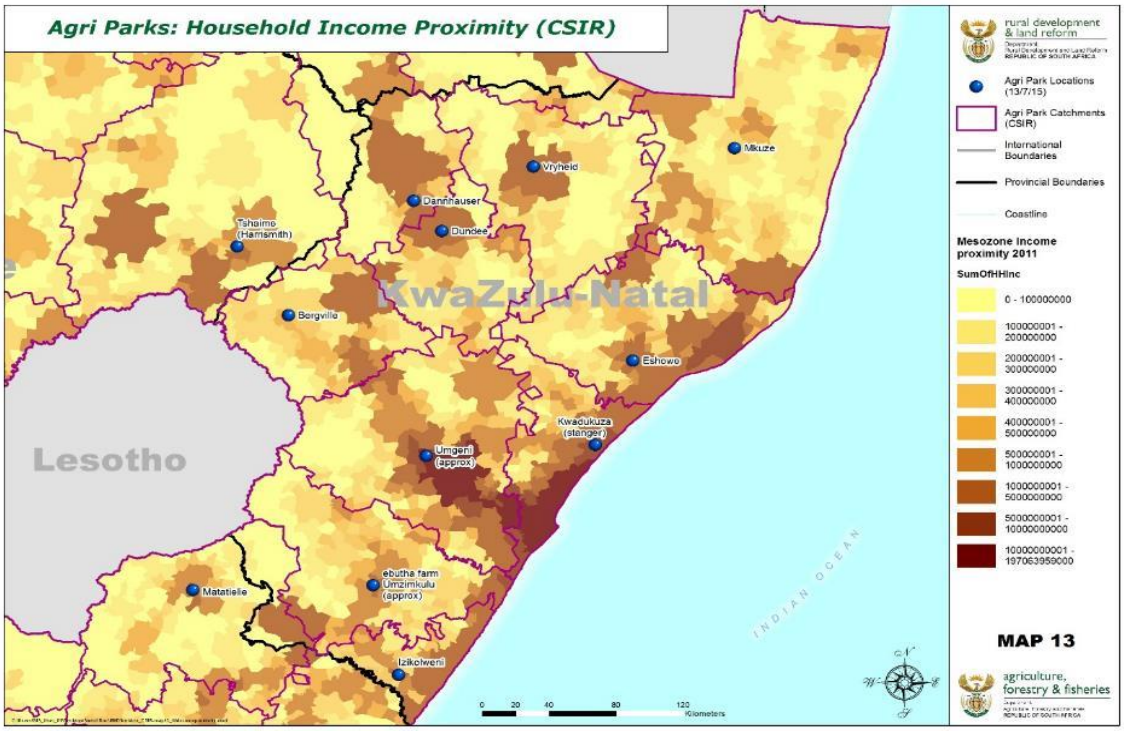
4.1.2 Urban-Rural Linkages

Mostly, the rural has been associated with certain geographical spaces, presenting challenges in understanding poverty and inequality within the district. The development of rural areas in South Africa has posed serious challenges, of particular concern is the fact that the South African economy has, and continues to, develop and generate extreme income and developmental inequalities within geographical spaces. The poverty facing rural areas in South Africa today can be understood to be as a result of the way apartheid shaped access to economic opportunities and government services through rigidly enforced tenure, settlement and labour policies.

Due to the levels of inequality experienced when comparing coastal regions (urbanised) with the inland regions (rural), the South African Gini coefficient (one of the world's worst) remains highly unequal. Areas within iLembe such as Ballito, Zimbali and Sheffield, house high income earners whilst the inland areas of Maphumulo and Ndwedwe lay poverty stricken. The map

below depicts the total household income found within iLembe, ranging from R100 Million – R197 Billion.[1]

MAP 1: HOUSEHOLD INCOME IN ILEMBE



Source: DAFF, 2015

The challenges which affect the iLembe rural areas, include:

- Under-utilisation and unsustainable use of natural resources,
- Poor access to socio-economic infrastructure and services, public amenities and government services,
- Lack of access to water or lack of water sources for both household and agricultural development,
- Low literacy, skills levels and migratory labour practices,
- Deterioration of the social fabric of societies,
- Unresolved restitution and land tenure issues,
- Reliance on social grants and other forms of social security,
- Untapped opportunities in agriculture, tourism, mining and manufacturing.

The most prominent growth has been concentrated along the coastal areas of the District. Stakeholders need to leverage the opportunities presented by the urban coastal areas, but require further growth and development opportunities in the rural hinterland. The rural nodes of the Ndwedwe and Maphumulo Municipalities are underdeveloped. Both the Ndwedwe

[1] Comprehensive Rural Development Plan – iLembe, 2015

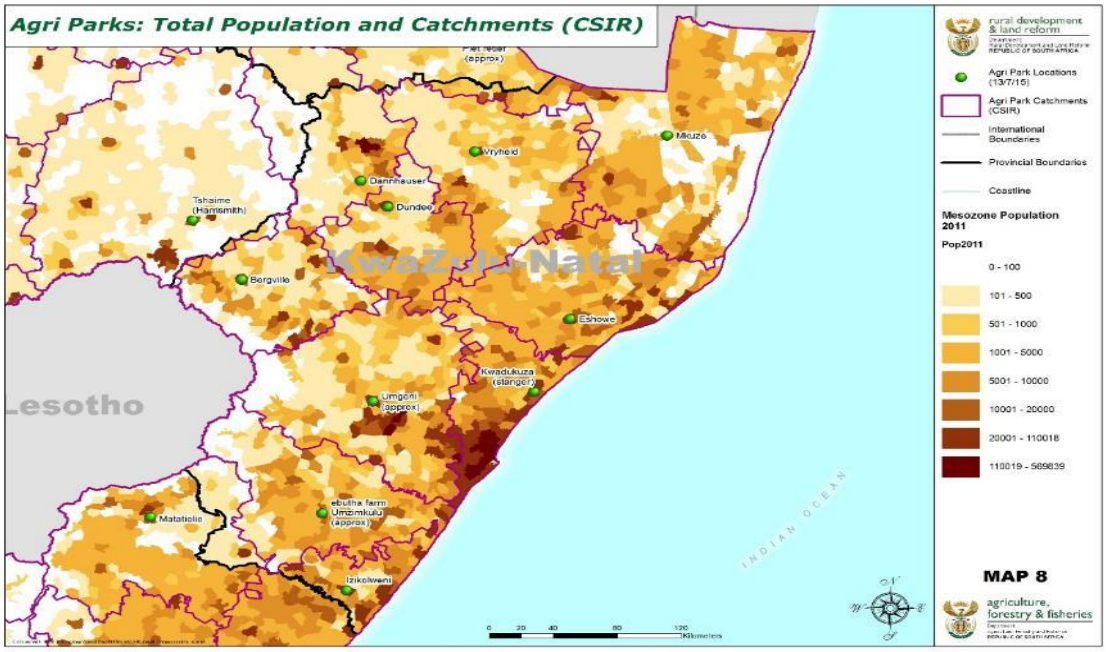
and Maphumulo Villages have received regeneration planning attention in the past, but experienced limited implementation to date.

4.1.3 Settlement Patterns

The challenges of the dispersed rural settlement patterns, the backlogs in infrastructure (water, electricity, roads and telecommunications), and the issues related to land tenure are strongly felt within iLembe. The district and local municipalities, who are charged with planning and budgeting for infrastructure, need a long-term strategy to guide future planning and infrastructure prioritisation, so that economic growth, sustainable job creation and spatial equity is achieved. This strategy must of necessity make sustainable "economic growth" its primary focus, as without such growth and the jobs that growth delivers, the infrastructure investment of Government will not be sustainable, and levels of poverty and inequality will increase. The settlement density is much higher around the urban nodes of Stanger and Mandeni, Isithebe, Sundumbili and along the coastal strip.

The rural hinterland consists of scattered rural settlements and subsistence farming only. Due to the urban-upgrade of Ndwedwe town and Maphumulo, services are becoming available in these towns but people in the hinterland still have to travel far to access services. Infrastructure in the hinterland is very poor. High levels of poverty and unemployment exist within these areas.[2] The map below illustrates the catchment population density per area.

MAP 2: POPULATION CATCHMENTS IN ILEMBE



Source: DAFF, 2015

[2] iLembe Spatial Economic Development Strategy, 2012

As can be seen from map 2 above, population density and settlements occur mainly along the coast with relatively low numbers inland with the exception being for Ndwedwe and Maphumulo.

4.1.4 Land Characteristics

The economy of KwaDukuza is dominated by agriculture (primarily sugarcane), light industry (engineering, wood products, paper and packaging) and tourism. The agricultural sector in the KwaDukuza contributes 23% to the local economy. The products that dominate the area are sugarcane, fruit and vegetables, with some pockets of forestry in inland areas. However, there is a need to diversify these agricultural products into more sustainable products such as dry fruit and juices, that will ensure economic spin offs for the local economy. Therefore, stimulating agricultural practices for commercial production, will promote sustainable livelihoods and development of economic capacity.

Poor land uses and lack of environmental stewardship attitudes of land users have contributed some degradation of portions of land in the district. In some areas, loss of top soil and the creation of gullies preclude the areas from other land uses such as agriculture and long term loss to biodiversity. Attention needs to be given to erosion and land degradation in the rural areas of the district. This condition has severe consequences on the rural environment through:

- Threatened food security status
- Reduced accessibility of natural resources
- Greater susceptibility to climate change impacts
- Reduced quality of life in the already resource rural poor communities

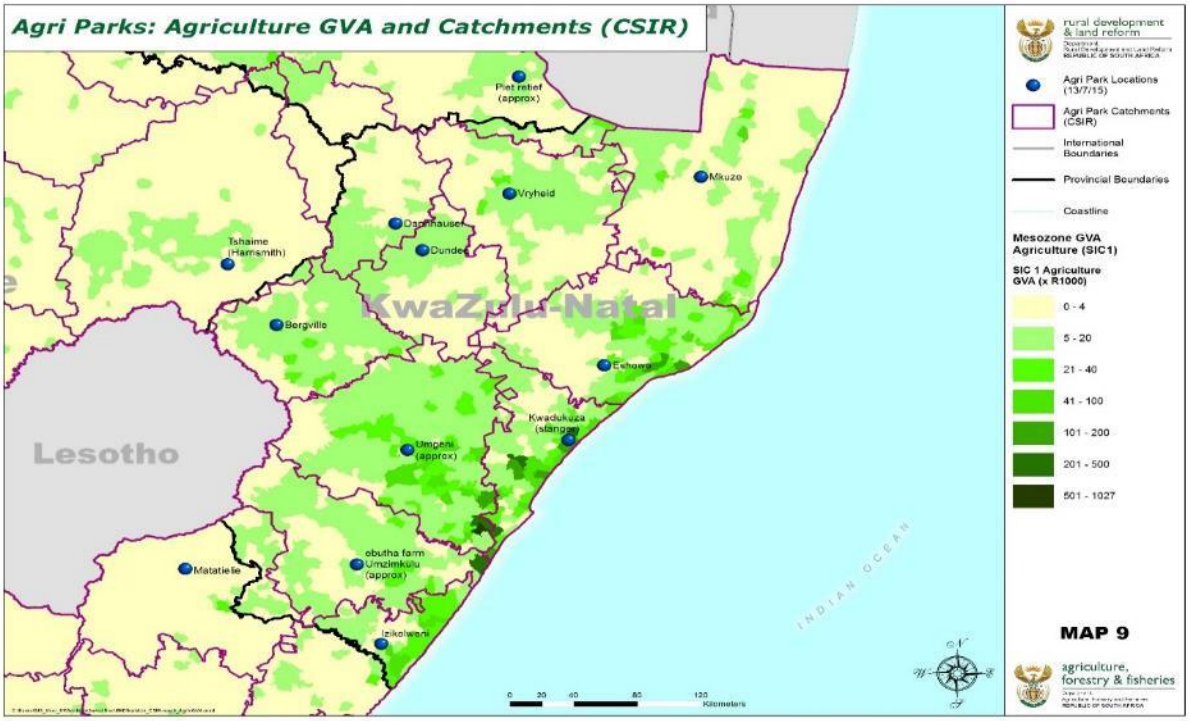
The rationale of these management imperatives is that the rural areas of the district still have relatively large coverage of vegetation.[3]

4.1.5 Agriculture Potential

KwaDukuza and Mandeni both possess similar characteristics within the iLembe district, both have high agricultural potential due to highly arable soils and hardly any climate limitations. One of the key areas of concern is that areas along the corridor have been marked for urban development, however these very areas are identified to have high agricultural potential, this poses a serious problem for farmers as the most useful land is soon to become urbanised and no longer used for agricultural activities.[4]

[3] iLembe Draft RDP, 2015
[4] iLembe EMF Specialist Report, 2012

MAP 3: AGRICULTURAL GVA AND CATCHMENTS FOR ILEMBE (KWADUKUZA)



Source: DAFF, 2015

Depicted clearly in the map above, KwaDukuza, more commonly known as Stanger has the highest degree of Agricultural Gross Value Add (GVA) within iLembe, this is seen by the dark green shaded in area surrounding the iLembe Agri-Hub. The GVA is the value add of goods and services which an industry produces within a particular area, which for Stanger, fluctuates between R 501 000 to R 1 027 000 which is excellent considering there are not many regions that have such high agricultural GVA's.

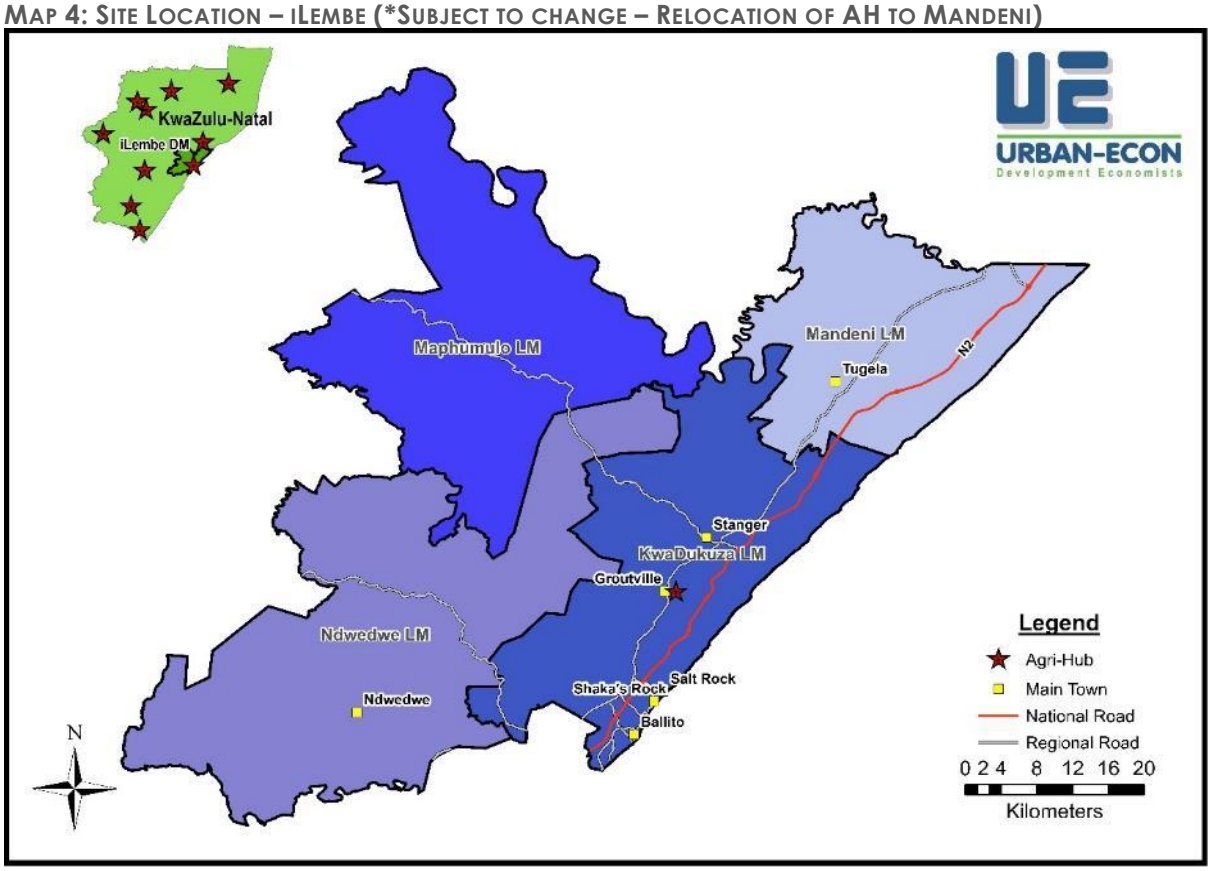
4.2 Location of the Agri-hub

The maps available indicate the proposed location of the Agri-Parks although it should be noted that this is only preliminary at this point as discussions around site selection are ongoing. These maps include land use capabilities, important agricultural projects, and related infrastructure, markets, and transport routes. iLembe possesses a number of abattoirs, saw mills, fresh produce markets and retailers, and CASP supported sites, all of which are of crucial importance in proposals for expanding the agricultural economy in the province.

iLembe is located in the along the eastern region of KZN in South Africa. At 3 269 km^2 and with a population totalling 606 809, the District is the 2nd smallest District in KwaZulu-Natal according

to size, however population density remains one of the highest 190 people per square kilometre.[5]

MAP 4: SITE LOCATION – ILEMBE (*SUBJECT TO CHANGE – RELOCATION OF AH TO MANDENI)



Source: urban-Econ, 2015

The locational analysis will be based on the Province's decision to elect the proposed town of Mandeni (until such time as another potential site has been identified) as the best location for an Agri-hub based on the following:

1. Infrastructure Availability

iLembe consists of a number of Open Community Farms the iLembe Agricultural Farm Projects are located across the four Local Municipalities. Six sites have been identified and are located in Mathonsi, Bulwer, Siyanqoba, Kwahlongwa, Mwandle and Khelelani.

The objectives of the project are to create commercially viable farms, to improve the farm infrastructure, to identify agricultural co-operatives and assist them with capacity building and skills development.

[5] Statistics South Africa, 2011

iLembe has in addition to the open community farms project, the Agro-processing Hubs Project is located across the Local Municipalities. For this project green houses will be erected on Mathonsi, Bulwer, Ndwedwe and Maphumulo. These projects will ensure construction and operation of a hydroponic greenhouse with co-operative driven management. This will allow the co-ops to produce first grade produce and subsequently identify suitable markets for the produce and ultimately supply export quality product to global markets. Additional outcomes involve the creation of community owned structures for each site, creation of employment opportunities for each site and the development of sustainable market linkages, linking producers to export and buying agents.

2. *Proximity to Markets*

KwaDukuza, Stanger is well positioned, close to the N2 and is the heart of iLembe, this area is characterised as the key market place where shopping is carried out, ultimately the busiest place in iLembe with the widest linkages. Stanger being situated where it is, has access not only to its immediate, local market areas, but also has the potential to capture a larger market area of passers-by through its N2 linkage.

Distribution channels are optimal and have minimal deviation costs for consumers and transport companies alike, this will reduce costs and encourage more spend, increasing the Agricultural purchasing power of consumers in the area.

3. *Land Capability*

Further agricultural opportunities exist on the Ingonyama Trust land which is uncultivated and largely unproductive at present. This land is not suitable for extensive agricultural due to poor soil and topography but agricultural projects such as the intensive farming initiatives and hydroponics already mentioned, as well as community gardens or potentially piggeries and poultry farms, can be encouraged in these areas.

The following table reflects the land capabilities of the areas within the iLembe district according to Land Capability Classifications (LCC).

TABLE 2: LCC FOR LOCAL MUNICIPALITIES WITHIN ILEMBE

LCC	Ha	%	Ha	%	Ha	%	Ha	%	Ha
1	0	0	0	0	0	0	0	0	0
2	86.22	0.13	0	0	14846.60	12.81	1329.72	1.48	16276.96
3	16940.28	25.27	20578.44	38.04	19400.24	16.77	13986.09	15.61	71000.74
4	30388.49	45.34	14082.18	26.04	10595.74	9.14	6426.29	7.17	61580.39
5	1298.75	1.94	2462.10	4.55	1154.46	1	0	0	4922.80
6	17659.65	26.33	16959.67	31.35	63201.66	54.61	40470.55	45.18	138449
7	562.96	0.84	0	0	6434.86	5.55	612.45	0.69	7617.35
8	0	0	0	0	127.62	0.11	26772.99	29.89	26930.61
Totals	66936.35		54082.39		115761.20		89598.09		

Source: iLembe EMF Specialist Report, 2012

Approximately 60% of iLembe, the entire KwaDukuza Municipality and large parts of Mandeni and Ndwedwe are suitable for perennial cropping (class 3 and 4) if appropriate soil conservation measures are adhered to.

4. Prerequisites for Development

Based on the analysis done by the Province, it is proposed that KwaDukuza be identified as the best location for the Agri-hub based on the following:

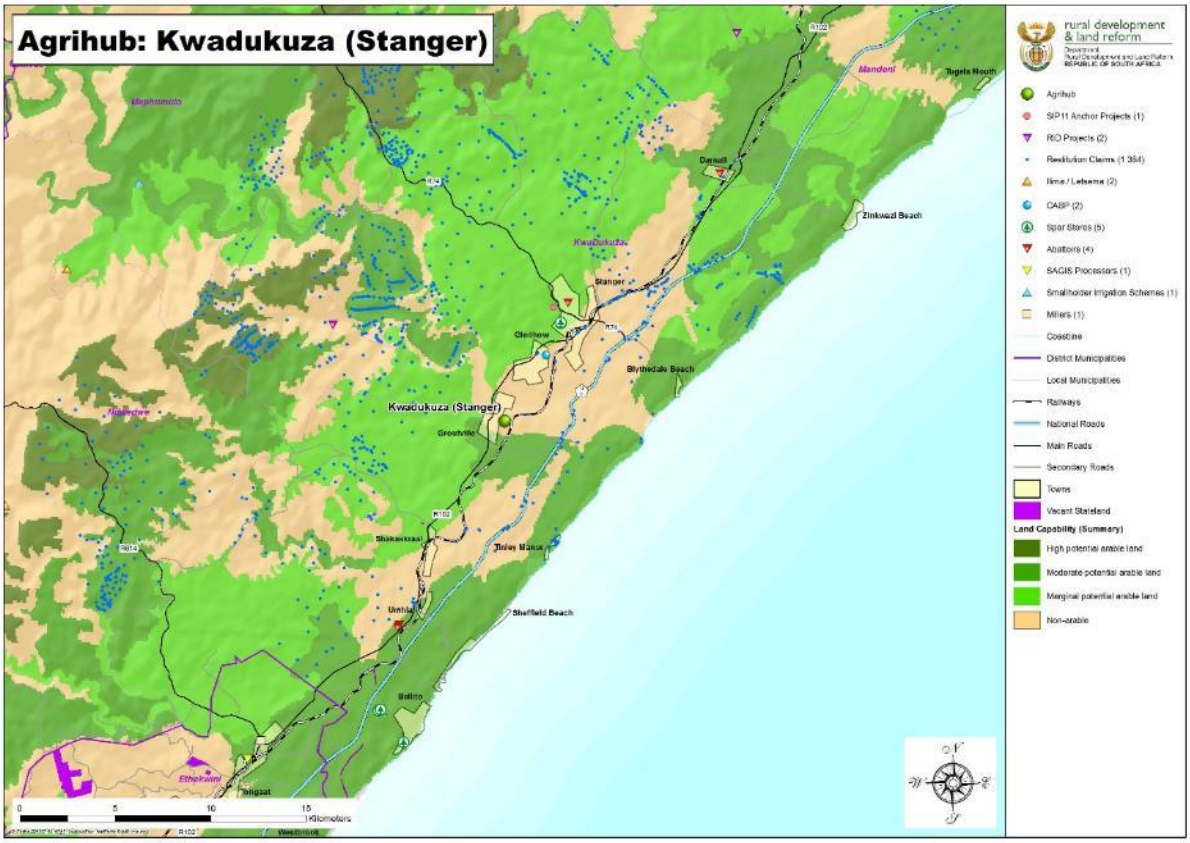
- Market access
- Socio-economics
- Potential availability of state land
- Presence of good transportation linkages
- Water availability from Hazelmere dam
- Land reform acquisitions
- Presence of CASP 15-16 projects surrounding the proposed location

It must be noted that there is little agricultural infrastructure at KwaDukuza, and existing infrastructure should be further developed. It is suggested that land parcels owned by the state should be surveyed in order to inform their occupation and to the extent which they are being occupied. Meeting this criteria, these selected areas should be the primary places to consider for the development of the Agri-park.

4.3 Maps

The map below indicates the proposed location (green dot) of the Agri-Hub in KwaDukuza within the iLembe District Municipality.

MAP 5: ILEMBE DISTRICT MUNICIPALITY (*SUBJECT TO CHANGE – RELOCATION OF AH TO MANDENI)



Source: DAFF, 2015

4.4 Economic Infrastructure

The iLembe District is set to become a major economic hub within KwaZulu-Natal. The N2 national highway running from Durban up through Richards Bay to Swaziland and Mozambique dissects the district. Three distinct development zones exist: the coastal strip with its residential and tourism components; the inland corridor, which is influenced by the existence of major commercial agricultural activities, and the rural hinterland.

The recent developments of King Shaka International Airport and Dube Tradeport are pivotal to the district's future success. The development has created immense opportunities for growth and stimulation of economic initiatives. Economic spinoffs include:

- High value manufacturing
- Business and logistics parks
- Research and technology parks
- Warehousing and distribution centres
- Entertainment and shopping
- Hotels and residential development

There is a strong positive sentiment from the business sector for new direct investment into the region, creating pressure to deliver on serviced commercial sites for occupation, as well as on the upgrade of existing infrastructure to accommodate the new demands.

The Provincial Growth and Development Strategy for KwaZulu-Natal, as approved by Cabinet in 2011, clearly indicates that the northern corridor will become the focus of economic growth over the next 20 years and beyond.[6]

The most prominent growth has been concentrated along the coastal areas of the District. Thus far, backlogs in infrastructure with water, electricity, roads, telecommunications and the issues related to land tenure have been identified. The central portion of KwaDukuza from KwaDukuza Town southwards to Shakaskraal is the major urbanised area, reflected by the higher population densities. Other urbanised areas are the southern coastal strip, Darnall and Mdlebeni in the far north-west. These areas are relatively well serviced with water and electricity, but reticulated sewerage appears to be deficient in the Greater Groutville area. Provincial roads form an appropriate lattice with spacing of under 10km throughout the municipal area, therefore the major influences on urban growth would only be topography and the desired structure in relation to existing development. What is evident is the fact that many people living within the KwaDukuza area do still not have adequate access to basic service infrastructure, particularly in the more traditional settlement areas.[7]

4.4.1 Roads and Transport Linkages

The roads and transport linkages in iLembe are excellent, however these are only the case with the coastal areas along the N2, inland areas face lack of connectivity and poor road quality, making transport to and around the area nearly impossible.

A substantial investment into road infrastructure is required, particularly, water infrastructure, a road connecting Maphumulo and Ndwedwe, as well as roads giving access to Dube Tradeport as this will facilitate stronger trade linkages to rural and developing areas.

The R102 is a vital route for industry as it connects Durban harbour, via Tongaat, the airport, KwaDukuza to Richards Bay and further North. The R102 road conditions have been described as diminishingly poor and in need of proper maintenance, this is due in part to the prioritised SIP2 corridor which requires frequent maintenance to the highly tolled N2 route. Most of the wards, especially those that have gravel roads were concerned about the state of gravel

[6] KZN Top Business, 2012
[7] KwaDukuza Status Quo Assessment, 2011

roads and access roads. There is a dire need for maintenance and upgrade of the entire existing road infrastructure throughout the municipal area.

East west corridors of new road infrastructure and urban development linking Blythdale to KwaDukuza (Stanger), and projecting from there further westwards would do well to create a groundswell of market forces supporting KwaDukuza town's reconstruction. However, a public-private partnership drawing on international best practice in urban reconstruction experience also needs to be focused on the existing town itself, which is otherwise currently jaded and not consistent with the attributes of a core of a nascent metro.

The rural hinterland consists of scattered rural settlements and subsistence farming only. Due to the urban-upgrade of Ndwedwe town and Maphumulo, services are becoming available in these towns but people in the hinterland still have to travel far to access services. Infrastructure in the hinterland is very poor. High levels of poverty and unemployment exist in these areas and migration into KwaDukuza, Durban and Pietermaritzburg results.[8]

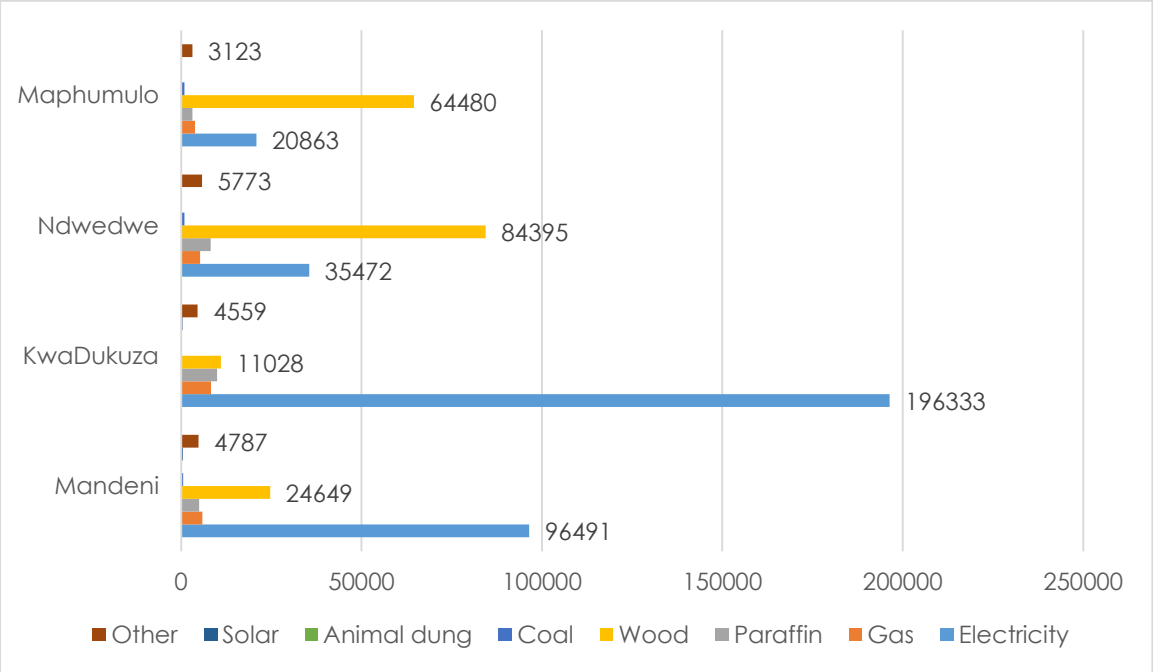
4.4.2 Electricity

Most of the wards do not have access to electricity especially the rural community. There is a need to provide electricity supply to all areas that are not already covered. The poorest municipalities in iLembe are Ndwedwe and Maphumulo, these form part of the rural hinterland segment of iLembe. Production and development in these LMs is much lower than the coastal LMs (as is indicated in the graph above). These LMs are also part of the Ingonyama Trust Lands and therefore have a history of economic neglect. Provision of electricity and other services is much lower here than in the coastal areas (over 50% of people here use candles as their main source of light), unemployment is very high and the standard of living in general is low.[9]

The figure below depicts the number of individuals with access to electricity for lighting and those without electricity for lighting.

[8] iLembe Spatial Economic Development Strategy, 2012
[9] Environmental Management Framework – iLembe, 2012

FIGURE 4: ENERGY SOURCES USED BY HOUSEHOLDS BY LOCAL MUNICIPALITIES IN ILEMBE

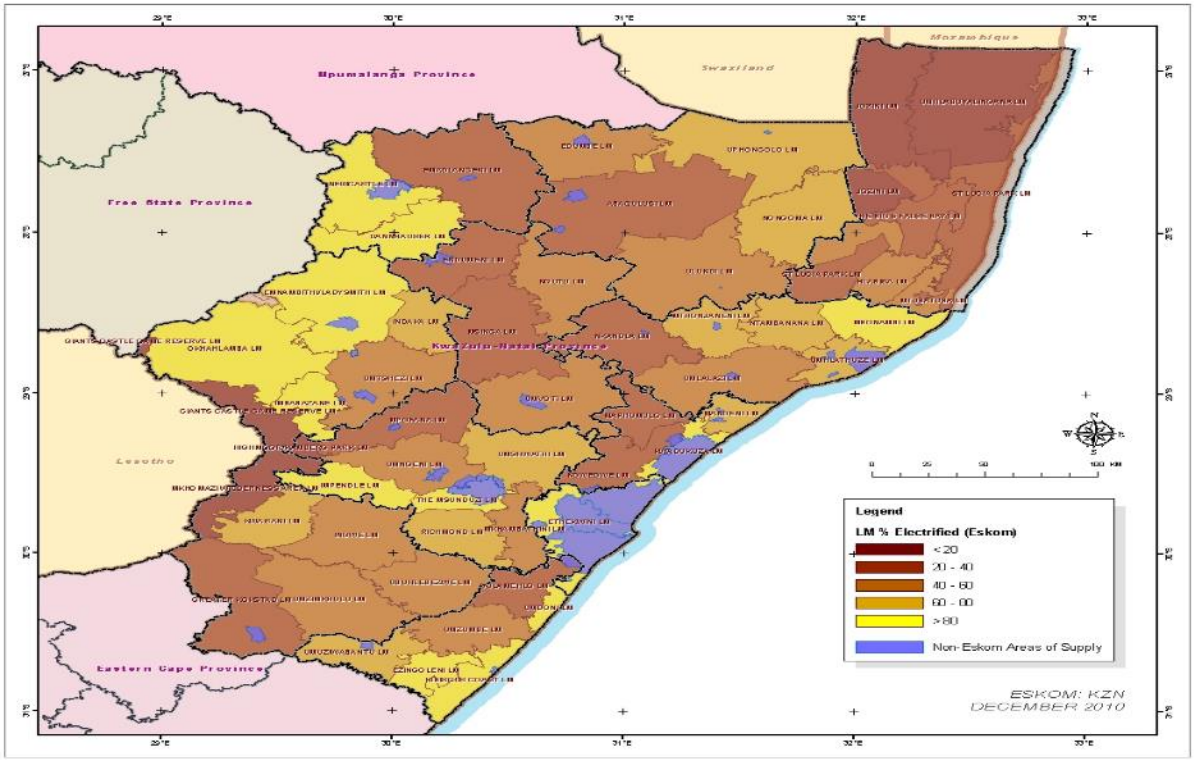


Source: Final IDP Review, 2014/15

While there is an increasing trend in electricity usage for lighting there are relatively lower levels of electricity usage in the rural areas of Ndwedwe and Maphumulo. In Ndwedwe and Maphumulo 25.3% and 33.7% of households respectively used electricity for lighting in 2011. This indicates that over 65% of households in these local municipalities use other sources of energy such as wood, gas and paraffin, some have even employed the use of animal dung and solar. The use of wood can result in higher levels of PM10 which are best known to be health hazards. The best intervention is to continue the electrification roll-out programme and to complement this with information and awareness programme to increase ventilation and introduce clean burning stoves.

Areas such as Mandeni and KwaDukuza are more urbanised, this is reflected in the 70% and 85% of respective household supplied with electricity in these municipalities.

MAP 6: KZN ELECTRICITY BACKLOGS



Source: Cluster Corridor Development Master Plan, 2013

The map above depicts the backlog of electrification in KZN as of 2010. With reference to the map above KwaDukuza is highlighted as a Non-Eskom Area of Supply. Given the current electricity supply issues facing the country, it is unlikely that this situation has changed much although this cannot be said with certainty as more up to date data is not available. The iLembe District has through its strategic planning exercises in tandem with the local municipalities and various other role players, prepared an Energy Master Plan which has identified a need for approximately R1.8 billion worth of bulk and secondary electrical infrastructure to be constructed and administered within the iLembe District Municipality as a whole, in order to meet the present electricity backlogs being experienced within the District.

The iLembe Energy Master Plan was finalised in December 2007. NERSA have issued four licences to distribute electricity within iLembe, these are:

- Eskom, to supply all of Ndwedwe, Maphumulo, most of Mandeni and a small part of KwaDukuza;
- KwaDukuza Local Municipality, to supply most of KwaDukuza;
- Mandeni Local Municipality to supply Mandeni town;
- EThekwini Electricity to supply the lower parts of Ndwedwe and KwaDukuza.

Of the estimated 145 907 Households in iLembe, 59 337 were connected by 2006 leaving a backlog of 86 570 connections (59%). Backlog was only reported in the Eskom supply area;

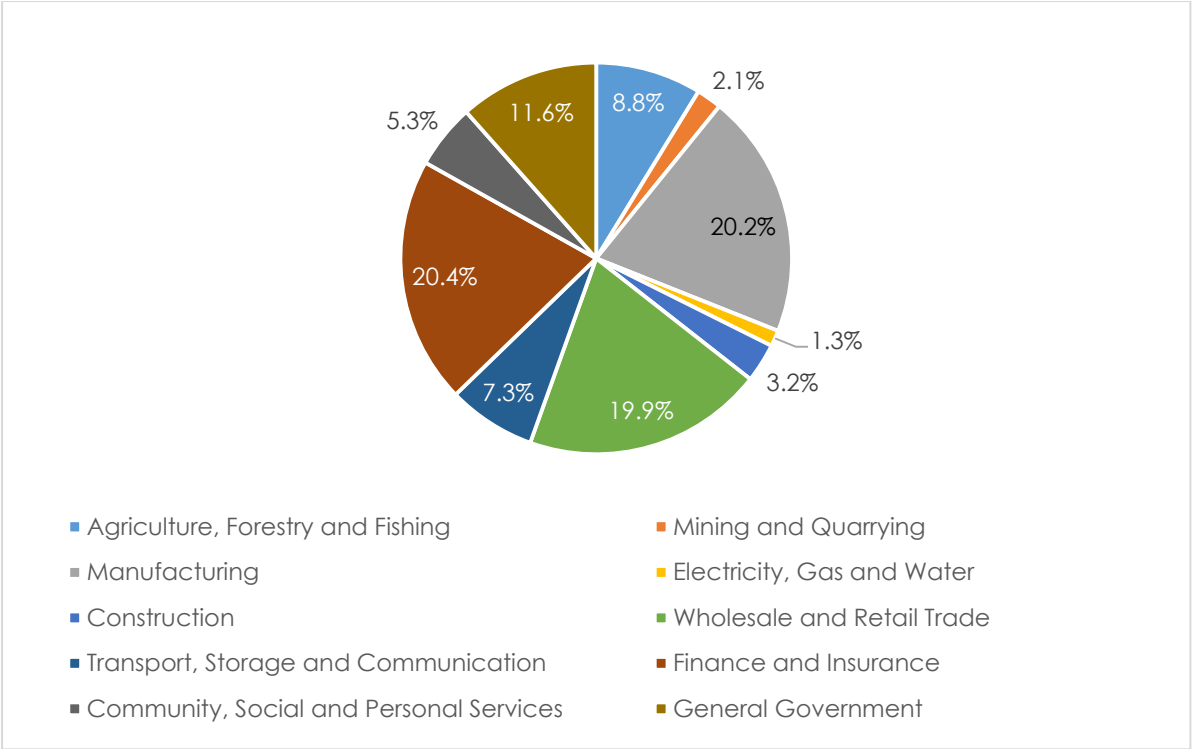
essentially the electrify supply backlogs occur towards the periphery of the KwaDukuza municipality. The current Eskom 3-year rolling electrification plan details projects for 4 844 connections at a cost of R24 million over the 2007-2010 period. This represents 5.6% of the estimated backlog being cleared over the next 3 years.

There are no capacity constraints on the bulk infrastructure supplying iLembe, however certain reticulation networks constraints were identified to delay electrification in the Mandeni and Ndwedwe areas. These constraints will be cleared once the planned substations, Mangethe and Ndwedwe, are commissioned in 2011. Due to unprecedented growth in private developments on the KwaDukuza coastline a need has also been identified for a further bulk supply point from the new KwaDukuza Substation.[10]

4.4.3 Telecommunications

The transport, storage and communications sector in iLembe accounts for only 7.3% of the district's total GVA in 2013, this is the 6th highest contributor to GVA of all sectors[11]. The figure below illustrates the relative sectoral GVA contributions in the district with the transport, storage and communications sector in dark navy blue.

FIGURE 5: ILEMBE GVA CONTRIBUTION PER SECTOR, 2013

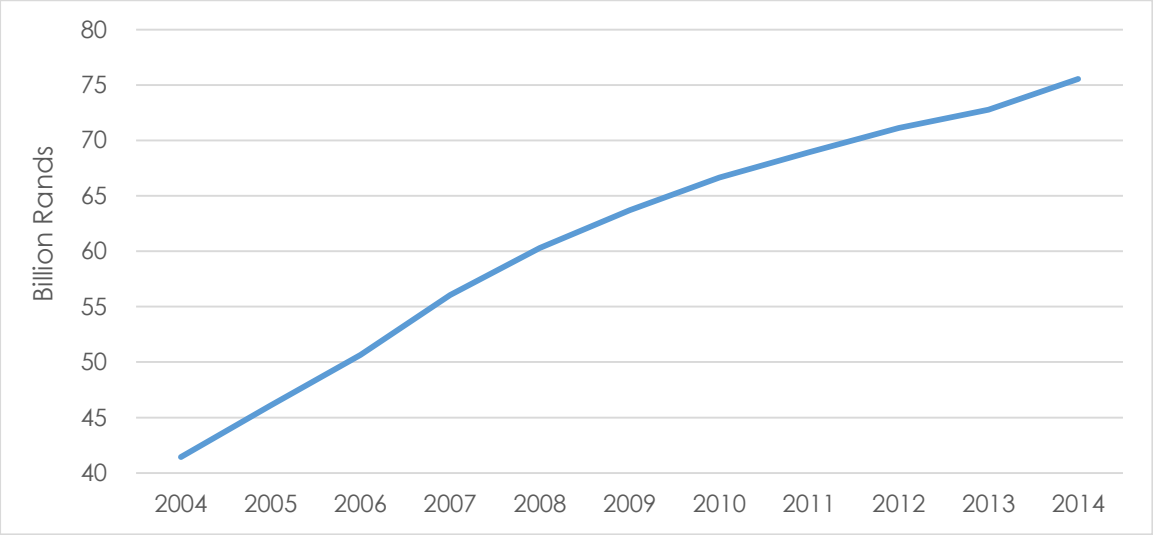


Source: Quantec & Urban-Econ (2015)

[10] KwaDukuza Status Quo Assessment, 2011
[11] Quantec, 2015

All Information on telecommunications infrastructure within the district is difficult to access from the various service providers. However, it is believed that the District is underserviced by telecommunication networks. This situation has serious implications for the district, especially in the rural areas, as access to such infrastructure has significant impact on the economic development. Depicted below in Figure 3, average growth of 1.8% is experienced throughout South Africa.

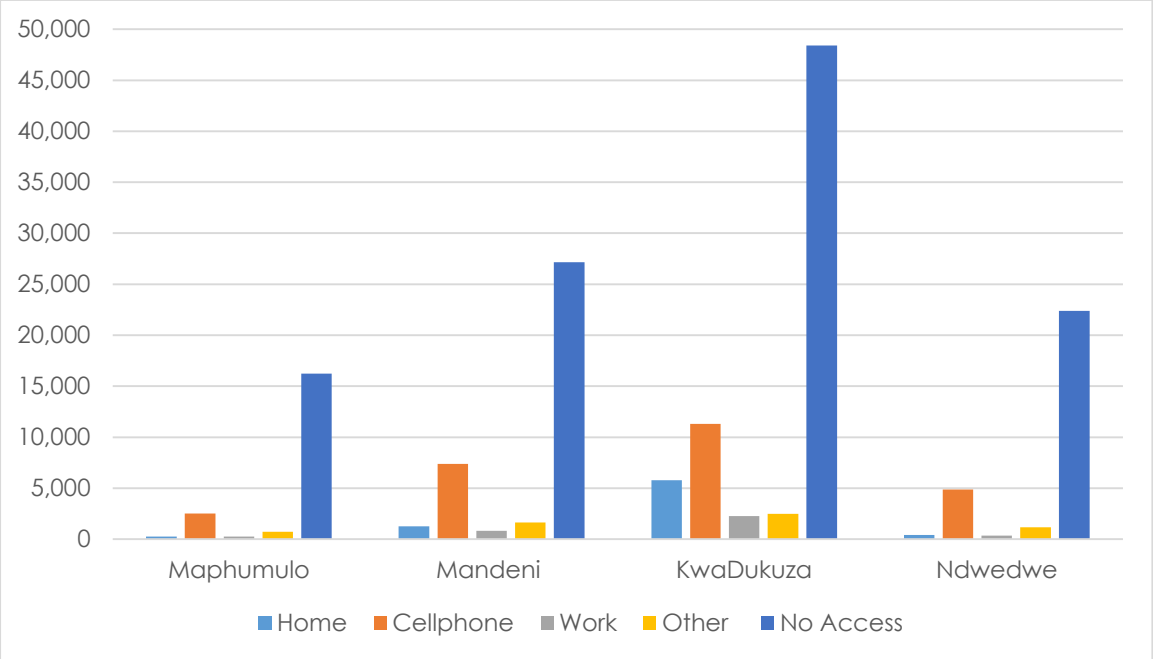
FIGURE 6: REAL VALUE ADDED IN THE TELECOMMUNICATIONS SECTOR SOUTH AFRICA, 2004-2014



Source: Quantec, 2015

The results below show that all the local municipalities have the highest number of people with no access to internet. The main medium for internet access is from cell phones.

FIGURE 7: ACCESS TO INTERNET - ILEMBE, 2011



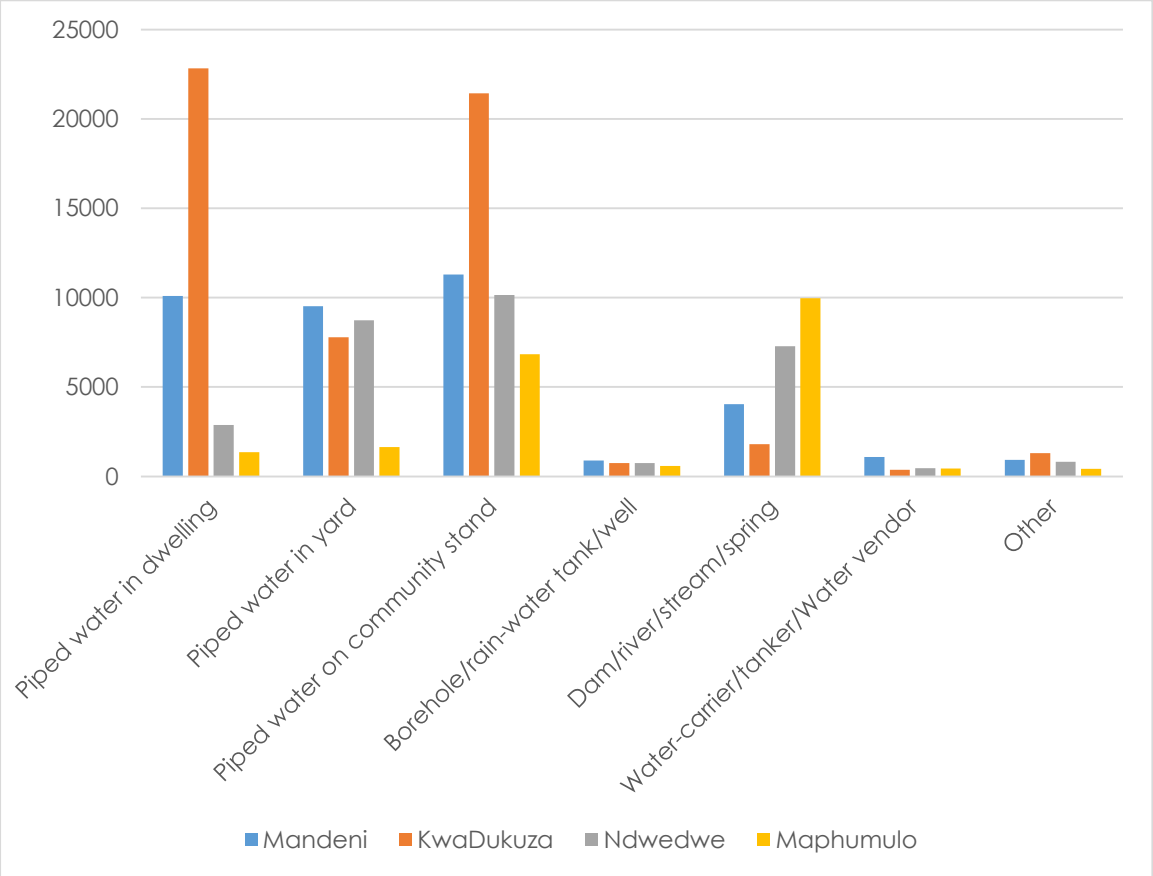
Source: Statistics South Africa Census, 2015

4.4.4 Water and Sanitation

The existing settlement areas are largely capable of being supplied with water. Rural areas require irrigation infrastructure as well as ease of access to the strategically important Dube Tradeport and economic centres such as KwaDukuza and Durban. Special emphasis should be placed on value adding. Once fresh produce is produced, there will be opportunities for manufacturers. Entrepreneurial training, access to market information and regulation that makes it easier to enter the industry will be essential if these opportunities are going to be consumed.

The figure below illustrates the degree to which the community within iLembe have water access. Again KwaDukuza comes out first in terms of respective infrastructure and access to water, whereas Ndwedwe and Maphumulo have poor access to water resources with only 9.3% and 6.4% having access to piped water in their respective dwellings. Mandeni and KwaDukuza much better access to infrastructure with water piped dwellings comprising 26.7% and 40.6% respectively. This access to water translates well for the Agri-Hub being located in KwaDukuza, however infrastructural upgrades will need to take place to accommodate iLembe as a whole.

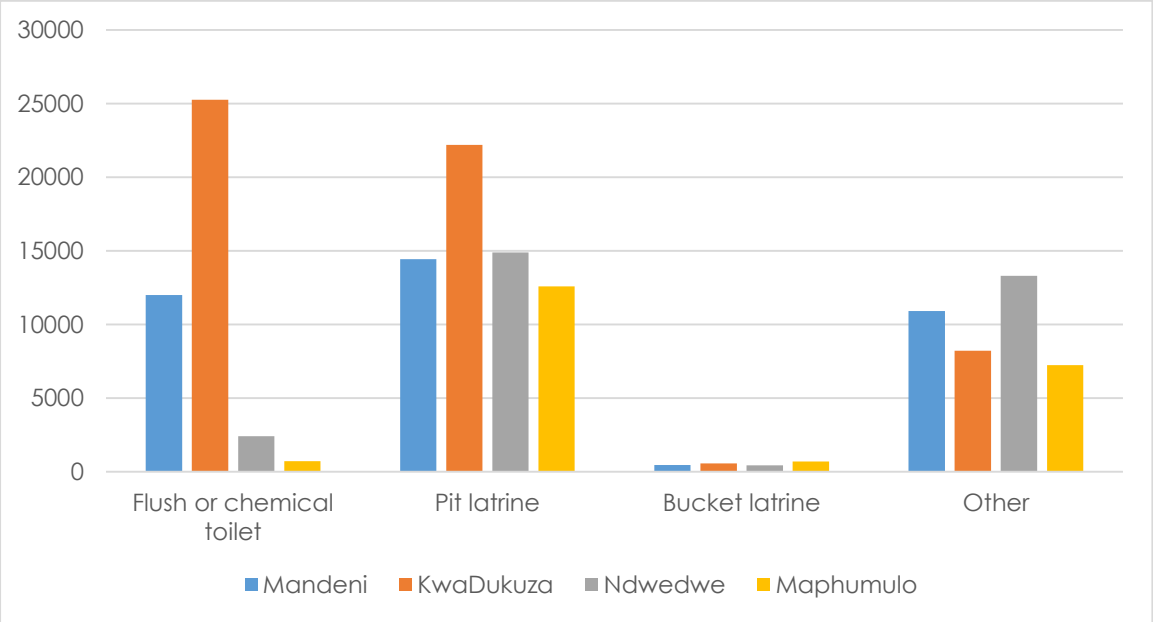
FIGURE 8: WATER ACCESS IN ILEMBE, 2015



Source: Quantec, 2015

The figure below provides the methods of sanitation used in the iLembe district, KwaDukuza has the most advanced sanitation infrastructure this will contribute towards efficient waste management and reduce the risk of pollution in the overall area which is likely to compromise the successful crop farming within the area.

FIGURE 9: SANITATION METHODS USED IN ILEMBE, 2015



Source: Quantec, 2015

5 Main role-players

The following public sector stakeholders are considered to be of importance to the iLembe Agri-park. Engagement with the role players is an important component of the data collection methodology.

Stakeholder	Role
KZN Department of Agriculture and Rural Development (KZN DARD)	• Project Co-ordination • Agricultural sector support • Monitoring and Evaluation • Provision of institutional support • Project facilitation • Promote rural development
Department of Rural Development and Land Reform (DRDLR)	• Project Co-ordination • Monitoring and Evaluation • Provision of institutional support • Provision of funding • Project facilitation
iLembe District Municipality	• Project Support
Enterprise iLembe	• Project Support
KwaDukuza Local Municipality	• Project Support
Mandeni Local Municipality	• Project Support

Maphumulo Local Municipality	• Project Support
KZN Department of Economic Development, Tourism and Environmental Affairs (EDTEA)	• Project Support and facilitation • Research and development • Partnering for development
KZN Department of Cooperative Governance and Traditional Affairs (COGTA)	Project Support
Agri-Business Development Agency (ADA)	• Grant funding • Partnering for development • Research and development • Capacity building
African Farmers Association South Africa (AFASA)	• Project Support
Ndwedwe Local Municipality	• Project Support
North East Coast Farmers Co-op	• Liaison with local stakeholders • Instructional support and facilitation • Facilitation of local initiatives • Access to Information
KwaDukuza Association	
Emambedwini Farmers Association	
Nsongweni Farmers Association	
KwaMaphumulo Farmers Association	
Groutville Abalimi Farmers Association	
Abalimi Basehangers Association	

5.1 Extension services

These services are purposed to assist the Agri-Park in carrying out its roles responsibilities and functions and will be defined for each of the prioritised commodities. Extension services have a major role to play in promoting production and, at the same time, encouraging suppliers of seed, tools and production requirements to devote more attention to this currently neglected section of the economy. The contribution that own production can make to alleviating rural poverty is restricted, however, by factors such as the availability of land, the difficulties of obtaining water, or a lack of family labour. Employment opportunities therefore remain the most critical issue for many rural households.

5.1.1 Sub-Tropical Fruit

Phuhlisani Solutions

Awarded a grant by the Ford Foundation to work with DAFF, ARC and key stakeholders to facilitate a national policy dialogue and development process.

The envisaged Extension Policy for national, provincial and local government will promote and facilitate a harmonised extension and advisory services approach for South Africa; give extension and advisory services a sector-wide dimension and representation. The policy's purpose is to guide and regulate the provision of extension and advisory services in the country.

Agribusiness Development Agency

The Agribusiness Development Agency is a public entity that was established in 2009 to serve as a special purpose vehicle to drive socio-economic transformation in the agricultural and agribusiness sector in KwaZulu-Natal.

5.1.2 Vegetables

iLembe School Nutrition Programme

Currently in iLembe, a Schools Nutrition's Programme is underway and has commenced roll out in 2013. This programme responds to children who live in some of the poorest communities in the province, and enables the provision of fresh produce to these children to allow them to be properly nourished and achieve the most from their schooling careers.

The Schools Nutrition Programme is a poverty alleviation project and as well as feeding children, it is also providing a much needed income for the 500 plus farmers and their helpers more than 1 000 in total who are already growing the vegetables. This number is expected to increase as further farmers are identified.

5.1.3 Poultry

Ministry of Agriculture – Poultry Production Section

The mandate of the section is to promote poultry production with emphasis on Broiler Production, Egg Production and Indigenous Chickens. The Poultry Section commits itself to provide quality extension service towards sustainable and diversified poultry industry. The mission of this section is to provide quality extension services to communities and farmers and other stakeholders through effective extension service. This is done by delivering research based information to the target audience through workshops, and visitations to give skills and knowledge to improve the quality of their lives.

KZN Poultry Institute

The department's cooperative arrangement with the Poultry Institute will include taking advantage of specialist poultry training. Extension officers, animal health technicians and students from surrounding Colleges will be sent to the Institute for Training. The department's poultry specialists will be based at local and district level and will be support and continuously train smallholder poultry farmers.

6 Economic and Socio-Economic Analysis

6.1 Demographic Analysis

The following table below represents the demographic status quo of South Africa, KwaZulu-Natal and iLembe. By comparative analysis we are able to find how the iLembe district compares at a local, regional and national level.

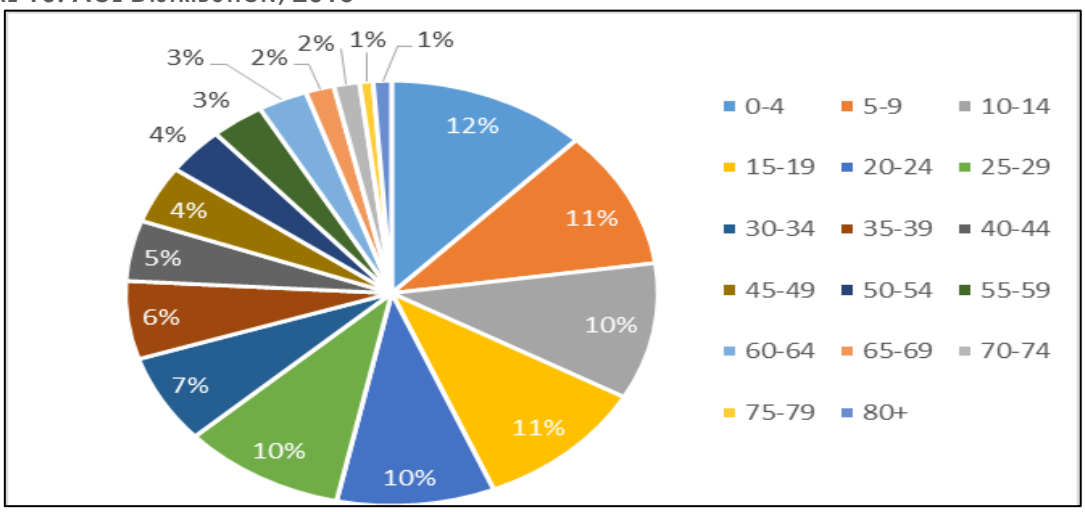
TABLE 3: DEMOGRAPHIC ANALYSIS, 2015

2015	iLembe	KZN	SA
Population total	568 563	10 819 015	54 956 508
Households total	146 435	2 689 431	15 500 856
Population household size	4	4	4
Area (Km²)	3 269	94 361	1 220 813
Population density (People per Km²)	174	115	45
Household density (Households per Km²)	45	29	13

Source; Quantec, 2015

Upon analysis of the above table, it is noticeable that iLembe has a small population, just 1% of South Africa and 5% of Kwa-Zulu Natal, although iLembe occupies just 0.3% and 3.5% of area respectively within both areas. This translates to a higher density per square kilometre, which is represented per the population density, 51% greater than KwaZulu-Natal and 287% greater than South Africa. Household density reflects a similar case, where in iLembe there are 45 houses per square kilometre, 55% greater than KZN and 246% greater than SA. The population household size remains the same from iLembe through to SA at 4 persons per household. iLembe is thus an area for great economic potential, having a greater household and population density, meaning that more of the population can readily, or will eventually partake in economic activity to bring economic benefit and upliftment to the area.

FIGURE 10: AGE DISTRIBUTION, 2015



Source: Quantec, 2015

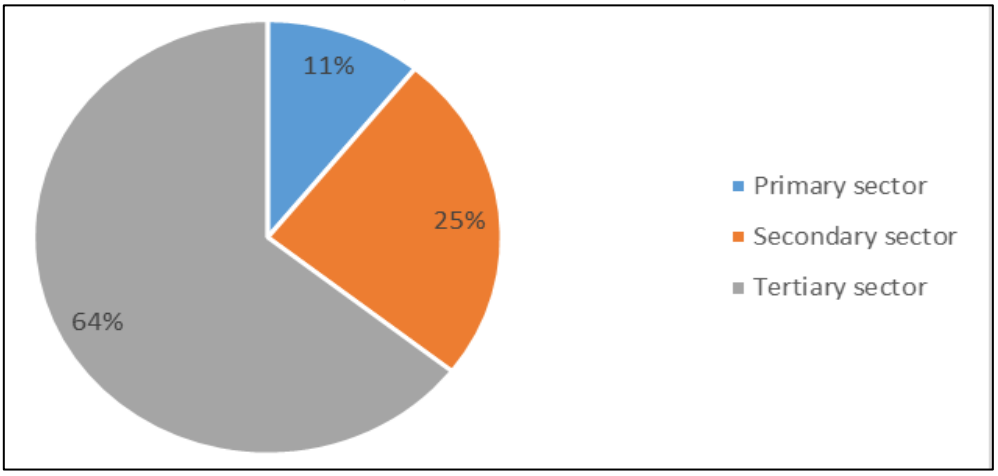
The figure above depicts the Age Distribution within the iLembe district in 2015. It is evident that a large proportion (63%) of the population is young (under 30 years of age). 63% of the population is also of working age (15-64), meaning that there is a large proportion of employment potential available to be absorbed within the agricultural industry.

6.2 Economic Profile (Sector Analysis)

The Economic Profile in iLembe is made up of three sectors, these are the:

- Primary Sector (Agriculture, Forestry, Fishing and Mining)
- Secondary Sector (Manufacturing, Energy Generation and Construction)
- Tertiary Sector (Retail, Transport, Finance, Services and Governance)

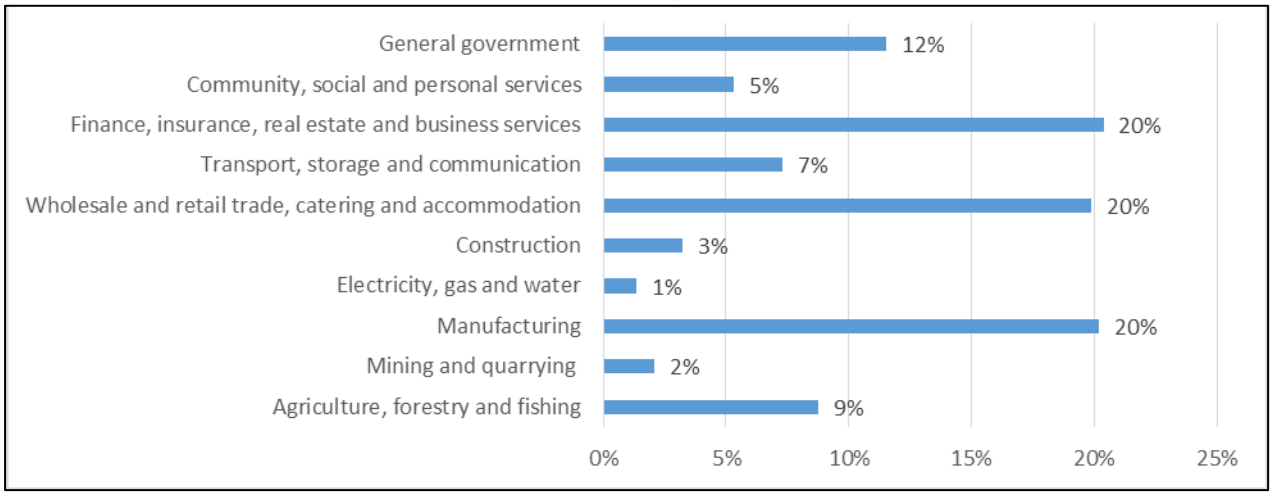
FIGURE 11: SECTOR ANALYSIS GVA - ILEMBE, 2013



Source: Quantec, 2015

From analysing the iLembe districts sector distribution, it can be seen that the district is dominated (64%) by the tertiary sector (services), whilst the secondary sector GVA contributions amount to a mere 25% followed by the primary sector (inclusive of Agriculture) which accounts for 11%. The impact of Agriculture on the local economy is thus poor, although development into more sophisticated processes and services are a result of technological advancement, more focus needs to be accorded to primary sectors out of fear of complete phasing out of primary sector activity.

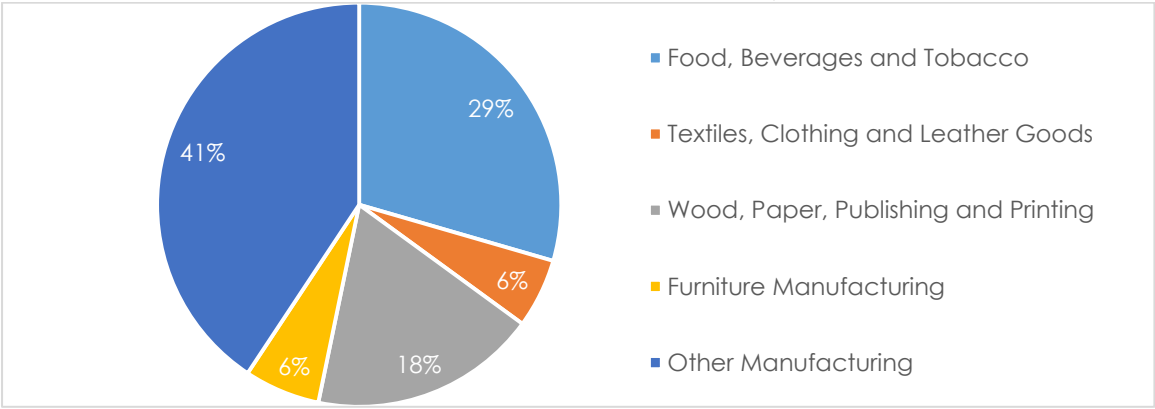
FIGURE 12: GVA CONTRIBUTIONS PER SUB-SECTOR - ILEMBE, 2013



Source: Quantec, 2015

Agriculture, forestry and fishing contributes 9% to iLembe's GVA. Manufacturing, Retail and Finance each contribute 20% towards GVA, amongst the sectors these are the fastest growing. The adoption of the Agri-Park model within iLembe will assist primary, secondary and tertiary sectors, particularly Agriculture, Manufacturing (Agro-Processing) and Retail (Sales).

FIGURE 13: AGRICULTURE RELATED MANUFACTURING GVA IN ILEMBE, 2013



Source: Quantec, 2015

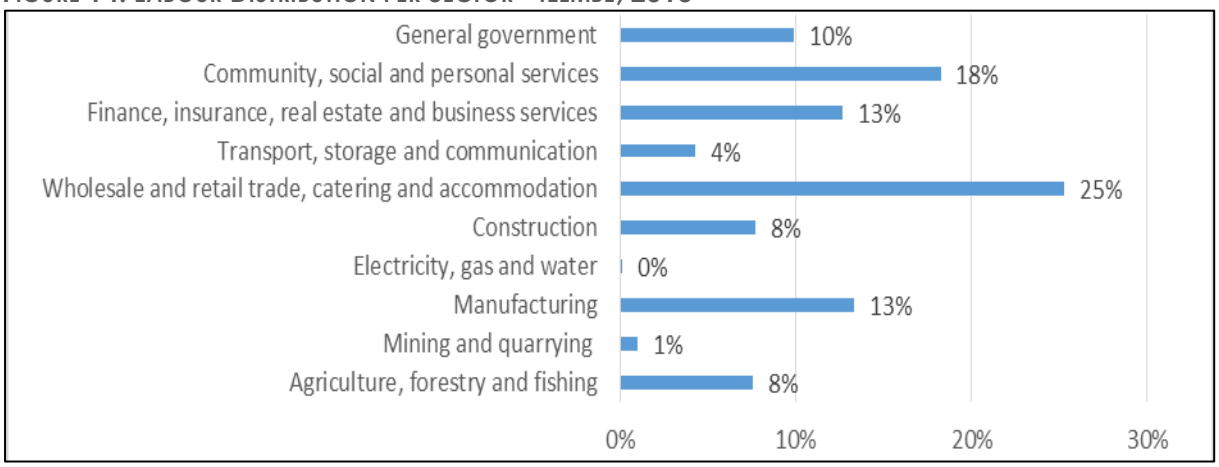
The figure above concludes that 59% of the GVA accounted for by the Manufacturing sector in iLembe is as a direct result of the Agricultural Industry, thus the actual GVA contributions per sector per figure 12 are;

- Agriculture: 20.5%; and
- Manufacturing: 8.5%.

This crucial elaboration allows for out-lookers to realise the full importance of the Agricultural Sector rather than making assumptions based on Primary Sector (First Tier) activity.

6.3 Employment per Sector

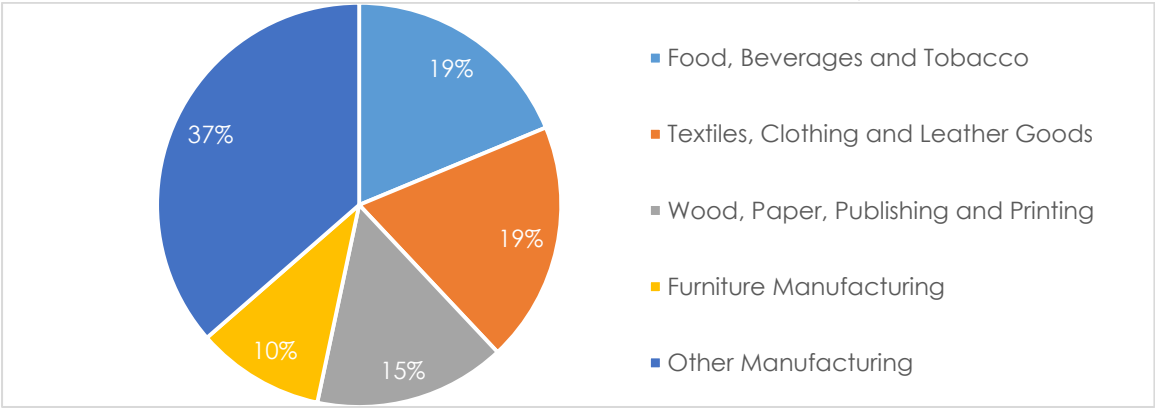
FIGURE 14: LABOUR DISTRIBUTION PER SECTOR - ILEMBE, 2013



Source: Quantec, 2015

The Agriculture, forestry and fishing sector accounts for 8% of employment, comparatively this is poor to the Retail, and Personal services sector which accounts for 25% and 18% respectively. Manufacturing fares reasonably well, contributing 13% towards employment, again the multiplier effect can be intensified through farming, agro-processing and sales. To reiterate, the Agriculture sector is responsible for secondary sector processing and tertiary sector sales, thus the impact of Agriculture cannot solely be measured in isolation, but in combination.

FIGURE 15: AGRICULTURE RELATED MANUFACTURING EMPLOYMENT IN ILEMBE, 2013



Source: Quantec, 2015

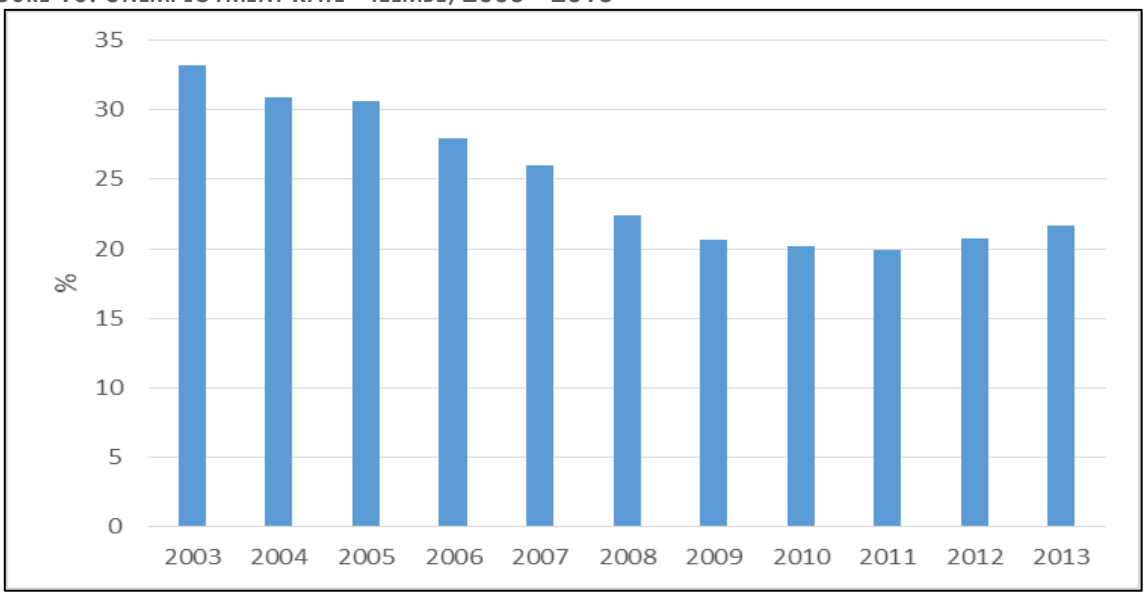
The figure above concludes that 63% of the employment accounted for by the Manufacturing sector in iLembe is as a direct result of the Agricultural Industry, thus the actual employment contributions per sector per figure 14 are;

- Agriculture: 15.9%; and
- Manufacturing: 5.1%.

6.4 Unemployment Rates

The figure below depicts the unemployment rate for iLembe for the periods 2003 – 2013.

FIGURE 16: UNEMPLOYMENT RATE - ILEMBE, 2003 - 2013



Source: Quantec, 2015

The unemployment rate has decreased by 12% over the 10 year period, 1.2% decrease per annum, although, 2011 has seen the lowest level of unemployment at 15%, 6% lower than 2013. When comparing the unemployment rates of iLembe at district level (21.7%) to KwaZulu-Natal at 20.9% and South Africa at 24.1%, we derive that while the province fares better than the district, the district still fares substantially better than the national rate.[12]

6.5 Skills (Level of Education)

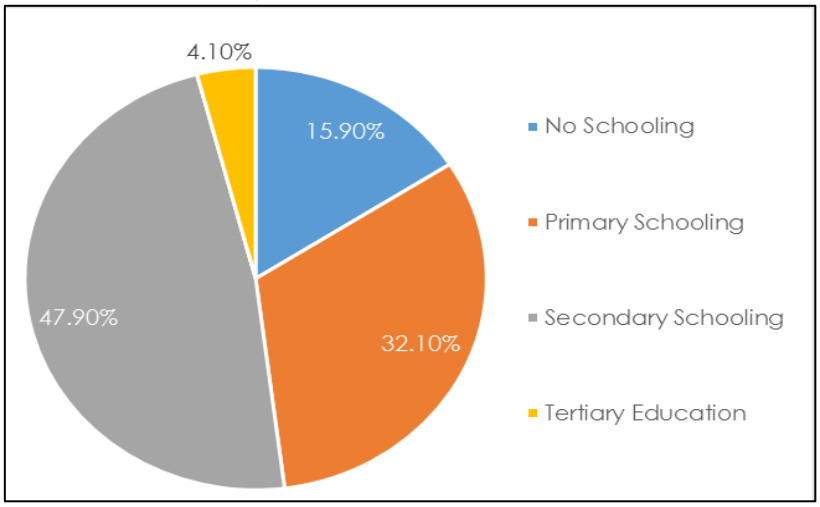
Whilst assessing the level of education in iLembe, careful consideration is taken when classifying these levels, definitions are listed below;

- Primary Schooling: Grade 1 – 7
- Secondary Schooling: Grade 8 – 12
- Tertiary Education: University Certificate, Diploma, Degree, Honours, Masters, Doctorate etc.
- No Schooling: Uneducated population

The figure below graphs the levels of education found within the iLembe district.

[12] The official unemployment rates were used for analysis, this does not take into account discouraged workers and individuals who are not economically active as per the expanded unemployment rate definition.

FIGURE 17: EDUCATION LEVELS - ILEMBE, 2015



Source: Quantec, 2015

From the figure above, it is noted that only 4.1% of school leavers actually proceed onto tertiary education, this may be in part due to the socio-economic conditions within which these individuals live and reliance on these individuals to obtain employment in order to support households. 47.9% (the majority) of the population has at least had some form of high schooling, based on the provincial pass rate of 69.3% (Umalusi, 2014), it is estimated that 33.2% of the population (one-third) has passed matric, meaning that one in every three people has a chance of semi and skilled employment.

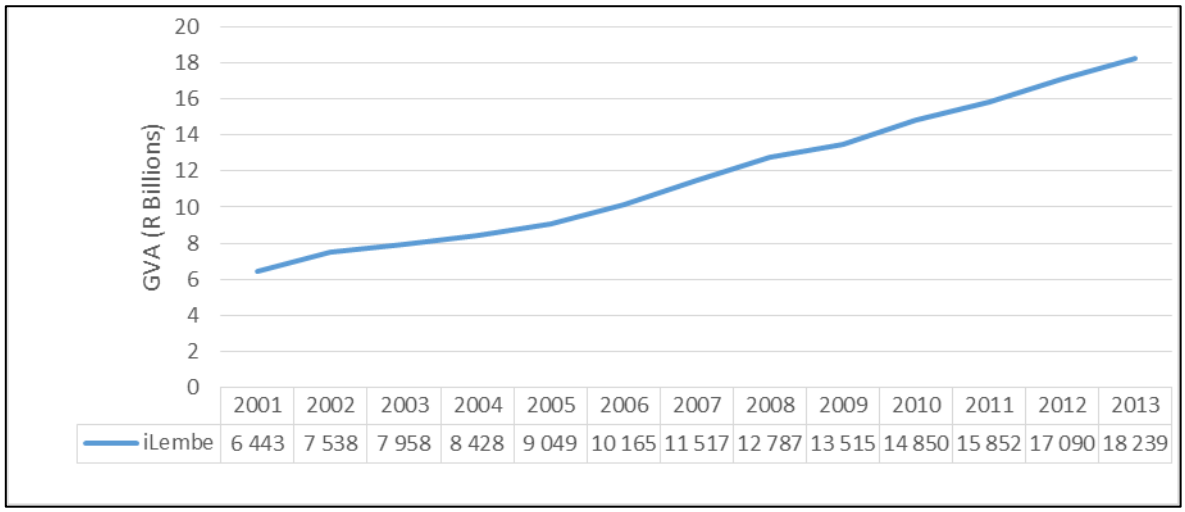
A total of 80% of the population has some form of schooling, this is particularly good for the area as employment opportunities in agro-processing and retail will arise out of the Agri-Park initiative and these positions have the potential to be filled by the local population. To a certain degree manual labour will be required for on the ground farming, these positions will be ideally filled by the 15.9% of the population which have no schooling, but excludes the youth which are too young to school. More education programmes within the district should be implemented to encourage awareness in support of the importance of agriculture.

6.6 Income and Poverty

The state of the district may portray good growth in terms of GVA, but the ambiguity lies with where this money is absorbed. It is known that half of South Africa lives below the poverty line, with poor income earning potential, driven into debt on a monthly basis, this ultimately leads to poverty and famine. The figures and table below illustrate the state of iLembe in relation to the province and the country as a whole to determine if iLembe is currently suited to uphold Agriculture as a premier employment creation industry or one that requires intervention and assistance.

The figure below depicts the annual growth of GVA within iLembe from 2001 – 2013.

FIGURE 18: GVA - ILEMBE, 2001 - 2013



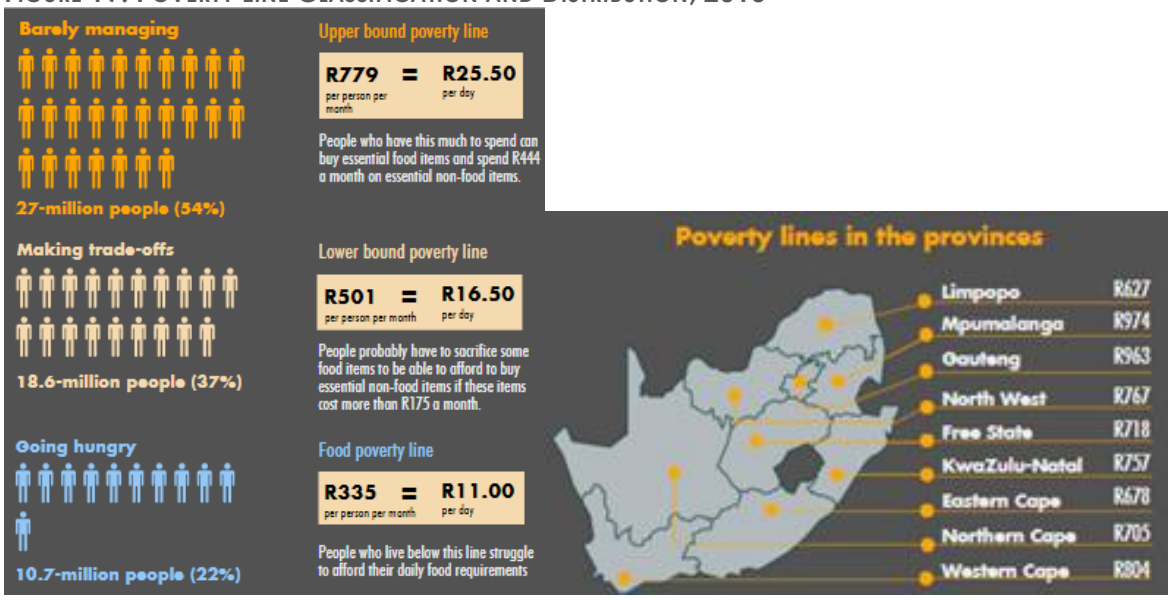
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
iLembe	6 443	7 538	7 958	8 428	9 049	10 165	11 517	12 787	13 515	14 850	15 852	17 090	18 239

Source: Quantec, 2015

From the figure above it is noted that whilst iLembe's GVA growth is 9.1% year on year for the periods 2001-2013, its overall contribution to the province is relatively small at 3.8%. KwaZulu-Natal recorded GVA at R480.4 billion in 2013 and a 10% year on year growth rate, indicating that iLembe is growing approximately 1% slower than KwaZulu-Natal.

The graphic below depicts the poverty line classifications and distributions amongst each of the provinces.

FIGURE 19: POVERTY LINE CLASSIFICATION AND DISTRIBUTION, 2015



Source: Stats SA, 2015

The figure above classifies three poverty lines ranging from R335 – R779 income per month. KwaZulu-Natal has a poverty line of R757 which basically indicates a moderate cost of living comparative to other provinces. This equates to an annual income poverty factor of R 9084.

The table below generates a classification of income types found in iLembe and shows the wealth spread amongst these classes.

TABLE 4: HOUSEHOLD INCOME DISTRIBUTION, 2015

iLembe	Income per Annum	Number of Households	Percentage	
No income	R 0	20 363	12.9%	12.9%
Low income	R1 - R4 800	7 982	5.1%	61.9%
	R4 801 - R 9 600	14 487	9.2%	
	R9 601 - R 19 200	37 727	23.9%	
	R19 201 - R 38 400	37 398	23.7%	
Low/middle income	R38 401 - R 76 800	18 729	11.9%	17.6%
	R76 801 - R153 600	9 055	5.7%	
Middle/high income	R153 601 - R307 200	6 136	3.9%	6.4%
	R307 201 - R614 400	3 927	2.5%	
High income	R614 401 - R1 228 800	1 219	0.8%	1.2%
	R1 228 801 - R2 457 600	416	0.3%	
	>R2 457 601	245	0.2%	

Source: Quantec, 2015

From the table above, 12.9% of the population earns no income, the majority (61.9%) is classified as earning low income and as much as 27% of the population lives below the poverty line. This isn't critical as South Africa faces a factor of 50%. The remainder (25%) of the population earn medium to high salaries.

7 Agricultural Industry Analysis

This section examines the collation and collaboration of existing agricultural producers and looks at possible further integration by scrutinising the main agricultural activities, considering environmental conditions, aligning with similar projects in the region and finally prioritising a set of commodities for the iLembe region.

7.1 Main agricultural activities

iLembe's agricultural sector revolves around the production of sugarcane which takes place on the flatter eastern land. Supporting agricultural activities include forestry, fruit and vegetable farming, tunnel farming and fresh cut flowers. Over the past 10 years, employment in agriculture has declined by 12% per annum on average and production has decreased by 0.5% annually. Gross value has also reduced although the agriculture sector remains the 4th largest contributor to GGP. This is similar to the state of the South African industry due to new labour laws, crime, emigration, and input costs, amongst other reasons.

Commercial agricultural activities occupy the majority of iLembe's land, which is predominantly located in the flatter eastern portions. Relatively minimal diversification has occurred and activities relate mainly to the growing of sugarcane. The majority of the agricultural developments in the western parts are comprised of traditional subsistence farming activities.

The agricultural focus shifts from extensive sugarcane farming along the coastal belt to intensive, high profit irrigated farming in the hinterland. The agricultural industry requires rejuvenation, this will allow for the production of a diverse range of products, using a variety of modern and sustainable farming methods, in a new and reconstructed space. Big, global players will invest in long term contracts with local producers of fresh products tailored or focus on exporting through Dube Tradeport. For this to be achieved the following needs to occur:

TABLE 5: INFRASTRUCTURAL INVESTMENT REQUIRED

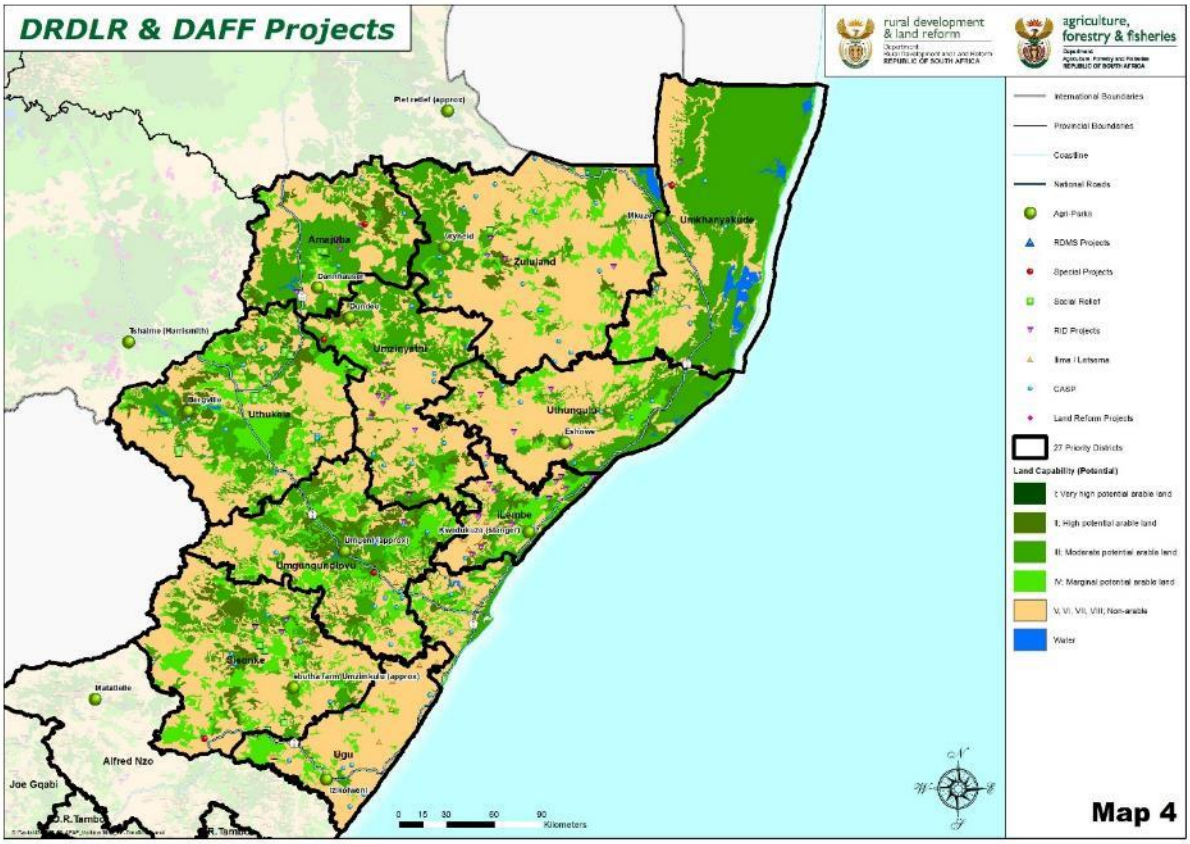
Infrastructure	Water	Transport	
	Pipeline upgrades	Promote accessibility to Dube Tradeport.	Upgrade to the road connecting Maphumulo and Ndwedwe.
Attracting global markets	Potential to attract fresh produce supply to countries such as Australia.		
Skills Development	Capacitating the transformation of rural farmers into sustainable commercial farmers.	Mobilisation of farmers associations, mentorships and training opportunities.	Encouraging the development of the knowledge economy in agriculture to improve research and innovation efficiency and constantly reinvent the status quo to ensure that iLembe remains the first choice supplier of fresh produce.

Source: Urban-Econ, 2015

7.2 Current and proposed projects in the region

iLembe and KwaDukuza comprise of multiple projects, 27 in total. Of these the majority are RID Projects (14), followed by Ilima/Letsema (10) and three Comprehensive Agriculture Support Programmes (CASP) which are located closely along iLembe's borders.

MAP 7: PROJECTS IN ILEMBE DISTRICT



Source: Urban-Econ, 2015

7.2.1 Rural Infrastructure Development (RID) Projects

There are a total of 14 RID projects in the iLembe district, these were classified into three project classes, tabulated below.

TABLE 6: RID PROJECTS IN ILEMBE

Project Class	Description	Local Municipality	Status
Livestock boreholes	The drilling, development, testing and equipping of 7 boreholes for the livestock infrastructure projects.	Ndwedwe and Maphumulo	Contractor commenced on 12 January - May 2015
Livestock Earth Dams	The construction of 2 spring protection devices and rehabilitation of 4 stock watering dams for the livestock infrastructure projects.	Maphumulo and Ndwedwe	Contractor commenced on 26 May - September 2015
Livestock fencing	The erection of 6 strand barbed wire fence for 8 livestock infrastructure projects.	Ndwedwe	Contractor commenced on 26 May - October 2015

Source: Final Long Report: Implementation Evaluation of the CRDP, 2013

A number of challenges and issues relevant to rural infrastructure development and planning exist within iLembe. These are summarised as follows:[13]

- **Reliance on sugarcane production** - The agricultural sector within the iLembe District is characterised by extensive areas of sugarcane production and measures to encourage the diversification of the sector's agricultural production could contribute meaningfully to **job retention** within the sector given the current general declining employment trend in the sugarcane industry;

- **Grazing potential is limited –** overgrazing and overstocking, especially in the traditional areas of the District have reduced grazing potential of the available grazing land. Camp reports that grazing capacity varies across the bio-resource groups within the Districts from 1.5 - 3.0 hectares per Animal Unit (AU). This limits the areas available for grazing livestock in future and **further intensification of production**;

- **Lack of agricultural soils and land** – high potential agricultural land within iLembe is limited and the majority of land in traditional areas is not considered arable. This limits the number of **agricultural enterprise options** one could consider for development;

- **Rugged topography** – the topography of iLembe is particularly rugged and undulating in the western portions of the District which not only limits agricultural production but also the **delivery of basic infrastructure and services** to rural communities;

- **Limited road access** – Due in part to the District's rugged topography described above, access roads to remote areas which could **link smallholder farmers to markets** are required. Market access is vital to the sustainability of the smallholder farmers.

- **Competing land uses and land development requirements** – the recent increase in commercial property development on commercial agricultural land along the coast of iLembe is putting the Districts comparative advantage in sugarcane production at risk. High potential parcels of land need to be identified in other areas within the District that are less desirable from a property development perspective;

- **Integration of commercial and traditional farming areas** – there appears to be a clear distinction between traditional farming areas situated in the western portions of the District. Integration between these farming areas needs to take place to encourage effective development of the rural areas.

7.2.2 iLima Letsema Projects

These projects are basically food security initiatives and focus on developing local rural communities into self-sustaining units. This is achieved through educating villagers on the "fruits

[13] iLembe Spatial Economic Development Strategy, 2012

of labour" which can be derived from agricultural production, eliminating hunger and poverty. The majority of these projects are located in Nembe which is close to the town of Mandeni, central iLembe. Accessibility is gained through the N2, northbound from Durban and 60 km south of Empangeni and Richards Bay.

The area did not have water problems in 2008 (irrigation), however climate change currently dictates otherwise with water shortages becoming imminent. Villagers (small holding and commonage/subsistence) have been making a living out of agriculture.

The purpose of the Ilima/Letsema will be to encourage food production in this area. The Ilima/Letsema activity aims on diversifying crop production (although the area is conducive to maize production) due to maize farming being more productive in the months of October - December. To counter this loss in productivity, beans have been identified as a complementary commodity to be farmed within the area.

The area for Ilima/Letsema is situated along the river. Instead of individual beneficiaries, the cooperatives already in the area will be assisted with the planting. Assistance includes the mechanisation, fencing and irrigation. This will further strengthen the community in joining the local initiative of forming cooperatives. The Mandeni area has four cooperatives ranging from 12 – 20 members. Livestock, maize, home gardens and occasional sugar plantations will form the core of the Ilima/Letsema project. The main taxi terminal in Mandeni is earmarked for a fresh produce market, this allows the small business hub to access an even greater market area.

7.2.3 iLembe Schools Nutrition Programme

It must be noted that perhaps one of the most successful ventures within iLembe is the Schools Nutrition Programme, this programme speaks to various local, provincial and national policies and has been in operation for the past xx years. The Business and Implementation Plan for the iLembe district welcomes the concept of an Agro-processing Hub, which aligns directly to the concept of an Agri-Parks Hub, thus the Plan should inform key stakeholders when decisions regarding the Agri-Hub's processing opportunities and activities are made.

7.2.4 Comprehensive Agriculture Support Programmes (CASP)

The iLembe (KwaDukuza) district has three CASP's in total, however one is fairly new, the other two have been operational since 2008 and have been reviewed in 2010, and these reviews have been provided below, as well as the difficulty which each project faces.[14]

Project	Description and Funding
Maize and Bean Production	These projects total R6.01 million, which is distributed amongst Ndwedwe, Maphumulo, KwaDukuza and Mandeni region, of which total land size is estimated to be 583 hectares. The total number of jobs created was 815, of which only 93 are permanent, 65% were women and 9% were youth.
Pencerrow (Sweet dreams) - Sugarcane	The project is struggling. The implementing agent or the KZN Department of Agriculture, (Tongaat Huletts) has not released the entire grant of R875 000. Amongst others, the reason for withholding the money is that soil preparation has not been done, hence planting cannot proceed. The farmer will be supported with fertiliser and labour costs once soil preparation has been completed. The production levels of the farm have dropped drastically partly due to drought in the area.
Shusha Business Enterprises - Sugarcane	Although the production levels have decreased slightly (400 000 - 4 800 tons) due to drought in the area, the project is generally performing well. The farm manager is hopeful that the production level will increase soon due to the intervention provided by the South African Sugar Association (SASA) in support of emerging farmers. At the time of evaluation, the farm employed 30 temporary workers and 12 full time workers, a direct contribution of 42 jobs to the local economy.

TABLE 7: CASP IN ILEMBE
Source: CASP Projects - DARD, 2015

Analysis of the table above confirms the uncertainty of sugar farmer's sustainability in iLembe. This creates doubt in the minds government officials and state funding entities when risks from past failures confirm the instability in investing in sugar farming entrepreneurs. Current market conditions indicate a saturation in the market, making it more challenging to obtain funding for sugar production in iLembe. Maize and Bean production creates a different picture, although less capital intensive than sugar, the contribution towards sustainable employment is poor at 11%, equivalent to 1 job per 6.3 hectares of land farmed.

7.2.5 Projects identified by the Comprehensive Rural Development Plan (CRDP-SPLUM)

The projects and programmes identified for the iLembe DM are based on the CRDP strategies.

1. Retention of current investment and jobs in the agricultural sector through strategic support to existing agricultural development projects implemented by Enterprise iLembe		
Description	**Prioritised Commodities**	**Implementers**
The aim of this project will be to identify appropriate support mechanisms to current agricultural development projects. Support needs to be in the form of updated studies and business plans with the objectives of expanding the sizes of these existing projects in conjunction with strategic partners to ensure viability and growth.	• **Vegetables** • Wine • Grapes	Enterprise iLembe

[14] Evaluation of CASP, 2011

2. Assessment of constraints and identification of new market opportunities on transferred land, REID and RECAP projects		
Description	**Prioritised Commodities**	**Implementers**
This project aims to review production constraints and business sustainability on all land transferred by DRDLR. This project seeks to address the concern of providing additional support to existing initiatives. The focus areas will be on supporting existing investment.	• **Vegetables** • Sugarcane • Maize • Dry Beans	DRDLR, REID, RECACP
3. Detailed assessment of agricultural potential on vacant state land and identification of production and value adding opportunities		
Description	**Prioritised Commodities**	**Implementers**
This project aims to The identify Traditional Leadership and communities involved, Assess the of climate, rainfall and irrigation opportunities, conduct Soil analyses to further unpack production possibilities, conduct Market analysis for identified agricultural enterprises linked to Agri-parks and other markets and develop a detailed business plan with communities and leadership.	• **Vegetables** • Sugarcane • Maize • Dry beans • Beef & Dairy • Sheep & Goats • Timber	DRDLR, SPLUM

Source: Comprehensive Rural Development Plans, 2015

7.2.6 Projects identified by the Department of Rural Development and Land Reform (DRDLR)

PROJECT NAME	LOCAL	EXTENT OF SUPPORT	FUNDING
Thulele Primary Co-operative	Mandini (Ward 5)	• Agricultural Inputs • Cold room • Office Container • Storeroom • Protective Clothing	R 251 000
Emalundalunda Primary Co-op	KwaDukuza (Ward 25)	• Jojo Tanks X 2	R 23 687
Qwabe Development Secondary Co-op	Maphumulo (Ward 7)	• Cold room • Container • Packing Tables and Scales • Seeds, fertilisers for vegetable production	R 2 000 000
Injobo ithungelwebandla Primary Co-op	Ndwedwe (Ward 16)	Seeds, Fertilizers for Vegetable Production, Containers. Service provider to deliver items not yet appointed	R 700 000
Amandlendodaw apheli Primary Co-op	Maphumulo (Ward 6)	Seeds, Fertilizers, Jojo Tanks and containers. Service provider to deliver items not yet appointed	R 500 000
Mbolombe River Valley Cluster Project	Maphumulo (Ward 3)	Seeds, Fertilizers, Containers, Engine Pumps, Jojo tanks, Protective Clothing, Packing Tables and Scales. Service provider to deliver items not yet appointed	R 2 000 000
Jikijela River Valley Cluster	Maphumulo (Ward 2)	Tractor, Jojo tanks, Containers, Seeds, Fertilizers, Agricultural Inputs, Protective Clothing. Service provider to deliver items not yet appointed	R 2 500 000
iLembe Red Meat Development Programme	Maphumulo (All LM's)	Support farmers in breeding improvements, setting up of custom feeding facilities, marketing of animals through auctions. Programme implemented in partnership with National Agricultural Marketing Council	R 1 000 000

iLembe Livelihoods Programme	Maphumulo and Ndwedwe (Ward 11 & 8)	• Agricultural Inputs • Vegetable Seeds • Fertilisers (Seeds0 • JoJo Tanks Service provider to deliver items not yet appointed	R 1 000 000
TOTAL			**R 9 974 687**

Source: DRDLR DAPOTT, 2015

In addition, there are 11 projects which are producing maize and beans which will be supported through our partnership with GRAIN South Africa. These projects are still being assessed and will be supported in this financial year.

7.2.7 Projects identified by the Department of Agriculture and Rural Development (DARD)

Project Area	Commodity	Requirements	Budget	Job creation	Land Size (Ha)
Mandeni	Sugarcane	Supply fertilizer and chemicals for seed cane demonstrations	R 200 000	5	10ha
uMshwathi	Sugar Cane	Fertiliser, chemicals	R 117 000	12	3 ha
Ndwedwe	Crop and Vegetables	Fence garden and supply inputs	R 150 000	3	3ha
Ndwedwe	Crop and Vegetables	Fence garden and supply inputs	R 220 000	3	6.2ha
Maphumulo	Crop and Vegetables	Fence garden and Install irrigation system and reservoir (jojo tanks)	R 250 000	2	2ha
Ndwedwe	Crop and Vegetables	Installation of irrigation system and reservoir (jojo tanks)	R 150 000	3	1.45ha
Maphumulo	Crop and Vegetables	Install irrigation system and reservoir (jojo tanks)	R 150 000	2	2ha
Maphumulo	Crop and Vegetables	Installation of irrigation system and reservoir (jojo tanks)	R 150 000	2	2ha
Maphumulo	Crop and Vegetables	Installation of irrigation system and reservoir (jojo tanks)	R 150 000	2	2ha
Maphumulo	Seedlings Nursery	Construct nursery structure, supply inputs (seedlings and chemicals	R 250 000	3	2 X 27m x 30m
Ndwedwe	Indigenous Goats	Construct goat shed, water supply (2x jojo tanks)	R 250 000	5	1.3ha
Ndwedwe	Layers	Construct a 400 layer bird unit and supply inputs and feed for 1 cycle.	R 300 000	3	400 layer unit
Maphumulo	Layers	Construct a 400 layer bird unit and supply inputs and feed for 1 cycle.	R 450 000	2	400 layer unit

Maphumulo	Broilers	Construct and fence 1000 broiler unit and supply feed and medication for 6 cycles	R 900 000	3	1000 broiler unit
Kwadukuza	Piggery	EIA Assessment	R 50 000	2	50 sow unit
Ndwedwe	Piggery	EIA Assessment	R 50 000	3	10 sow unit

Source: DARD DAPOTT, 2015

7.3 Environmental conditions and resource analysis

Whilst assessing iLembe's agricultural potential it is of crucial nature to assess the environmental conditions and resources available to this particular district in order to make the most appropriate selection regarding potential agricultural activities. The agriculture sector in iLembe needs to transform into a water prudent and innovative food producer, inevitably driving the economic growth of the iLembe locality, as well as the export potential being presented by the Agri-zone within Dube Tradeport.

7.3.1 Temperature

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.[15]

According to SSI Environmental (2012) the mean annual temperature distribution for iLembe varies widely from a mean annual temperature of 21°C in places along the coast to 16°C inland at higher altitudes. The relatively warm winter temperatures along the coast allow for a wider range of agricultural production in winter than is possible in many other places in the country which become limited in potential due to severe cold or frost. It is evident however that as one moves away from the coast inland to slightly higher altitudes such as at Kearsney (29°17'S 31°16'E), which is 241m above sea level, the average minimum temperatures during winter begin to approach 12°C at what is still a relatively low altitude. These are fairly low average minimum temperatures that would result in inadequate heat units during the winter months for the production of many of the traditional summer crops such as maize and will result in the slowing down in crop growth in any of the true tropical crops such as sub-tropical fruit.

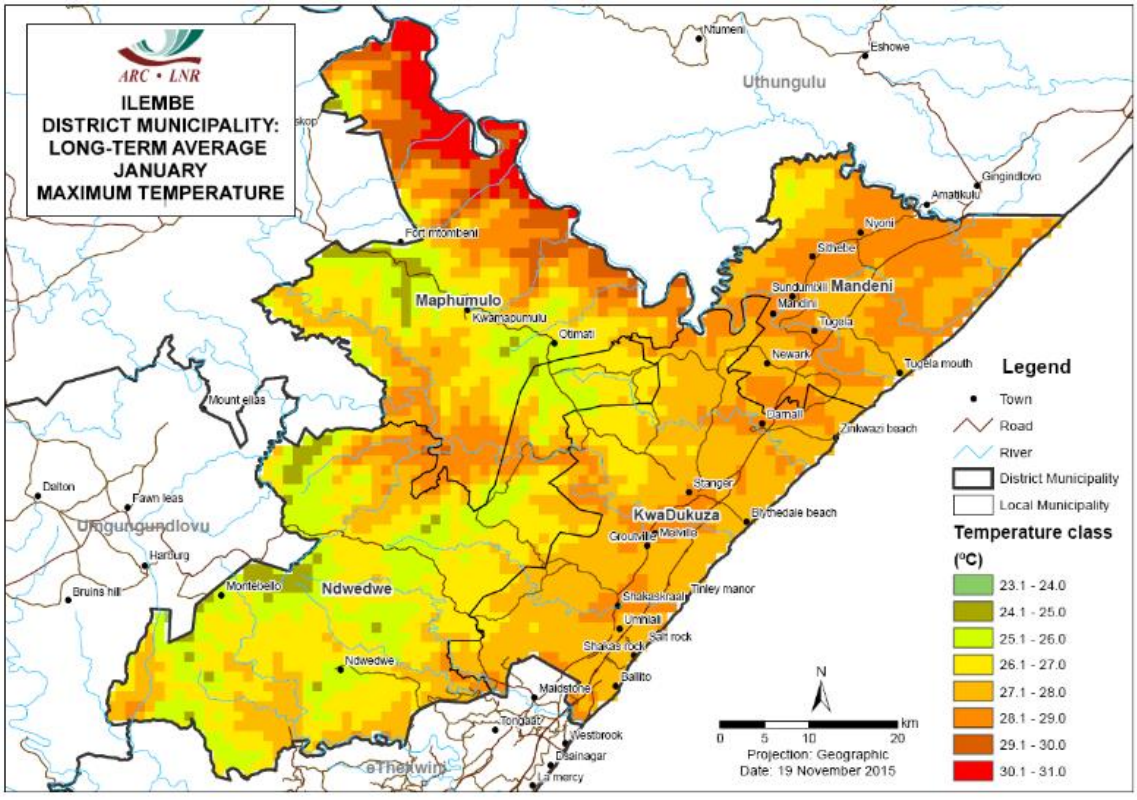
[15] Malherbe & Tackrah, 2003

The long-term average maximum temperatures for iLembe are mostly between 260 and 270 for January as per the map 8 below and the long-term average minimum temperatures between 110 and 120 near the coast and between 90 and 100 for July depicted by the map below.

According to Schulze (2008) the heat units (0 days) for January for the area is > 460 for the coastal areas and between 440 and 460 for the inland areas. The July values is >160 for the coastal areas and 100 to 120 for the inland areas. The positive chill units for July is mostly between 100 and 150 PCUs for iLembe.

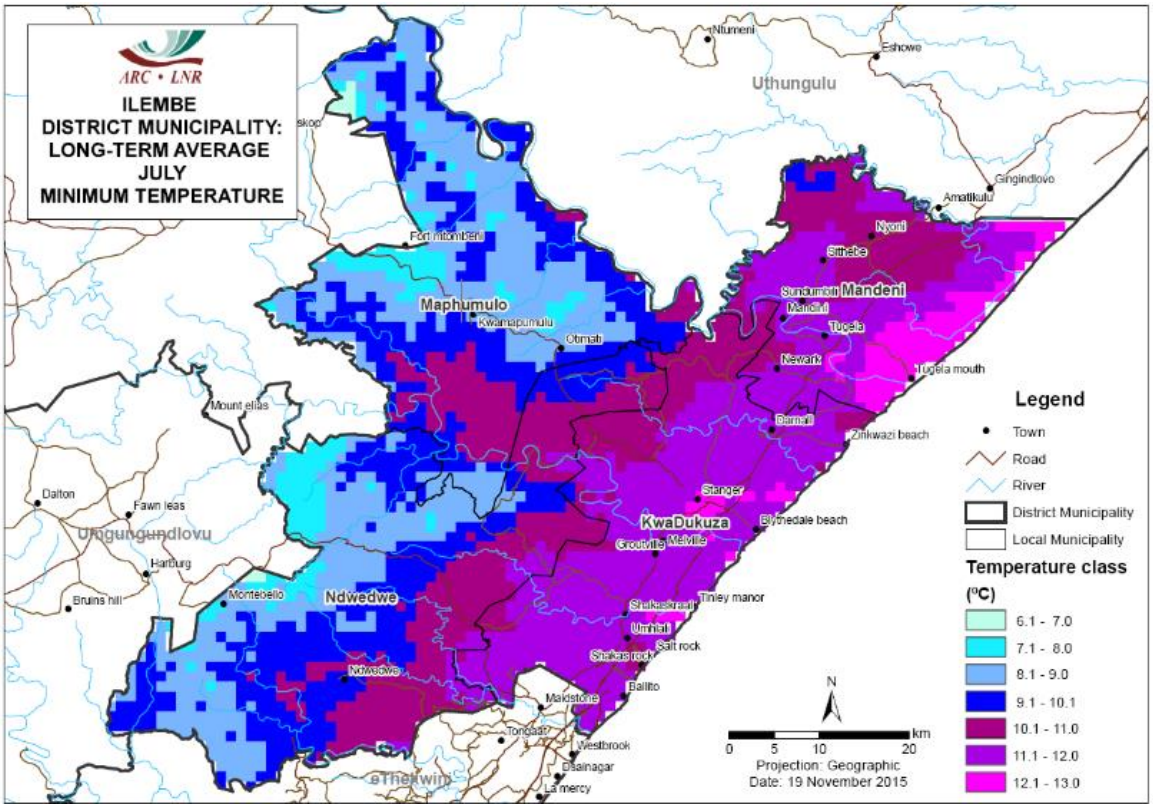
The overall temperature and rainfall are suitable for the production of sub-tropical fruit, maize and vegetables. Sub-tropical fruit growth is closely related to temperature. Optimum temperature for sprouting (germination) of stem cuttings is 32° to 38°C. It slows down below 25°C, reaches plateau between 30°-34°C, is reduced above 35°C and practically stops when the temperature is above 38°C.Temperatures above 38°C reduce the rate of photosynthesis and increase respiration. For ripening, however, relatively low temperatures in the range of 12°C to 14° are desirable, since this has a noticeable influence on the reduction of vegetative growth rate and enrichment of sucrose in the cane.

MAP 8: LONG-TERM AVERAGE JANUARY MAXIMUM TEMPERATURES



Source: ARC LNR, 2015

MAP 9:LONG-TERM AVERAGE JULY MINIMUM TEMPERATURES



Source: ARC LNR, 2015

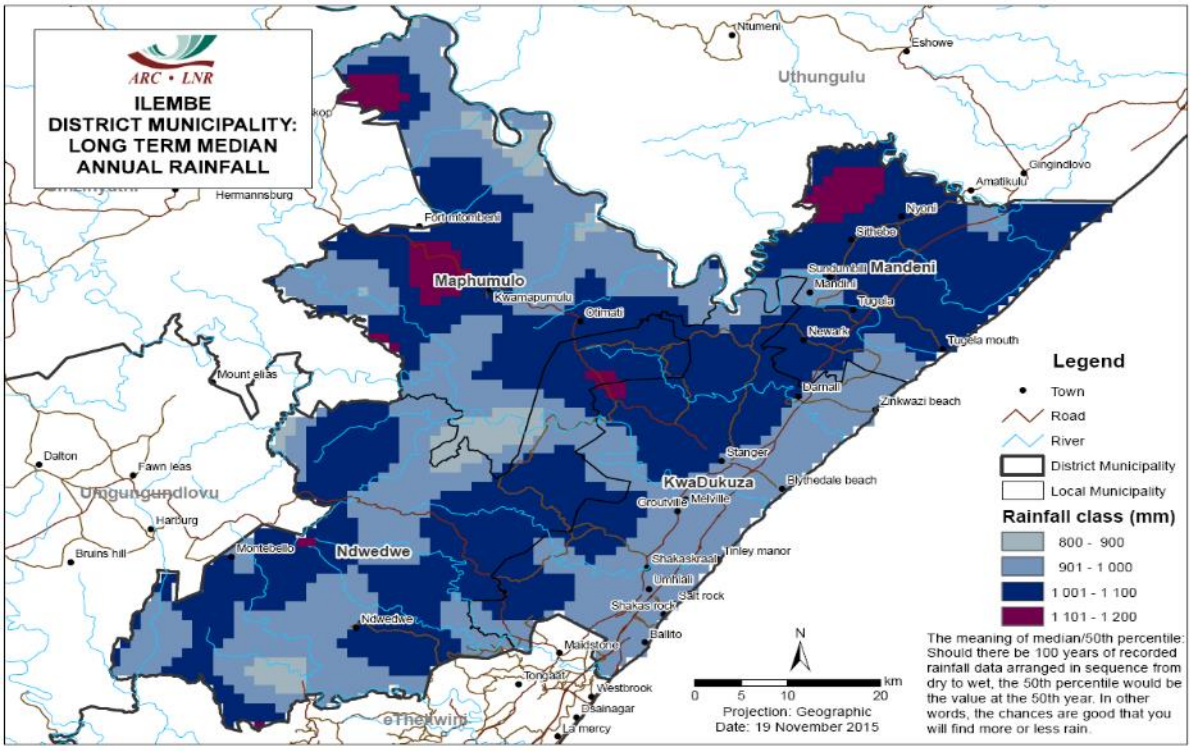
7.3.2 Rainfall, hail risk, humidity and water availability for irrigation

Decadel (ten day period) 1km^2 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.[16]

iLembe falls within the South African summer rainfall region with mean annual precipitation (MAP) ranging from 650mm to 1200mm depending on the local area in question MAP generally declines from the coast to inland areas. The majority of the District receives relatively high rainfall in excess of 900mm, with even the drier inland areas usually receiving in excess of 800 mm as per the map below.

[16] Malherbe & Tackrah, 2003

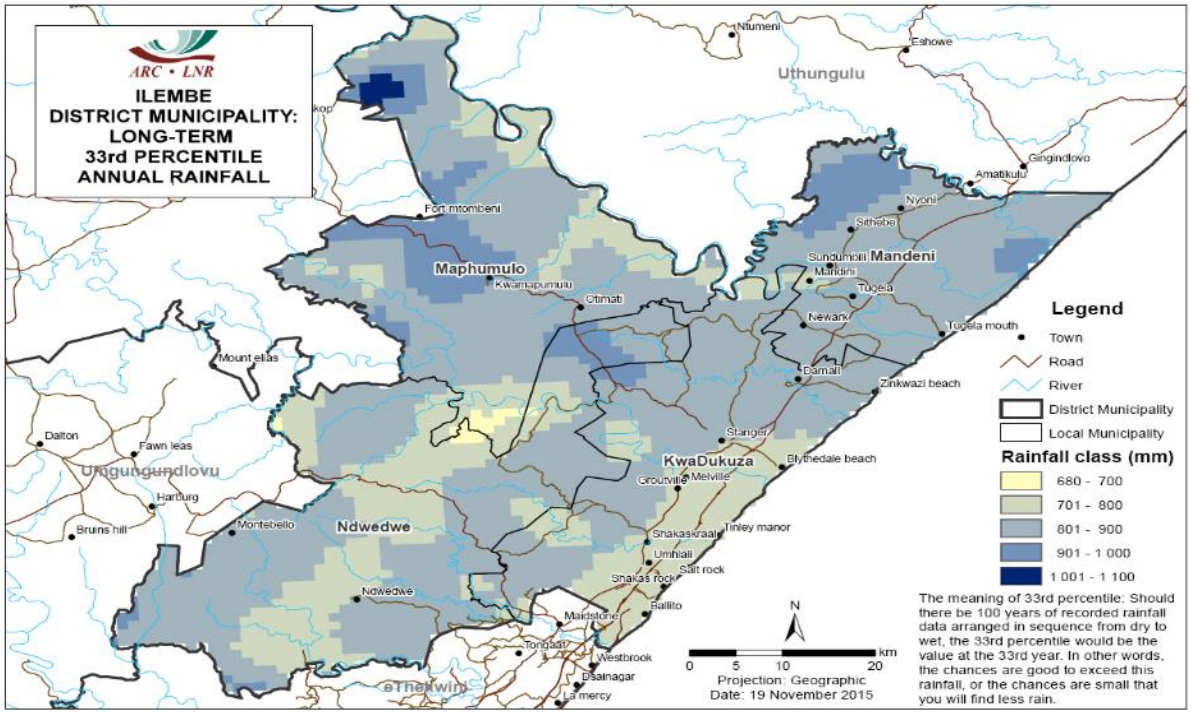
MAP 10: LONG-TERM MEDIAN ANNUAL RAINFALL



Source: ARC LNR, 2015

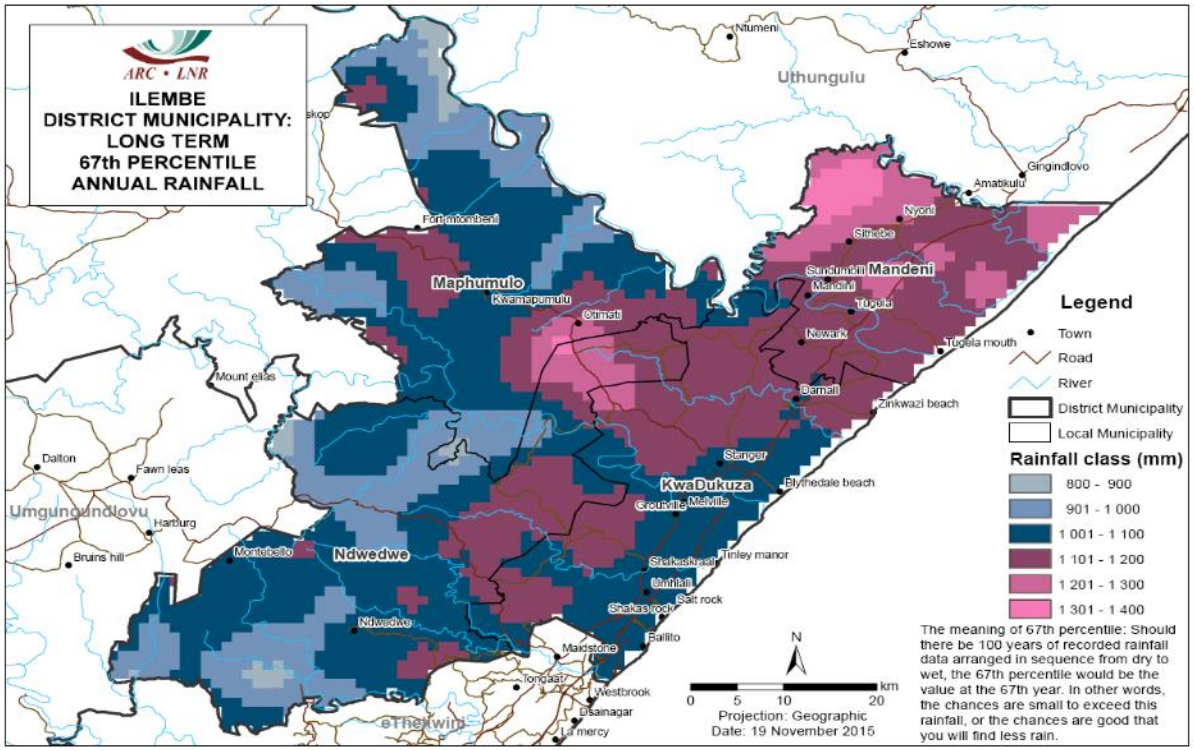
From the long-term 33rd and 67th percentile annual rainfall (Map 11 and 12) it can be seen that the north-eastern and a small area in the northwest have the highest probably of relatively high rainfall.

MAP 11: LONG-TERM 33RD PERCENTILE ANNUAL RAINFALL



Source: ARC LNR, 2015

MAP 12: LONG-TERM 67 PERCENTILE ANNUAL RAINFALL



Source: ARC LNR, 2015

Rainfall is sufficient for dryland production of poultry and vegetables and mostly also for sub-tropical fruit, however, in certain areas supplementary irrigation is necessary. A total rainfall between 1100 and 1500 mm is adequate for sub-tropical fruit provided the distribution is right, abundant in the months of vegetative growth followed by a dry period for ripening. During the active growth period rainfall encourages rapid cane growth, cane elongation and internode formation. But during ripening period high rainfall is not desirable because it leads to poor juice quality, encourages vegetative growth, formation of water shoots and increase in the tissue moisture.

According to SSI Environmental (2012) limitations to crop production are therefore largely driven by the fact that the winter period from May to September is relatively dry despite temperatures being favourable for the production of many crops. Such production would therefore require supplementary irrigation during the winter months and during dry spells in the summer.

The iLembe DM crosses three major watershed areas which are managed as three Water Management Areas (WMA"s). The Mvoti to uMzimkhulu is the largest WMA, and the Thukela and Usutu to uMhlatuze WMAs covering a lesser area in the north and north-east extents of the districts. Much of the iLembe DM receives water primarily from the Mvoti WMA, which is

currently largely hampered by unlicensed water users and transfer schemes (Thukela, Usutu to Durban Metro).

The Thukela River is the major source of bulk freshwater supply within and beyond the boundaries of the iLembe DM. Several dams are located in the far upper catchment as well as current and future transfer schemes. The Thukela WMA also falls within a higher rainfall region of the iLembe DM Umgeni Water currently the operation and maintenance of 37 water schemes, consisting of 18 water treatment plants and 19 borehole schemes for three of the local municipalities; KwaDukuza, Ndwedwe and Maphumulo. The population, and particularly rural communities is widely scattered across the iLembe DM which creates challenges for the supply of potable water[17].

The large challenge to water supply remains the large size of the District area and the remoteness and accessibility of the communities. Further problems relate to access to water services and consistency of supply, particularly in the rural areas, as well as water quality problems due to inadequate treatment facilities or poorly maintained and managed facilities.[18]

The iLembe DM contains free flowing rivers which are important at a national level (Nel et al, 2011), the most important of which is the Nsuze (tributary of the Thukela) as it is free flowing for over 100km and has been identified as a national flagship river. There are only 62 free-flowing rivers remaining in South Africa and 19 of these represent the Flagship Rivers which were selected based on their national representivity of rivers and their importance for biodiversity and the provision of ecosystem services. Ndwedwe has two major characteristics that exist within the agricultural sector which are the abundance of land suitable for various cropping and enterprise practices. Secondly, the North Coast enjoys a warm sub-tropical climate for the majority of the year.[19]

The rainfall in this varies from 800 – 1276mm per annum. Cloud cover and high humidity within the iLembe area reduce the loss of moisture caused by evaporation. Water is available from major rivers and use to irrigate, sub-tropical fruit, vegetables and subtropical fruit. Limitations to crop production are largely driven by the winter period from May to September being relatively dry despite temperatures being favourable for the production of many crops this is somewhat 250mm lower than 2007 and is anticipated to experience a further decline in 2015 as the KZN province is currently effected by drought.

[17] SSI Environmental, 2012
[18] Swartz, 2009
[19] Agricultural Policy Action Plan, 2015

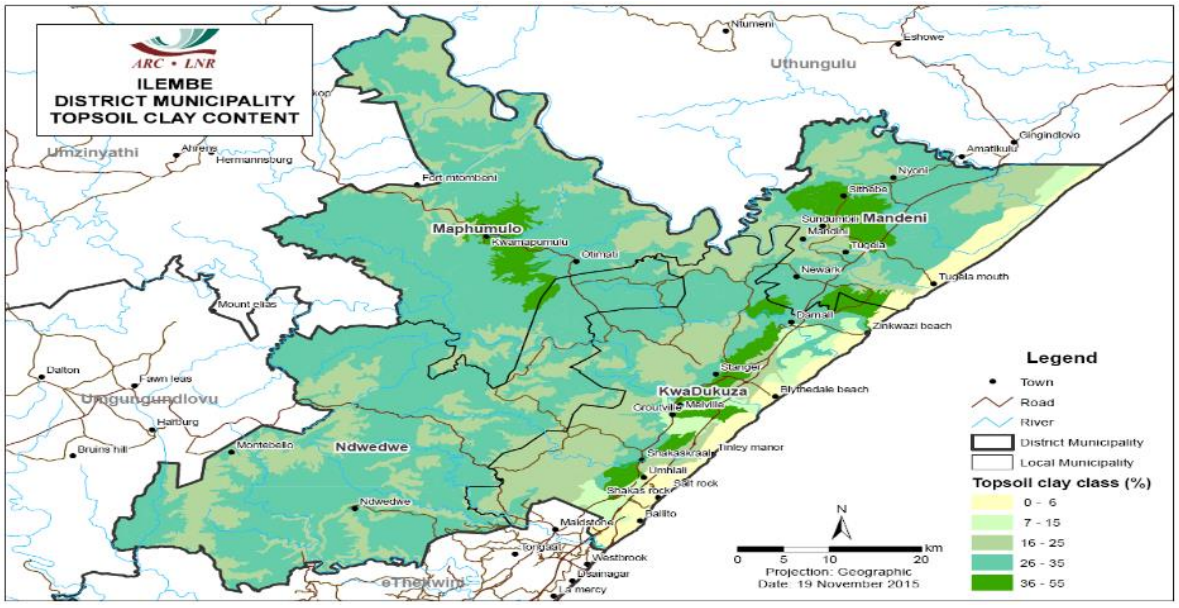
7.3.3 Land and Soil Resources

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[20].

Along the coast dunes of Aeolian eposited sands dominate. Shallow sandy (Glenrosa and Mispah) soils are formed over Ordovician Natal Group Sandstone. Where there is Dwyka-tillite the soils tend to be compact, clayey soils. Land types are Fa, Fb with some Ca, Bd, and Ac where these soils are found. Where the Karoo Supergroup is found the soils are acid, leached heavy soils including Glenrosa and Mispah soils. The land types found here are Fa, Ab, Ac and Aa. Apedal, and plinthic soils develop over Ecca Group (Karoo Supergroup). The dominant land type here is Ac and Fa where Ac is dominant. Karoo Sedimentary rocks give rise to nutrient poor, leached and shallow soils.

The topsoil clay is mostly between 26 and 35% in the area, an indication of a relatively low infiltration rate and high water-holding capacity. Along the coast the topsoil clay content is very low (< 6%) and near Maphumulo and Mandeni high (36 to 55%).

MAP 13: ILEMBE TOPSOIL CLAY CONTENT

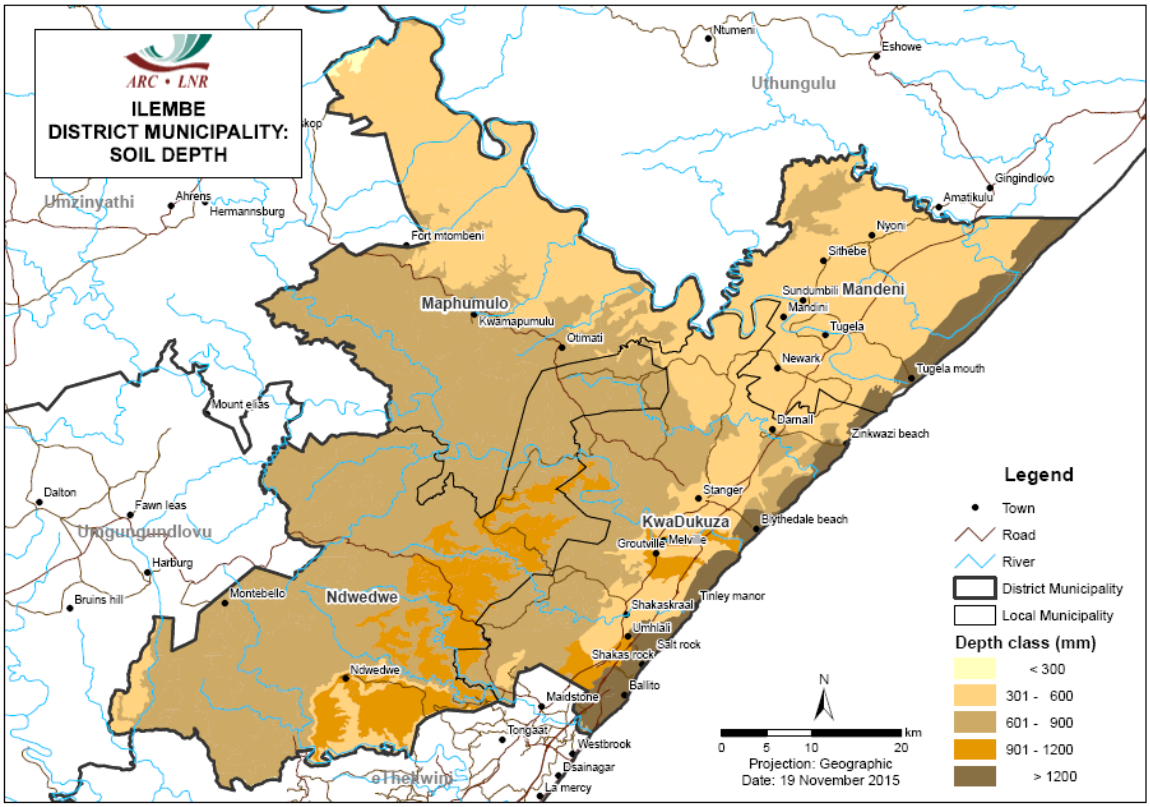


Source: ARC LNR, 2015

[20] Land Type Survey Staff, 1972 to 2006

The majority of the area has a soil depth between 600 and 900 mm, and along the coast very deep sandy (>1 200 mm) material occurs, which is suitable for the production of most crops.

MAP 14: ILEMBE SOIL DEPTH



Source: ARC LNR, 2015

The AGIS database developed by ARC-Institute for Soil, Climate and Water, indicates that the iLembe District does in general not have high potential soils from an agricultural perspective, with even arable soils mostly being classed as Class 3 and 4 in terms of their capability. Since the climate is favourable for crop production this can only be due to the terrain/slope limitations, resulting in many areas being too steep with shallow soils to allow for any crop production and in some cases even excluding the possibility of grazing. As such only an approximate 148 858 ha of the iLembe District can be classified as arable, with only 10.94% of this being classified as arable Class 2, 47.70% Class 3, and 41.36% Class 4 in terms of agricultural land capability. A further approximate 150 989 ha is classed as grazing land with 91.70% of this being Class 6. Approximately 26 930ha or 8.24% of the total area is classified as non-arable/grazing with no on-site benefits for crops or grazing and should as such not be used for any agricultural purposes.

7.3.4 Weed, pest and disease control

Weed, pest and disease control will differs between areas and crops within the different areas and tailor-made programs should be developed for each case study. The high humidity would have a negative influence on the development of diseases.

7.3.5 General adaptability and resilience to climate change

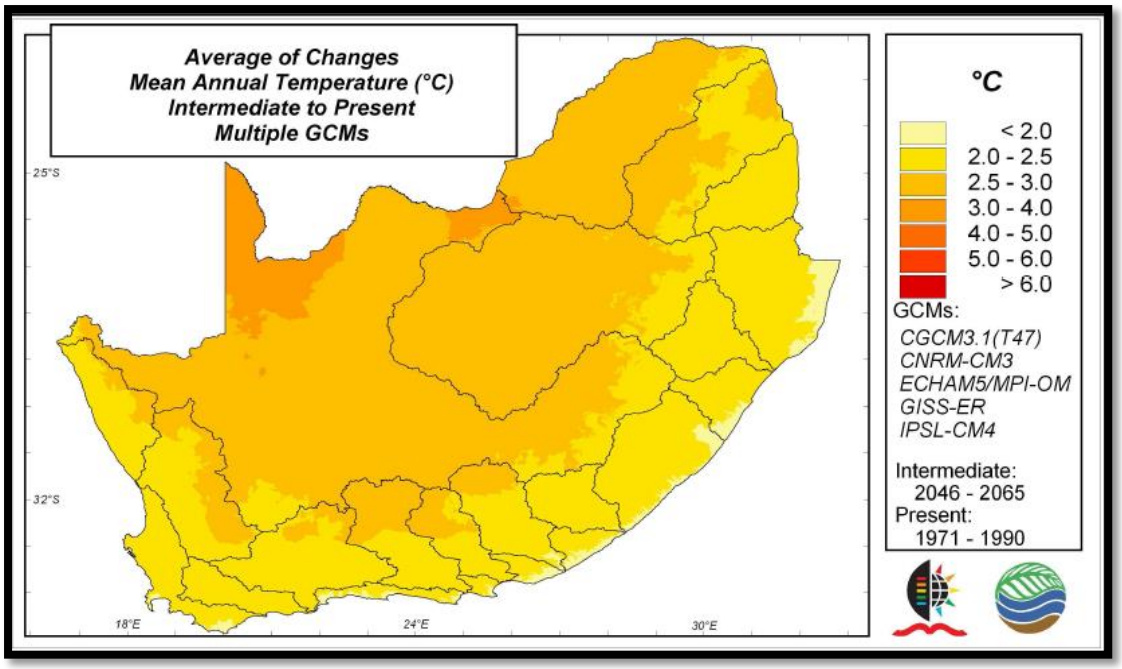
Projected changes to temperature and rainfall

Temperature affects a wide range of processes in agriculture and is used as an index of the energy status of the environment. It is the one climatic variable for which there is a high degree of certainty that it will increase with global warming.

Annual temperatures

- Into the intermediate future (2046 – 2065) annual temperatures are projected to increase by 1.5 °C to 2.5 °C along the coast (illustrating the moderating influence of the oceans) to 3.0 °C to 3.5 °C in the far interior.
- By the end of the century an accelerating increase in temperatures becomes evident with projected increases between 3.0 °C to 5.0 °C along the coast and up to > 6.0 °C in the interior.
- Year-to-year variability of annual temperatures tends to increase in the northern half of the country and decrease in the south.

MAP 15: AVERAGES OF CHANGES (°C) BETWEEN THE INTERMEDIATE FUTURE AND PRESENT CLIMATES



Source: Schulze, 2011

Heat waves

In regard to heat waves (i.e. occurrences with T_{mxd} > 30 °C on 3 or more consecutive days) and extreme heat waves (occurrences with T_{mxd} ≥ 35 °C on 3 or more consecutive days), the median number of heat waves per annum is projected to increase by anything from 30% to more than doubling from the present to both the intermediate and more distant futures.

Cold spells

While the numbers of cold spells (defined as ≥ three or more consecutive days with minimum temperatures < 2.5 °C) and severe cold spells (≥ three or more consecutive days with minima < 0 °C) are shown not to change along the coast of South Africa under future climatic conditions, in the more continental interior a reduction to < 70% of present cold spells is projected used.[21]

Projected changes to Rainfall

In agriculture, limitations in water availability are a restricting factor in plant development, with water being essential for the maintenance of physiological and chemical processes within the plant, acting as an energy exchanger and carrier of nutrient food supply in solution. In any regional study of agricultural production, rainfall, as a basic driving force and pulsar input in many agricultural processes, is therefore of fundamental importance. Focus is invariably on the patterns of rainfall in time and over an area, by enquiring how much it rains, where it rains, when it rains, how frequently it rains, and what the duration and intensity of rainfall events are.[22]

Annual rainfall

It has already been alluded to that overall changes in future scenarios of climate depend strongly on which GCMs were used, and how many GCMs were in the ensemble used. Output from GCMs applied in this study indicated that even under current climatic conditions, South Africa is regarded as a semiarid country with 20% receiving < 200 mm per annum, 47% < 400 mm and only 9% with a Mean Annual Precipitation (MAP) in excess of 800 mm. Inter-annual variability is high.[23]

Projected medians of changes in MAP from the ensemble of GCMs used show an overall wetting into the intermediate future, very slight in the west and more pronounced in the east, particularly in the more mountainous areas. In the more distant future intensifications of changes in MAP become evident, with areas of decreases in the west and the increases in the east from 200 mm and up to 500 mm in the escarpment and mountainous runoff producing

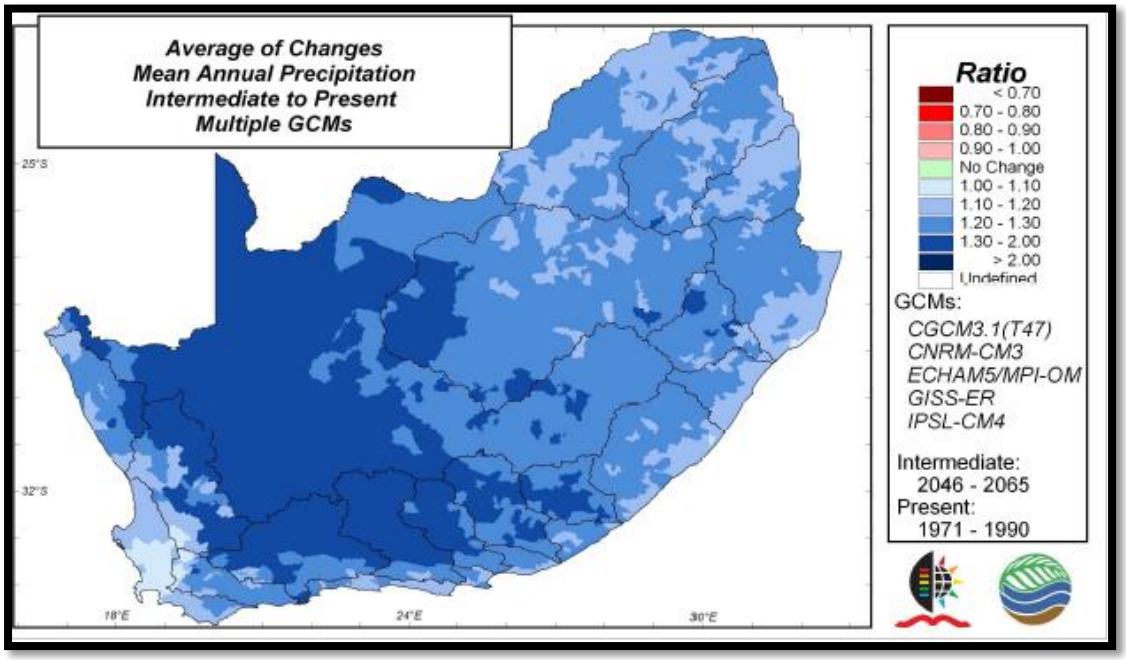
[21] Schulze,2011 cited by Oosthuizen, 2014
[22] Schulze, 2011
[23] Lynch, 2004

areas. The period of significant change in the west appears to be in the latter half of the century.

The averaged ratio changes from multiple GCMs in the inter-annual variability of rainfalls show standard deviations (a measure of absolute variability) to be intensifying from the intermediate to the more distant future, with significant increases in the year-to-year variability of annual precipitation in the east (from 30% up to a doubling), but with decreases in the west.

The overall increase in rainfall variability has severe repercussions for the management of water resources and operations of major reservoirs as well as on the year-on-year consistency of agricultural production.

MAP 16: AVERAGES OF RATIO CHANGES IN MEAN ANNUAL PRECIPITATION



Source: Schulze, 2011

Monthly rainfall

Changes in distribution patterns over South Africa of medians of precipitation in cardinal months are not uniform, but can vary markedly:

- in direction
- in intensity
- spatially within South Africa in a given month
- between different months of the year for the same statistic
- between the intermediate future and the more distant future for the same statistic
- in intensification and acceleration of impacts of climate change over time.

- A recurring feature is a general wetting trend of varying intensity and distribution in all three periods of change considered, particularly in the east. This wetting trend is, in general, projected to be beneficial to South Africa's agricultural production and to water availability for agriculture, but the flood damage or erosion associated with this trend could cause it to be detrimental.
- There is a drying trend evident in the west, mainly towards the end of its rainy season. Combined with increases in temperature, the repercussions for agricultural production, irrigation demand and water resources could thus be severe in the west.
- The GCMs used in this study also display a drying trend in the northern areas of South Africa in the latter half of this century, mainly in the middle and towards the end of the wet season (i.e. January and April), with projected negative impacts on crop yields and water availability.
- The area which is transitional between the summer and winter rainfall areas in South Africa frequently displays marked relative increases in rainfall.
- For the period up to the intermediate future marked differences in averaged ratio changes of standard deviations are seen in the four cardinal months, as are differences in direction and intensity within a given month. January and April display a narrow coastal strip of decreased rainfall variability into the future, but with a general increase over the interior which intensifies into autumn.
- By mid-winter virtually the entire South Africa displays significant increases in the inter-annual variability of rainfall. Over much of the country this has little impact on agriculture and water resources as mid-winter coincides with the dry season, but it does impact on the winter rainfall region of the southwest. By October, when the rainy season starts for much of the country, the eastern half of South Africa and the southwest show reductions in variability, with only the semiarid central interior displaying averaged increases in variability.

Rainfall concentration

- The rainfall concentration statistics indicate whether the rainfall season is concentrated over a short period of the year only or extended over a longer period.
- Median changes in ratios of intermediate future to present rainfall concentration computed from the five GCMs used, display a general reduction over much of South Africa, indicative of a slightly more even spread of the rainy seasons by the mid-century.
- However, in the all year rainfall belt, as well as the transitional area between the winter and summer rainfall regions, the rainy season is projected to become more concentrated into shorter periods than at present.
- Confidence in these projections is generally in the 'High' category in the northern areas of South Africa, but reduces to the 'Low' category in the south and east.

Rainfall Seasonality

- Large tracts of the current winter and summer rainfall regions are projected with high certainty by the various GCMs used in this study to remain as they are now.
- However, the major uncertainties between the models in changes of future rainfall seasonality are in the transitional areas between the winter and summer regions in the west, and in the future location of the all year rainfall region, with confidence in the composite projections only in the 'Medium High' to 'Medium Low' categories.
- Within the summer rainfall region individual GCMs display a contraction in the mid-summer rainfall region into the intermediate and the more distant future, and a corresponding expansion of late and very late rains.

In regard to annual precipitation, the averages of the ratio changes in the map show relatively high increases from the present into the intermediate future, i.e. 40 years from now, especially in the western transitional belt between the winter and summer rainfall regions. The year-to-year variability of annual precipitation, is expected to increase throughout South Africa between the present and intermediate future.

A comprehensive analysis on impacts of climate change (Lobell et al., 2008) indicates that Southern Africa is likely to suffer negative impacts on several crops (e.g. maize and sorghum) that are very important to large food-insecure populations. The table below summarizes the likely impact on crop and livestock production for Southern Africa.

TABLE 8: IMPACTS OF PROJECTED CLIMATE CHANGE ON CROP AND LIVESTOCK PRODUCTION FOR SA

Crop production	**Direct impacts**	• Even small increases in mean temperature between 1° and 2° C are projected to lead to a decrease in crop productivity
		• Changes in temperature regimes could affect growing locations, the length of the growing season, crop yields, planting and harvest dates
		• Increased need for irrigation in a region where existing water supply and quality is already negatively affected by other stressors
	Indirect impact	• Predicted higher temperatures are likely to negatively impact organic matter, thereby reducing soil nutrients
		• Higher temperatures may favour the spread of significant pests and pathogens to a range of agricultural systems
Livestock	**Direct impacts**	• Changes in forage quality and quantity (including the availability of fodder
		• Changes in water quality and quantity
		• Reduction in livestock productivity by increasingly exceeding the temperature thresholds above the thermal comfort zone of livestock which could lead to behavioural and metabolic changes (including altering growth rate, reproduction and ultimately mortality)
		• Increased prevalence of "new animal diseases"
		• Increases in temperature during the winter months could reduce the cold stress experienced by livestock, and warmer weather could reduce the energy requirements of feeding and the housing of animals in heated facilities
	Indirect impact	• Increased frequency in disturbances, such as wildfires
		• Changes in biodiversity and vegetation structure
Socio-economic/ livehood impacts		• Changes in income derived from crops and livestock production
		• Shifts in land use (including consequences of land reform)
		• Overall changes in food production and security

Source: Davis (2011)

If future climates are perturbed in accordance with the projections for temperature and rainfall used in Schulze (2010) then some major inland shifts in the climatically optimum growth areas of sub-tropical fruit may be expected. The harvest-to-harvest cycle, or ratoon, times could reduce by 3 - 5 months (i.e. by 20-30%) by the intermediate future and by > 5 months (i.e. > 30%) in the more distant future, while yields per ratoon are projected increase by 5 - 15 t/ha along the coast and by up to 20-30 t/ha in the inland growing areas by mid-century, with major implications to the sugar industry (Schulze, 2010). When a temperature increase of 2°C is associated with simultaneous changes in rainfall, yields were modelled to decrease by ca. 7% for a 10% reduction in rainfall, and to increase by a similar percentage for a 10 % increase in rainfall. Median changes in ratios of cane yields per ratoon are projected to increase by the intermediate future by < 10% in many parts of the present cane growing areas, but by up to 30% and more in potentially new growth areas further inland. All the above projected changes are significant enough for the sugar industry to consider more in-depth studies of its entire value chain from production to transport to milling and exporting.[24]

7.4 Commodity selection criteria (APAP)

The commodity selection criteria is used to determine the most appropriate commodity for a particular area, it is also dependant on three aspects; these are the feasibility, viability and sustainability. On certain occasions it may be the case where a single commodity may meet

[24] Schulze, 2010; DAFF, 2013

this criteria for half of the year due to seasonality, in this regard optimising another commodity to ensure that the agricultural land does not lie fallow would contribute towards a best fit model ensuring minimal wastage and productivity loss.

A. Biophysical criteria

Assumptions made include:

1) Temperature and carbon dioxide concentration cannot be modified.

2) Solar irradiation is not a limiting factor in all districts at regional level.

3) Artificial growth mediums are not viable at massive scale for most districts in South Africa.

A1. Temperature, frost and heat and chill units

In the case of plants and crops, the temperature during growth season is considered. Temperatures falling within the growth season are only considered as using the average temperatures will distort the accuracy of the selection criteria. Frost has been identified as a threat, crops have been investigated in this respect with regards to tolerance frost sensitivity.
In case of animals and livestock we examine the temperature range which the animal is adapted to, whether the animal will be able to cope with extremes experienced in the area.

A2. Rainfall, hail risk, humidity and water availability for irrigation or animal watering

In the case of plants and crops whether sufficient rainfall is received during the seasonal months. The average rainfall will not be used in this case but rather that which occurs during growth season. Availability of water in the area is also considered as well as the areas susceptibility to drought. Another consideration for the crop was if there was sufficient irrigation and protected areas from hail, given the hail frequency of the area and sensitivity of the particular crop to hail damage.

In the case of animals and livestock, whether there was a sufficient quantity of water available from surface or groundwater resources for animal consumption and usage, other factors were considered additionally such as ground water quality, humidity and drought.

A3. Land and soil resources

In the case of plants and crops whether the soil is suitable in terms of texture (relative composition of sand, silt and clay), drainage (well vs poorly drained) and depth (deep, moderate and shallow). Land type and capability for each crop was thoroughly investigated

considering aspects such as the land topography which the crop would be farmed on.

In the case of animals and livestock, the purpose of the livestock usage will determine what land is required. Land suitability is based on the surrounding topography and whether such land will be suitable for grazing, this is in turn dependent on the breed of animal farmed having varying levels of tolerance to differing topography. Other factors also considered were the vegetation type suitability, the grazing capacity and feedstock proximity.

A4. Weed, pest and disease control

In the case of plants and crops, weed threats have been deliberated, this too together with the impact of pest and disease and the tolerance of the commodity to commonalities in these areas.

In the case of animals and livestock the bush encroachment and poisonous plant infestation has been identified as a potential threat, animal tolerance and hardiness to these conditions have been evaluated. Pest and disease have also been realised as a significant threat, evaluation of whether the animal breed is generally resistant to pests and diseases and the relative immunity of the animal to the disease was undertaken.

A5. General adaptability and resilience to extreme weather and climate change

In the case of plants and crops we have examined the crops resilience to climate change and whether each crop can specifically adapt to drought conditions.

In the case of animals and livestock, the climate change resilience for each animal breed was considered and measured against extreme heat waves, parasite infestations and other possible impacts of climate change, to determine the suitability of the animals to each particular district.

B. Enterprise viability criteria

B1. Transport, market access and demand criteria

Distance to markets and transport cost efficiency: Is transport likely to be cost efficient considering the following two rules:

Value density vs distance to market rule: 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.

Perishability vs distance to market rule: 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: Is current demand for the product sufficient, and is there an established market for the product, including existing marketing channels and demand amongst customers already having a strong preference for the product? Or does the market require broad consumer awareness creation and a change in customer behaviour in addition to conventional marketing practices.

Future market growth potential: Given global and local market trends and further marketing potential, is demand for the crop likely to grow into the short to medium term?
Market openness: Are buyers of the particularly farm product willing to buy from new suppliers and small-scale farmers (even if small-scale farmers market their produce cooperatively)?

B2. Business strategy, payback period and profitability criteria

Business strategy and positioning: Is the enterprise compatible with the likely range of viable business strategies and positioning strategies adopted by small-scale farmers and cooperatives?

Payback period: Will the enterprise generate sufficient income to justify the period before profits are returned?

Profitability: Given the average expected enterprise budget, is it likely to be a profitable enterprise in the particular area?

B3. Human, physical and financial capital requirements

Familiarity and local knowledge and skills: Is the crop/livestock already familiar amongst farmers in the area or will significant awareness creation be needed? Are local farmers and workers 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, or will extensive education, training and recruitment of outside workers be required?

Labour cost and productivity: Are the local labour costs, willingness of workers to perform farm and agro-processing work and overall labour productivity at competitive levels, given the labour intensity/requirements of the particular enterprise?

Implements and infrastructure: Are local farmers likely to have or to obtain the required implements and infrastructure fairly easily, or will extensive capital financing be required?
Finance: How difficult will it be to access finance?

C. Economic development criteria

C1. Forward and backward economic linkages and agro-processing opportunities

Forward and backward economic linkages:

Does the enterprise utilize significant quantities of farm input (as opposed to insignificant/small levels of input) that will significantly contribute to business and job opportunity creation throughout the value chain?

Agro-processing opportunities at district level: Does the crop/animal present extensive value adding or primary as well as secondary agro-processing opportunities to be exploited specifically by intended beneficiaries of the Agri-Parks scheme?

C2. Job creation

Direct on-farm job creation: Is the enterprise itself sufficiently labour intensive (e.g. cotton) rather than capital intensive (e.g. grain) or not labour intensive at all (e.g. beef cattle), thereby contributing significantly to on-farm direct job creation and rural development?

Direct, indirect and induced job creation through the value chain: Are opportunities associated with forward and backward economic linkages and value adding more labour intensive than capital intensive, thereby contributing to broader regional job creation?

Job decency: Overall, are the enterprise and its value adding opportunities likely to create higher quality job opportunities as opposed to minimum wage, unskilled, seasonal, temporary or part time opportunities?

C3. Local as opposed to distant development

Business opportunities, agglomeration effects and job creation at local or district level: Are value chain business opportunities and job creation associated with the particular crop/animal's value chain likely to lead to rural and local economic development as opposed to jobless growth?

Agricultural intensification and increased local GDP: Is the enterprise characterized by a relatively high level of agricultural intensification, and high income per surface area unit?

C4. Global competitiveness and trade balance criteria

Global competitiveness: Is the region truly globally or at least regionally competitive to produce the crop/animal, or are "cheap imports" likely to be or become a threat?

Export potential: Does the crop and possibly its value added products have strong export potential?

Import substitution potential: Does the crop or its value adding products present an opportunity to contribute to import substitution, at local, regional or national level?

D. Political/institutional, social and food security/sustainability criteria

D1. Political and institutional criteria

The commodities were then evaluated to ensure that crops which were accorded APAP priority were granted preferential selection. Other factors which were considered include existing successful or planned projects, these were used likelihood of success for the particular commodity venture.

D2. Social criteria

Socially the factors considered were the acceptability ("buy-in") by the farmers, the income equality, labour rather than capital intensity, which will contribute to job creation and income flows and whether forward and backward supply chain and value adding opportunities can be exploited by small entrepreneurs rather than large businesses. Other factors which were considered were the black smallholder suitability, and the crime and vandalism resilience.

D3. Food security and sustainability criteria

Elements examined include the contribution to food security and the sustainability of the commodity to maintain these levels of food security.

All these factors take into consideration the requirements needed in order to ensure the most sustainable commodity selection, these aspects are then classified in terms of low, medium and high impact to ensure the rating scale is synchronised with the impact model.

7.5 Commodity identification

To identify a commodity, two understandings are sought; these are based on ground research, provided by the tried and tested methods of the local farmers and the second which is Research and Development institutions which promote the most efficient deployment of agricultural technology. These are combined to isolate key commodity opportunities for the selected region. The following commodities were identified; Poultry, Goat, Vegetables, Bananas, Dry beans, Essential Oils, Sub-tropical fruit and Pork.

7.6 Commodity prioritisation

The table below classifies each of the commodities according to a predetermined scale which has variable impact levels. The complete table can be found in Annexure A.

TABLE 9: OVERALL COMMODITY SELECTION SCORING

Possible crop / livestock for District	Biophysical total	Enterprise viability total	Economic development total	Political and social total	Overall total
Weight→					
Sub-Tropical Fruit	24	60	49	49	182
Vegetables	26	54	45	55	180
Poultry	23	59	33	52	167
Maize	26	49	35	32	142
Sugarcane	23	46	33	38	140
Essential Oils	29	41	39	27	136
Pork	26	37	35	26	124
Goat	30	39	25	29	123

Source: Urban-Econ, 2015

7.7 Description of the three highest ranked commodities

The three top ranked commodities are listed as per the table above, these are; Sub-tropical Fruit ranked 1st, Vegetables are ranked 2nd and Poultry came in at 3rd.

Sub-Tropical Fruit

Sub-tropical fruit was ranked 1st this due to it being achieving the most points overall as well as 60 in enterprise viability, 49 in economic development and 49 in political and social ratings as per the selection scoring in 7.6 above.

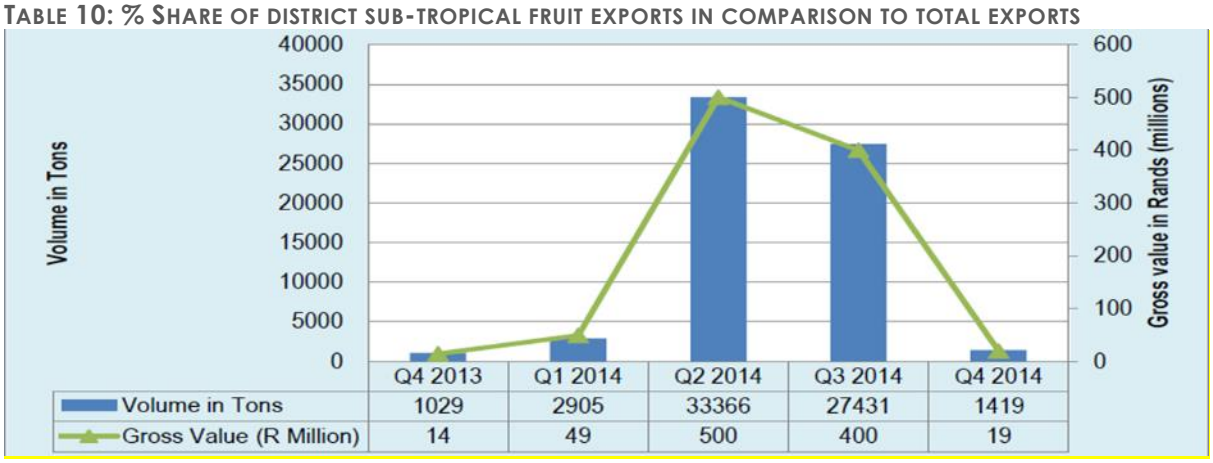
iLembe's temperature was reasonable for this commodity, although high at certain peak periods and it achieved a score of 3. Sub-tropical fruit being a relatively wet crop having extensive water requirements, was scored 2, this is in lieu of the latest drought conditions experienced, and due to the fact that sub-tropical fruit relatively does not require an extensive amount of water. Soil conditions in iLembe are reasonable, sub-tropical fruit attained 2 points in this section, sub-tropical fruit proved quite resilient to pests and weeds scoring 3 and was considered to be relatively adaptable to climate conditions scoring 2. The overall result was 24 points for the biophysical criteria, the lowest of the three commodities.

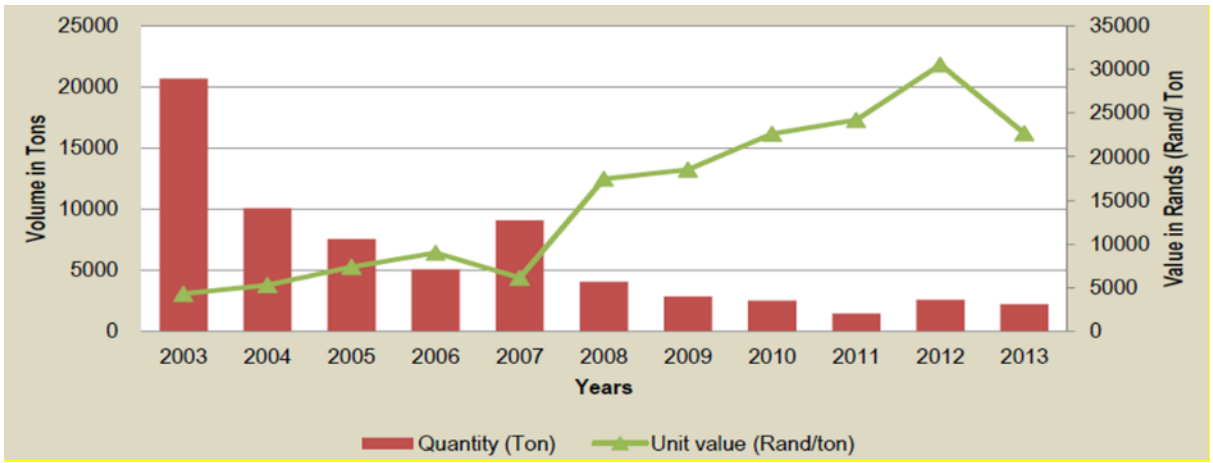
Enterprise viability is excellent, sub-tropical fruit has good market access, transport is generally low cost due to the lack of specialised transport required and demand is generally good as

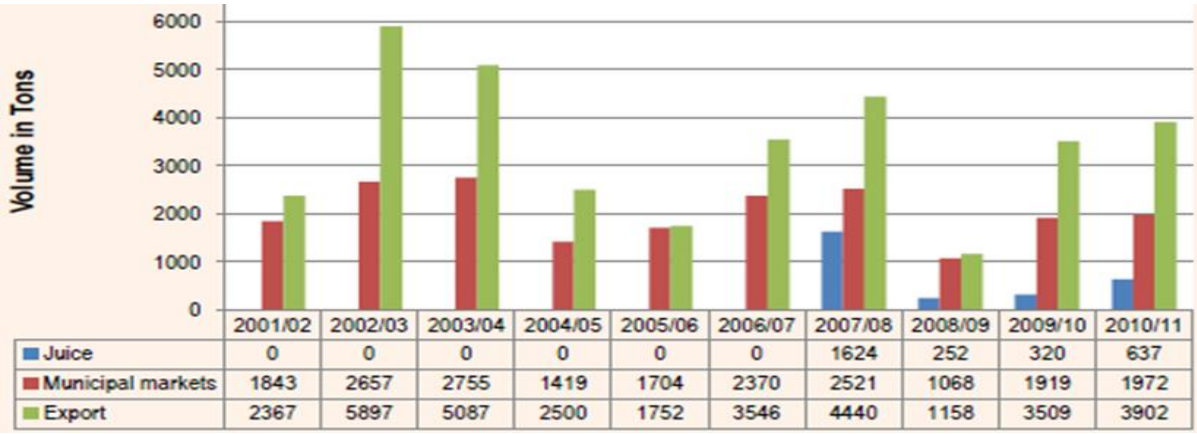
sub-tropical fruit has multiple uses, each of which form part of essential consumables. Sub-tropical fruit is ideally and strategically positioned within Stanger, harvesting of sub-tropical fruit is usually 9 months which is fast relatively to the other potential commodities within the area, however profitability in sub-tropical fruit farming is generally low and rests on economies of scale to ensure expenses are covered. Sub-tropical fruit in iLembe has been produced historically for hundreds of years, one of the primary crops in the area apart from sugar, sub-tropical fruit labour intensive and is thus an employment creator.

Economic development for this commodity is excellent, economic linkages within the sub-tropical fruit industry are moderate with multiple processing opportunities available. Job creation within the sub-tropical fruit sector is generally moderate, with indirect jobs constituting the majority of jobs created. For sub-tropical fruit there are numerous development opportunities with a variety of aspects, however it does contribute a relatively modest amount towards local GDP. Globally sub-tropical fruit is most cost effectively farmed in India, China and Brazil, South Africa is highly uncompetitive with these countries but still remains a prime exporter to countries such as the United Arab Emirates with major import substitution potential.

TABLE 10: % SHARE OF DISTRICT SUB-TROPICAL FRUIT EXPORTS IN COMPARISON TO TOTAL EXPORTS







	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Juice	0	0	0	0	0	0	1624	252	320	637
Municipal markets	1843	2657	2755	1419	1704	2370	2521	1068	1919	1972
Export	2367	5897	5087	2500	1752	3546	4440	1158	3509	3902

Source: Sub-tropical fruit Market Value Chain Profile, 2014

Sub-tropical fruit was chosen to be one of the key commodities not only chosen by the district but by the Agricultural Policy Action Plan (APAP) as well, not only is sub-tropical fruit a highly sustainable venture with low start-up costs, but it is one of the few commodities (excluding sugarcane) which have a small number of successful projects in the iLembe region. Sub-tropical fruit is widely accepted to be farmed by all farmer types, has no social issues and contributes towards food security.

Sub-tropical fruit achieves an overall score of 182 which is the highest of the commodities.

Vegetables

Vegetables are ranked 2nd. Temperature was reasonable for vegetable growth in iLembe although the latest drought conditions experienced in the area have affected its successes and a scoring of 2 was obtained due to extreme heat conditions. The water and moisture, and soil conditions rating for this commodity was 3 as vegetables overall aren't typically water intensive and the soil conditions in iLembe proved optimal for vegetable growth over time. Vegetables are highly resilient to weeds and pest and score 3, but have moderate adaptability to climate change attaining a score of 2. Overall vegetables scored 26, the joint highest of the three commodities realising sensible market opportunities for farming this commodity within the iLembe region.

Vegetables are excellent in terms of enterprise viability, although their current market is moderate, they have a high degree of future potential. The payback period is similar to sub-tropical fruit, if not quicker, strategic locations for vegetables are abundant in iLembe and considered to be highly profitable. Vegetable farming is historically rich for iLembe, vegetables require less infrastructural investment and are hence operations are easier to finance.

Vegetables have similar economic linkages and processing opportunities to sub-tropical fruit, with slightly less value add options. The farming of vegetables is regarded as semi-labour intensive, but more labour intensive than poultry.

Vegetables are currently not cost efficient and are majorly uncompetitive with other more developed countries, however exports dictate the demand for this commodity and hence the potential for success and future import substitution.

Vegetables face little political and social issues and are widely accepted by iLembe's farmers, nevertheless its sustainability is moderately strong and subject to potential growth in future.

Vegetables achieves an overall score of 180 which is the second highest of the commodities.

Poultry

Poultry was ranked 3rd. The temperature in iLembe is semi-optimal for poultry, however it can be too hot at times leading to poultry desiccation, attaining a score of 2. Soil conditions, land capability and pest resilience for this commodity were optimal and it was noted that poultry has a high tolerance to poor soil conditions and was scored 3. Rainfall and moisture, and adaptability to climate change were scored 3, this is due to the fact that poultry is relatively water intensive, requiring adequate rainfall, requirements which are currently unmet as a result of the drought currently facing KwaZulu-Natal.

Poultry performs above average in the enterprise viability section, due to exceptional demand currently existent within the area, however future growth potential is envisaged to be strong as the price of poultry continues to increase internationally, hindered by South Africa's poor competitiveness. Poultry is ideally positioned in and is known to thrive almost anywhere. Profits will only be recovered after approximately 42 days or 1.5 months, translating to relatively quick profit turnarounds. Currently the local market potential for poultry is poor as the imports from Brazil have made competition nearly impossible, however this industry is highly suited to small holder farmers as it is relatively simple and low cost to start up. iLembe is capable of stimulating small holder poultry farming although labour costs are high, relatively a low amount of workers are required, these workers are generally regarded as low skilled and low income.

Economic development rated poultry as a highly favourable commodity, this due to good economic linkages, contribution to local, regional and national GDP through emphasised and proven export potential. Poultry is imported regularly as and when needed, imports are major causes for concern as they are made in large quantities, which can't be readily substituted as local markets are un-competitively priced in comparison to international ones.

Poultry poses little social and political issues and the broiler industry is one that has experienced increasing growth over the past 30 years. Income equality and entrepreneurship contributes substantially towards the stabilisation of the Gini-coefficient and favours local black small

holder and emerging farmers. This venture is considered to be highly sustainable for these small holder and developing farmers, due to low start-up costs, although the quality of poultry (broiler) produced will determine its sales potential.

Poultry achieves an overall score of 167 which is the third highest of the commodities.

7.8 Products related to selected commodities

The KZN Department of Agriculture and Rural Development (DARD), enterprise iLembe and farmers associations have jointly identified a list of commodities, tabulated below:

TABLE 11: COMMODITY BENEFICIATION OPPORTUNITIES

Commodity	Importance
Sub-tropical Fruit	Have a large degree of opportunities available, from juicing fruits, to flavourants, extracts and peels for medicinal purposes to reduce wastage.
Vegetables	Vegetables are an integral part of much of the world's food supply and contribute the most towards food security initiatives.
Poultry	Poultry is regarded as one of the most important meat sources globally, poultry has multiple beneficiation opportunities available if utilised efficiently. Chicken bones serve as powdered chicken soup/broth, offal's are sold separately allowing revenue to be generated on what essentially was considered waste and feathers to be used in pillow, other than the normal broiler processing and packaging processes used.
Maize	Maize, a large grain plant can be used in many forms such as; field corn which is used mainly to feed livestock (poultry and pork) called silage; Sweet corn, the type most commonly consumed; popcorn, the ability of maize kernels expand upon heating. Maize flour creates cereal; Corn syrup is used as a sweetener instead of sugar in thousands of products, including soda, candy, cookies and bread; Kitty litter made from maize is environmentally-friendly.
Sugarcane	Sugarcane is currently the largest agricultural industry within iLembe, sugar production is greatest in this area, contributing towards large scale employment. It is used to produce Sugar and even the by-product/waste is used to generate bio-energy.
Goat	Goat farming can be utilised for a variety of functions, such as in the production of cheese, milk, hair, skins (hide) and even for consumption (meat).
Banana	Banana is commonly consumed as a subtropical fruit. Dried banana chips are sold as mixed dried fruit.
Essential Oils	Essential oils are used for multiple uses especially for flavours, fragrances and medicines (pharmaceuticals).
Pork	Pork is the most widely used meat in the world. Pork can be consumed as meat or dried (value added) to produce bacon

8 Commodity Analysis

8.1 Sub-tropical Fruit

Subtropical fruits are categorised as fleshy fruit such as bananas, avocados, litchis, kiwi fruit, mangoes, guavas, pineapples, papayas and granadillas and nuts such as cashew, macadamia, pecan, almonds and walnuts. Each fruit has various cultivars, which have different harvesting dates.

As per the table below and consultation with stakeholders, the following sub-tropical fruits have been identified as key commodities (highlighted in Red):

- Mango (December – March)
- Litchi (November – February)
- Avocado (March-December)

TABLE 12: HARVESTING PERIODS - SUB-TROPICAL FRUIT

Harvesting period

The table below indicates the availability of subtropical fruit:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Banana												
Avocado												
Litchie												
Kiwi												
Mangoes												
Pineapples												
Papaya												
Guavas												
Macadamia												
Pecan nut												

Source: Urban-Econ, 2015

8.1.1 Mango Industry Overview

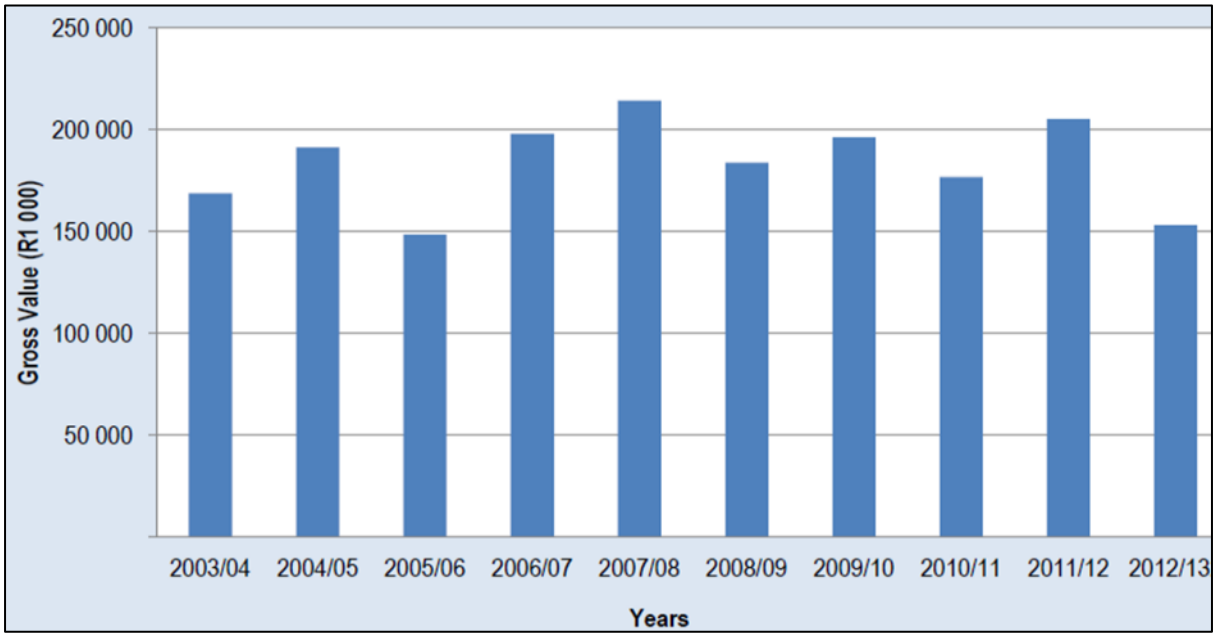
Mangoes are a sought-after fruit because of its palatability and nutritive value. This tropical fruit is abundant and cheap during the warm summer months but in off-peak seasons, it becomes a scarce commodity.

8.1.1.1 Market Assessment

During the 2012/13 marketing season the total gross value of subtropical fruits in South Africa was R2.6 billion. In the same period the total gross value of mangos was R150 million, representing 5.7% of the total gross value of South Africa sub-tropical fruits. The total gross value of production (GVP) for mangos over the last ten years is presented in the figure below.

It can be observed from the figure below that the total gross value of mangos fell by 25% between the 2011/12 and 2012/13 marketing seasons. It is interesting to note that the gross value of production only increased by 9% during the ten years under review. This may be explained by the fact that total volumes produced during the same period also declined by approximately 40%.

FIGURE 20: GROSS VALUE OF PRODUCTION FOR MANGOES, 2003/04 - 2012/13



Source: DAFF, 2014

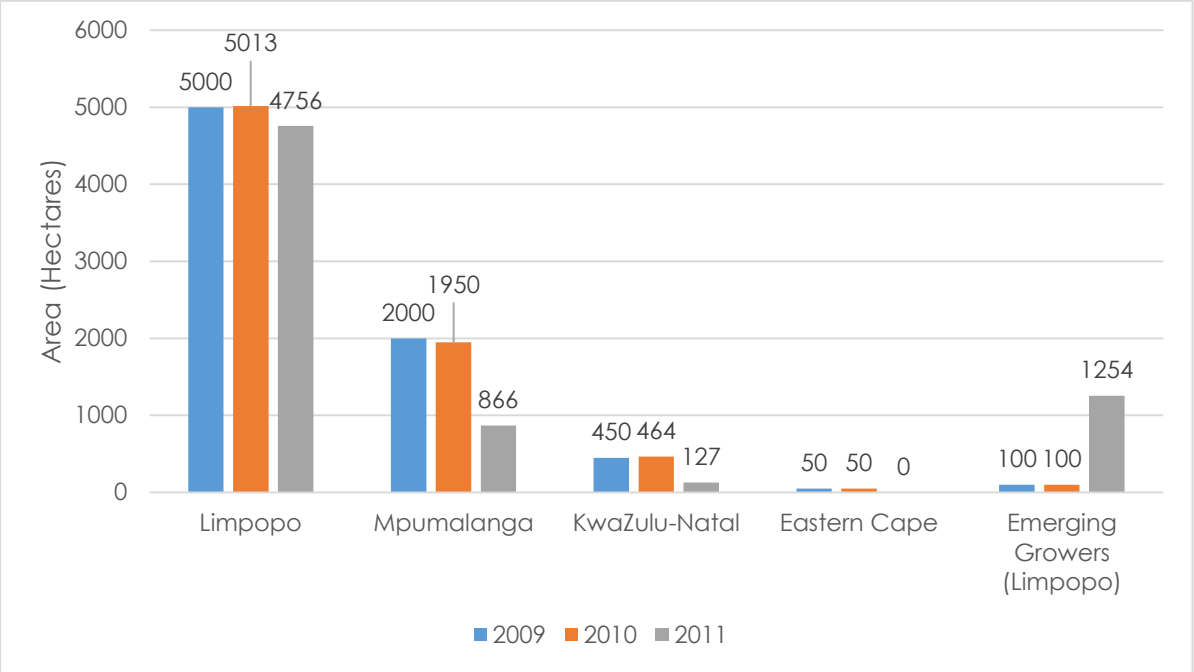
As depicted in the figure above, there has been a slight decrease in the gross value of production (GVP) for mangoes from 2003/04 to 2012/13.

Production Areas

South Africa's mango production regions are mainly situated in the North Eastern part of the country. The elevation of mango growing areas varies from 300 to 950 meters above sea level with annual rainfall in the major growing areas varying from 300 to 1000 mm. Flowering during winter (June to August) is normally intense, which indicates that winter conditions are adequately inductive for flowering.

Differences in average temperatures between the major mango growing regions give rise to differences in harvesting dates. Fruits produced in the higher lying areas are harvested later than fruit produced in the lower lying areas. The difference in the time of harvest for a specific cultivar may be as long as 3 to 6 weeks. The major mango producing areas in 2009, 2010 and 2011, indicated in the figure below.

FIGURE 21: PLANTED AREA FOR MANGO CROP IN SOUTH AFRICA, 2009-2011



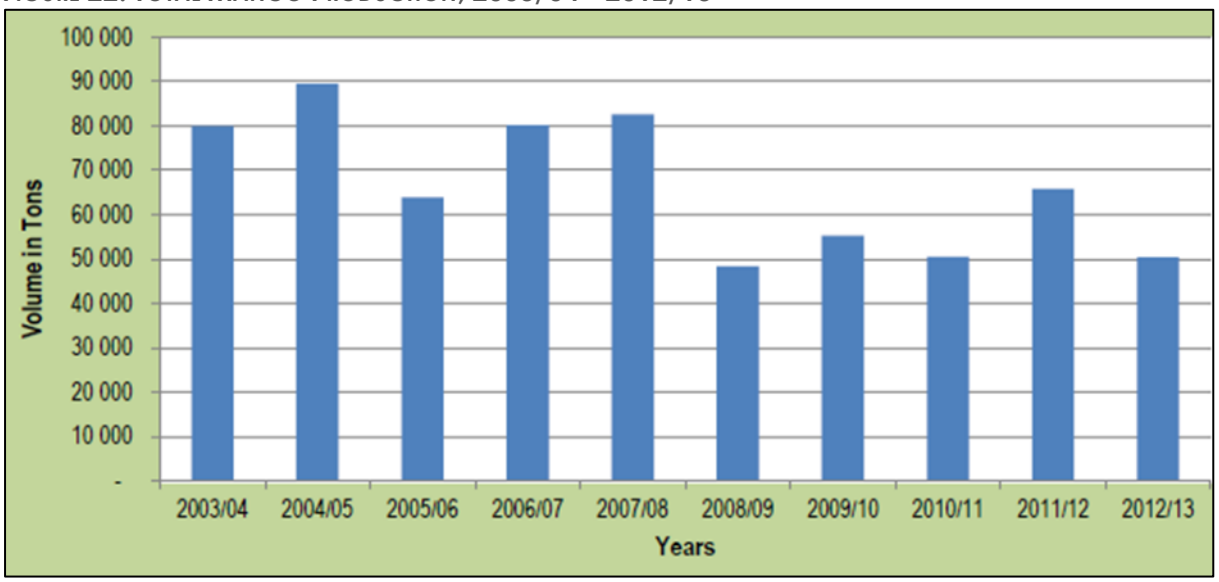
Source: SubTrop, 2012

As can be seen in the figure above, a total area of 7 003 hectares was planted to mangos in 2011. This is in comparison with 7600 hectares planted to mangos in 2009 and 7 577 ha planted in 2010, indicating a decline of 8% in two years. Limpopo Province is the largest producer of mangos, with 6 010 hectares (representing 86% of total land planted to mangos) planted to mangos in 2011. Most of the mango plantings in Limpopo are found in the Soutpansberg, Northern, Central and Southern Letaba as well as Hoedspruit regions. The second largest producer of mangos in South Africa is Mpumalanga province. The province had 866 hectares (12%) planted to mangos in 2011. Most of the mango plantings in Mpumalanga are found in Onderberg areas of Malelane and Komatipoort. KwaZulu-Natal is the third largest producer of mangos with 2% and most of the mango plantings in KwaZulu-Natal are found in Pongola.

Production

The total volumes of production for mangos during the past ten years are presented in the figure below. A total volume of 50 440 tons of mangos was produced in South Africa during the 2012/13 production season. This represented a 30% decline from the 2011/12 volume of 65 807 tons. The highest volume produced during the last decade was 89 464 tons in the 2004/05 season. Considering data for the past decade, the 2004/05 and 2007/08 seasons experienced bumper crops. There was a 43% drop in quantities produced between 2003/04 and 2012/13 production seasons. The decline in production over the years is an indication that the area under mango production has not been increasing during the period under review. This may be because mangos can be grown only in specific areas, as already highlighted above.

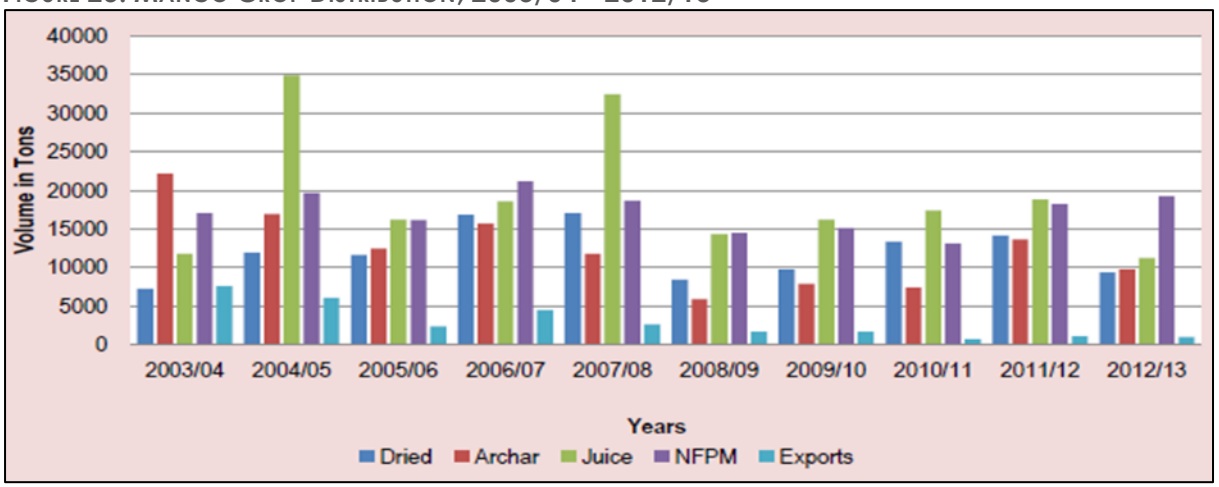
FIGURE 22: TOTAL MANGO PRODUCTION, 2003/04 - 2012/13



Source: DAFF, 2014

The annual distribution of the mango crop is presented in the figure below. The annual crop is processed into dried mangos, achar and juice and sold fresh through the national fresh produce markets (NFPMs) and as exports. A total volume of 30 271 tons of mangos was processed into juice during the 2012/13 marketing season. This was down from 46 533 tons processed into juice the previous year (2011/12). Another important distribution channel for mangos during the 2012/13 marketing season was the NFPMs. 19 225 tons of mangos were sold through the NFPMs in the same year. The proportion sold through the NFPMs increased by 5.6% between 2011/12 and 2012/13 marketing seasons. The quantity of dried mangos increased from 14 122 tons in 2011/12 to 9 330 ton in 2012/13, a decline of 34%. The volume of mangos processed into achar declined from 13 614 tons in 2011/12 to 9 746 tons in 2012/13 while the volume of mangos exported also declined from 1 072 tons in 2011/12 to 943 tons in 2012/13.

FIGURE 23: MANGO CROP DISTRIBUTION, 2003/04 - 2012/13

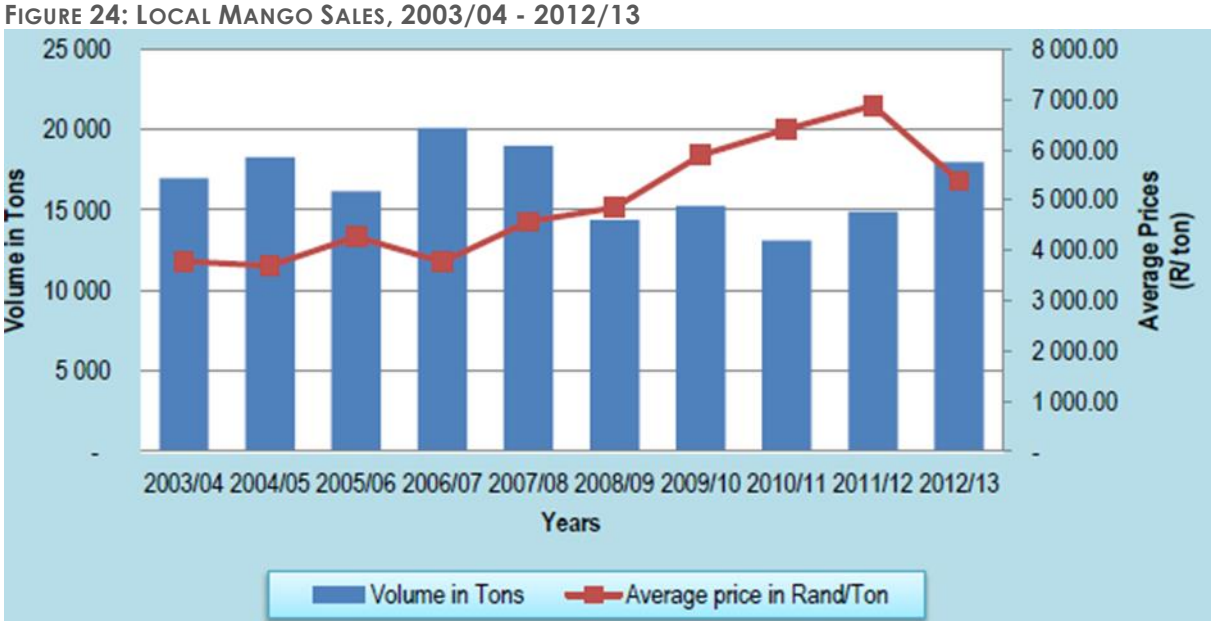


Source: DAFF, 2014

8.1.1.1.1 Local Marketing Channels

The volume of sales and the average prices of mangos sold at the NFPMs are presented in the figure below. As witnessed in the figure above, a total volume of 17 982 tons of mangos were sold through the National Fresh Produce Markets (NFPMs) during the 2012/13 marketing season. This represents approximately 37% of the total mango crop produced during the same season. The volume of sales at the NFPMs have been relatively stable over the last decade, remaining above 15 000 tons per annum except during 2008/09 and 2010/11 when sales dropped to 14 452 tons and 13 055 tons, respectively. The period between 2003/04 and 2012/13 marketing seasons witnessed a 5% increase in volumes of mangos sold through the NFPMs. At the same time average prices realised at the markets increased by 43%. The average price realised at the markets in 2012/13 was R 5 378.00 per ton. This was 21% lower than the average price during the previous year (2012/13). NFPMs serve as centres of price discovery for the local mango market.

FIGURE 24: LOCAL MANGO SALES, 2003/04 - 2012/13



Source: SubTrop, 2011

8.1.1.2 Mango Global Market Analysis

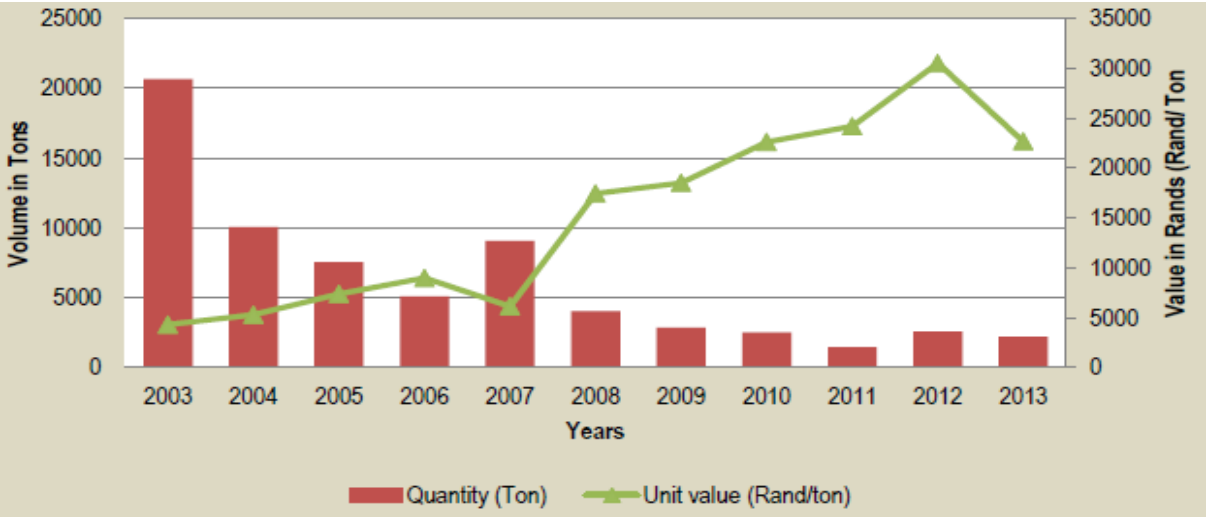
The following sub-section will provide trade analysis of the mango industry.

Export

Volumes and unit values for mangos exported by South Africa during the past ten years are presented in the figure below. South Africa is relatively a small exporter of mangos in the world. The highest volume exported by South Africa during the last decade was in 2004 when the country exported 10 057 tons mangos worth approximately R53 million. Since then, the volumes of mangos exported have declined considerably, dropping below 2 500 tons during 2013.

As can be noted in Figure 38, a large proportion of South Africa's annual mango crop is processed and sold through the NFPMs, leaving very small quantities available for the export market. A total volume of 2 211 tons of mangos was exported by South Africa in 2013. This was 14% lower than the volume exported in 2012 and 78% lower than the volume exported ten years ago. At the same time when the quantity of mango exports is declining the unit values have been on the rise, increasing from R5 295 per ton in 2004 to R22 674 per ton in 2013 (an increase of 426%). The 2013 unit value (R22 674/ton) was 26% lower than the unit value of the previous year (2012). The ever falling quantities of mango exports coupled with increasing imports points to a growing local market and lack of growth in respect of local mango production.

FIGURE 25: SOUTH AFRICAN MANGO EXPORTS, 2003 - 2013

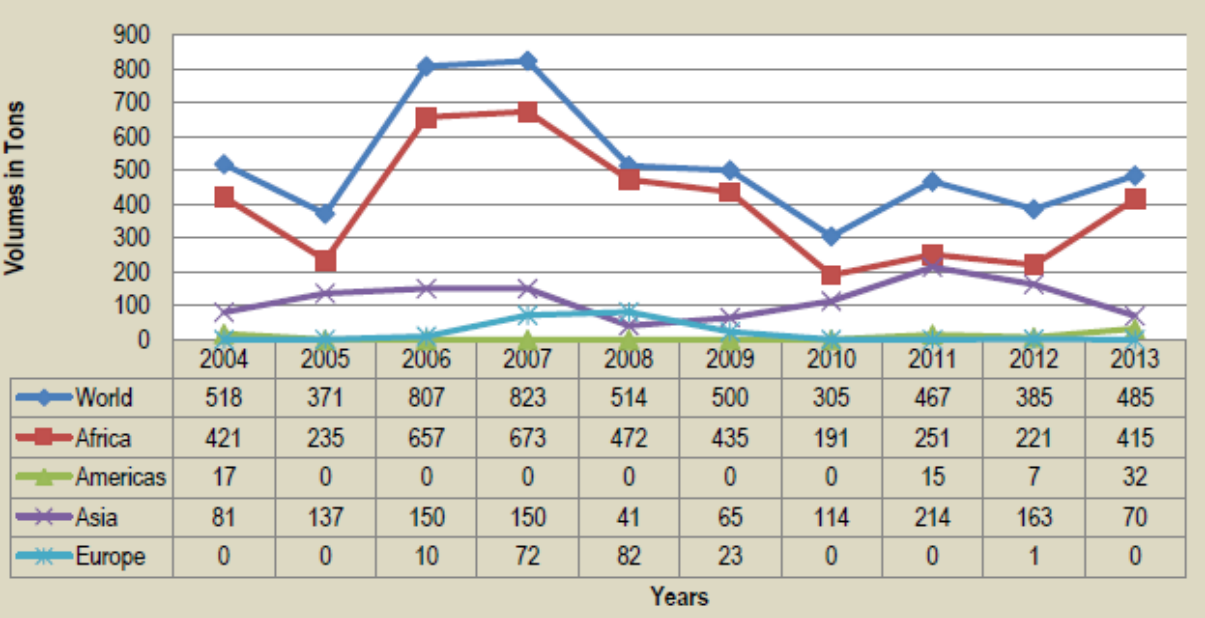


Source: Quantec, 2013

Import

In 2013, South Africa's imports of mangos represented 0.01% of world mango imports and its ranking in the world was number 63. This clearly shows that South Africa is not a major importer of mangos. Volumes of South Africa's mango imports from the different regions of the world during the last ten years are presented in Figure 19. A total volume of 485 tons of mangos worth R2.6 million was imported by South Africa in 2013. During the period under review, imports peaked at 823 tons in 2007 and were at their lowest during 2010 at 305 tons. The biggest supplier of South Africa's mango imports is Africa, accounting for 85% of the country's total mango imports in 2013. Africa was followed by Asia at 14% during the same year.

FIGURE 26: GLOBAL MANGO IMPORTS INTO SOUTH AFRICA, 2004 - 2013



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
World	518	371	807	823	514	500	305	467	385	485
Africa	421	235	657	673	472	435	191	251	221	415
Americas	17	0	0	0	0	0	0	15	7	32
Asia	81	137	150	150	41	65	114	214	163	70
Europe	0	0	10	72	82	23	0	0	1	0

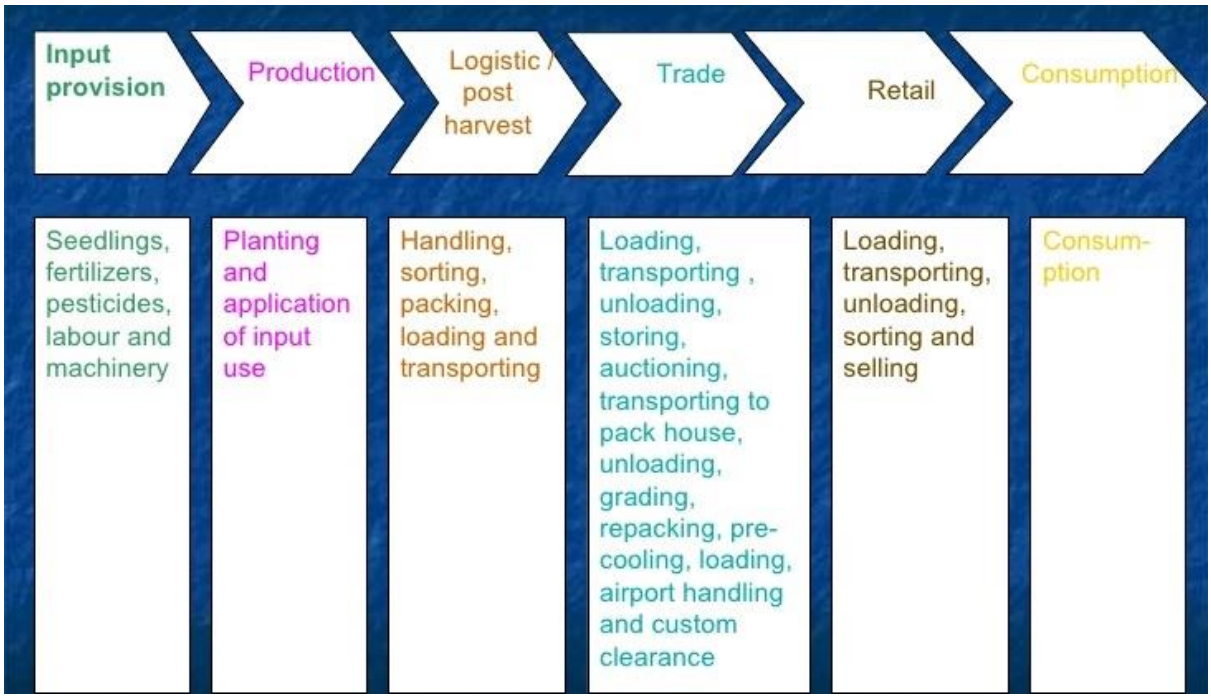
Source: Quantec, 2013

8.1.1.3 Value Chain Assessment

Selecting the ripeness of mangos can be determined by either smelling or squeezing. A ripe mango will have a full, fruity aroma emitting from the stem end. Mangos can be considered ready to eat when slightly soft to the touch and yielding to gentle pressure, like a ripe peach.

Mangos are an excellent source of Vitamins A and C, as well as a good source of Potassium and contain beta-carotene. Mangos are high in fibre, but low in calories (approx. 110 per average sized mango), fat (only 1 g) and sodium. Mangos are a good staple for a daily diet.

FIGURE 27: MANGO VALUE CHAIN



8.1.1.4 Mango Agro-processing Opportunities

The following table discusses possible value adding opportunities for mangoes that may be considered. The table below portrays the packaging and agro-processing opportunities that exist within the mango industry. The table also recommends opportunities that can be specifically used by the iLembe DM's smallholder farmers, packaging and agro-processors.

TABLE 13: POTENTIAL MANGOES AGRO-PROCESSING OPPORTUNITIES

Processing method	Description	Advantages/opportunities	Disadvantages/challenges	Priority & gaps/opportunities
Sorting	Mangos should be sorted/classified before being packed or processed.	Modern marketing channels require mangoes to be sorted and classified according to quality and other criteria.	N/A	Highly recommended.
Fresh packing and branding	Mangos that are packaged in their fresh condition should be packed in a type of bag or packaging that allows for air to move through. Special arrangements for bulk packaging may also be needed. Branding a product enhances product differentiation.	The type of packaging material required for mango are usually of higher quality, smaller size and provide ample opportunity for branding.	Optimal packaging material for mango may be expensive.	Highly recommended.
Mango juice, dried mangos, jams, chutneys and atchar.	Processing is extremely important to the mango industry.	Large demand and high export potential.	Expensive process to ensure preservation.	Moderate potential.
Medicinal Uses	Mango is one of the most recommended fruits to fight beriberi and to heal bronchial diseases. Mango is an excellent depurative for the organism. It is very helpful to fight heartburn and assists digestion. Mangos, beyond being delicious and rich in vitamins, minerals and anti-oxidants which have a high nutritional value.	High export potential and high profit margins.	Small local market, therefore exportation is important.	Very high potential, especially for the export market.

8.1.1.5 Input Suppliers

The following sub-section will provide the identified input suppliers that are available within the mango industry. The list will consist of input suppliers that are based in KwaZulu-Natal, nearby regions and in other provinces. In this sub-section, only necessary input suppliers have been identified. The final business plan will include a comprehensive list with contact numbers if available.

Mango input suppliers:

- Tree Nurseries.
- Irrigation equipment suppliers.
- Fertiliser supplier.
- Post-harvest equipment.
- Grading and packing machinery.

8.1.1.6 Competitors

In this subsection, the identified mango competitors will be listed. Included in the table is the name of the competitor, the location, product offering, etc. More potential competitors will be profiled in the final business plan.

TABLE 14: MANGO COMPETITOR PROFILING

Mango Competitors	Location	Mango Competitors	Location
African Realty Trust (LCP)	Tzaneen	**Kashmiri**	Letsitele
Baobab Value Adding	Hoedspruit	**Matana Droë Produkte**	Hoedspruit
Beli Trust	Letsitele	**Mohlatsi Dried Fruit**	Tzaneen
Beerseun Boerdery	Tzaneen	**Onderberg Verwerkings**	Musina
Big Six	Levubu	**Ko-operasie**	Malelane
Bronpro	Nelspruit	**Carlos Paiva**	Swaziland
Cape Fruit Processors	Malelane	**Rabeja**	Louis Trichardt
Dando	Montana	**School Boy Atchar**	Hoedspruit
Garoro	Letsitele	**Unifrutti Blyderivier**	Levubu
Granor Passi	Polokwane	**Valley Farms Processing Co.**	Levubu
Hoedspruit Fruit	Hoedspruit	**New Dawn Farming Ent**	Hoedspruit
Westfalia Fruit Products	Tzaneen	**Dri-Froot**	White River
JAB Droë Vrugte	Nelspruit	**Bergsig Boerdery**	Komatipoort
Michet Trading	Wierda Park	**Wild Hawk Farm**	Ofcolaco
Landman Droë	Letsitele	**Winlake**	Hoedspruit
Levubu Achar Verwerkers	Levubu	**B&S Dried Fruit**	Tzaneen
Mango Magic Atchar	Tzaneen	**Hendri Kristi**	Hoedspruit
Mango Magic Dehydration	Tzaneen	**Sadek**	Hoedspruit

8.1.1.7 Demand and Needs Analysis

In the earlier section of marketing channels that describes the importance of and opportunities posed by the specific marketing channels, the following market segments seem to be the most promising:

- The informal traders should be targeted; however, it is essential to establish a streamlined and low cost distribution system tailored to their needs.
- After production issues are resolved and participating farmers can produce tomatoes in sufficient quantity and quality, the increasingly important channel of large retail chains should be targeted.

Regarding value adding, the most important opportunity is to brand the mangos in fresh or processed form properly. After fresh mango sales channels are sufficiently penetrated, specific processing opportunities can be considered.

8.1.1.8 Socio-economic Benefits

The economic and social importance of mangoes lies in the benefit that its cultivation gives to producers, marketers, processors, and consumers. The primary plantations create jobs by demanding labour for farming operations, harvesting, packing house operations, transportation, and marketing channels.

Employment

The industry makes an important contribution to direct employment in the mango production and processing. It provides indirect employment for numerous support industries in the areas where mangos are grown. Direct employment within the industry during 2013 was estimated at 2 900 with approximately 17 400 dependents.

TABLE 15: EMPLOYMENT MULTIPLIER, 2015

Commodity	Direct Multiplier	Indirect Multiplier	Total
Mango (Fruit)	1.40	0.92	2.32

The prescribed minimum wage is used as a baseline for determining basic wages in accordance with the legislation governing conditions of service. Minimum wages for farm workers for the period 1 March 2014 to 1 February 2017 are presented in the table below. The consumer price index (CPI) is used in the calculation of annual wage adjustments. The sectoral determination stipulates that the wage increase will be determined by utilising the previous year's minimum wage plus CPI + 1.5%.

TABLE 16: MANGO MINIMUM WORKER WAGE RATE

Minimum Wage Rate				Minimum Wage Rate			Minimum Wage Rate		
Mar 2013 – Feb 2014				Mar 2014 – Feb 2015			Mar 2015 – Feb 2016		
Monthly	Weekly	Daily	Hourly	Monthly	Weekly	Hourly	Monthly	Weekly	Hourly
R2273.52	R524.70	R105.00	R11.66	Previous year's minimum wage + CPI + 1.5%			Previous year's minimum wage + CPI + 1.5%		

Source: Department of Labour, 2013

8.1.1.9 Regulatory Requirements

Tariff regulations can be prohibitive and result in inferior market access, it is often the non-tariff barriers that restrict countries like South from successfully entering the large developed markets. Many of these barriers revolve around different types of standards, including sanitary and phytosanitary standards (SPS), food health and safety issues, food labelling and packaging, organic produce certification, quality assurance and other standards and grades. Table 9 presents tariffs applied by the top-ten export markets to mangos originating from South Africa during 2013. The EU is treated as one country because all member states apply the same tariffs on mangos originating from South Africa. During 2013 the EU member states that featured in the list of the top-ten importers of South African mangos were the Germany, Netherlands, United Kingdom, and Belgium.

Phytosanitary Regulations

The international standard for phytosanitary measures was set up by the International Plant Protection Committee (IPPC) to protect against spreading of diseases or insects through the importation of certain agricultural goods. The EU has its own particular rules formalized under EC 2002/89, which attempts to prevent contact of EU of crops with harmful organisms from elsewhere in the world.

The crux of the directive is that it authorizes the Plant Protection Services to inspect large number of fruit products upon arrival in the EU This inspection consist of physical examination of a consignment deemed to have a level of phytosanitary risk, identification of any harmful organisms and certification of the validity of any phytosanitary certificate covering the consignment. If the consignment does not comply with the requirements, it may not enter the EU although certain organisms can be fumigated at the expense of the exporter.

There are other non-tariff barriers, including the phytosanitary and food health regulations laid down by the EU legislation, marketing standards and certificates of conformity, and the ever changing demand patterns of the EU consumers.

The USDA Food Safety Inspection Services (FSIS) regulates sanitary practices in the packing of food products, while the Food and Drug Administration (FDA), which is part of the US Department of Health, regulates packaging and labelling. The HACCP protocol is used extensively. The USDA quality standards for fruits and vegetables provide basis for domestic and international trade and promote efficiency in marketing and procurement.

Packaging Requirements

The business panel of any carton (including printed carton labels) should comply with the requirements as established by the EU or any other regulations that are specified by a target market. Producers are advised to present their designs to the Perishable Products Export Control Board (PPECB) before they can order any cartons from a manufacturer. The following is normally required:

- Class 1 or 2
- Fruit type
- Carton depth
- Country of Origin: "Produce of South Africa"
- Complete address of exporter or producer
- Variety Name
- Content of carton: Quantity per Carton
- PUC or PHC code: Registered producer – or Pack House Code with DAFF
- Date code
- Food safety accreditation number: Global Gap and Nature's Choice registration

8.1.1.10 Contribution to Food Security

The agriculture and food security programme has been the focus for the South African government, as it is envisaged as one of the initiatives that could promote rural economic growth through agriculture-led development.

The forefront of encouraging food security programme is often motivated by the government's drive to address poverty and income inequality, especially in the rural South African regions such as the iLembe DM. The intention is to generate employment and sustainable livelihoods while ensuring food security. In addressing food security issues, the iLembe Agri-Park can adopt the following food security interventions:

- Focus on initiatives that are geared at responding to a shortage of food in specific areas in the villages. This will require the identification of farm space in the targeted areas to support the development of communal farms.

- Farmer's smallholder support that will facilitate the transformation and build capacity to transform food into manufactured food.

8.1.1.11 Mango SWOT Analysis

The sub-sector Strengths, Weaknesses, Opportunities, Threat (SWOT) analyses concentrates on one of the main commodities namely field mangoes. The purpose of this sub-section is to indicate areas that the mango farming and processing stakeholders can take advantage of (strengths and opportunities) in becoming one of the major mango farming and processing district. The SWOT analysis also provides the perceived weaknesses and threats that may need formulation of mitigating factors that will ensure mango industry development in the region.

TABLE 17: STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS OF MANGOES

Strengths	Weakness
• The South African mango industry has a strong reputation in major international markets. • The climatic diversity of the country is suitable for the cultivation of a wide variety of fruits. • Off-season production suit the European market and ensures demand for South African fruit. • The industry's export operations and leading players are well established.	• Small-scale farmers lack access to advance farming technologies, thus reducing their global competitiveness. • Small-scale fruit farmers do not have sufficient access to credit, transport, and storage infrastructure and markets making it difficult to participate in commercial agriculture. • The sub-tropical fruit industry is cost-intensive and requires high levels of investment required during non-bearing seasons.
Opportunities	**Threats**
• Increasing demand from mango processing present a potential for growth. • There is a strong demand in the UK and the rest of Europe in their summer months.	• Shelf life discourages exportability • Competition from Spain, Israel, Kenya, Peru, and Mexico for the European market. • Rising input costs. • Sub-tropical fruit farmers are prone to pests and diseases.

8.1.2 Litchi Industry Overview

South Africa is a fairly young litchi producing country in comparison to China. Litchis spread from China where litchi records date back to more than 2100 years BC. From there litchi trees were distributed around the world in tropical and subtropical areas. In the Southern Hemisphere litchis landed up in Madagascar, Mauritius and the east coast of Central Africa.

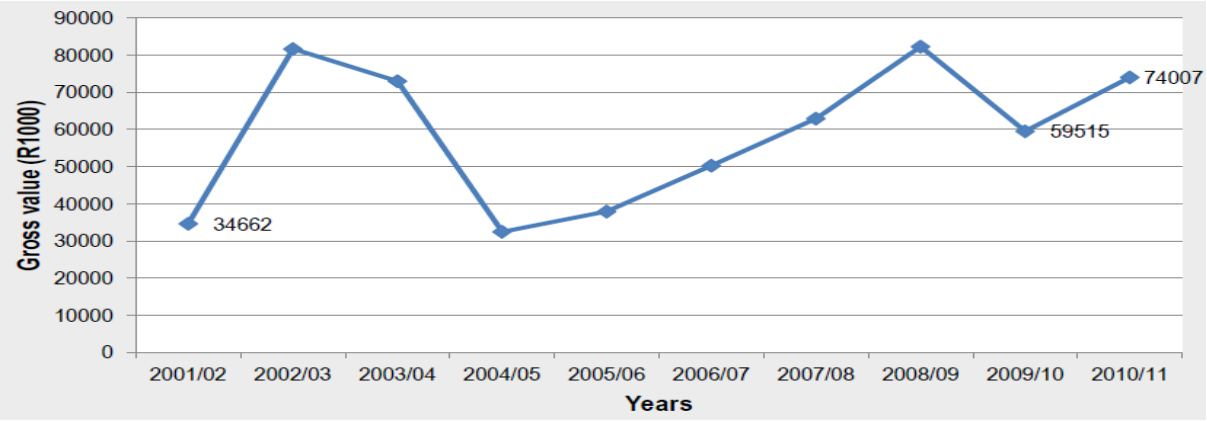
Litchis reached South Africa from Mauritius in 1875 and the first and oldest litchi tree in South Africa was planted that same year in Durban Botanical Gardens on the east coast of South Africa. Litchis spread from Durban, KwaZulu-Natal Province, to the Province of Mpumalanga as well as other suitable frost-free areas of the country. The plant reached Barberton near Nelspruit approximately 100 years ago. Today the main production regions are located in the frost-free areas of Mpumalanga and the Limpopo Province in the north of the country.

8.1.2.1 Market Assessment

The South African Litchi Growers' Association (SALGA) and the Research and Technical Committee were formed in 1987 to attend to the immediate problems of the litchi industry. The industry is subject to the same problems as the fresh fruit industry in general, namely marketing, logistics, market access and adverse weather conditions such as drought, frost and hail. During the 2010/11 production season the litchi industry contributed approximately 3% (R74 million) to total gross value of subtropical crops (R2.3 billion).

The gross value of production for litchis in South Africa for the period 2001/02 to 2010/11 is presented in the figure below.

FIGURE 28: GROSS VALUE OF PRODUCTION FOR MANGOES, 2003/04 - 2012/13



Source: DAFF, 2014

As can be seen in the figure above the gross value of litchis produced in South Africa fluctuated significantly during the past ten years. During the ten years under review the total value of production for litchis reached its highest in 2008/09 at R82.3 million and was at its lowest in 2004/05 at R32.5 million. Litchis with a total gross value of R74 million were produced in South Africa during the 2010/11 production season. The total gross value was 23% higher than that of the previous year (2009/10) and 11% higher than that of a decade ago (2001/02). The total gross value usually trails the total volume of production.

Production Areas

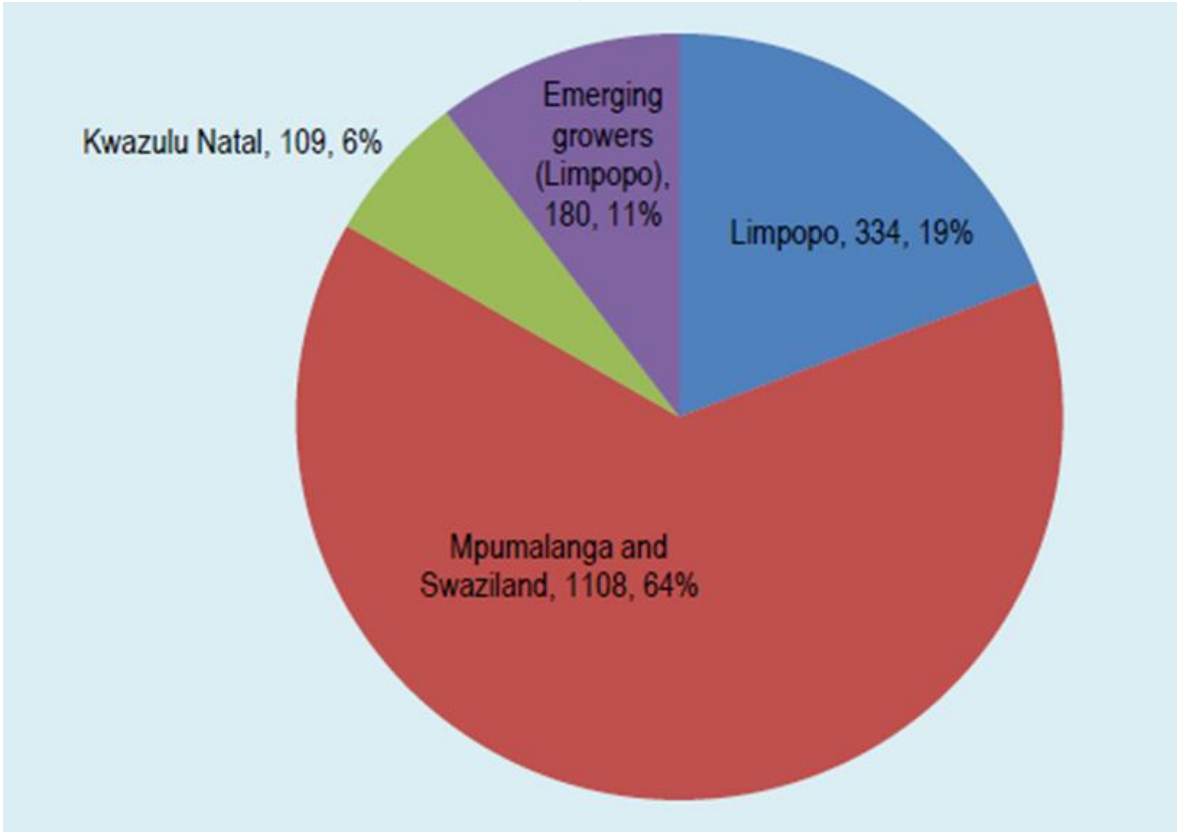
Areas under commercial production in South Africa totals 1,731 ha, with 514 ha in Limpopo Province, 1 108 ha in Mpumalanga (including Swaziland), 109 ha in KwaZulu-Natal. On a tree basis the number of trees in South Africa is estimated at 344 500 ha. The main production areas can be found near the towns of Nelspruit, Hazyview and Malelane in Mpumalanga where 70% of litchis are produced. This is followed by the Tzaneen area in the Limpopo Province with 25% of the production. The remaining 5% is produced in KwaZulu-Natal. In 1987 the South African Litchi Growers' Association (SALGA) was formed. SALGA represents the local litchi industry. In 1992 a breeding programme was initiated at the Agricultural Research Council's Institute for Tropical and Subtropical Crops in Nelspruit. In 2006 the litchi, avocado, mango and macadamia growers formed The Subtropical Growers' Association (Subtrop). Subtrop is a voluntary non-profit organization that coordinates research and extension services as well as market development, and acts as a mouth piece for the different growers' associations.[25]

Litchis grow well in especially sandy soils in the cooler subtropical areas. However, the trees also grow and produce well in clay soil in the warmer areas. The litchis require mean winter minimum temperatures below 15°C and mean winter maximum temperatures of 20°C or lower to flower well. Mean summer maximum temperatures should be between 27 and 33°C. There should be low rainfall during winter and high rainfall during summer. The relative humidity should be 50% and higher during the warm summer months.

Litchi production areas during the year 2011 are presented in the figure below. A total area of 1 731 ha was planted to litchis in South Africa in 2011. It is evident from the figure below that Mpumalanga province is the leader in terms of litchi production in South Africa. An area of 1 108 hectares (64%) out of a total of 1 731 hectares under litchi cultivation in South Africa in 2011 are found in Mpumalanga (including Swaziland). Regionally, the most important litchi producing region in Mpumalanga is the hot Lowveld, which produces nearly 60% of all South African litchis annually.

[25] ISHS Acta Horticulturae, 2015

FIGURE 29: LITCHI PRODUCTION AREAS DISTRIBUTION, 2011



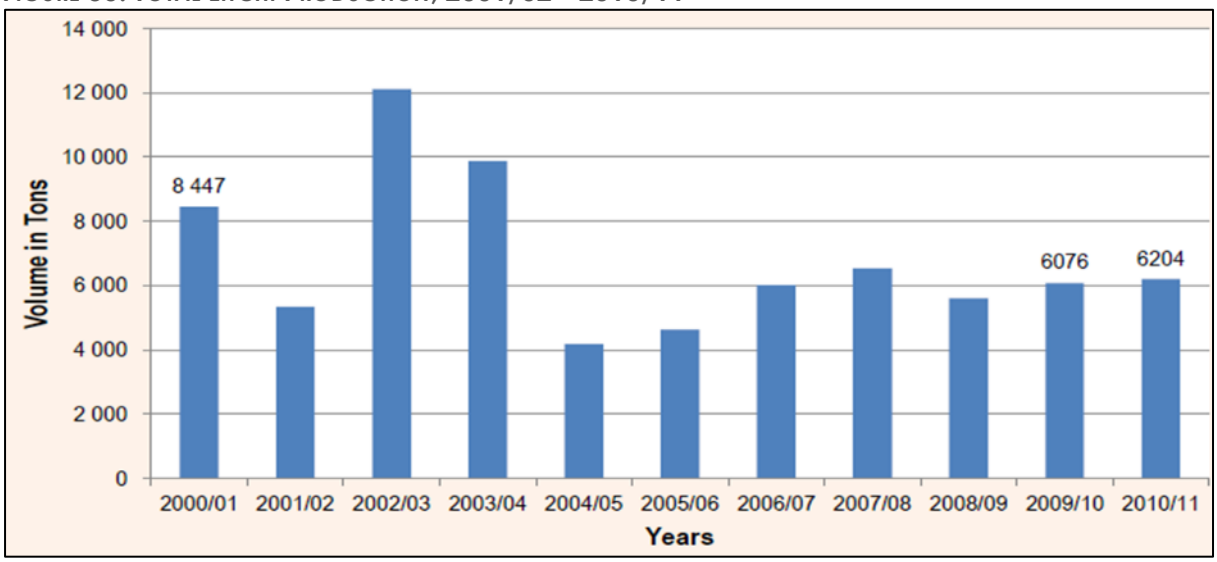
Source: DAFF, 2012

An area totalling 334 hectares are under litchi cultivation in Limpopo province, representing 19% of the total area under litchi cultivation in South Africa in 2011. The most important litchi producing areas in Limpopo include Trichardtsdal, Tzaneen, Makhado (Louis Trichardt), and Levubu. Annually, Tzaneen contributes an average of 20% to total Litchi production in South Africa and this includes areas farmed by emerging producers in the province. The north and south coasts of KwaZulu-Natal have 109 hectares (6%) under litchi cultivation while the emerging producers in Limpopo have 180 hectares (11%) under litchi cultivation.

Production

The litchi industry in South Africa is well-established and exhibits a slow trend in terms of new plantings and production. Growth in production volume has been relatively disappointing during the last decade. Total production of litchis for the period 2001/02 to 2010/11 is presented in the figure below.

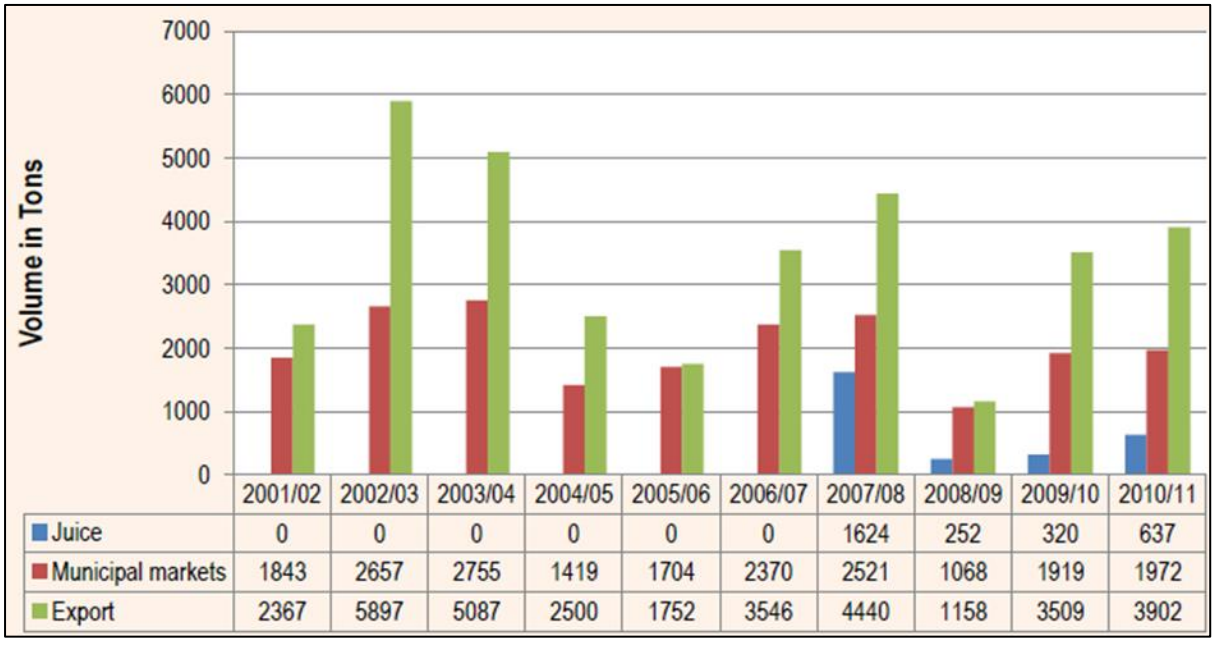
FIGURE 30: TOTAL LITCHI PRODUCTION, 2001/02 - 2010/11



Source: DAFF, 2014

As can be observed in the figure above, a total volume of 6 204 tons of litchis were produced in South Africa during the 2010/11 production season. The production volume increased by 2% between the 2009/10 and 2010/11 production seasons. The volume produced was however, 27% lower than the volume produced during the 2000/01 production season. During the ten years under consideration, production peaked in 2002/03 at 12 102 tons and was at its lowest in 2004/05 at 4 177 tons. Litchi has long been known to have a substantial water requirement and is best adapted to a subtropical climate with short, dry and cool but frost-free winters and long hot summers with high rainfall and humidity.

FIGURE 31: ANNUAL LITCHI CROP PRODUCTION, 2001/02-2010/11



	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Juice	0	0	0	0	0	0	1624	252	320	637
Municipal markets	1843	2657	2755	1419	1704	2370	2521	1068	1919	1972
Export	2367	5897	5087	2500	1752	3546	4440	1158	3509	3902

Source: DAFF, 2014

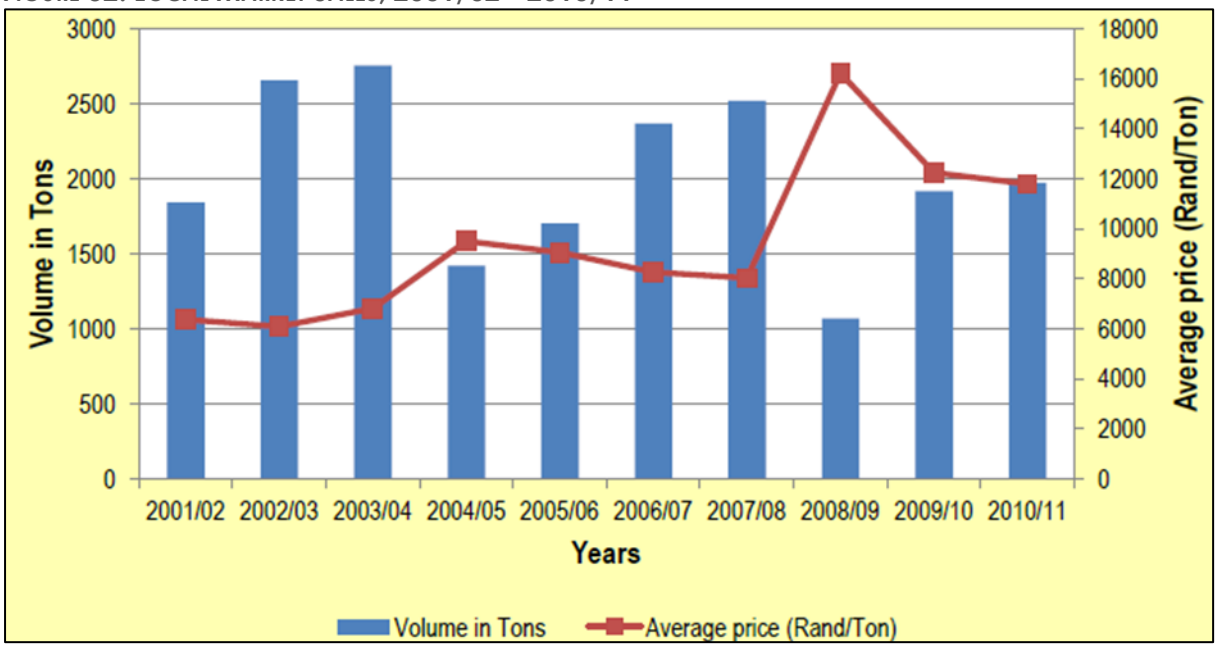
The distribution of the annual litchi crop over the past decade is presented in the figure above. The South African litchi industry is predominantly export oriented. During the 2010/11 production season 3 902 tons of litchis were exported and 1 972 tons were sold in the local markets. This means that out of a total production of 6 204 tons produced in 2010/11, 63% went to the export market while 32% was sold through the local markets. Approximately 5% (637 tons) was delivered for processing (juice making) during the same year. The volumes of litchis delivered to the export, processing and local markets increased between 2009/10 and 2010/11 seasons.

Litchi production is mostly hampered by inadequate yields due to alternate bearing and high fruit drop during fruit set and early fruit development. Fruit size is affected by insufficient irrigation and fertilisation during critical stages of fruit development. All these factors should be taken into account if farmers are to produce fruits of good quality and size for the market.

8.1.2.1.1 Local Marketing Channels

It is quite a challenging task to obtain a complete picture of the local market, as most of the fruit is sold informally to hawkers and informal traders. However, recorded quantities are sold through agents on the national fresh produce markets (NFPMs), as well as through retailers and processors for the manufacturing of mostly juice. Domestic sales and prices realised at the NFPMs for the period 2001/02 to 2010/11 are presented in the figure below.

FIGURE 32: LOCAL MARKET SALES, 2001/02 - 2010/11



Source: SubTrop, 2012

Between the 2001/02 and 2010/11 marketing seasons volumes of litchis sold on the NFPMs increased slightly from 1 843 tons to 1 881 tons, an increase of 2%. The volume of litchis sold through the markets has not grown significantly during the last decade. This trend is not only confined to litchis but to a whole other fruits and vegetables sold through NFPMs. This is a clear indication that NFPMs are losing their role as centres of price discovery and the principal marketing channel of fruits and vegetables. The result is direct sales from farms to pack houses and retailers.

At the same time, prices realised at the NFPMs have increased steadily, increasing from R6 370 per ton in 2001/02 to R11 803 per ton in 2010/11, an increase of 85% in ten years. The rise in prices has been mainly due to a decline in volumes delivered to the markets. The response of prices to volumes available for sale in the markets indicate a lag in terms of the responsiveness of prices to available stocks in the sense that, it takes approximately a year for prices to adjust to available stocks.

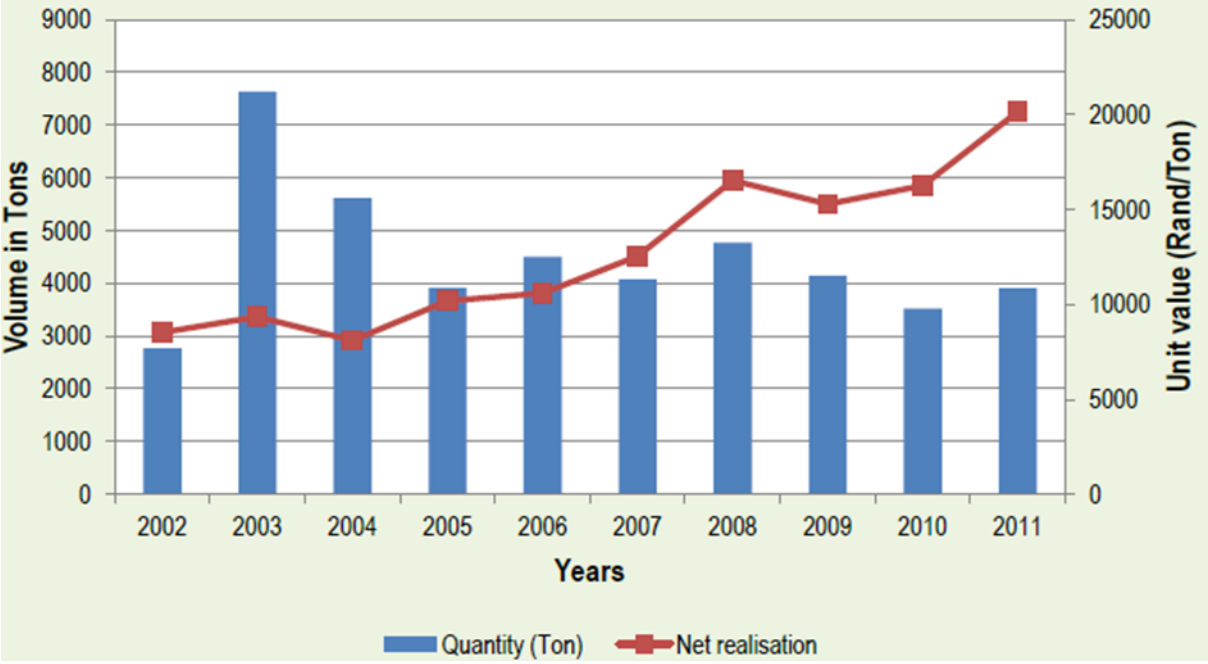
8.1.2.2 Litchis Global Market Analysis

The following sub-section will provide a trade analysis overview on the industry.

Exports

In 2011 the South African litchi industry accounted for 1.23% of the world's exports of litchis and approximately 63% (3 902 tons) of all litchis (6 204 tons) produced in South Africa during the 20010/11 marketing season were exported. Total volumes and net realisation for South African litchi exports from 2002 to 2011 are presented in the figure below.

FIGURE 33: SOUTH AFRICAN LITCHI EXPORTS



Source: Quantec, 2012

The volumes of litchis exported by South Africa have been relatively stable over the past ten years. The exceptions were in 2003 and 2004 when volumes exported were higher. There was a huge increase (176%) in exports between 2002 and 2003. This was mainly due to an increase in production experienced during the 2002/03 production season. A total volume of 3 902 tons of litchis was exported by South Africa in 2011. The export volumes have been declining during the past two marketing season before increasing again by 11% in 2011.

Prices realised in the export markets have been increasing during the last ten years. Prices increased from R8 519 per ton in 2002 to R20 149 per ton in 2011, an increase of 136%. Prices also increased by 24% between 2010 and 2011. It is interesting to note that prices of litchis respond to quantities supplied to the market. This was evidenced in 2004 with a 13% decline in prices following an increase in quantities supplied. It is also important to note that there exists a lag in terms of the responsiveness of prices to quantities available for sale. Exports of South African litchis to the various regions of the world over the past decade are presented in the figure below.

FIGURE 34: EXPORT REGIONS, 2002-2011

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
World	2769	7630	5617	3913	4504	4072	4767	4146	3520	3902
Africa	117	55	81	76	78	66	65	105	86	79
Americas	0	0	26	70	63	332	241	65	49	1
Asia	134	404	204	170	151	200	107	143	130	173
Europe	2518	7171	5306	3598	4212	3473	4353	3833	3255	3649

Source: Quantec, 2012

It is evident from the figure above that during the last decade, almost all of South Africa's exports of litchis were destined for the European market. Exports to Europe accounted for 94% (3 649 tons) of total South African litchi exports (3 902 tons) in 2011. Exports to Africa, the Americas and Asia have been relatively insignificant, collectively accounting for less than 10% throughout the last decade. Exports to Europe increased from 3 255 tons in 2010 to 3 649 tons in 2011, an increase of 12%. During the period under review, litchi exports to Europe peaked at 7 171 tons in 2003 and were at their lowest in 2002 at 2 518 tons.

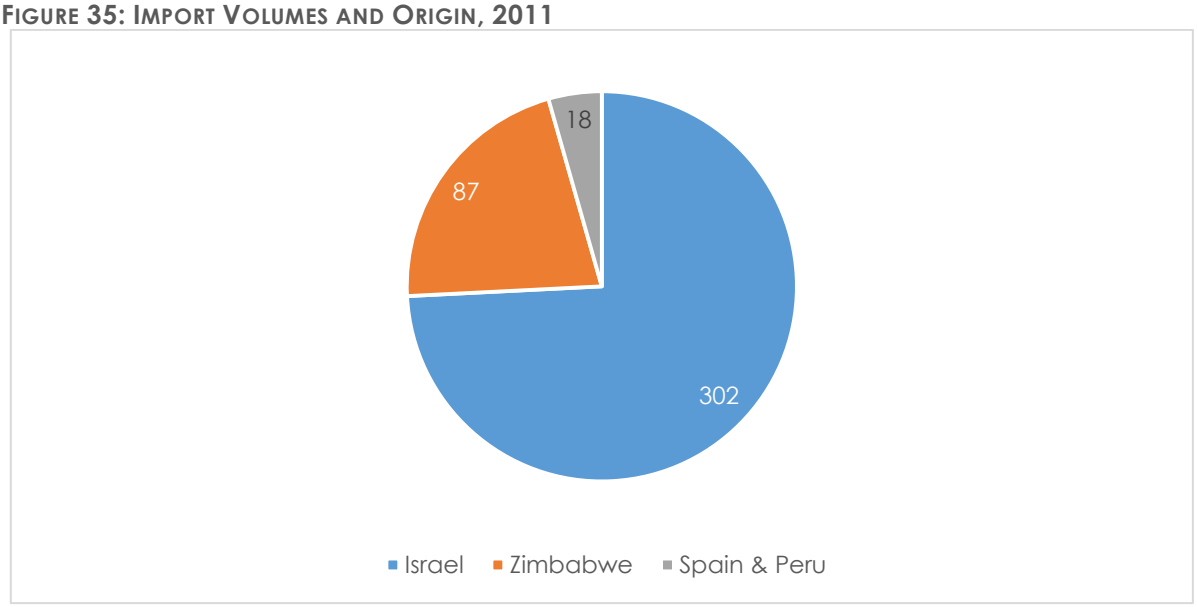
Within Europe, South African exports of litchis are mainly distributed between the European Union and Western Europe. The European Union consists of 25 member states while Western Europe comprises Switzerland, Liechtenstein and Monaco. Annually, over 90% of all South African litchi exports to Europe go to European Union member states while the remainder goes to Western Europe. Exports to Europe peaked at 7 171 tons in 2003. The European Union absorbed approximately 98% (3561 tons) of all South African litchi exports to Europe in 2011 and the remaining 2% (88 tons) was absorbed by Western Europe.

Imports

South Africa is not a major importer of litchis, indicating that the country is self-sufficient in terms of litchis. In 2011 South Africa imported a total of 407 tons of litchis worth $ 986 000. Approximately 74% (302 tons) of the total litchi imports came from Israel, 21% (87 tons) came from Zimbabwe, while the remaining 4% (18 tons) came from Spain and Peru. South Africa's imports represented 0.04% of world litchi imports in 2011 and its ranking in the world was number

72. Litchi imports rose from 322 tons in 2010 to 407 tons during 2011, an increase of 26%.

FIGURE 35: IMPORT VOLUMES AND ORIGIN, 2011



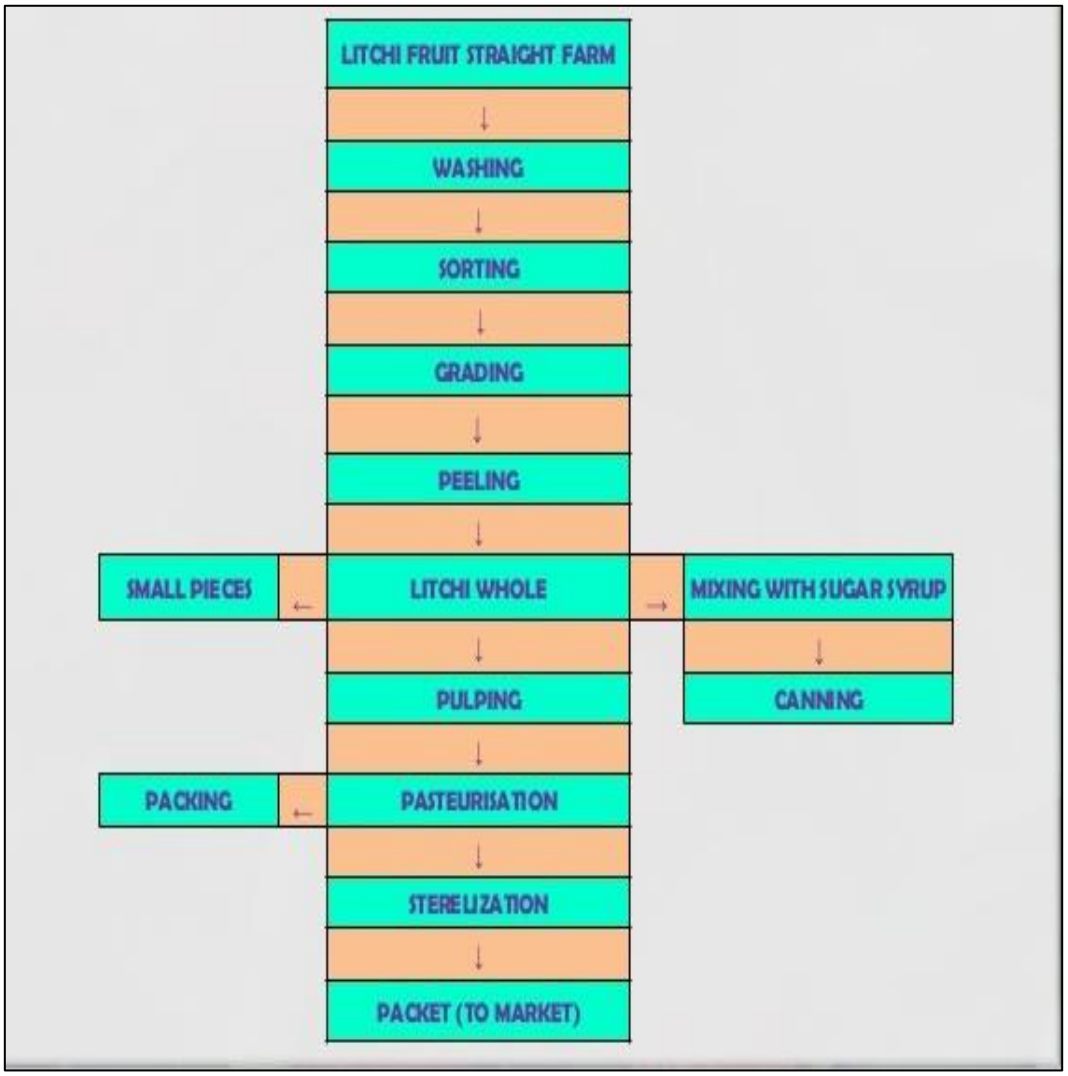
Source: Quantec, 2012

8.1.2.3 Value Chain Assessment

As pointed out in DAFF's commodity value chain profile, there are controls by different agents, carried out in different ways, at different points along the value chain in response to the requirements of private sector companies, coalitions of private-sector standards setters and public agencies. Standards in agribusiness value chains operate, by definition, at multiple points. They are created, adopted, applied and verified by different actors (enterprises and institutions) at different points in the value chain (DAFF, 2014).

The main actors in the litchi value chain, comprises of processors, National Fresh Produce Markets (NFPMs), exporters, retailers, hawkers, and wholesalers. In aligning to the objectives of the Agri-Park programme, traditionally litchis are sold to the market in their raw form. However, in order to introduce rural industrial activities, opportunities exist for processing companies to be created in order to retain the economic value of agricultural commodities.

FIGURE 36: LITCHI VALUE CHAIN



8.1.2.4 Litchi Agro-processing Opportunities

The following table discuss possible value adding opportunities for litchis that may be considered. The table below portrays the packaging and agro-processing opportunities that exist within the Litchi industry. The table also recommends opportunities that can be specifically used by the iLembe DM's smallholder farmers, packaging and agro-processors.

TABLE 18: POTENTIAL LITCHIS AGRO-PROCESSING OPPORTUNITIES

Processing method	Description	Advantages/opportunities	Disadvantages / Challenges	Priority & gaps/opportunities
Sorting	Litchis should be sorted/classified before being packed or processed.	Modern marketing channels require Litchis to be sorted and classified according to quality and other criteria.	N/A	Highly recommended.
Fresh packing and branding	Litchis that are packaged in their fresh condition should be packed in a type of bag or packaging that allows for air to move through. Special arrangements for non-damaging bulk packaging may also be needed. Branding involves attaching a name, words or a term, sign, symbol, design or any combination of these, that identifies a particular seller's product and conveys a message about how it differs from other competing products.	The type of packaging material required for litchi are usually of higher quality, smaller size and provide ample opportunity for branding.	Optimal packaging material for litchi may be expensive.	Highly recommended.
Litchi Sweets	Litchis can be pureed and even preserved (expensive process) into very high value sweets, liqueurs and other products.	Large demand and high export potential.	Expensive process to ensure preservation.	Moderate potential.
Litchi Juice	Litchis can be squeezed and juice made. 100% Litchi juice is of high cost due to its seasonal availability.	High export potential and high profit margins.	Small local market, therefore exportation is important.	Very high potential, especially for the export market.

8.1.2.5 Input Suppliers

The following sub-section will provide the identified input suppliers that are available within the litchi industry. The list will consist of input suppliers that are based in KwaZulu-Natal, nearby regions and in other provinces. In this sub-section, only necessary input suppliers have been identified. The final business plan will include a comprehensive list with contact numbers if available.

Litchi input suppliers:

- Tree Nurseries.
- Irrigation equipment suppliers.
- Fertiliser supplier.
- Post-harvest equipment.
- Grading and packing machinery.

8.1.2.6 Competitors

In this subsection, the identified litchi competitors will be listed. Included in the table is the name of the competitor and their location. More potential competitors will be profiled in the final business plan.

TABLE 19: LITCHI COMPETITOR PROFILING

Litchi Competitors	Location
Bronpro	Nelspruit
Cape Fruit Processors	Malelane
Onderberg Verwerkings	Malelane
Valley Farms	Levubu

8.1.2.7 Demand and Needs Analysis

in the earlier section of marketing channels that describes the importance of and opportunities posed by the specific marketing channels, the following market segments seem to be the most promising:

- The informal traders should be targeted; however, it is essential to establish a streamlined and low cost distribution system tailored to their needs.
- After production issues are resolved and participating farmers can produce Litchis in sufficient quantity and quality, the increasingly important channel of large retail chains should be targeted.

Regarding value adding, the most important opportunity is to brand the litchis in fresh or processed form properly. After fresh sales channels are sufficiently penetrated, specific processing opportunities can be considered.

8.1.2.8 Socio-economic Benefits

The economic and social importance of litchi lies in the benefit that its cultivation gives to producers, marketers, processors, and consumers. The primary plantations create jobs by demanding labour for farming operations, harvesting, packing house operations, transportation, and marketing channels.

Employment

The South African litchi industry plays an important role in terms of job creation for the majority of the people living in rural areas. It is estimated that the industry employs approximately 4 000 permanent farm workers and an additional two thousand casual labourers during peak periods. The contribution of the industry is further seen through the dependency of individual members of the households, which is estimated at 24 000 annually.

TABLE 20: EMPLOYMENT MULTIPLIER, 2015

Commodity	Direct Multiplier	Indirect Multiplier	Total
Litchi (Fruit)	1.40	0.92	2.32

The prescribed minimum wage is used as a baseline for determining basic wages in accordance with the legislation governing conditions of service. Minimum wages for farm workers for the period 1 March 2013 to 1 February 2016 are presented in the table below. The consumer price index (CPI) is used in the calculation of annual wage adjustments. The sectoral determination stipulates that the wage increase will be determined by utilizing the previous year's minimum wage plus CPI + 1.5%.

FIGURE 37: LITCHI INDUSTRY MINIMUM WAGE RATE

Minimum Wage Rate				Minimum Wage Rate			Minimum Wage Rate		
Mar 2013 – Feb 2014				Mar 2014 – Feb 2015			Mar 2015 – Feb 2016		
Monthly	Weekly	Daily	Hourly	Monthly	Weekly	Hourly	Monthly	Weekly	Hourly
R2273.52	R524.70	R105.00	R11.66	Previous year's minimum wage + CPI + 1.5%			Previous year's minimum wage + CPI + 1.5%		

Source: DAFF, 2012

8.1.2.9 Regulatory Requirements

Tariff regulations can be prohibitive and result in inferior market access, it is often the non-tariff barriers that restrict countries like South from successfully entering the

large developed markets. Many of these barriers revolve around different types of standards, including sanitary and phytosanitary standards (SPS), food health and safety issues, food labelling and packaging, organic produce certification, quality assurance and other standards and grades. Table 12 presents tariffs applied by the leading export markets to litchis originating from South Africa in 2011. Tariffs applied by European Union member states to litchis originating from South Africa are clustered into one category under European Union. During 2011 the EU member states appeared in the list of leading markets were the Netherlands, United Kingdom, France, Italy, Germany, Belgium, and Spain.

All PPECB and other inspection regulations, protocols or requirements must be met and adhered to. The Information and Communication Procedure (ICP) must therefore be seen in conjunction with the PPECB Act and its regulations, the APS Act, as well as those temperature and other specialized handling protocols and procedures as established by PPECB in conjunction with the industry. As more emphasis is placed on food safety and customers are demanding higher standards of quality, PPECB and other inspection bodies play an increasingly important role in the export of fresh produce from South Africa. PPECB may make the following information available to exporters and producers on request:

- Packed volumes
- Inspected and approved for export
- Inspected and rejected for export
- Product quality
- Reasons for rejection
- Shipped volumes
- This information is available on a product and destination region level
- Cold chain information
- Vessel carrying instructions (temperature letter, vessel temperature log, statements of facts, deviations, etc.

8.1.2.10 Contribution to Food Security

The agriculture and food security programme has been the focus for the South African government, as it is envisaged as one of the initiatives that could promote rural economic growth through agriculture-led development.

The forefront of encouraging food security programme is often motivated by the government's drive to address poverty and income inequality, especially in the rural South African regions such as the iLembe DM. The intention is to generate employment and sustainable livelihoods

while ensuring food security. In addressing food security issues, the iLembe Agri-Park can adopt the following food security interventions:

- Focus on initiatives that are geared at responding to a shortage of food in specific areas in the villages. This will require the identification of farm space in the targeted areas to support the development of communal farms.
- Farmer's smallholder support that will facilitate the transformation and build capacity to transform food into manufactured food.

8.1.2.11 Litchi SWOT Analysis

The sub-sector Strengths, Weaknesses, Opportunities, Threat (SWOT) analyses concentrates on one of the main commodities namely field litchis. The purpose of this sub-section is to indicate areas that the litchi farming and processing stakeholders can take advantage of (strengths and opportunities) in becoming one of the major litchi farming and processing district. The SWOT analysis also provides the perceived weaknesses and threats that may need formulation of mitigating factors that will ensure litchi industry development in the region.

TABLE 21: STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS OF LITCHIS

Strengths	Weakness
• The South African litchi industry has a strong reputation in major international markets. • The climatic diversity of the country is suitable for the cultivation of a wide variety of fruits. • Off-season production suit the European market and ensures demand for South African fruit. • The industry's export operations and leading players are well established.	• Small-scale farmers lack access to advance farming technologies, thus reducing their global competitiveness. • Small-scale fruit and vegetable farmers do not have sufficient access to credit, transport, and storage infrastructure and markets making it difficult to participate in commercial agriculture. • The sub-tropical fruit industry is cost-intensive and requires high levels of investment required during non-bearing seasons.
Opportunities	**Threats**
• Increasing demand from litchi processing (juice) present a potential for growth. • There is a strong demand in the UK and the rest of Europe in their summer months.	• Shelf life discourages exportability • Competition from Spain, Israel, Kenya, Peru, and Mexico for the European market. • Rising input costs. • Sub-tropical fruit farmers are prone to pests and diseases.

8.1.3 Avocado Industry Overview

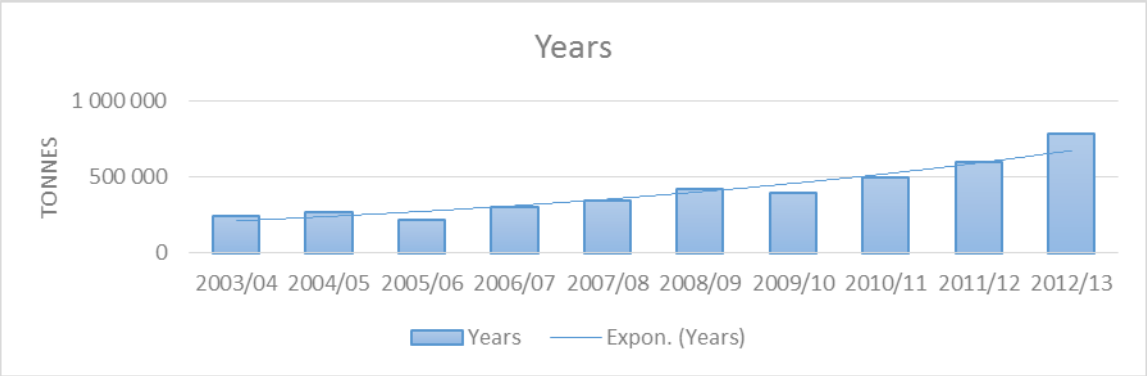
In South Africa, avocados are mainly produced in the warm subtropical areas of the Limpopo (49% from established growers plus 12 % from emerging growers) and Mpumalanga provinces (30%) and to a lesser extent in the KwaZulu-Natal province (Department of Agriculture, Forestry and Forestry, 2014). Approximately 8% of commercial avocado orchards are in KwaZulu-Natal province where the conditions are cooler. The different regions have the ability to produce avocados from the end of February to the beginning of November, with the bulk of the crop from the end of February until the beginning of September. This is due to climatic variability between the growing regions and climatic differences in major cultivars grown.

Generally, the avocado production has been fairly stable in the past decade, with significant declines only reported by the industry in 2003, 2004, and 2011. During the period 2014 the average producer price for avocados decreased by 0.2% annually, total production increased by 12.6% while sales recorded a 14.7% change compared to 2013. The total volume of avocado exports increased by 37.9% while import volumes of avocados increased by 0.5%.

8.1.3.1 Market Assessment

There has been a general increase on the gross value of production (GVP) for avocados from 2003/04 to 2012/13. The South African avocado industry is mostly export-oriented, and the gross value of production is heavily reliant on international avocado prices and fluctuations in the value of the South African currency relative to the currencies of South Africa's trading partners (mainly the European Union and the United States of America). The gross value of production increased by 33% between the 2011/12 and 2012/13 production seasons. The figure below illustrates avocadoes GVP at a national level.

FIGURE 38: GROSS VALUE OF PRODUCTION FOR AVOCADOS, 2003/04 - 2012/13



Source: DAFF, 2014

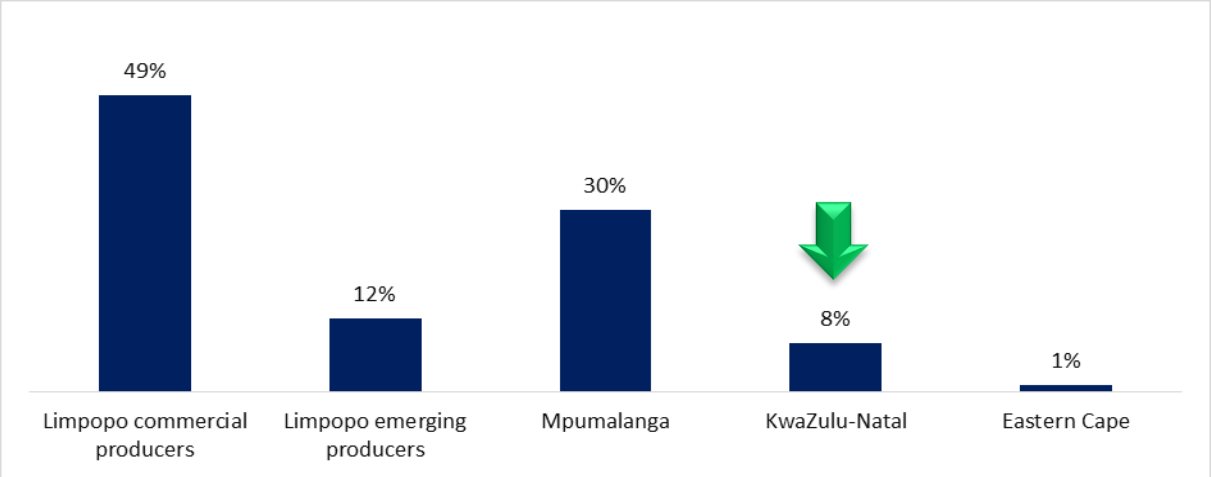
As depicted in the figure above, there has been a general increase on the gross value of production (GVP) for avocados from 2003/04 to 2012/13.

Production Areas

The avocado production areas are scattered mainly in the warm subtropical areas of the Mpumalanga and Limpopo provinces. The Limpopo Province is the leading province in terms of the annual volumes of avocadoes harvested and marketed to various market destinations. The figure below portrays the percentage distribution of avocado producing provinces across South Africa.

As can be noted below, the Limpopo province is the leading avocado producer and includes both the crops of commercial farmers and emerging farmers. Approximately 49% of the country's avocado produce is cultivated by the Limpopo commercial orchards, while 12% of the produce is cultivated by small scale farmers.

FIGURE 39: SOUTH AFRICA'S AVOCADO PRODUCING PROVINCES

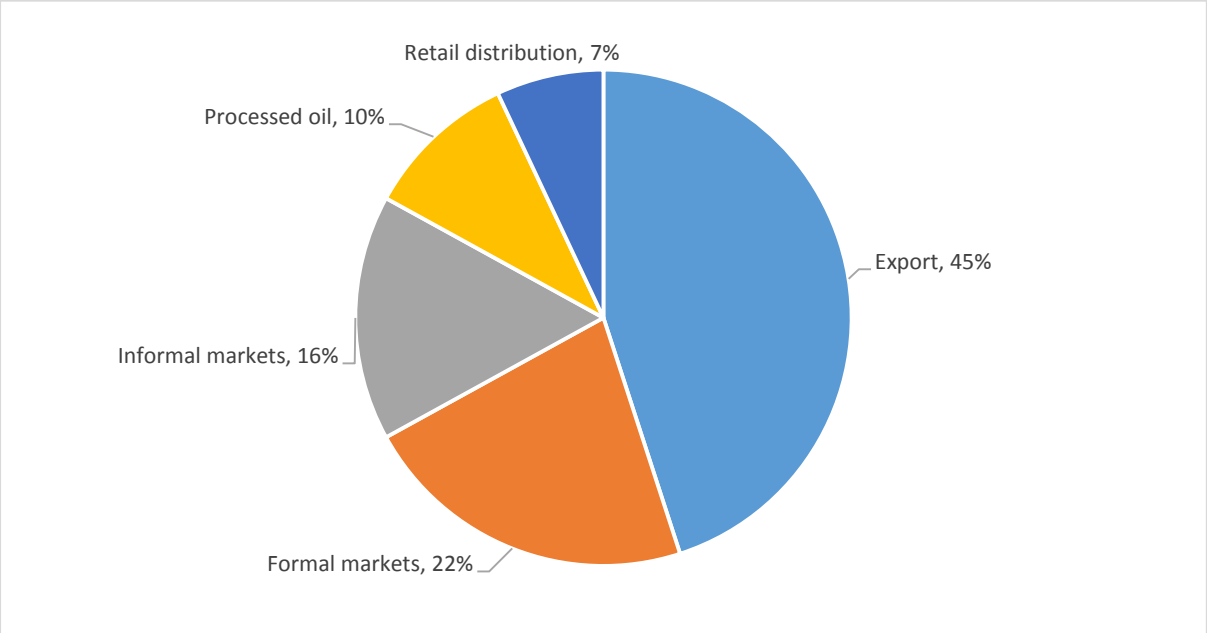


Source: DAFF, 2012

The Mpumalanga and KwaZulu-Natal provinces are the second and third biggest producers of avocados with over 30% of the national avocado production.

According to the South African Avocado Growers Association (SAAGA) and DAFF, the distribution of the 2013 total avocado crop reflects the following: 45% were exported, 22% sold via the formal markets, 16% sold to the informal markets, 10% was processed, while the remaining 7% was delivered directly to retailers. The figure below illustrates the distribution of avocadoes.

FIGURE 40: SOUTH AFRICA'S AVOCADO DISTRIBUTION



Source: South African Avocado Growers Association, 2015

As depicted in the figure above in South Africa avocadoes are sold through different market channels such as the National Fresh Produce Markets (NFPMs) and the informal trade market (mainly street hawkers). That lack of growth in the local markets may be partly due to increased direct sales from the pack houses to the informal sector and retailers. Local avocado prices have however, increased steadily from 2004 to 2013 due to stable volumes sold at the NFPMs during the same period.

The Johannesburg fresh produce has the biggest market with an approximate 41% market share, followed by Cape Town with 22%, Tshwane with 21%, and Springs with 3% market share. Given the dominance of the NFPMs in distributing avocadoes within the local market, the table below outlines the volumes traded and the value of such trades for each NFPM.

TABLE 22: NATIONAL AVOCADO TRADE FLOWS

Avocado	Tonnage			Rand per Ton		
	2013	2014	Growth (%)	2013	2014	Growth (%)
Johannesburg	10757.13	11898.00	10.61	7430.98	7541.31	1.48
Tshwane	5044.01	6197.62	22.87	6188.44	6068.19	-1.94
Cape town	6440.50	6358.25	-1.28	7315.82	9400.34	28.49
Durban	321.80	387.91	20.54	6029.72	5698.84	-5.49
Port Elizabeth	261.38	343.07	31.26	6891.66	7209.73	4.62
East London	159.44	142.24	-10.79	6772.55	9223.27	36.19
Pietermaritzburg	205.72	172.52	-16.14	3746.42	4801.57	28.16
Springs	549.97	956.93	74.00	5161.59	4439.30	-13.99
Klerksdorp	569.45	731.77	28.50	7015.95	5939.00	-15.35
Bloemfontein	508.82	529.16	4.00	6937.70	8209.43	18.33
Welkom	176.03	319.07	81.26	5788.26	5065.55	-12.49
Witbank	115.35	136.88	18.67	4094.48	4007.28	-2.13
Vereeniging	260.00	384.44	47.86	4071.69	4208.35	3.36
Uitenhage	4.41	3.03	-31.33	4134.53	2773.04	-32.93
Nelspruit	0.00	0.00	0.00	0.00	0.00	0.00
Mpumalanga	0.00	0.27	0.00	0.00	6502.73	0.00
George	5.44	1.93	-64.60	4826.65	10230.01	111.95
Kimberley	63.06	121.13	92.08	6163.25	5879.77	-4.60
Total	**25442.50**	**28684.21**	**12.74**	**86406.43**	**101317.94**	**17.26**
Average	**2544.25**	**1509.70**		**4800.36**	**5641.98**	

Source: DAFF, 2014

As earlier indicated avocado prices in the NFPMs are primarily determined by market forces of supply and demand. Product grading is a critical component of price determination in the market, and as a result avocadoes are still officially graded at the NFPMs. Table 7.3 depicts local avocado distribution across the country.

In 2013 the informal market made up the third largest distribution channel, with 16 % of the total crop sold via this channel. The informal market has been ignored by some large producers for a long time due to its unpredictability. The proportion of avocados that are sold directly to retailers has been increasing significantly over the last decade, moving from 2 800 tons in 2004 to 7 721 tons in 2013. The remainder of the crop was used for the processing (10% of the total crop) of guacamole and oil, and for export (45% of the crop) (DAFF, 2014).

8.1.3.1.1 Local Marketing Channels

The following table describes specific marketing channels where or to whom farmers can sell avocados.

TABLE 23: AVOCADO MARKETING CHANNELS

Channel	Description	Advantages	Challenges	Priority, Gaps & Opportunities
Direct sales (farmer-to-consumer) – 1%	Sell directly to consumers through personal contact, at the farm gate or stall, or at farmers' markets.	Simple, easy and require little marketing or business skills or capital.	Small volumes sold per transaction, low profit and little growth prospects.	Very low relevance to the Agri-Park scheme because direct sales (although valuable for individual small farmers) will not provide the desired scale for efficient marketing, distribution and income generation.
Street hawkers, visiting hawkers (informal traders), and free markets – 15%	The farmer sells to informal street traders or hawkers who in turn sell the avocados to members of the public from their stalls on the street or isolated patches (as opposed to large market areas), usually in areas where low income people reside, work or transit through. Most hawkers in the iLembe area buy directly from farmers, while some hawkers even grow their own avocados. The street traders may arrange to pick up the avocados at the farm or from the farmer, or an agent may distribute it to them.	Profitable for small-scale farmers' that market their avocados independently. Very good prices can be attained by sales negotiations. Ideal when the farmer is situated near towns and city centres. Transport not always essential. Suitable for fairly low quality avocados, since hawkers don't have stringent quality requirements.	Risk in dealing with hawkers. Transport may be required upon request. Variety of produce is demanded (more than just avocados). Market Proximity and Transport Costs. Very low prices attained during harvest season.	Low priority because farmers organised in the Agri-Parks scheme should rather aim for much more profitable channels. This will have an important social impact by not crowding out the very small-scale avocado producers who are in a better position to serve the local hawkers and the free market marketing channel.
Small local independent shops or supermarkets – 3%	Sell to small, independent retailers, i.e. shops that do not belong to or are franchises of large national or global groups. This channel includes general dealers, spaza shops, independent fruit and vegetable shops etc.	Very good prices can be attained and potentially a very profitable channel for small-scale farmers. Ideal for growers situated near Stanger and the farmer has the energy to be closely involved in selling and distributing to them.	Although this can be a very lucrative market for small farmers, larger farmers generally do not bother with this management-intensive channel.	Very low priority because of logistical difficulties and the fact that farmers organised into the Agri-Parks network will have sufficient bargaining power to access other more profitable marketing channels.
Large retail chains – 4%	A farmer may supply directly to large national or global retail groups, usually by contract. Although most large retailer groups buy centrally, they are more open to farmers that are organised into groups	Large and stable demand. Very attractive for larger, well established farmers. Some retail chains do have special	Profit per unit is low. Strict quality, quantity and administrative requirements, and are increasingly	Very high priority - main marketing channel for fresh produce, and farmers. Collective access to this market through the Agri-Parks scheme. The Agri-Park

Channel	Description	Advantages	Challenges	Priority, Gaps & Opportunities
	that sell high value, high demand fruits of relative low perishability such as avocados.	programs to buy from smaller farmers.	demanding traceability to a specific producer, which is difficult.	system is in a good position to develop a system that enables traceability. Highly recommended channel for avocados.
National Fresh Produce Markets – 22%	Larger municipalities and some private companies operate market places where farmers deliver vegetables to sales agents who will sell the produce on the farmer's behalf to various buyers, including wholesalers, retailers, hawkers, "Asian market" agents who supply hawkers, processors, exporters, restaurants, institutional buyers etc.	It is a well-established marketing system where large quantities of a wide variety of fruit and vegetables (including avocados) are sold daily. Requires little involvement from farmers because the agents handle the sales and administrative tasks.	Reliability between the farmer and the agent to sell the produce at the highest possible price. Unsold produce will be counted as losses. Stringent quality measures.	Moderate priority during the initial phase simply because it is the easiest marketing channel for avocados to start with. Priority should soon decrease as contracts via more profitable marketing channels are secured, especially large national retail and export markets.
Pack houses, avocado packers, wholesalers and exporters -45%	Packers buy from farmers (often by contract) then sell to large retailers, other wholesalers, exporters, national fresh produce markets, etc. They tend to be situated in large production areas for the particular group of fruits and vegetables they specialise in.	Usually perform valuable services, e.g. grading, sorting, packaging and marketing on behalf of the farmer. Stable market with strong demand. This is the main exporting channel for avocado farmers to access foreign markets.	Prefer to buy only or mainly from large farmers. Farmers usually have to arrange for transport to the packer.	High priority in areas where pack houses that handle avocados are situated, and low or no priority in areas where such pack houses are absent. The Agri-Park system should develop a system to enable traceability when targeting this channel.
Processors	Process avocados into puree, oil, and related products. See section 8.c. for a discussion on processing.	Well-linked to export markets, fairly secure demand and favourable prices could sometimes (but certainly not always) be negotiated.	Prices tend to be low. Processors prefer not to buy from small-scale farmers. Not suitable for inconsistent or very small-scale farmers.	High priority because financial and non-financial support provision can be negotiated, and this is becoming a very important channel for avocados (linked to the large retailer and export channels).

**Volume of total crop sold directly by farmers through the particular marketing channel, estimated by Manstrat*

8.1.3.2 Avocado Global Market Analysis

The following sub-section will provide a trade analysis overview on the avocado industry.

Exports

In 2013, South Africa exported 50 126 tons of avocados with a total value of R738 million. The quantity exported during 2013 was 7.8% lower than the quantity exported in 2012 (54 406 tons). In 2013, South Africa's avocado exports represented 3.2% of world exports and its ranking in world exports was in the top ten. During the past decade, almost all of South Africa's exports of avocados were destined for the European market.

In 2013 exports to Europe accounted for 98% (49 122 tons) of total South African avocado exports (50 126 tons). Limpopo Province is the leader in exports of avocados in South Africa. The Province contributed 75% to total South African avocado exports in 2013. This is however, not surprising since most of South Africa's avocados are produced in Limpopo. Second in 2013 was the Mpumalanga Province at 14%. Gauteng, ***KwaZulu-Natal*** and Western Cape followed at 11%, 0.29% and 0.3%, respectively. The value of avocado exports by South Africa as a whole declined by 47% between 2012 and 2013, with the greatest individual decline coming from the KwaZulu-Natal province.[26]

The Limpopo, Mpumalanga and Gauteng provinces have commanded the greatest share of avocado exports for the past ten years. The above scenario raises concern about the availability of marketing infrastructure and agro logistics in the other major avocado producing provinces of South Africa like Kwazulu-Natal, because Gauteng is not an avocado producing region and yet a sizeable share of South African avocado exports are exported through this province. The three leading provinces cumulatively accounted for 99.4% of total value of South African exports of avocados in 2013.

[26] All figures supplied in this section were obtained from DAFF Profiling of Avocado Industry, 2014

Imports

In 2013, South Africa's imports of avocados represented 0.2% of world imports of avocados and its ranking in the world was number 33. The main source of South Africa's avocado imports is Europe, accounting for 57% (1 178 tons) of the total South African avocado imports (849 tons) in 2013. South Africa's imports of avocados grew steadily during the past decade, moving from 1 105 tons in 2004 to 2 073 tons in 2013, an increase of 87%. Within Europe, the major source of South Africa's avocado imports during 2013 was Spain, from which South Africa imported 1 238 tons of avocados. The other significant avocado importer in terms of South African avocado imports during 2013 was Asia and all imports (849 tons) from Asia during the same year were from Israel[27].

8.1.3.3 Value Chain Assessment

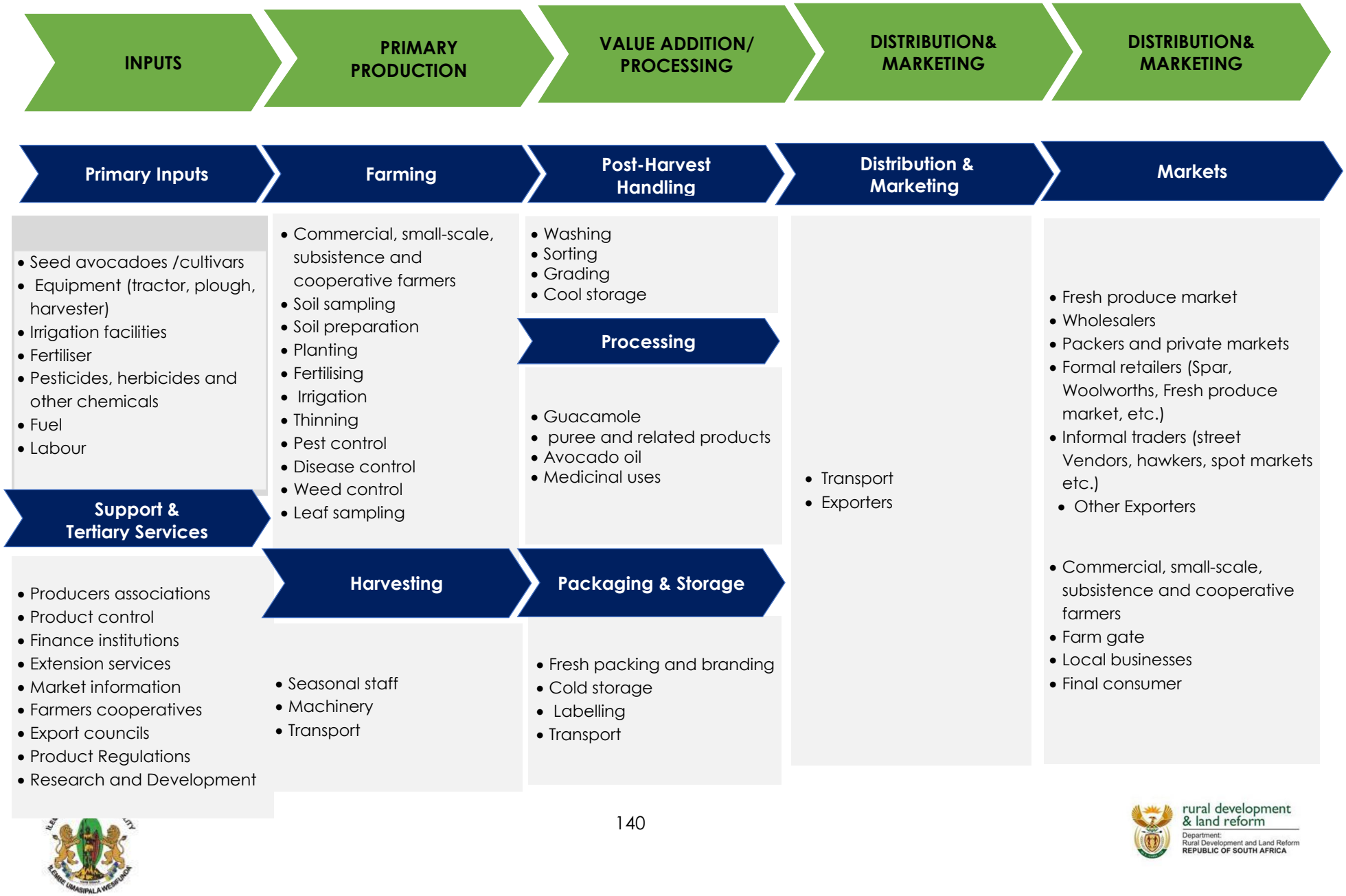
As pointed out in DAFF's commodity value chain profile, there are controls by different agents, carried out in different ways, at different points along the value chain in response to the requirements of private sector companies, coalitions of private-sector standards setters and public agencies. Standards in agribusiness value chains operate, by definition, at multiple points. They are created, adopted, applied and verified by different actors (enterprises and institutions) at different points in the value chain (DAFF, 2014).

The main actors in the avocado value chain, comprises of processors, National Fresh Produce Markets (NFPMs), exporters, retailers, hawkers, and wholesalers. In aligning to the objectives of the Agri-Park programme, traditionally avocadoes are sold to the market in their raw form. However, in order to introduce rural industrial activities, opportunities exist for processing companies to be created in order to retain the economic value of agricultural commodities.

The next sub-sections provide value chain indicating both the backward and forward linkages for avocadoes industry.

[27] Source: Bureau for Food and Agricultural Policy *Baseline Agricultural Outlook, 2015.*

FIGURE 41: AVOCADO VALUE CHAIN



8.1.3.4 Avocado Agro-processing Opportunities

The following table discuss possible value adding opportunities for avocados that may be considered. The table below portrays the packaging and agro-processing opportunities that exist within the avocado industry. The table also recommends opportunities that can be specifically used by the iLembe DM's smallholder farmers, packaging and agro-processors.

TABLE 24: POTENTIAL AVOCADOES AGRO-PROCESSING OPPORTUNITIES

Processing method	Description	Advantages/opportunities	Disadvantages/challenges	Priority & gaps/opportunities
Sorting	Avocados should be sorted/classified before being packed or processed.	Modern marketing channels require avocados to be sorted and classified according to quality and other criteria.	N/A	Highly recommended.
Fresh packing and branding	Avocados that are packaged in their fresh condition should be packed in a type of bag or packaging that allows for air to move through. Special arrangements for non-damaging bulk packaging may also be needed. Branding involves attaching a name, words or a term, sign, symbol, design or any combination of these, that identifies a particular seller's product and conveys a message about how it differs from other competing products (Kotler & Keller, 2012: 144).	The type of packaging material required for avocado are usually of higher quality, smaller size and provide ample opportunity for branding.	Optimal packaging material for avocado may be expensive.	Highly recommended.
Guacamole, puree and related products	Avocado flesh can be pureed and even preserved (expensive process) into very high value dips and other products.	Large demand and high export potential.	Expensive process to ensure preservation.	Moderate potential.
Avocado oil	Avocado contains very valuable oil which can be used in various industries, including the food, pharmaceutical and cosmetic industries.	High export potential and high profit margins.	Small local market, therefore exportation is important.	Very high potential, especially for the export market.

8.1.3.5 Input Suppliers

The following sub-section will provide the identified input suppliers that are available within the avocado industry. The list will consist of input suppliers that are based in Limpopo, nearby regions and in other provinces. In this sub-section, only necessary input suppliers have been identified. The final business plan will include a comprehensive list with contact numbers if available.

Avocado input suppliers:

- Tree Nurseries.
- Irrigation equipment suppliers.
- Fertiliser supplier.
- Post-harvest equipment.
- Grading and packing machinery.

8.1.3.6 Competitors

In this subsection, the identified avocado competitors will be listed. Included in the table is the name of the competitor, the location, product offering, etc. More potential competitors will be profiled in the final business plan.

TABLE 25: AVOCADO COMPETITOR PROFILING

Avocado Competitors	Products	Location
ZZ2	• Maluma Hass. • Fuerte. • Pinkerton. • Ryan. • Edranol. • Lamb Hass. • Reed.	Mooketsi valley Politsi Houtbosdorp.
Levubu cultivators	• Fuerte. • Pinkerton. • Ryan. • Hass.	Levubu

8.1.3.7 Demand and Needs Analysis

In the earlier section of marketing channels that describes the importance of and opportunities posed by the specific marketing channels, the following market segments seem to be the most promising:

- The informal traders should be targeted; however, it is essential to establish a streamlined and low cost distribution system tailored to their needs.

- After production issues are resolved and participating farmers can produce avocados in sufficient quantity and quality, the increasingly important channel of large retail chains should be targeted.

Regarding value adding, the most important opportunity is to brand the avocados in fresh or processed form properly. After fresh sales channels are sufficiently penetrated, specific processing opportunities can be considered.

8.1.3.8 Socio-economic Benefits

The economic and social importance of avocado lies in the benefit that its cultivation gives to producers, marketers, processors, and consumers. The primary plantations create jobs by demanding labour for farming operations, harvesting, packing house operations, transportation, and marketing channels.

Employment

The avocado production falls within the sub-tropical fruit industry and is a labour multiplier industry where two workers per hectare, can create a significant number of jobs if the necessary technical and financial support is injected into just one third of the underused area. Additional opportunities in the downstream and upstream linkages of about 1.3 jobs per hectare exist, and have the potential to meet the NDP and APAP's target of creating decent jobs for the rural communities.[28]

TABLE 26: EMPLOYMENT MULTIPLIER, 2015

Commodity	Direct Multiplier	Indirect Multiplier	Total
Avocado (Fruit)	2.00	1.32	3.32

8.1.3.9 Contribution to Food Security

The agriculture and food security programme has been the focus for the South African government, as it is envisaged as one of the initiatives that could promote rural economic growth through agriculture-led development.

The forefront of encouraging food security programme is often motivated by the government's drive to address poverty and income inequality, especially in the rural South African regions such as the iLembe DM. The intention is to generate employment and sustainable livelihoods

[28] APAP, 2015

while ensuring food security. In addressing food security issues, the iLembe Agri-Park can adopt the following food security interventions:

- Focus on initiatives that are geared at responding to a shortage of food in specific areas in the villages. This will require the identification of farm space in the targeted areas to support the development of communal farms.
- Farmer's smallholder support that will facilitate the transformation and build capacity to transform food into manufactured food.

8.1.3.10 Avocado SWOT Analysis

The sub-sector Strengths, Weaknesses, Opportunities, Threat (SWOT) analyses concentrates on one of the main commodities namely field avocados. The purpose of this sub-section is to indicate areas that the avocado farming and processing stakeholders can take advantage of (strengths and opportunities) in becoming one of the major avocado farming and processing district. The SWOT analysis also provides the perceived weaknesses and threats that may need formulation of mitigating factors that will ensure avocado industry development in the region.

TABLE 27: STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS OF AVOCADOES

Strengths	Weakness
• The South African avocado industry has a strong reputation in major international markets. • The climatic diversity of the country is suitable for the cultivation of a wide variety of fruits. • Off-season production suit the European market and ensures demand for South African fruit. • The industry's export operations and leading players are well established.	• Small-scale farmers lack access to advance farming technologies, thus reducing their global competitiveness. • Small-scale fruit and vegetable farmers do not have sufficient access to credit, transport, and storage infrastructure and markets making it difficult to participate in commercial agriculture. • The sub-tropical fruit industry is cost-intensive and requires high levels of investment required during non-bearing seasons.
Opportunities	**Threats**
• Increasing demand from avocado processing (oil and guacamole) present a potential for growth. • There is a strong demand in the UK and the rest of Europe in their summer months.	• Shelf life discourages exportability • Competition from Spain, Israel, Kenya, Peru, and Mexico for the European market. • Rising input costs. • Sub-tropical fruit farmers are prone to pests and diseases.

8.2 Vegetables

Vegetables are produced in most parts of the country. However, in certain areas farmers tend to concentrate on specific crops; for example, green beans are grown mainly in Kaapmuiden,

Marble Hall and Tzaneen, green peas mainly in George and Vaalharts, onions mainly in Caledon, Pretoria and Brits, and asparagus mainly in Krugersdorp and Ficksburg regions.

8.2.1 Market Assessment

The production of vegetables in South Africa for the period 2009/10 to 2013/14 is summarised in the Table below.

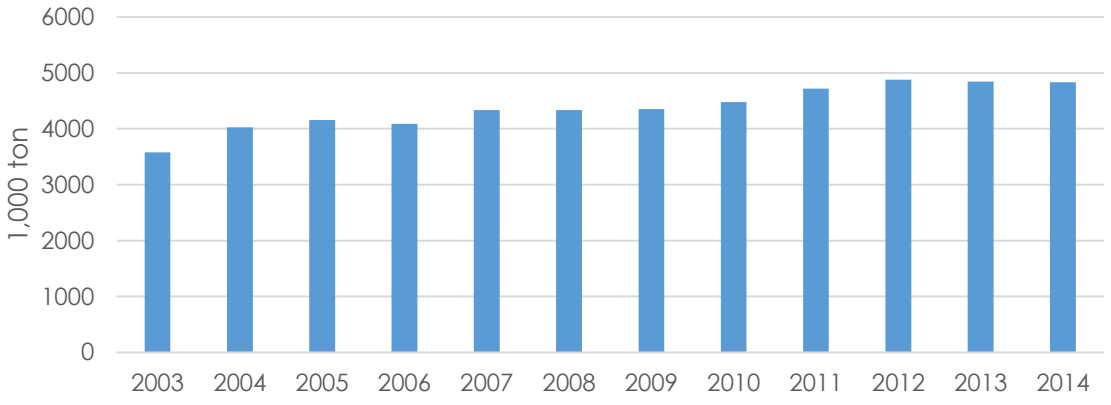
TABLE 28: PRODUCTION VOLUMES OF VEGETABLE TYPES

Year	2009/10	2010/11	2011/12	2012/13 '000 tons	2013/14	Average % increase
Potatoes	1 955	2 165	2 205	2 202	2 193	3%
Tomatoes	575	523	545	527	525	-2%
Pumpkins	234	237	244	247	245	1%
Green mealies	339	340	347	361	362	2%
Onions	489	563	625	596	592	5%
Sweet potatoes	60	63	55	57	69	4%
Green peas	17	12	8	11	12	-8%
Beetroot	67	62	66	68	61	-2%
Cauliflower	25	16	16	14	12	-17%
Cabbage	141	153	141	136	145	1%
Carrots	151	152	178	183	184	5%
Green beans	23	25	25	24	19	-5%
Other	400	406	421	420	416	1%
Total	**4 476**	**4 717**	**4 876**	**4 846**	**4 835**	**2%**

Source: Abstract of Agricultural Statistics, 2015

Since 2003 there has been a general increase in vegetable production in South Africa. Although, since 2012, production has started to decrease. Concerning the major vegetable types in terms of volumes produced, the production of green mealies rose slightly from approximately 361 000 tons to 362 000 tons and sweet potatoes increased by approximately 12 000 tons or 21.2%. Most of the vegetable crops, however, decreased over the period. These trends are illustrated in the table below.

TABLE 29: TOTAL VEGETABLE PRODUCTION



Source: DAFF, 2015

From 2012/13 to 2012/13 (July–June), the total production of vegetables decreased by 0.22%, from approximately 4 846 000 tons to 4 835 000 tons. Concerning the major vegetable types in terms of volumes produced, the production of green mealies rose slightly from approximately 361 000 tons to 362 000 tons and sweet potato's increased by approximately 12 000 tons or 21.2%. Most of the vegetable crops, however, decreased over the period.

According to the agricultural census survey conducted in 2011, a total of 1 123 520 households are involved on the production of vegetables. The summary of findings are summarised in the table below.

TABLE 30: NUMBER OF AGRICULTURAL HOUSEHOLDS IN A SPECIFIC ACTIVITY BY PROVINCE

Province	Livestock Production	Poultry Production	Vegetable Production	Production of other crops	Fodder / grazing production	Other
Western Cape	28 334	29 176	39 337	22 725	16 516	23 804
Eastern Cape	330 354	334 665	246 412	99 052	24 335	33 493
Northern Cape	28 040	25 853	9 334	11 324	4 518	5 415
Free State	45 207	51 414	106 809	63 193	11 106	13 811
KwaZulu-Natal	268 656	356 881	340 743	109 580	27 393	45 715
North West	88 633	117 453	36 620	42 923	16 013	25 301
Gauteng	62 047	82 403	147 870	89 167	50 650	78 847
Mpumalanga	72 896	127 759	91 214	59 885	11 439	20 595
Limpopo	172 683	173 681	105 181	161 888	13 995	31 067
South Africa	1 096 850	1 299 285	1 123 520	659 737	175 965	278 048

Source: Abstract of Agricultural Statistics, 2015

The table above suggests that KwaZulu-Natal has the largest number (30%) of households involved in vegetable production, followed by Eastern Cape (22%) and Gauteng (13%). Gauteng has approximately 147 870 households that are involved in vegetable production. The table below summarises gender of household heads of the vegetable producers.

TABLE 31: NUMBER OF AGRICULTURAL HOUSEHOLDS IN VEGETABLE PRODUCTION BY GENDER AND PROVINCE

Province	Male	Female	Total
Western Cape	11 618	27 719	39 337
Eastern Cape	132 952	113 460	246 412
Northern Cape	3 370	5 963	9 333
Free State	50 914	55 895	106 809
KwaZulu-Natal	184 361	156 381	340 742
North West	12 869	23 750	36 619
Gauteng	51 082	96 788	147 870
Mpumalanga	41 581	49 633	91 214
Limpopo	52 159	53 021	105 180
South Africa	540 906	582 610	540 906

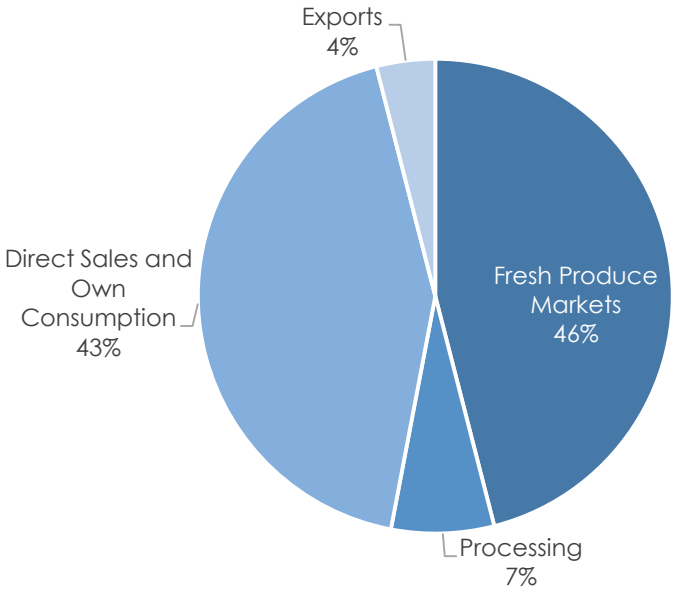
Source: Abstract of Agricultural Statistics, 2015

The table above indicates that, overall, 70% of the households involved in vegetable production are headed by female members. Limpopo has an even split of male and female household heads, while Western Cape has the highest number of households lead by women in vegetable production. Within Gauteng 65% of the households are female headed households, while in KZN only 46% of women partake in vegetable production.

8.2.2 Global Overview

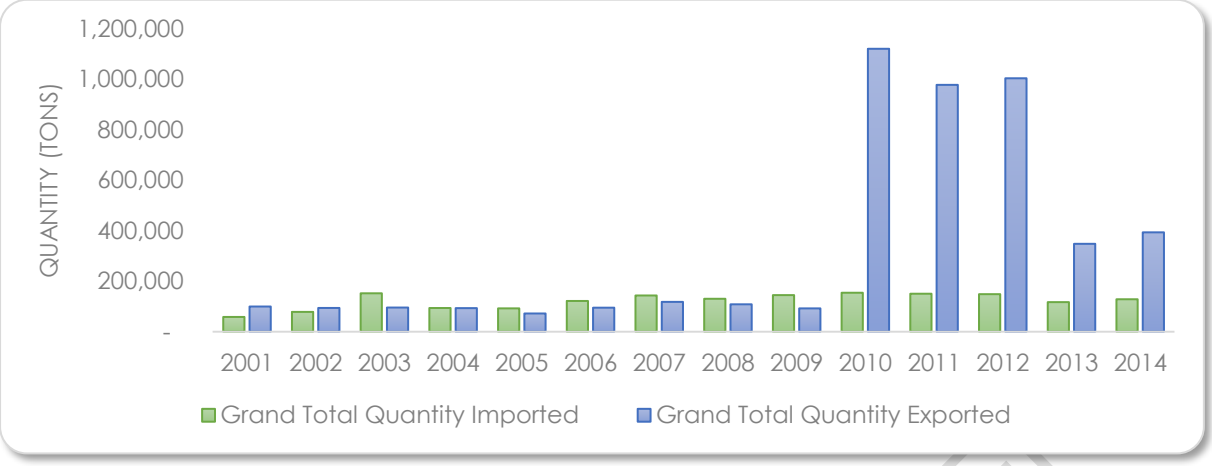
The majority of fresh vegetables are either sold directly by farmers or it is sold at fresh produce markets. Only 7% of vegetables are used for further processing while only 4% is exported.

FIGURE 42: DISTRIBUTION CHANNELS



Imports and exports are an indicator of South Africa's competitiveness on a global scale, while also contributing to trade balance – whether South Africa is a major exporter, or major importer. Exports, in general, indicate that South Africa produces a surplus of goods (has a competitive advantage in that specific good) that can be distributed to international markets. Imports are generally required to fill a consumption deficit (local production does not meet local consumption) and add to food security. In addition, importing products introduces competition to the local market, requiring that local producers remain efficient. South Africa has historically been a nett exporter of agricultural products, importing only deficits in certain commodities, or niche products. The figure below indicates the quantity of vegetable products imported and exported by South Africa between 2001 and 2014.

FIGURE 43: IMPORT AND EXPORT OF VEGETABLES AND VEGETABLE PRODUCTS, 2001 - 2015



Source: ITC, Trade Map, 2015

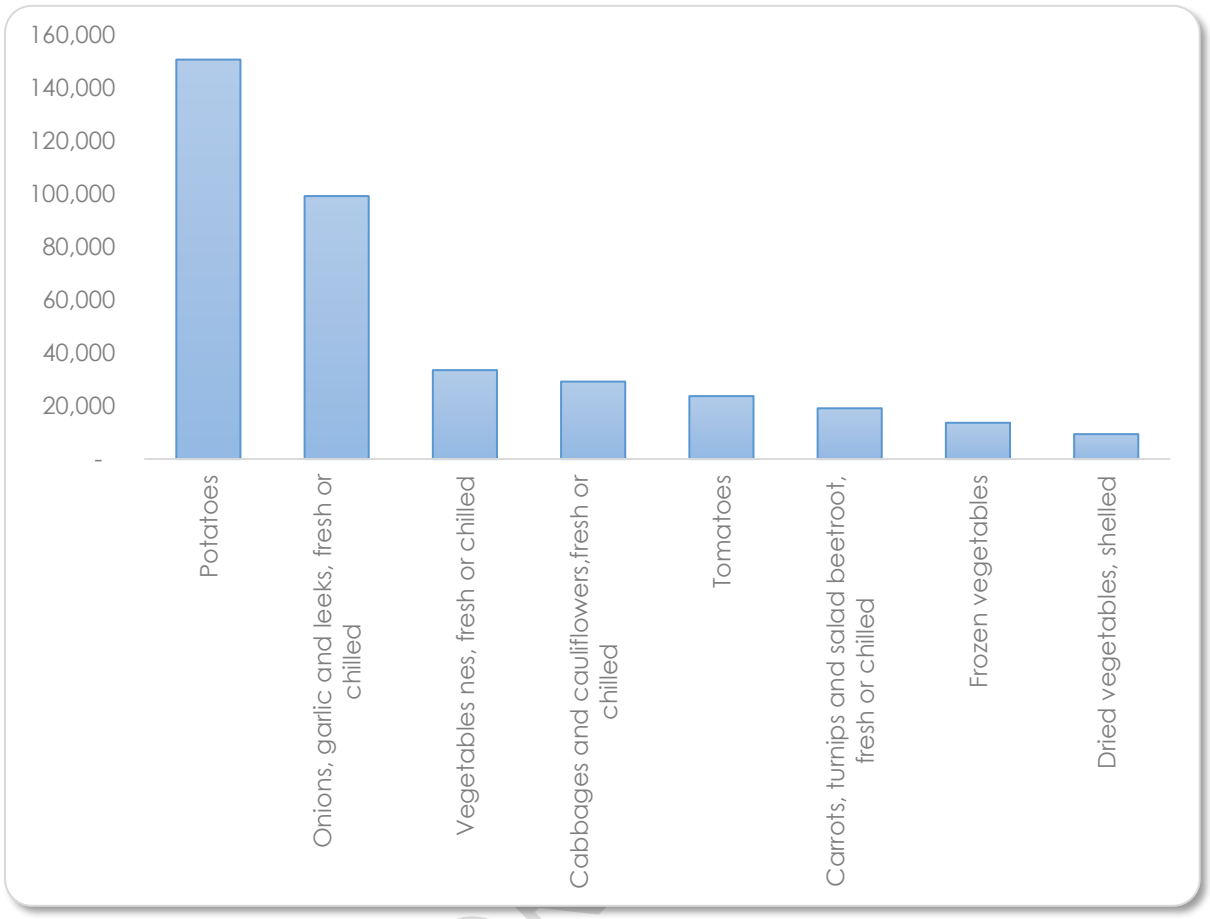
The figure above suggests that exports of vegetables and vegetable products was significantly higher than exports from 2010 to 2014. Most export figures for 2010 were, however, estimated by ITC Trade Map and could be over-estimated. Figures for 2012, 2013, and 2014 are more exact figures and not estimated. In summary, the figures suggests that recently South Africa has been a major nett exporter of vegetables and vegetable products. The import and export products are listed in the table below.

TABLE 32: IMPORT AND EXPORT PRODUCTS FROM AND TO SOUTH AFRICA

Import products	Export products
1. Dried vegetables, shelled	1. Potatoes
2. Frozen vegetables	2. Onions, garlic and leeks, fresh or chilled
3. Dried vegetables	3. Vegetables, fresh or chilled
4. Onions, garlic and leeks, fresh or chilled	4. Cabbages and cauliflowers, fresh or chilled
5. Vegetables, fresh or chilled	5. Tomatoes
6. Tomatoes	6. Carrots, turnips and salad beetroot, fresh or chilled
7. Leguminous vegetables, shelled or unshelled, fresh or chilled	7. Frozen vegetables
8. Manioc, arrowroot salep (yams) etc	8. Dried vegetables, shelled
9. Vegetables, provisionally preserved (unfit for immediate consumption)	9. Leguminous vegetables, shelled or unshelled, fresh or chilled
10. Cabbages and cauliflowers, fresh or chilled	10. Manioc, arrowroot salep (yams) etc
11. Potatoes	11. Lettuce and chicory, fresh or chilled
12. Carrots, turnips and salad beetroot, fresh or chilled	12. Cucumbers and gherkins, fresh or chilled
13. Cucumbers and gherkins, fresh or chilled	13. Dried vegetables
14. Lettuce and chicory, fresh or chilled	14. Vegetables, provisionally preserved (unfit for immediate consumption)

Some of the major commodities exported from South Africa include potatoes, onions, fresh and chilled vegetables, tomatoes, carrots, and frozen vegetables. The export quantities of the respective products are indicated in the figure below.

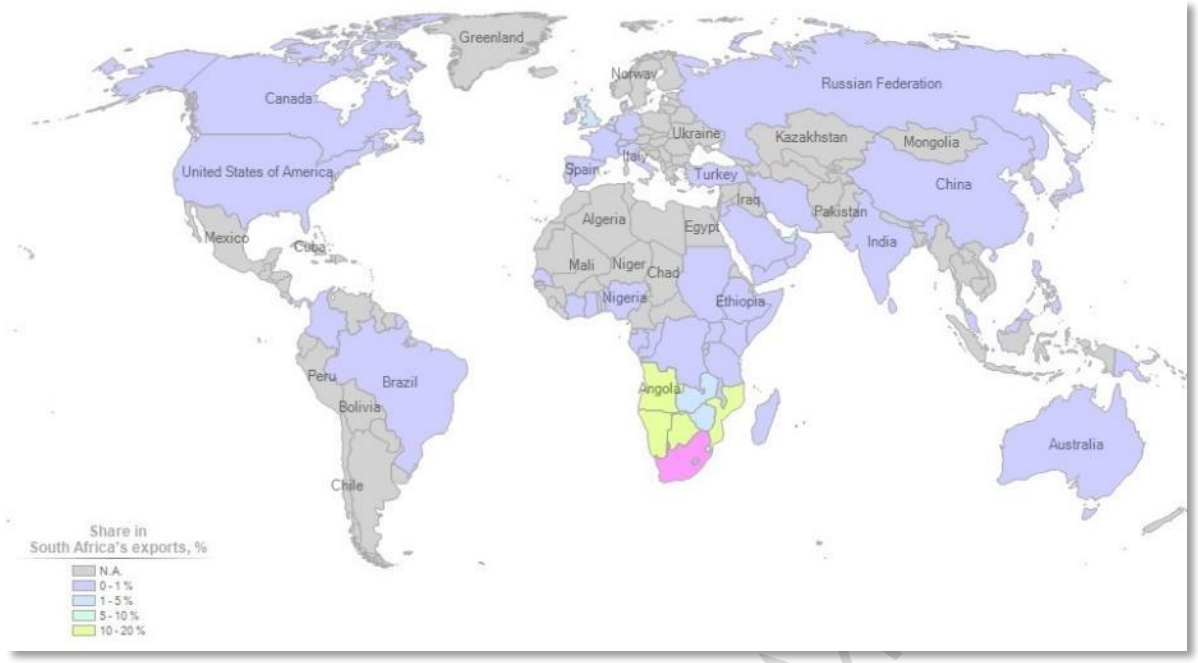
FIGURE 44: MAJOR VEGETABLE EXPORT PRODUCTS FROM SOUTH AFRICA, 2014



Source: ITC, Trade Map, 2015

It is clear from the figure above that potatoes and onions are the major export commodities from South Africa, especially since they are easily stored and transported. The major export destinations for the commodities are South African Development Community (SADC) countries including Namibia, Botswana, Angola and Mozambique as indicated in the map below.

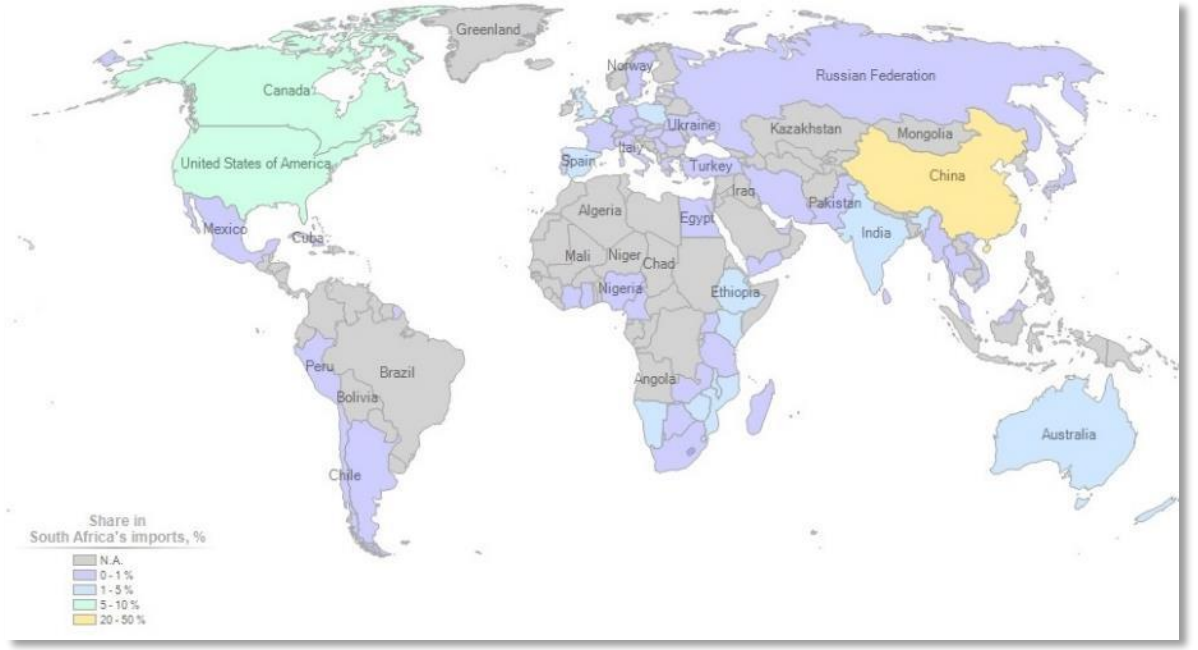
MAP 17: EXPORT MARKETS, 2014



Source: ITC, Trade Map, 2015

South Africa's major import markets for vegetable products include China, Canada and United States of America (USA) as indicated by the below map. The major import products include dried and frozen vegetables.

MAP 18: IMPORT MARKETS



Source: ITC, Trade Map, 2015

It is clear from the above import-export analysis that South Africa is a nett exported of vegetables and vegetable products, with SADC countries being the major markets for these products. The major export commodities include potatoes and onions which can be easily stored and transported to the SADC region with relative ease given the relative proximity and low trade barriers. Of interest is that these commodities are exported mostly in their primary for and have gone through little processing. Major imported vegetable products include dried vegetables and frozen vegetables with most imports originating from China. Importantly, the imported products have gone through value adding activities.

8.2.3 Relative importance and Consumption

The relative importance of the major vegetable types, according to gross value of production, during the 2013/14 season, tabulated below:

TABLE 33: RELATIVE IMPORTANCE OF VEGETABLE TYPES, 2013/14

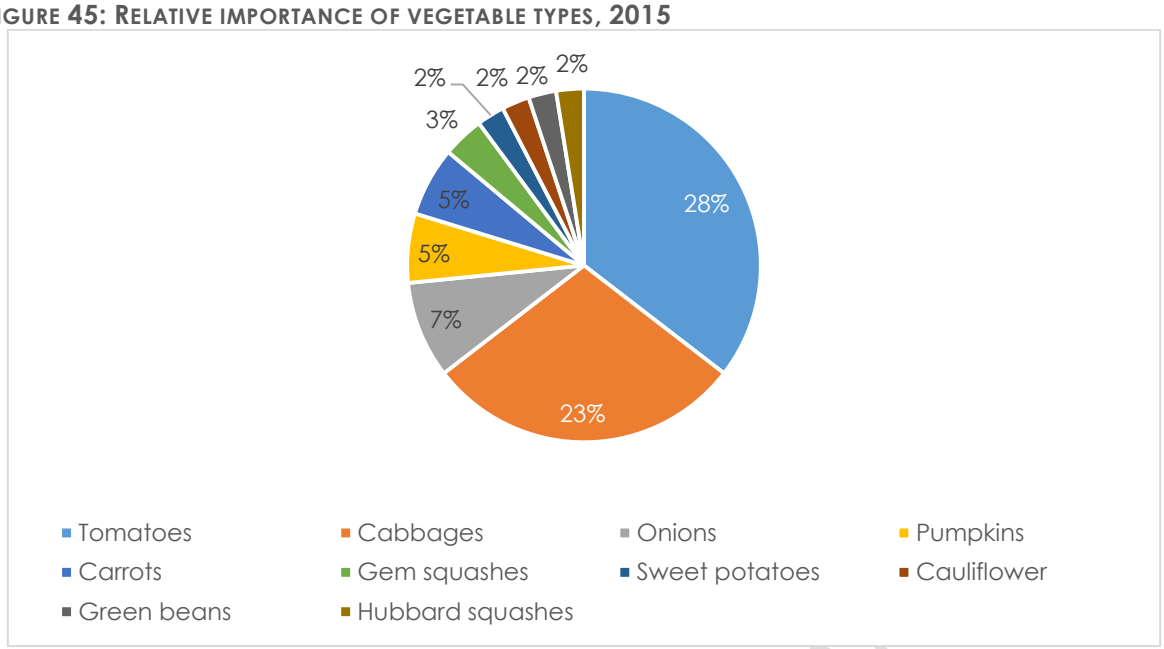
Rank	Product	% Share
1	Potatoes	42%
2	Tomatoes	16%
3	Cabbages	13%
4	Onions	4%
5	Pumpkins	3%
6	Carrots	3%
7	Gem squashes	2%
8	Sweet potatoes	1%
9	Cauliflower	1%
10	Green beans	1%

Source: Abstract of Agricultural Statistics, 2015

The above table indicates that potatoes are clearly a vegetable of high relative importance, with an approximate gross value of production equal to 42% of the total for vegetables. Tomatoes and onions are the also important vegetable crops with a combined gross value of 29%.

The relative importance of the major vegetable types, according to gross value of production, during the 2013/14 season, is depicted in the figure below:

FIGURE 45: RELATIVE IMPORTANCE OF VEGETABLE TYPES, 2015



Source: Abstract of Agricultural Statistics, 2015

The above figure indicates that tomatoes and onions are clearly a vegetable of high relative importance, with an approximate gross value of production equal to 51% of the total for vegetables when potatoes are excluded. Squashes, such as butternut and pumpkins, and also cabbages are also important crops with over 10% of the production.

The importance of vegetables in a healthy diet is being strongly promoted by all the stakeholders in the fresh produce marketing chain. The per capita consumption of fresh vegetables was 43.01kg during 2014, approximately 2.8% lower than the previous year. The table below summarises consumption of vegetables (excluding potatoes) between 2010 and 2014.

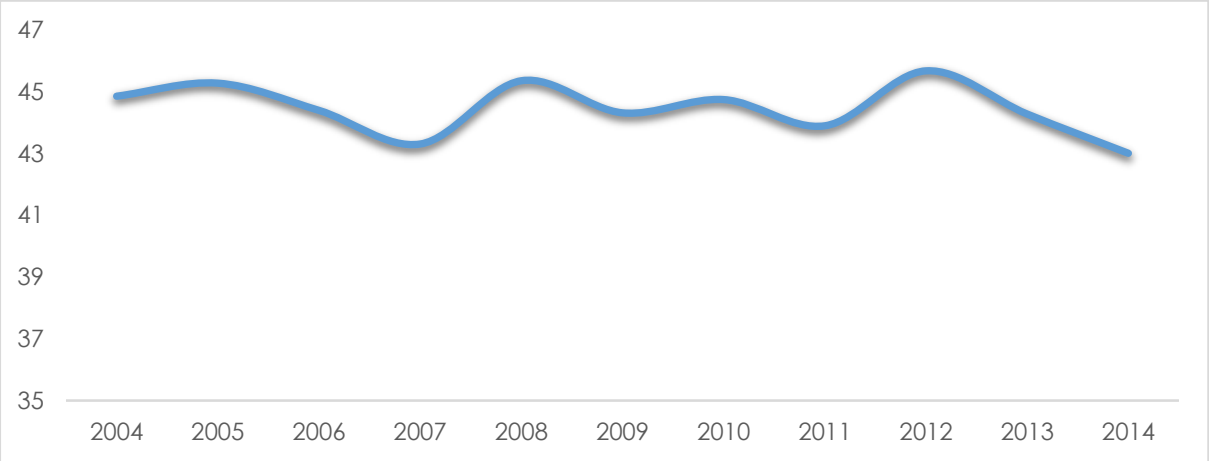
TABLE 34: PER CAPITA CONSUMPTION

Year	2010	2011	2012	2013	2014
Vegetables (potatoes excluded) (Kg/Year)	44.75	43.90	45.68	44.28	43.01

Source: Abstract of Agricultural Statistics, 2015

Per capita consumption of vegetables has remained relatively stable over the last 10 years, ranging between 43.01kg per year to 45.68kg per year. The figure below illustrates the fluctuations in per capita consumption of vegetables between 2004 and 2014.

FIGURE 46: PER CAPITA CONSUMPTION TREND



Source: Abstract of Agricultural Statistics, 2015

Consumption patterns with respect to vegetable have remained predominantly stable at just over 40kg per capita within South Africa. Fluctuations in per capita consumption figures may vary due to population figures as well as production yield figures.

TABLE 35: PRODUCTION TIMES - VEGETABLES

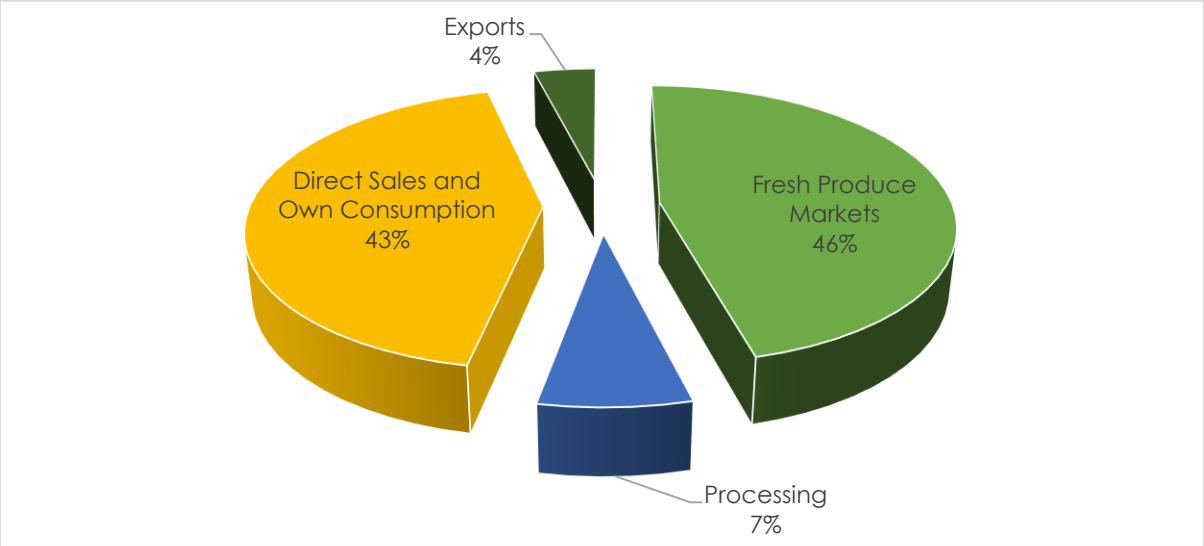
Crop	Sowing Time	Transplanting Time	Harvesting Time
Potatoes		Aug/ Sept & Feb/Mar	Nov/Dec & Jun/Jul
Beetroot	Jan - Apr & Jul/Aug	Thin out at a later stage	May - Sept & Nov/Dec
Green beans	Aug - Oct & Jan - Mar		Nov - Feb & Apr - Jun.
Carrots	Feb – Apr & Jul - Sept	Thin out 5 - 7 days after germination	May – Aug &Oct/Nov
Cabbage	Feb/Mar, Jun/Jul & Aug/Sept	Mar, May, Aug/Sept & Oct/Nov	Jun - Sept & Nov - Jan.
Sweet potatoes		Oct – Dec	Feb – Aug
Pumpkin	Aug/Sep & Jan		Dec – Apr
Squash	Aug - Oct	Nov - Jan	Jan/Feb & Apr/May
Lettuce	Feb, Apr, Jun & Aug	Thin out 5 - 7 days after germination	May - Dec.
Tomatoes	Aug/Sept, Nov/Dec	Oct, Dec/Jan	Jan - May

Source: Agricultural Research Council, 2015

8.2.4 Distribution channels

The figure below indicates the volume of vegetables that are traded through various distribution channels that are available to farmers.

FIGURE 47: DISTRIBUTION CHANNELS FOR VEGETABLES



Source: Agricultural Statistics and Urban-Econ, 2015

It is clear from the figure above that approximately 46% of the volume of vegetables produced is traded on the major fresh produce markets. The total volume of vegetables sold on these markets during 2014 amounted to approximately 2.3 million tons, compared to the 2.1 million tons that sold during 2010, an increase of approximately 8.8% (2.1% average per annum).

TABLE 36: QUANTITY OF VEGETABLES SOLD ON THE MAJOR FRESH PRODUCE MARKETS, 2010 - 2014

Year	2010	2011	2012	2013	2014
Total (tons)	2 107 800	2 222 100	2 334 400	2 290 200	2 293 600

Source: Abstract of Agricultural Statistics, 2015

The values of sales of vegetables on the major South African fresh produce markets for the period 2005/06 to 2013/14 are as follows:

FIGURE 48: AVERAGE VOLUME AND AVERAGE PRICE OF VEGETABLES, 2005/6 – 2013/14

Source: Abstract of Agricultural Statistics, 2015

8.2.5 Capital Markets

Capital Markets specific for the Vegetable value chain is limited. Most producers raise funding through main stream finance houses comprising of the commercial banks, Land Bank and Co-operative finance houses. The major commercial banks, Land Bank and Co-operative finance and their respective financial offerings are summarised respectively below:

Land Bank

Land Bank is a statutory body with a mandate from Government to support the development of the agricultural sector. The Bank's key strategic intent is to achieve financial sustainability focused on social and development impact. Meeting client needs by means of cost-effective and competitive products and services, building a representative, committed and an efficient workforce and good relations with stakeholders are critical elements in this strategy. The Bank provides a comprehensive range of retail and wholesale financial products and services designed to meet the needs of commercial and developing farmers and agriculture-related businesses. As a statutory development finance institution, the Bank must fulfil a government mandate requiring it to:

- support the development of all elements of the agricultural economy
- give special attention to the needs of previously-disadvantaged people in the sector
- benchmark its operating efficiencies and service delivery against financial-sector norms
- ensure its financial sustainability

Land Bank gives low, medium and high-risk clients access to a full range of long, medium and short-term loans to meet all financial needs, including land and equipment purchases, asset improvement and production credit. During 1999 the bank added Gold Premium and Platinum risk categories to its existing Gold low-risk category. Clients who qualify on the basis of exceptional security and high loan values pay reduced interest rates. Specific criteria for medium and high-risk clients with limited security increases access to credit while minimising the risk of default.

Commercial Banks

The four major commercial banks target market comprises of both the commercial as well as developing agriculture. Their focus is on retaining and selective acquisitioning of their market share in commercial agriculture. Products and services offered are, amongst others, cheque accounts, overdraft facilities, term loans, mortgage loans, asset finance, investments, estate and asset management, insurance and assurance, international banking services, contract growing, hedging and trading as well as electronic banking services and advisory services. Agricultural Long-term Loans are used to buy farm property, make capital improvements such

as fencing, water provision and soil conservation or to consolidate short-term debt (where farmers have previously financed fixed assets out of working capital or short-term finance). Agricultural Project Loan is a medium-term loan product. It is a multipurpose agricultural loan suited for the acquisition of livestock, orchards, farm buildings, etc., which generates an income only after a certain establishment period. Agricultural Cheque Account fulfils the transmission of funds requirements of a farming business, as well as providing a dedicated product for short-term (less than 12 months) production credit.

Agricultural Co-operative Finance - Seasonal Facilities, Monthly Accounts, Term Loans & Asset Finance

The Co-operative finance divisions of the various Agricultural Co-operatives provide production loans or seasonal facilities for period of up to one year. These facilities are granted for the purchase of production resources and services rendered. Interest is calculated on the basis of simple interest per day on the outstanding balance owed. The interest rate applicable on the account is the interest rate determined per individual depending on the risk profile. Month accounts are used to make purchases at trading branches. These accounts are short-term credit and the full outstanding balance must be settled monthly, 30 days after statement. The primary goal of a long term loan is to finance the purchase of productive agricultural land. The purpose of asset finance is to assist clients financially in purchasing durable capital goods, like tractors, combines and implements

In Addition to the above commercial finance institutions the following Development Finance Institutions are functional within the iLembe District Municipality:

Enterprise iLembe

Situated on the East Coast of KwaZulu-Natal Province in South Africa iLembe is one of 11 District Municipalities and is the smallest District Municipality in terms of land area. The municipal district is located along the principle provincial development corridor between Africa's busiest ports, which are Durban, and Richards Bay. It is subsequently strategically situated to cater not only to local but also national and international markets. Enterprise iLembe is the Economic Development Agency for the iLembe District Municipality responsible for Trade & Investment Promotions and Local Economic Development in the region. The vision of Enterprise iLembe is to enable iLembe District to be the destination of choice for Investment, Business & Tourism.

SEDA (Small Enterprise development Agency)

The Small Enterprise Development Agency (SEDA) is an agency of the Department of Small Business Development. SEDA was established in December 2004, through the National Small Business Amendment Act, Act 29 of 2004. It is mandated to implement government's small

business strategy; design and implement a standard and common national delivery network for small enterprise development; and integrate government-funded small enterprise support agencies across all tiers of government. SEDA's mission is to develop, support and promote small enterprises throughout the country, ensuring their growth and sustainability in co–ordination and partnership with various role players, including global partners, who make international best practices available to local entrepreneurs

Agribusiness Development Agency

The Agribusiness Development Agency is a public entity that was established in 2009 to serve as a special purpose vehicle to drive socio-economic transformation in the agricultural and agribusiness sector in KwaZulu-Natal.

The Agency provides holistic agricultural support services to entrant commercial farmers, focusing mainly on previously disadvantaged farmers, who have acquired land through the government's Land Reform Programme and on private basis. The ADA also aims to develop strategies to address inequities, create opportunities for the farmers to participate in the value chain, provide access to markets and foster sustainability in the agricultural sector. Since its inception, the major focus has been on the turnaround strategy to resuscitate distressed farmers who had suffered skills gaps, financial support and access to the markets. In the three years of operation ADA has managed to support over 180 large and small commercial farms under individuals, restitution, recapitalization, labour tenant and cooperatives.

Other Smaller Development Agencies that also function in the iLembe District Municipality are listed below

- World Vision
- Save Act

8.2.6 Technology

8.2.6.1 Equipment (energy/implements/techniques)

Vegetables varieties

Vegetable processors must appreciate the substantial differences that varieties of a given vegetable will possess. In addition to variety and genetic strain differences with respect to weather, insect and disease resistance, varieties of a given vegetable will differ in size, shape, time of maturity, and resistance to physical damage.

Varietal differences then further extend into warehouse storage stability, and suitability for such processing methods as canning, freezing, pickling or drying. A variety of peas that is suitable for canning may be quite unsatisfactory for freezing and varieties of potatoes that are

preferred for freezing may be less satisfactory for drying or potato chip manufacture. This should be expected since different varieties of a given vegetable will vary somewhat in chemical composition, cellular structure and biological activity of their enzyme system.

TABLE 37: VEGETABLE PLANTING COMPLEMENTARY TABLE

Vegetable	Companions	Antagonists	Insight
Cabbage	Beets, Bush Beans, Celery, Chamomile, Dill, Mint, Onion, Potato, Oregano, Rosemary, Sage	Beans (Pole and Runner), Mustards, Peppers, Strawberry, Tomato	Celery, onion and herbs keep pests away. Rosemary repels cabbage fly.
Carrots	Beans (Bush and Pole), Garlic, Lettuce, Onion, Parsley, Peas, Rosemary, Tomato	Dill, Parsnip	Beans provide nitrogen in soil which carrots need. Onion, parsely and rosemary repel the carrot fly
Cauliflower	Beans, Celery, Oregano, Peas, Tomato	Strawberries	Beans provide the soil with nitrogen, which cauliflower needs.
Celery	Bush Beans, Cabbage, Dill, Leeks, Marjoram, Tomatoes	Parsnip, Potato	--
Chives	Basil, Carrots, Marigold, Parsley, Parsnip, Strawberries, Tomato	Beans	--
Corn	Beans, Cucumbers, Marjoram, Parsnip, Peas, Potatoes, Pumpkin, Squash, Zucchini	Tomato	Tomato worm and corn earworm like both plants. Beans and peas supply nitrogen.
Cucumber	Beans, Celery, Corn, Dill, Lettuce, Peas, Radish	Potato, Sage, strong aromative herbs, Tomato	Cucumbers grow poorly around potatoes and sage.
Lettuce	Beans, Beets, Carrots, Corn, Marigold, Onions, Peas, Radish, Strawberries	Parsley	Mints repel slugs (which feed on lettuce).

Vegetable	Companions	Antagonists	Insight
Onions	Beets, Cabbabe, Carrots, Lettuce, Marjoram, Rosemary, Savory, Strawberry, Tomato	Beans, Peas	Repels aphids, the carrot fly, and other pests.
Parsley	Asparagus, Beans, Radish, Rosemary, Tomato	Lettuce	Draws insects away from tomatoes.
Peas	Beans, Cabbage, Carrots, Celery, Corn, Cucumber, Lettuce, Marjoram, Parsnip, Potato, Sage	Alliums (Chives, Garlic, Onion, Shallots)	--
Potato	Beans, Cabbage, Corn, Eggplant, Horseradish, Marjoram, Parsnip	Celery, Cucumber, Pumpkin, Rosemary, Strawberries, Tomato	Cucumber, tomato and raspberry attract harmful pests to potatoes. Horseradish increases disease resistance.
Pumpkin	Beans, Corn, Radish	Potato	--
Radish	Cabbage, Corn, Cucumber, Eggplant, Lettuce, Marjoram, Parsnip	--	Radish is often used as a trap crop against some beetles(flea and cucumber).
Sage	Beans, Cabbage, Carrots, Peas, Rosemary, Strawberries	--	Repels cabbage fly, some bean parasites.
Spinach	Beans, Lettuce, Peas, Strawberries	--	Natural shade is provided by beans and peas, for spinach.
Squash	Fruit trees, strawberries	--	Similar companion traits to pumpkin.
Strawberries	Borage, Bush Beans, Caraway	Broccoli, Cabbages	The herb, Borage, is likely the strongest companion.
Tomatoes	Alliums, Asparagus, Basil, Borage, Broccoli, Carrots, Cauliflower, Celery, Marigold, Peppers	Brassicas, Beets, Corn, Dill, Fennel, Peas, Potatoes, Rosemary	Growing basil about 10 inches from tomatoes increases the yield of the tomato plants.

Source: Vegetable Garden Life – Companion Planting Chart, 2015

Harvesting and pre-processing

When vegetables are maturing in the field they are changing from day to day. There is a time when the vegetable will be at peak quality from the stand-point of colour, texture and flavour.

This peak quality is quick in passing and may last only a day. Harvesting and processing of several vegetables, including tomatoes, corn and peas are rigidly scheduled to capture this peak quality.

After the vegetable is harvested it may quickly pass beyond the peak quality condition. This is independent of microbiological spoilage; these main deteriorations are related to:

- Loss of sugars due to their consumption during respiration or their conversion to starch; losses are slower under refrigeration but there is still a great change in vegetable sweetness and freshness of flavour within 2 or 3 days;

- Production of heat when large stockpiles of vegetables are transported or held prior to processing.

At room temperature some vegetables will liberate heat at a rate of 127 000 kJ per ton daily; this is enough for each ton of vegetables to melt 363 kg of ice per day. Since the heat further deteriorates the vegetables and speeds micro-organisms growth, the harvested vegetables must be cooled if not processed immediately. But cooling only slows down the rate of deterioration, it does not prevent it, and vegetables differ in their resistance to cold storage. Each vegetable has its optimum cold storage temperature which may be between about 0-100 degrees Celsius (32-500 F).

The continual loss of water by harvested vegetables due to transpiration, respiration and physical drying of cut surfaces results in wilting of leafy vegetables, loss of plumpness of fleshy vegetables and loss of weight of both.

Moisture loss cannot be completely and effectively prevented by hermetic packaging. This was tried with plastic bags for fresh vegetables in supermarkets but the bags became moisture fogged, and deterioration of certain vegetables was accelerated because of build-up of CO_2 and decrease of oxygen in the package. It therefore is common to perforate such bags to prevent these defects as well as to minimise high humidity in the package which would encourage microbial growth.

Shippers of fresh vegetables and vegetable processors, whether they can, freeze, dehydrate, or manufacture soups or ketchup, appreciate the instability and perishability of vegetables and so do everything they can to minimise delays in processing of the fresh product. In many processing plants it is common practice to process vegetables immediately as they are received from the field.

To ensure a steady supply of top quality produce during the harvesting period the large food processors will employ trained field men; they will advise on growing practices and on spacing of plantings so that vegetables will mature and can be harvested in rhythm with the processing plant capabilities. This minimises stockpiling and need for storage.

Cooling of vegetables in the field is common practice in some areas. Liquid nitrogen-cooled trucks may next provide transportation of fresh produce to the processing plant or directly to market.

Upon arrival of vegetables at the processing centre the usual operations of cleaning, grading, peeling, cutting and the like are performed using a moderate amount of equipment but a good deal of hand labour also still remains.

Reception

This covers qualitative and quantitative control of delivered vegetables. The organoleptic control and the evaluation of the sanitary state, even if they are very important steps in vegetables' characteristics assessment, cannot establish their technological value.

On the other hand, laboratory controls do not precisely establish their technological properties because of the difficulty in putting into showing some deterioration when using rapid control methods.

One correct method of vegetable quality appraisal is their overall evaluation based on the whole complex of data that can be obtained by combining an extensive organoleptic evaluation with simple analysis that can be performed rapidly in plant laboratory. These analysis can be:

- Refractometric extract (tomatoes, fruit, etc.);
- Specific weight (potatoes, peas, etc.);
- Consistency (measured with tenderometers, penetrometers, etc.);
- Boiling tests, etc.

Temporary storage

This step should be as short as possible and better completely eliminated. Vegetables can be stored in:

- Stores, without artificial cooling;
- In refrigerated stores; or
- In silos (potatoes, etc.).

Simple stores should be covered, fairly cool, dry and well ventilated but without forced air circulation which can induce significant losses in weight through intensive water evaporation; air relative humidity should be at about 70-80%.

Refrigerated storage is always preferable and in all cases a processing centre needs a cold room for this purpose, adapted in volume I capacity to the types and quantities of vegetables (and fruits) that are further processed.

Washing

Washing is used not only to remove field soil and surface micro-organisms but also to remove fungicides, insecticides and other pesticides, since there are laws specifying maximum levels of these materials that may be retained on the vegetable; and in most cases the allowable residual level is virtually zero. Washing water contains detergents or other sanitisers that can essentially completely remove these residues.

The washing equipment, like all equipment subsequently used, will depend upon the size, shape and fragility of the particular kind of vegetable:

- Flotation cleaner for peas and other small vegetables;
- Rotary washer in which vegetables are tumbled while they are sprayed with jets of water; this type of washer should not be used to clean fragile vegetables;

Sorting

Incorporates two separate activities such as removal of sub-standard vegetables and possible foreign bodies remaining after washing and quality grading based on variety, dimensional, organoleptical and maturity stage criterion.

Skin Removal/peeling

Some vegetables require skin removal. This can be mainly done in three ways;

Mechanically

This type of operation is performed with various types of equipment which depend upon the result expected and the characteristics of vegetables, for example:

- A machine with abrasion device (potatoes, root vegetables);
- Equipment with knives (apples, pears, potatoes, etc.);
- Equipment with rotating sieve drums (root vegetables). Sometimes this operation is simultaneous with washing (potatoes, carrots, etc.) or preceded by blanching (carrots).

Chemically

Skins can be softened from the underlying tissues by submerging vegetables in hot alkali solution. Lye may be used at a concentration of about 0.5-3%, at about 93° C (2000 F) for a short time period (0.5-3 min). The vegetables with loosened skins are then conveyed under high velocity jets of water which wash away the skins and residual lye.

In order to avoid enzymatic browning, this chemical peeling is followed by a short boiling in water or an immersion in diluted citric acid solutions. It is more difficult to peel potatoes with this method because it is necessary to dissolve the cutin and this requires more concentrated lye solutions, up to 10%.

Thermally

Wet heat (steam). Other vegetables with thick skins such as beets, potatoes, carrots and sweet potatoes may be peeled with steam under pressure (about 10 at) as they pass through cylindrical vessels. This softens the skin and the underlying tissue. When the pressure is suddenly released, steam under the skin expands and causes the skin to puff and crack. The skins are then washed away with jets of water at high pressure (up to 12 at).

Dry heat (flame). Other vegetables such as onions and peppers are best skinned by exposing them to direct flame (about 1 min at 1000° C) or to hot gases in rotary tube flame peelers. Here too, heat causes steam to develop under skins and puff them so that they can be washed away with water.

Manual peeling is only used when other methods are impossible or sometimes as a completion of the other three ways. Average losses at this step are provided in the table below.

TABLE 38: PERCENTAGE LOSSES FROM VEGETABLE PEELING

	Peeling methods		
Vegetables	Manual	Mechanical	Chemical
Potatoes	15-19	18-28	-
Carrots	13-15	16-18	8-10
Beets	1416	13-15	9-10

Source: FAO, 2015

Blanching

The special heat treatment to inactivate enzymes is known as blanching. Blanching is not indiscriminate heating. Too little is ineffective, and too much damages the vegetables by excessive cooking, especially where the fresh character of the vegetable is subsequently to be preserved by processing.

This heat treatment is applied according to and depends upon the specificity of vegetables, the objectives that are followed and the subsequent processing and preservation methods.

Two of the more heat resistant enzymes important in vegetables are catalase and peroxidase. If these are destroyed then the other significant enzymes in vegetables also will have been inactivated. The heat treatment to destroy catalase and peroxidase in different vegetables are known, and sensitive chemical tests have been developed to detect the amounts of these enzymes that might survive a blanching treatment.

Because various types of vegetables differ in size, shape, heat conductivity, and the natural levels of their enzymes, blanching treatments have to be established on an experimental basis. As with sterilisation of foods in cans, the larger the food item the longer it takes for heat to reach the centre. Small vegetables may be adequately blanched in boiling water in a minute or two, large vegetables may require several minutes.

Blanching as a unit operation is a short time heating in water at temperatures of 100° C or below. Water blanching may be performed in double bottom kettles, in special baths with conveyor belts or in modern continuous blanching equipment. In order to reduce losses of hydro soluble substances (mineral salts, vitamins, sugars, etc.) occurring during water blanching, several methods have been developed, these include;

- Temperature setting at 85-95° C instead of 100° C;
- Blanching time has to be just sufficient to inactivate enzymes catalase and peroxidase;
- Assuring elimination of air from tissues.

An illustration of blanching parameters is displayed in the table below.

TABLE 39: BLANCHING PARAMETERS FOR SOME VEGETABLES

Vegetables	Temperature, °C	Time (min.)
Peas	85-90	2-7
Green beans	90-95	2-5
Cauliflower	Boiling	2
Carrots	90	3-5
Peppers	90	3

Source: FAO, 2015

Steam heat treatment can also be applied instead of water blanching as a preliminary step before freezing or drying, as long as the preservation method is only used for enzyme inactivation and not to modify consistency.

For drying, the vegetables are conveyed directly from steaming equipment to drying installations without cooling. Vegetable steaming is carried out in continuous installations with conveyer belts made from metallic sieves.

Cooling of vegetables after water blanching or steaming is performed in order to avoid excessive softening of the tissues and has to follow immediately after these operations; one exception is the case of vegetables for drying which can be transferred directly to drying equipment without cooling.

Natural cooling is not recommended because is too long and generates significant losses in vitamin C content. Cooling in pre-cooled air (from special installations) is sometimes used for vegetables that will be frozen

Cooling in water can be achieved by sprays or by immersion; in any case the vegetables have to reach a temperature value under 37° C as soon as possible. Too long a cooling time generates supplementary losses in valuable hydro soluble substances; in order to avoid this, the temperature of the cooling water has to be as low as possible.

Canning

Large quantities of vegetable products are canned. A typical flow sheet for a vegetable canning operation (which also applies to fruit for the most part) covers some food process unit operations performed in sequence: harvesting; receiving; washing; grading; heat blanching; peeling and coring; can filling; removal of air under vacuum; sealing/closing, retorting/heat treatment; cooling; labelling and packing. The vegetable may be canned whole, diced, puréed, as juice and so on.

Enzyme Activity Verification Test

Peroxidase test

Two solutions have to be prepared in order to ascertain peroxidase activity:

- 1% guaiacol in alcohol solution (1 g guaiacol is dissolved in about 50 cm³ of 96% ethylic alcohol and then this preparation is brought to 100 cm° with the same solvent);
- Peroxide solution 0.3% (1 cm³ perhydrol is brought to 100 cm³ with distilled water.

Sampling from various parts of the material samples are taken, the material is then crushed in a laboratory bowl in order to obtain an average sample.

Verification from the average sample, 10-20 g of material is taken in a medium capacity test tube; on this sample are poured: 20 cm³ distilled water; 1 cm³ of 1% guaiacol solution; 1.6 cm³ of peroxide solution. The contents of the test tube is shaken well. The gradual appearance of a weak pink colour indicates an incomplete peroxidase inactivation - reaction slightly positive. If there are no tissue colour modifications after 5 minutes, the reaction is negative and the enzymes have been inactivated.

As an orientated check it is also possible to simply pour a few drops of 1% guaiacol solution and 0.3% peroxide solution directly on blanched and crushed vegetables. A rapid and intensive brown-reddish tissue colouring indicates a high peroxidase activity (positive reaction).

Catalase test

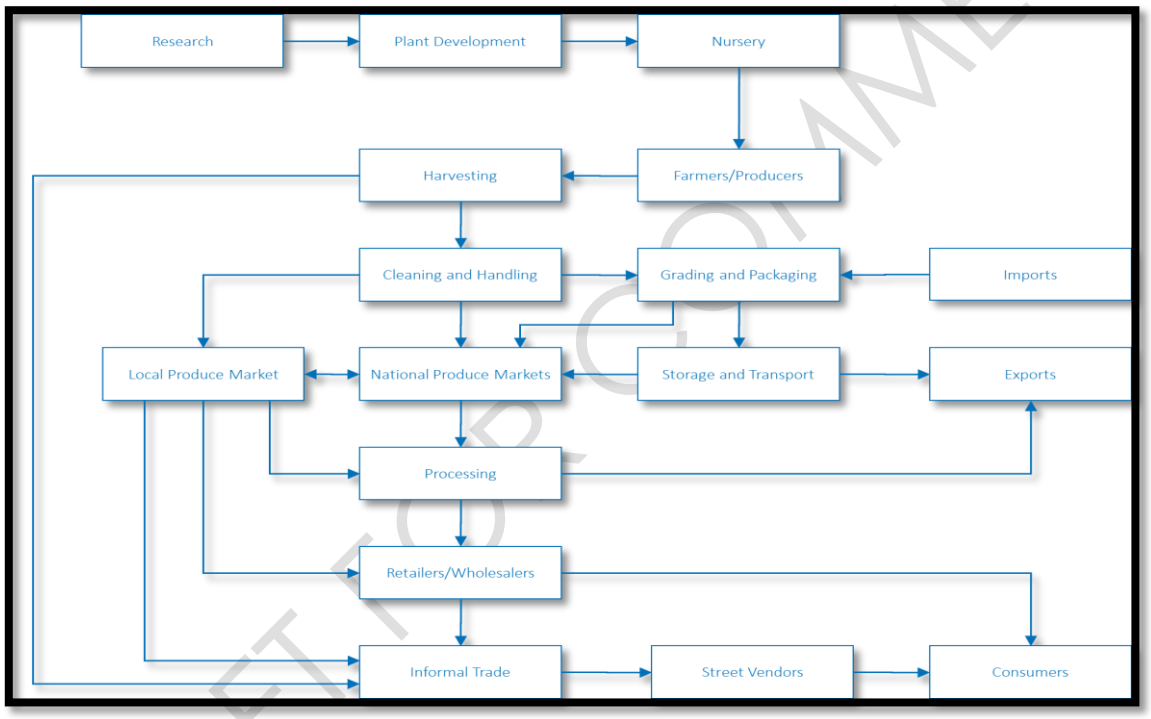
In order to identify the catalase enzyme activity, 2 g of dehydrated vegetables are well crushed and mixed with about 20 cm³ of distilled water. After 15 min softening, 0.5 cm³ of a 0.5% or 1% peroxide solution is poured on prepared vegetables. In the presence of catalase, a strong oxygen generation is observed for about 2-3 minutes.

These tests are of a paramount importance in order to determine the vegetable blanching treatments (temperature and time); incomplete enzyme inactivation has a negative effect on finished product quality. For cabbage catalase inactivation by blanching is sufficient; blanching further to peroxidase inactivation would have negative effects on product quality and even complete browning. For all other vegetables and for potatoes, both tests should be negative, for catalase and for peroxidase.

8.2.7 Value Chain Assessment

iLembe district is ideally suited for field crop production. Several factors impact on the productivity and growth of the sector, namely: growth in the South Africa economy and rising consumer demand; international trade and trade agreements; the global recession and rise in food prices; the land reform programme; reliance on imports; water availability; changing consumer patterns and demands (e.g. organic food stuffs); rising costs of agricultural inputs ; technological changes and mechanisms; quality standards; farm safety and security; broad based black economic empowerment; skills demand and supply; HIV/AIDS; and changing climate.

FIGURE 49: VEGETABLE VALUE CHAIN



Source: Urban-Econ, 2015

Potatoes are the most important crop in South Africa, are particularly prominent in iLembe District Municipality. This is because the climate and the soils are well suited for potato farming. Most production is for domestic markets, however processed potatoes are exported. Moreover, domestic demand for potatoes and potato-related products is increasing. Potatoes make up 44% of total gross value of vegetable production, 14% of horticultural production, and 7% of total agricultural products. 1.86 million tons were produced in 2009.

Factors influencing production include: expansion of the fast-food industry; higher average income of the population; the rapid rate of urbanization; and the influx of international processing companies. Competition is also very strong for emerging farmers.

8.2.8 Prices

The average prices of vegetables realised on the fresh produce markets for the period 2011 to 2014 were as follows:

TABLE 40: AVERAGE PRICE OF VEGETABLE TYPES, 2014

Product	2011	2012	2013	2014	Average Price Increase (%)
	R/ton				
Potatoes	2 591	2 645	3 379	3 428	10%
Tomatoes	4 339	4 407	4 847	6 082	12%
Cabbages	1 516	1 772	2 109	2 180	13%
Onions	2 221	2 587	3 433	3 334	15%
Pumpkins	1 675	1 617	2 156	2 128	8%
Carrots	2 815	2 633	3 154	3 644	9%
Gem squashes	2 615	2 702	2 666	3 248	7%
Sweet potatoes	2 995	3 636	2 798	3 724	8%
Cauliflower	4 145	4 960	5 066	8 380	26%
Green beans	6 572	6 815	7 263	8 454	9%
Hubbard squashes	1 880	1 844	1 954	2 283	7%
Beetroot	2 821	2 365	3 858	4 335	15%
Cucumbers	5 862	7 337	7 320	8 487	13%
Lettuce	4 263	4 828	4 573	5 508	9%
Green peas	21 035	27 516	23 923	37 621	21%
Green mealies	9 471	11 409	8 344	13 089	11%
Marrows	8 575	7 648	9 085	10 718	8%
Turnips	3 651	2 728	3 527	4 052	4%
Butternut squashes	2 420	2 408	2 871	3 227	10%
All vegetables	2 944	3 047	3 683	4 024	11%

Source: Abstract of Agricultural Statistics, 2015

The table above indicates that, on average, prices of vegetables have increased by 11% annually between 2011 and 2014. Of the vegetables above, cauliflower, beetroot, and green peas increased the most over the period, with increases of 29%, 20% and 25% respectively.

8.2.9 Agro-processing opportunities

Agro-processing activities require a number of factors to be put in place before commencing production of value added products. Such activities also involve prior intensive and detailed analyses of the value chain.

Vegetables can withstand heating and cooking processes very well. As a result, a wide range of popular agro-processing opportunities exist for tomatoes. The following list consists of value-adding products that can be processed in the Agri-hub.

- Vegetable Soup
- Vegetable flavouring powder and paste

- Sauce (creamed vegetables)
- Canned vegetables
- Juice
- Dried Vegetables
- Medicinal Products (Vitamins)

The following table discusses possible value adding opportunities for vegetables that may be considered.

TABLE 41: COMPREHENSIVE AGRO-PROCESSING VEGETABLE OPPORTUNITIES

Processing method	Description	Opportunities	Challenges	Priority & gaps/opportunities
Storage, ripening, washing and sorting	Vegetables should be stored under cool, dark conditions if needed, sorted/classified, before being packed or processed.	Modern marketing channels require Vegetables to be sorted and classified according to quality and other criteria.	N/A	Highly recommended
Fresh packing and branding	Pack in plastic bags. Bulk packaging may also be needed. Branding involves attaching a name, words or a term, sign, symbol, design or any combination of these, that identifies a particular seller's product and convey a message about how it differs from other competing products (Kotler & Keller, 2012: 144).	Packing are needed to allow for easy transport and storage, and to prevent damage. Branding differentiates the product from competing products and are becoming essential in the modern agricultural marketing system, even if it is not directly sold to consumers but to other businesses down the value chain.	Some beefsteak and plum varieties are not suitable for fresh packing as they are not suitable for eating fresh or in salads (unless it is for customers who specifically want to cook and process it). Packaging material may be expensive (material and labour costs) and raise environmental concerns.	Highly recommended
Freezing of whole Vegetables	Pack the Vegetables into an air-tight plastic bag, then place it in the freezer.	Vegetables freeze well, but only in case it will be used for cooking afterwards. Therefore the best varieties for freezing include those varieties good for cooking as well, i.e. the beefsteak (except Evergreen) and plum varieties but NOT the cherry or globe varieties.	Low demand and difficult to distribute.	Low potential due to limited growth potential.
Vegetable puree: Canned or frozen	Pureed Vegetables can be canned, bottled or sold frozen. Other forms of packaging are not recommended during initial phases of establishment.	Convenient to use, especially in the hospitality sector. Freeze well without quality deterioration.	Frozen puree may be difficult to distribute.	Medium potential. Frozen puree targeted at hospitality businesses may be a viable strategy.
Vegetable soup: Canned or frozen	Vegetable soup can be canned, vacuum packed, bottled or sold frozen. Other forms of packaging are not recommended during initial phases of establishment.	Convenient to use, especially in the hospitality sector. Freeze well without quality deterioration.	Frozen puree may be difficult to distribute.	Medium to low potential. Frozen soup targeted at hospitality businesses may be a viable strategy.
Vegetable paste	Vegetable paste are commonly produced in various parts of the world as a large to medium-scale processing option for Vegetables. It is usually canned or bottled.	There is currently a large shortage of Vegetable paste in South Africa. It is expected that the demand for this product will also increase in future. Overall a large and growing demand, especially in local food processing markets. Quite a simple method of production. Efficient to store and transport.	Strong global competition can be expected.	High potential because of large and growing demand, and low barriers of entry.

Processing method	Description	Opportunities	Challenges	Priority & gaps/opportunities
Dried Vegetables, possibly stored in oil	Vegetables can be cut in half or into smaller pieces to dry properly, then dried. The dried product can be marketed in a vacuum or modified atmosphere packaged form, or can be bottled in oil.	Fairly simple technique to produce a high value product. Sun-dried Vegetables are very popular on foreign markets and it appears that demand is increasing in South Africa.	Market can easily become saturated due to imports.	Medium to low potential. There are opportunities to shredded or finely chopped dried Vegetable to various other food processors.
Vegetable powder	Dried Vegetables can be pulverised (possibly after frozen) into a fine powder, which can be used in food preparation to add a strong Vegetable flavour.	Highly concentrated form of Vegetable flavour, convenient to use and long storage life.	Market is currently small and easily saturated. Strong competition from importers can be expected.	Medium to high potential in case viable products can be developed and markets can be secured. Not recommended for initial phases.
Vegetable cooking sauce or pizza/pasta sauce base (frozen or canned)	Cook Vegetables with large quantity of oil, onions, herbs/spices and other minor ingredients to prepare a basic cooking sauce, or a base sauce for pasta, pizza and other foods. This sauce may be canned or frozen.	Contribute to convenience and cost savings for people who regularly prepare meals.	The household market are small.	Medium potential. Vegetables are a major ingredient in various sauces, therefore are in huge demand by various food manufacturers, restaurants and catering businesses. To develop a product and marketing strategy to serve the hospitality industry in the central and northern parts of South africa may be a viable strategy.
Vegetable sauce	Sauce made from Vegetable puree, sugar and other ingredients, then bottled.	Convenient to use and does not require refrigeration after opening due to low water activity and high acidity. Large and established market.	The market is mature and saturated, with strong competition from imports.	Very low potential due to competition.
Canning/bottling of Vegetables	Cook Vegetables in a sealed can (jars or bottles can also be used for small-scale processing) in boiling water or in a pressure cooker.	Fairly stable demand. Because Vegetables are an acidic food there is no need to use the more complex and expensive pressure cooking method.	Some loss of nutritive value and taste may occur.	Low potential because the market is saturated.
Pickled Vegetables	Can or bottle Vegetables with vinegar or brine as preservative method.	Very simple method.	Acquired taste and generally not a popular method to preserve Vegetables.	Low potential due to low demand.

Processing method	Description	Opportunities	Challenges	Priority & gaps/opportunities
Vegetable preserve	Cook Vegetables with sugar in the form of chunks (to produce Vegetable preserve) or pulp (to produce Vegetable jam).	Low barriers of entry.	Require large quantities of sugar, which pose health concerns amongst consumers. Vegetable preserve or jam are not as popular as jams or preserves produced from many other fruit.	Low potential because of low demand.
Ripe Vegetable chutney	Savoury condiment made from ripe Vegetables.	Easy to produce, store and transport.	Demand is low and the market can become easily saturated.	Low potential because of low demand and poor competitive position.
Green Vegetable chutney	Savoury condiment made from green or immature Vegetables.	Enable Vegetables to be harvested green, which can be useful when winter is approaching and frost or too cold temperature will prevent the Vegetables from maturing, when the next crop needs to be planted, or when demand for green Vegetables (green Vegetable chutney) is high.	Demand is low and the market can become easily saturated.	Low potential because of low demand and poor competitive position.

Source: Manstrat, 2015

8.2.10 Socio-economic (Employment 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 vegetable industry, i.e. the number of the job opportunities created at different levels for every additional R1-million production.

TABLE 42: EMPLOYMENT MULTIPLIER, 2015

Commodity	Direct Multiplier	Indirect Multiplier	Total
Vegetables	1.90	0.62	2.52

Direct Multipliers

The direct multiplier measures the direct impact emanating from a particular sector on itself. For instance, the direct multiplier will measure how an increase in the production of a particular sector will affect employment within the same sector. These direct impacts are very closely related to the sector and, as such, are probably the most important impacts from a strategic planning point of view.

Indirect Multipliers

Indirect multipliers reflect the impacts that a particular sector will have on all other industries that supply inputs (materials) for the operations taking place in the relevant sector. These 'backward linkages' are important as they measure the broader impact that changes in the direct sector will have on the economy. Frequently, these indirect impacts are significant, and may even exceed the direct impacts themselves.

8.2.10.1 Contribution to food security

Currently in iLembe, a Schools Nutrition's Programme is underway and has commenced roll out in 2013. This programme responds to children who live in some of the poorest communities in the province, and enables the provision of fresh produce to these children to allow them to be properly nourished and achieve the most from their schooling careers.

The Schools Nutrition Programme is a poverty alleviation project and as well as feeding children, it is also providing a much needed income for the 500 plus farmers and their helpers more than 1 000 in total who are already growing the vegetables. This number is expected to increase as further farmers are identified.

Hundreds of tons of vegetables butternut, cabbage, spinach, green beans, tomatoes and onions-have already been grown for schools by the farmers in co-operatives in the four main

areas of the region: Ndwedwe, Maphumulo, Mandeni and KwaDukuza. This project is achieving its aim of turning subsistence farmers into commercial farmers and as a result, the project received recognition at the Municipality Excellence Awards in 2013 in addition to scooping the Best Community Project Award for the iLembe Vineyards and Co-operative Winery.

The project is being run by the local economic development agency, Enterprise iLembe, a district municipal entity. It was selected by the provincial Department of Education as it has the most advanced development agency in the province. The programme aims to reach some two million school children in more than 5 000 schools.

Several provincial government departments are involved in the project, ranging from the Department of Agriculture, which provided the original vegetable seeds, to the Department of Economic Development and Tourism as well as the Department of Co-operative Governance and Traditional Affairs. Some of the seeds are grown in Dube Tradeport's Agrizone and then the plants are grown on land cultivated by the farming co-operatives.
The vegetables are then transported by Enterprise iLembe to agricultural hubs, cold storage facilities where 22 people have already got temporary jobs. The vegetables are packed into the correct amounts for each school and are collected by service providers who distribute them to the schools. The meals are prepared by dedicated food handlers.

Enterprise iLembe has also trained the farmers in such skills as preparing invoices, as well as the procedures in what to do to become suppliers for the school's nutrition programme. A spin-off is that the farmers' excess vegetables are now being sold to other customers, and the Gooderson Hotel Group is one of the commercial customers to sign up for the locally-grown vegetables.

8.2.11 New entrants

8.2.11.1 Potential Entrepreneurs (BBBEE)

Romac Farms is a 4.3ha hydroponic farm positioned close to Ballito. Five years ago, Zimbabwean Jeff Shinns and his daughter Lauren Hinds bought the farm to grow tomatoes, fancy lettuce, spring onions and herbs in 48 tunnels and three shade houses with closed circuit gravel bed systems. An accompanying pack house processes a wide range of cut vegetable and salad lines using own-grown and bought-in produce.

An accountant by profession, Jeff owned a business manufacturing disposable medical products in Zimbabwe which he sold when the family moved to South Africa in 2002. Lauren

completed a master's degree in agricultural management at the University of KwaZulu-Natal in Pietermaritzburg. With sterile environment manufacturing experience, Jeff was a good candidate to run the pack house, while Lauren's agricultural background made her suited to the growing side of the operation.

The main crop is cherry tomatoes, which contribute 50% of the yearly income from the growing division, with annual yields of 36 000kg. Fancy lettuce such as red and green frilly lettuce, green and red cos and butter lettuce make up 30% of the income at 14 000kg/ year, while spring onions contribute 15% at 12 000kg/ year. An assortment of herbs including rocket, basil, fennel, thyme and mint contribute 5% at 1 000kg/year.

Tomatoes grow in coco peat at a density of 960 plants/300m2 tunnel while fancy lettuce, spring onions and herbs grow in gravel. "What we grow on the farm makes up 30% of the volume of product that goes through our pack house. The pack house produces raw material for any and every cut veg and salad line you can think of, from julienned stir-fry vegetables to Greek salads, roast vegetable mixes, potato bakes and fruit salads. We supply the Spar distribution centre (KZN) with all its cut veg and salad lines. We also supply restaurants and airline catering companies," says Lauren.

The Romac pack house is supplied by contract growers. They buy in 2-3 tonnes of butternut, 1 tonne of potatoes and 1 tonne of sweet potatoes every week. On a daily basis they buy in 100kg of green beans and 100kg of spinach as well as other vegetables such as onions, peppers and carrots. Romac farm is Global GAP accredited and is in the process of acquiring Hazard Analysis and Critical Control Points (HACCP) and ISO 22000 certification in the pack house. "Traceability is a huge factor and there is pressure from Spar to be Global Gap and HACCP compliant. We believe certification will give us an edge over our competitors. The downside is the immense amount of paperwork to be done," says Lauren.

Business sense

In response to the pressure retailers are putting on their business partners to improve their Broad-Based Black Economic Empowerment (BBBEE) scorecards, Jeff and Lauren sold 74% of their business to BEE partners six months ago. New partners, Mel Clark and Malcolm Biggar, are consultants in the economic development sector. The new partners are bringing business opportunities to the table and allowing Romac to tender for government projects.

8.2.12 SWOT analysis

The following table summarises the strengths, weaknesses, opportunities and threats for the vegetable industry within the district:

TABLE 43: SWOT ANALYSIS - VEGETABLES

Strengths	Weaknesses
• Major economic advantages • Highly nutritive products • Contributor to food security • Proximity to major market • Availability of natural resources • Maximal soil usage • Wide variety of vegetables can be grown	• Shortage of skilled workers • Poor farming practices • Non-standard of product • Limited irrigation resources/capacity • Lack of Good Agricultural Practice (GAP) principles • Short marketing window (perishable product) • Small-scale production not competitive • Lack of access to market • High level of post-harvest losses • Inadequate working capital
Opportunities	**Threats**
• Intensive production • Organic production • Local labelling (food labelling) • Employment opportunities • Change in consumer preference (healthy living) • Growing preference for convenience • Increasing demand for fresh produce globally (export market) • Cooperative farming (alliances – economy of scale) • Technological advancement	• Increasing input costs • Market limitations • Consumer habit • Competition • Extreme weather conditions (drought & hail) • Pest problems • Disease • Barriers to entry • Food safety issues • Regional competition • Retailer consolidation (preference toward particular producers)

Source: Urban-Econ, 2015

8.3 Poultry

The poultry industry prides itself on being an industry that feeds the nation, as more poultry products are consumed annually, more than all other animal products combined. The South African poultry industry is an important contributor to the country's economy as well as to food security.

Broiler production is the largest segment of South African agriculture by 17.5% as of 2013 which constitutes 1.7% of the total gross value of agricultural product and 37.6% of all animal products in South Africa in terms of Rand value. It remains the major broiler producer in Southern Africa accounting for 80% of total broiler production within the region. The farm income from broiler meat in 2013 was R31.5 billion at farm gate level and R54 billion at a retail level (eggs and meat combined). Broiler production dominates the agricultural sector and it is the main supplier in protein diet than all other animal proteins combined.

8.3.1 Market Assessment

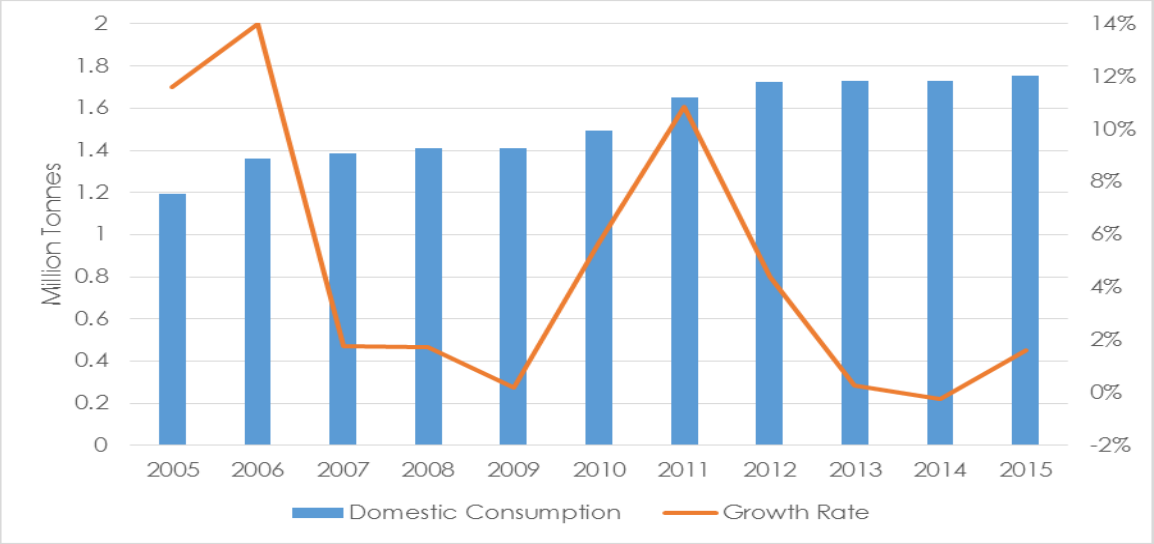
The industry's ability to compete within the global context and the implications for its long term sustainability has been questioned in light of growing imports to meet domestic demand. From 2001 to 2012, chicken consumption in South Africa increased by 74%, almost 800 000 tons. Of the additional meat consumed over this period, 65% was domestically produced, with imports accounting for the remaining 35%. Since 2010 however, almost 200 000 tons of additional

chicken has been consumed, yet only 35% was produced domestically, with imports accounting for 65%, this role reversal has negative impacts for South Africa's trade deficit.

8.3.1.1 Local Markets

The relevance of the figure below to poultry dictates the extent of local demand for the poultry commodity. Analysis of the above illustrates that between 2005 and 2015 (10 Years), poultry consumption has increased by almost 600 000 tonnes (50%). Between 2006 and 2009, consumption remained fairly constant while growth levels dipped to periods of no growth in 2009. A substantial recovery was made in 2010 which continued into 2011, seeing growth rates reach 10%, this was short-lived as growth rates slumped to 2% by 2015, and again consumption remained fairly constant since 2011.

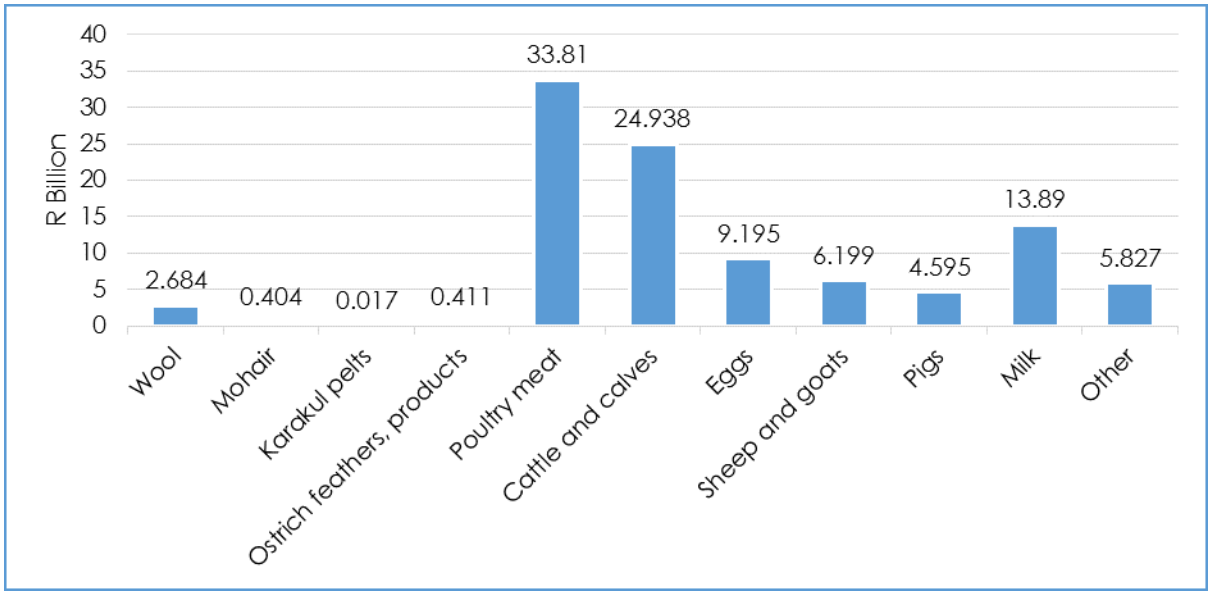
FIGURE 50: CONSUMPTION OF POULTRY IN SOUTH AFRICA, 2005 - 2015



Source: Index Mundi, 2015

The Gross Value of Animal Product is listed in the figure below.

FIGURE 51: GROSS VALUE OF ANIMAL PRODUCTS, 2014



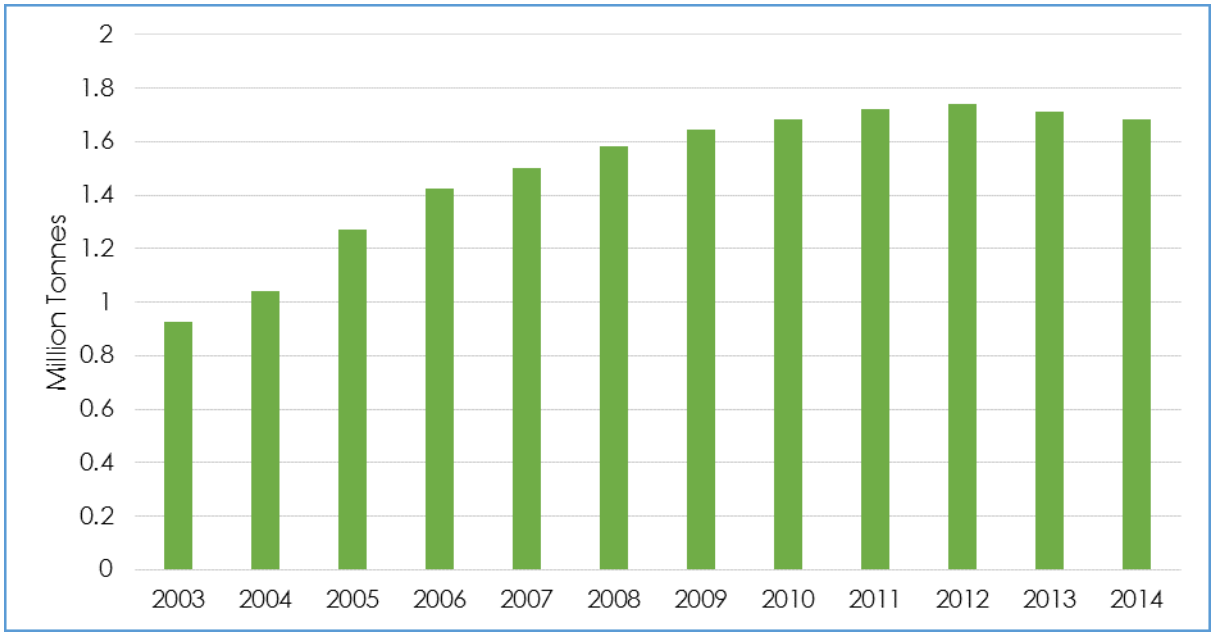
Source: South African Poultry Association, 2014

The figure above indicates that in 2014, the gross value obtained from primary agricultural production from poultry meat was R33.8 billion. The total gross value of animal products during 2014 was R102 billion, which contributed towards the total gross value of agricultural products which was approximately R218 billion. Animal products contributed a total of 46.8% towards the gross value of total agricultural products.

The figure below indicates that there has been an increase in the production of white meat between 2003 and 2014. In 2003, 925 000 tonnes of white meat was produced, this had increased by an average annual rate of 6% to almost 1 700 000 tons in 2014, an 83.8% increase overall.[29]

FIGURE 52: PRODUCTION OF WHITE MEAT

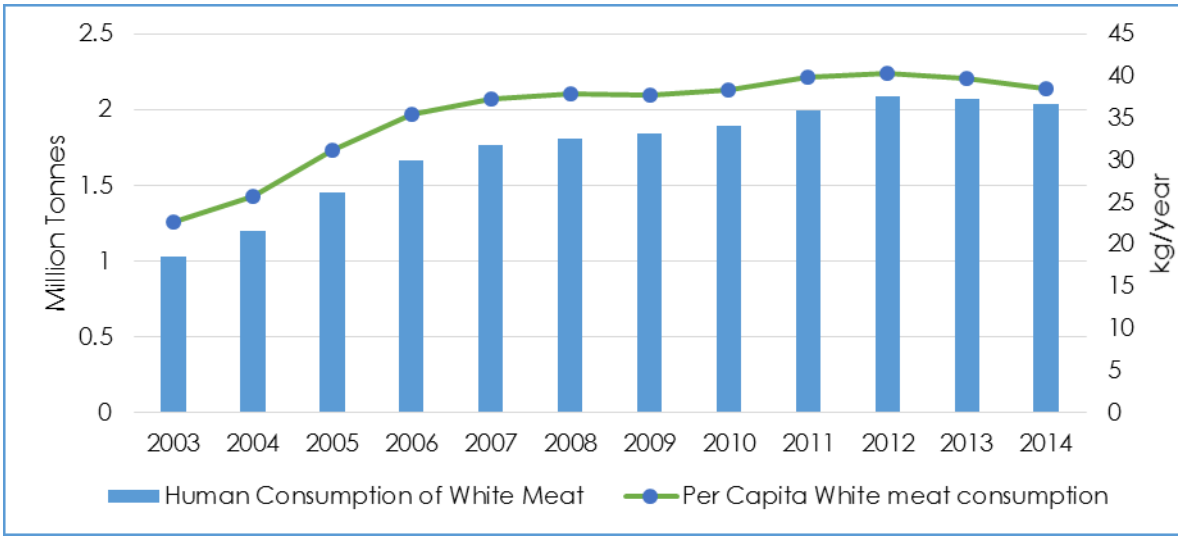
[29] South African Poultry Association, 2014



Source: Department of Agriculture, Forestry and Fisheries, 2015

The production of white meat is indicated in the figure above and consumption is indicated below.

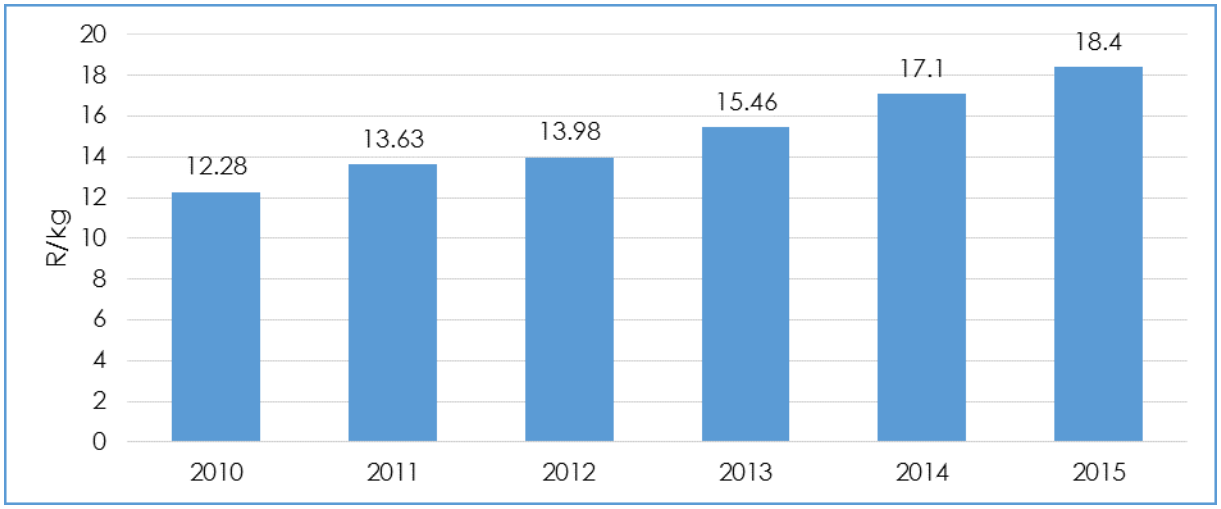
FIGURE 53: CONSUMPTION OF WHITE MEAT



Source: Department of Agriculture, Forestry and Fisheries, 2015

From the figures above, the consumption of white meat has increased from approximately 1 000 000 tonnes in 2003 to 2 000 000 tonnes in 2014 with an increase in per capital consumption from 22 kg per year in 2003 to 39 kg per year in 2014. The following figure indicates the yearly average producer price since 2010.

FIGURE 54: PRODUCER SALES



Source: South African Poultry Association, 2014

In the figure above, annual producer prices for broiler sales has increased since 2010 by an average rate of 8% annually, from R12.28/kg to R18.40/kg. The increase in chicken prices could be attributed to higher import duties and tariffs, duties such as anti-dumping duties.

8.3.1.2 Global Markets

In light of these numbers, questions have been raised regarding the South African producers' competitiveness in the global context. Based on technical efficiency indicators, South African producers compete well against international counterparts. When the cost of production is considered however, the picture changes, largely as a result of feed cost differentials. South African feed costs on a per ton basis is significantly higher than the US and Brazil. Feed accounts for up to 70% of variable production costs per cycle, hence differences in feed costs are considered the main driver behind differences in production costs across these regions.

In order to ensure its competitiveness, a number of trade measures are applied within the industry. In 2013, an application for an increase in the general duty applied on imported products was approved, yet the composition as well as the origin of imports diminished the impact of these duties on domestic prices, as products originating from the European Union (EU) remained duty free under the Trade, Development and Cooperation agreement (TDCA). Furthermore, antidumping duties have been applied to bone-in portions originating from the United States (US) for more than a decade and in 2014, the industry applied successfully for additional anti-dumping duties on bone-in portions originating from the United Kingdom, the Netherlands and Germany. Beyond the level of tariffs however, the underlying reasons behind the lack of competiveness will need to be addressed in order to ensure the long run sustainability of the sector.[30]

[30] Bureau for Food and Agricultural Policy, 2015 - 2024

Broiler production, consumption, exports and imports from 2004 to 2013 are summarised in the table below.

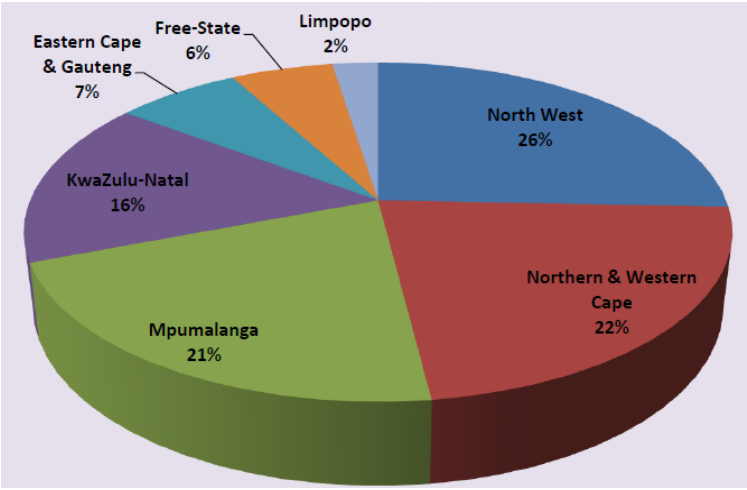
TABLE 44: BROILER PRODUCTION, CONSUMPTION, EXPORTS AND IMPORTS (2004 – 2013)

Years	Production	Broilers slaughtered	Consumption	Exports	Imports
	'000 Tonnes		No. of Chicken	'000 Tonnes	
2004	928	701 605	1 082	4	182
2005	1 019	769 379	1 204	2	214
2006	1 143	831 441	1 383	2	294
2007	1 200	864 962	1 470	2	276
2008	1 276	924 072	1 508	3	220
2009	1 358	931 443	1 558	19	231
2010	1 430	968 796	1 645	17	265
2011	1 478	978 873	1 753	10	349
2012	1 499	950 366	1 836	7	403
2013	1 529	947 421	1 899	15	391

Source: Department of Agriculture, Forestry and Fisheries, 2012

The above table shows that South Africa imports broiler meat to satisfy the local demand, while also exporting smaller quantities. It further shows that the imported quantities exceeded the demand due to the dumping of certain parts of broiler meat from Brazil and United States of America. South Africa imposed anti-dumping duties to USA and increased the general tariff on imported broiler meat to minimize imports from Brazil as this dumping was posing a threat to local producers. The figure below shows the provincial distribution of broiler supply for 2014.

FIGURE 55: BROILER PRODUCTION SUPPLY - SOUTH AFRICA, 2014

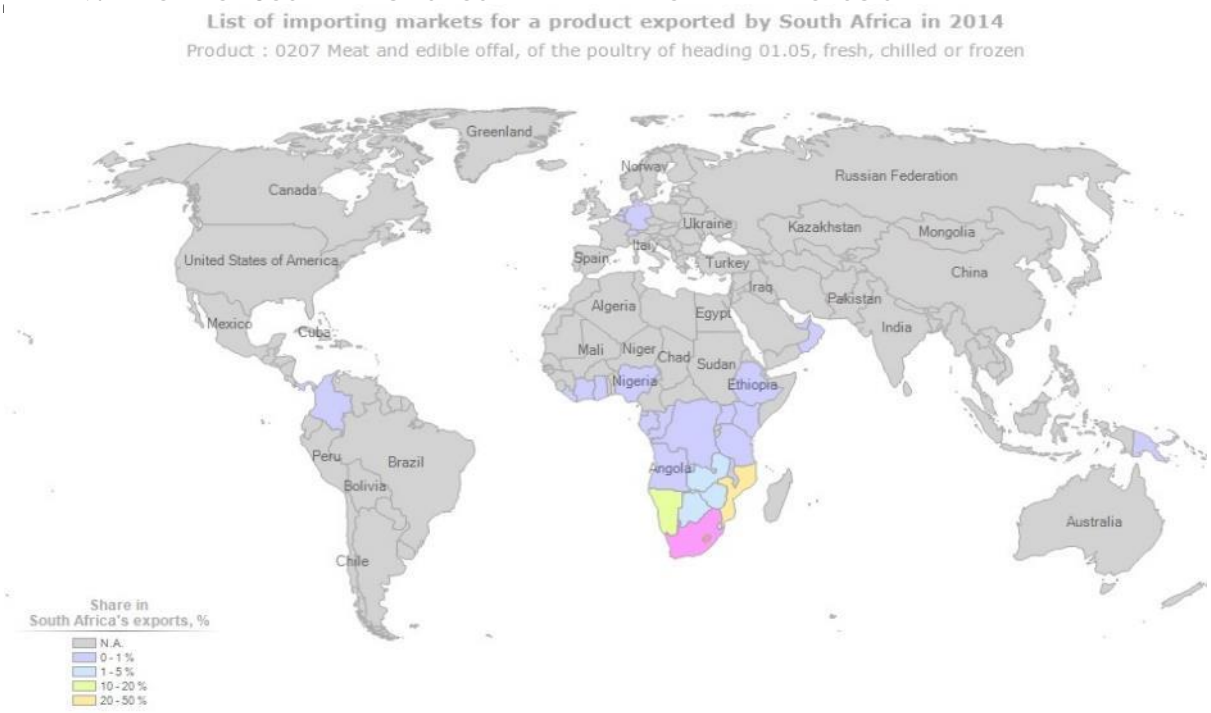


Source: DAFF, 2014

Depicted above, leading broiler supply originates in the North West (26%), followed by the Northern and Western Cape (22%), and preceded by Mpumalanga (21%) and KZN at 16%.

As indicated in table 10 above, South Africa also exports a small amount of broiler meat to neighbouring countries. Mozambique and Zimbabwe has been competing for dominance throughout the decade. Further evidence of exports is provided in the map below.

MAP 19: EXPORT FOR SOUTH AFRICA'S POULTRY MEAT AND OTHER BY-PRODUCTS

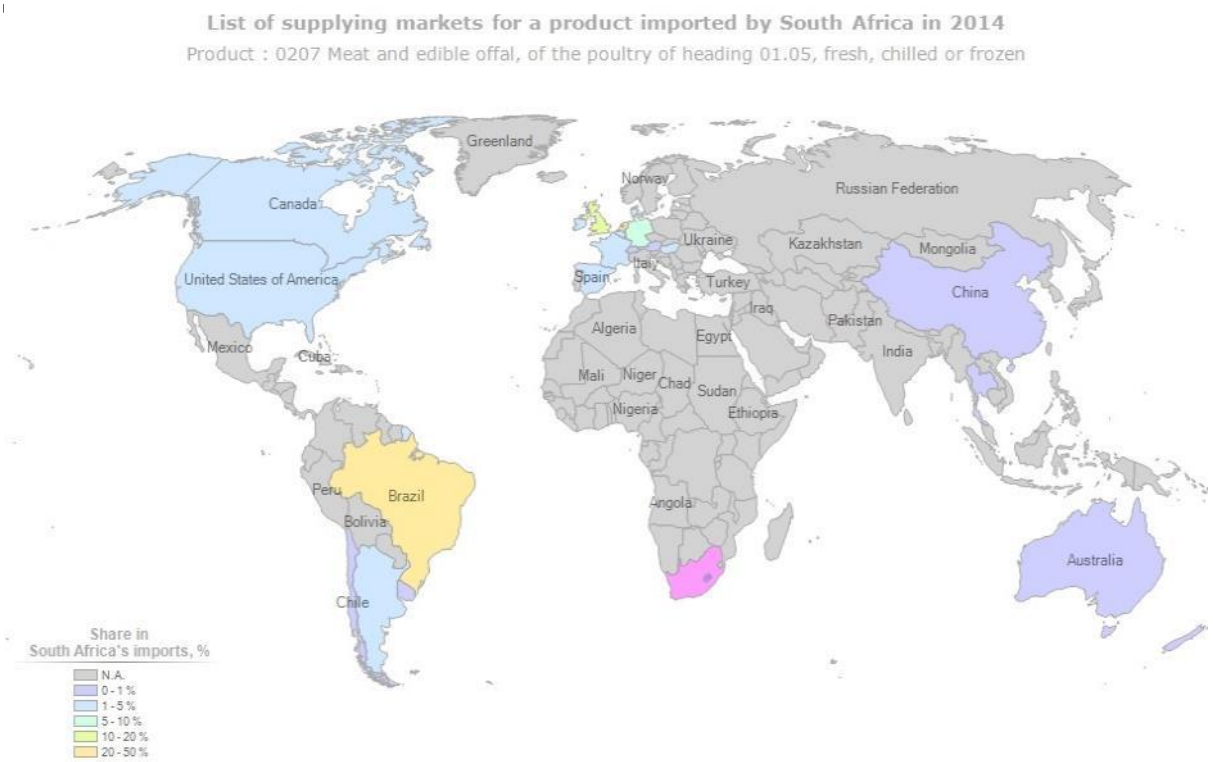


Source: ITC, 2015

The map above illustrates that Mozambique and Namibia are major export destinations for South African poultry meat. Between 20% and 50% of exports landed in Mozambique, while between 10% and 20% of exports land in Namibia. Other export destinations include Botswana, Zambia and Zimbabwe, where between 1% and 5% of poultry products are exported respectively. South Africa imported approximately 400 million kilograms of broiler meat in 2013 at an estimated value of R 4 billion.

The imports quantity and value showed significant increases of 163% and 539% respectively compared to 2003. This drastic increase might have been caused by the alleged dumping of certain pieces of broiler meat from Brazil and Unites States. **Error! Reference source not found.** 3 indicates the countries from which South Africa received imports.

MAP 20: COUNTRIES FROM WHICH SOUTH AFRICA RECEIVED POULTRY MEAT EXPORTS



Source: ITC, 2015

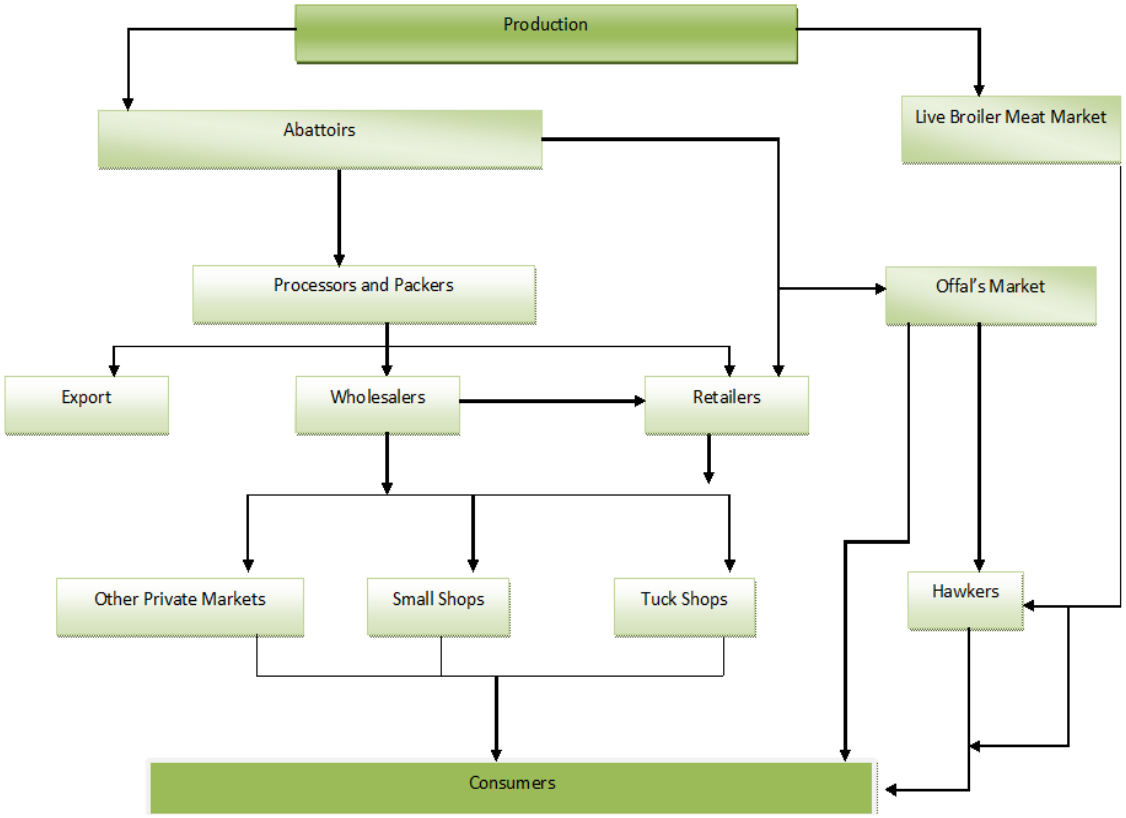
The map above clearly indicates that Brazil is responsible for most of the chicken products imported by South Africa with between 20% and 50% of the import share. The United Kingdom and other European countries are also responsible for a major portion of the imports in South Africa, while the USA, Canada and Argentina import shares are between 1% and 5% respectively. Interestingly, South Africa does not import chicken meat products from other African countries.

Locally, the broiler meat industry in South Africa is dominated by two large producers, namely Rainbow Limited and Astral Foods. Together these two companies produce 46% of the total broiler meat production. Rainbow produces approximately 235 million broilers per annum and Astral Food produces about 220 million broilers per annum. Country Bird is the third largest producing 68 million broilers per year. The other 4 medium-sized producers (Tydstroom, Daybreak, Fouries Poultry Farms and Rocklands) produce more than 50 million broilers per year and collectively they supply 22% of the market. These top 7 companies supply about 75% of total South African broiler meat and 25% is supplied by hundreds smallholder producers. The domestic market consists of approximately 265 formal abattoirs. These abattoirs sell mainly to 5 main retailers (Pick n Pay, Shoprite-Checkers, Spar, Woolworths and Massmart) and SMME's in the retail sector. These retailers buy the largest share of domestic production.

8.3.2 Value Chain Assessment (Broilers)

The following section will diagrammatically represent and provide an analysis of the broiler value chain. The opportunity analysis will identify potential opportunities within the value chain. The development of sustainable supply and value chains in the vegetable sector from production through processing to markets is important. The value chain below is for broilers. The value chain will visually represent the process from the production of the commodity through to the consumer. The following value chain is for the broiler industry.

FIGURE 56: POULTRY BROILER VALUE CHAIN



Source: Urban-Econ, 2015

iLembe is well suited for broiler production and there are several factors which impact on their productivity and growth in the sector. These factors include;

- Growth in the South Africa economy and rising consumer demand;
- International trade and trade agreements;
- The global recession and rise in food prices;
- The land reform programme;
- Reliance on imports;
- Water availability;
- Changing consumer patterns and demand such as organic foods;
- Rising costs of agricultural inputs;

- Technological changes and mechanisms;
- Quality standards;
- Farm safety and security;
- Broad based black economic empowerment;
- Skills demand and supply;
- HIV/AIDS; and a
- Changing climate

Broiler is a highly important commodity in South Africa. Favourable climate and natural resources are suited for broilers production in the region. Factors influencing broiler production include the expansion of the fast-food industry, higher population income earning ability, the rapid rate of urbanisation and influx of international processing companies.

8.3.3 Main Input Suppliers

As broiler is classified as primary production, as such the upstream activities relevant to the value chain are primary input suppliers used in the production system. The major inputs for broilers are vaccinations, feed, equipment, point of lay hens, etc. The table below tabulates the various types of inputs that broiler and laying farm will require for its day-to-day operations.

TABLE 45: MAIN INPUT SUPPLIERS TO THE BROILER INDUSTRY

Company	Type	Service
Dicla Farm & Seed	Agricultural equipment supplier	Animal nutrition and Equipment
AFGRI Feeds	Agricultural feed supplier	Animal nutrition
Alfa Chicks	Day old chick supplier	Day old chicks
Meadow feeds	Agricultural feed supplier	Animal nutrition
SA Veterinary Association	Veterinary Association	Animal nutrition and health

8.3.4 Agro-processing Opportunities

Handling, slaughtering, washing, portioning, grading, packing, packaging, labelling and transporting are all important practices aimed at preserving the quality of the produce, and presenting it to the best advantage. Prices achieved, and thus differences in income obtained, can be greatly affected by the emphasis placed on these practices. They must, therefore, be considered as important elements in the agro-processing and marketing strategies.

Most commercial producers consider only one or two of the major national markets as marketing outlets, to the exclusion of all other possibilities. The larger producers will supply even some of the far-distant national markets, provided better prices prevail there. Nationally linked information networks can supply daily prices to producers. These national markets, in all the

big centres, must remain the major outlets for many of the large broiler meat producers, because of the scale of their operations. Smaller producers may possibly be able to dispose of the bulk of their produce more profitably through outlets other than the national markets.

TABLE 46: POULTRY PROCESSING OPPORTUNITIES

Requirements	Poultry
Juicers, Bottlers and Sealers	**Chicken Broth and Powdered Soup**
Cold Storage & Packaging	**Frozen Chicken: Whole or Braai Packs**
Cold pressed, Peeled/Skinned, Sliced and Dehydrated	**Chicken Biltong and Fried Chicken Skin (Delicacy in America)**
Gutting/Recycling (Re-using waste processing)	**Offal's: Giblets and Livers (niche Market)**

Outlets to consider for broilers are as follows:

TABLE 47: POULTRY MARKETING CHANNELS

Marketing channel
Direct sales (farmer-to-consumer)
Street hawkers and visiting hawkers (informal traders)
Free markets, wet markets and live animal markets
Small independent shops or supermarkets
Large retail chains
Butchers
Restaurants and hospitality businesses
Public and private institutions that provide meals to their residents, inmates, learners or patients.
Poultry abattoirs and processors

The green highlighted outlets in the table above indicate outlets of high priority due to the following reasons.

TABLE 48: HIGH PRIORITY MARKETING CHANNELS

Marketing channel	Description	Advantages	Challenges	Priority gaps & opportunities
Large retail chains (4%)	A farmer may supply directly to large national or global retail groups, usually by contract. Some large retailer groups buy centrally, while others such as Spar allow local stores to buy independently which makes it easier for small local farmers to sell to this lucrative and growing marketing channel. Will not buy live chickens from farmers, however, the farmer may arrange for custom processing by a chicken abattoir, then sell this value added product to retailers.	Large and stable demand. Very attractive for larger, well established farmers who can produce on a consistent basis.	Although some retail chains do have special programs to buy from smaller farmers, this is not well established yet in the case of broilers.	High priority because retailers are the most important channel to reach poultry consumers of all income groups.
Restaurants and hospitality businesses (1%)	Sell to restaurants, pubs, deli's, fast food outlets, hotels, lodges and hospitality businesses who will prepare and serve chicken in a ready-to-eat form directly to the public.	Good prices can be attained. Strong, consistent demand growth. Potentially a profitable channel for small farmers organised into the Agri-Park system.	Legal consequences in case the farmer cannot supply as per contract. Entrepreneurial spirit, willingness to accept risk, invest in sales effort and to build customer relationships are important.	Very high potential because of high demand and the fact that farmers organised into the Agri-Park-Park system will be able to secure such lucrative contracts.
Public and private institutions that provide meals to their residents, inmates, learners or patients, and well-funded food schemes (1%)	Sell to private or government institutions or businesses with a catering unit e.g. some schools, public university residences and dining halls, prisons, hospitals etc, to prepare and serve chicken in a ready-to-eat form to their learners, residents, inmates or patients. This also includes well-funded government or NGO food schemes with formal and strong food buying contracts. The sales arrangement is almost always by contract.	Can be a very stable market, and prices tend to be fair. There are good opportunities for larger Black farmers to source government institution contracts.	Ability to be a reliable and consistent supplier is very important. Non-renewal of a supply contract may be devastating in case the farmer became too dependent on a particular institution.	High priority for government managed institutions and food programs because sourcing from Black farmers at are organised as in the Agri-Parks scheme is an important government priority, therefore it may be fairly easy to secure large contracts.
Poultry abattoirs and processors (56%)	Sell to poultry abattoirs or processors, often by contract. Abattoirs are a very important and major marketing channel for broilers. They slaughter the birds and sell the meat to butchers, retailers and sometimes operate their own butcheries or poultry meat processing plants. Poultry processors usually buy from poultry abattoirs or even have their own poultry farms and abattoirs, but some processors do buy directly from poultry farmers.	Strong and consistent demand. Livestock of good health and sale of stock in bulk. Some processors provide support to farmers.	Better prices can be negotiated based on availability of supply. Transport costs are high in the absence of a nearby poultry abattoir. Strict quality, legal and health criteria applies.	High priority during the initial phase only because it is an easy channel to start with, but more profitable channels e.g. large retailers and fast food chains should be focussed upon later.

Significant marketing considerations of livestock produced include:

- Size of outlet, and cost of servicing it;
- Transport availability and cost. Distances, which affects cost, as well as deterioration of the product and Condition of the roads;
- Packaging required, such as pre-packs, cartons, boxes, pockets and their relative costs in relation to prices attained;
- Market or consumer preferences;
- Product quality or specifications;
- Contact person or agents;
- Seasonal price trends;
- Market commission and agents' fees;
- Possible delays in payment for consignments; and
- Various other possible requirements for the specified outlet.

8.3.5 Competitors

The development of sustainable supply and value chains in the broiler sector from production through processing to markets, where there are unequal power relationships between large retailers/wholesalers and agro processors, and primary red meat producers is a constraint. Producers are vulnerable to demand volatility and price fluctuations and are "price takers" because of the buyers' market power. The major poultry players in KZN are indicated below.

TABLE 49: MAIN COMPETITORS IN THE BROILER INDUSTRY

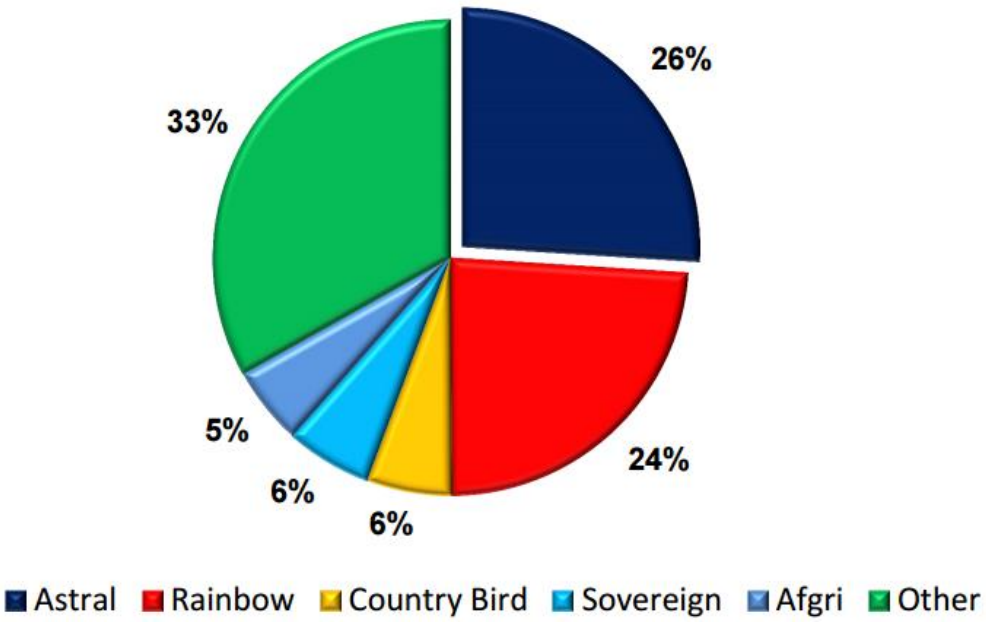
Role Player	Description
Rainbow Chicken Ltd	Rainbow Chicken is considered an integrated broiler producer. It has its own feed mill called Epol Feeds, which it uses to feed its chickens. Rainbow Chicken also breeds chicks, processes, distributes and markets value added chickens. Rainbow Chicken farms are located throughout South Africa, however, the main production areas are Rustenburg in the North West Province, and Pietermaritzburg and Durban in KwaZulu-Natal. The four main processing farms slaughter approximately 4.7 million chickens per week.
Country Bird Holdings	Supreme Chicken, Ross Africa, Master Farmer and Nuti Feed are subsidiaries of Country Bird Holdings. Supreme Chicken is located in the Free State and the North West Province. The holding also producers feed and chicks. Approximately 1.5 million broiler chickens are slaughtered per week.
Pioneer Foods Poultry Division	Divided into three poultry related segments, namely: Tydstroom (Western Cape) Poultry, Nova Feeds, and Nulaid Eggs. Approximately 1 million chickens are slaughtered per week.
Day Break Farms (AFPO Poultry)	The leading agricultural solutions and industrial foods company. The Daybreak Farms are situated in Sundra in Mpumalanga. Day Break has a subsidiary company called MidWay Chicks that producers day-old chicks. Feed is supplied by AFGRI. Day break slaughters approximately 650 000 broilers per week.

Role Player	Description
Astral Poultry	Astral poultry is the second largest producer of broiler chickens in South Africa. It also produces feed and feed premixes, which it utilises and sells to the market. The three major production areas are Camperdown in KwaZulu-Natal, Astral slaughters approximately 4.125 million broiler chickens per week.
Sovereign Foods	Sovereign Foods was established in 1948. Its broiler farms are located in the Rocklands Valley in the Eastern Cape. Sovereign Foods slaughters approximately 1 million broilers per week.

Competitors within iLembe include; Poultry producers and abattoirs: OBC Chicken and Meat, Henliet Abattoir, Kiki Agri, All Sorts Poultry, Rugare Poultry, Kancane Farm, Qamar' Chicken T/a Qamar's Farm, Randvaal Chicken, Gauchix (Highpoint farm) abattoir, A.P.G Poultry, Klipkop abattoir, Rafiq's poultry, HN Pluimvee, Andies, and Bolniks.

It is important to note that the broiler meat industry in South Africa is dominated by Rainbow Limited and Astral Foods, which together produce 46% of the total broiler meat in South Africa. The figure below illustrates the relative market shares of the major producers.

FIGURE 57: MARKET SHARE OF LOCAL BROILER PRODUCTION SOUTH AFRICA, 2013



Source: Astral, 2015

Astral produces approximately 257 million broilers per annum and Rainbow produces about 237 million broilers per annum. Country Bird and Sovereign Foods are jointly the third largest companies producing 59 million broilers each annually, whilst the fourth largest producer is Afgri, production is estimated at 49 million broilers per year. The other 4 medium-sized producers (Quantum foods, Daybreak, Fouries Poultry Farms and Rocklands) produce the remainder of the 329 million broilers per year and collectively they supply 33% of the market.

These major producers supply about 75% of total South African broiler meat with the remaining 25% is supplied by hundreds smallholder producers.

8.3.6 Technology

Technology plays a vital role in the development of the agricultural industry and today farmers use technology to assist in producing food for a growing world. High tech advances have been assist in making farming life easier and more profitable. Smaller farmers can hold their own by moulding the technology to fit their management techniques and needs.

The table below indicates the various technologies that the Agri-Park can use within iLembe. By utilising the various technologies, the small scale and emerging farmers can improve on the production of the poultry farmed and ultimately increase their profit.

The technologies were rated on a scale of 0 (not at all) to 3 (highly applicable), for the purpose of identifying the most suitable only those rated 2 and 3 are provided in the table.

TABLE 50: POULTRY TECHNOLOGY

Technological Requirements	Function or benefit to farmer
Mechanisation	
Small-scale implements and tractors: New generation of farming implements and tractors tailored for small-scale farming.	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.
Precision Farming, Integrated Farm Management Systems and Software	
Precision farming: Gaining real-time or exact information within particular parts of a single field e.g. moisture and nutrient levels, soil type and depth etc, to determine the most appropriate rate of application of water, fertilizer and to adjust implement settings automatically and instantly. Precision farming can also be applied to animal production, aquaculture and agroforestry systems.	Optimising and tailoring production levels at precise and small-area level so that yield is maximised and inputs are minimised.
Integrated farm management software: Combines information and management systems from various on- and off-farms sources to coordinate farming activities in a highly efficient manner. Includes a variety of technologies e.g. farm asset tracking systems, cloud computing, record keeping, accounting, mapping, water and soil management, weather forecasting etc.	Maximise profitability and efficiency automate some management and administrative tasks. Coordinate and simplify management processes.
Plan-A-Head Poultry Layer Management Software System: Complete management solution for a layer enterprise.	Integrate with other Plan-A-Head farming software to allow for whole-farm enterprise management. A particular strong feature of the system is input control such as feed, bedding material, medicines and other inputs. The light edition is particularly suitable for small-scale farmers.

Technological Requirements	Function or benefit to farmer
Plan-A-Head Poultry Broiler Management Software System: Complete management solution for a broiler enterprise.	Integrate with other Plan-A-Head farming software to allow for whole-farm enterprise management. A particular strong feature of the system is broiler growth monitoring. The light edition is particularly suitable for small-scale farmers.
Sim Junior: Basic financial management and accounting software for the small-scale farmer.	Easy to use. Ideal for the small-scale farmer
Accord: Complete human resource management system for farmers, including payroll, HR record keeping and administration.	Particular strong features of the system include its simplicity and coverage of basic employment legislation.
Groundwater Access Via Wells or Boreholes	
Manual well digging or borehole drilling: Although mechanical drilling can reach depths of 150 meters, it is generally too expensive for small-scale farmers. In case the groundwater table are less than 45-meter-deep and the subsoil material are soft, manual drilling or well digging are a cost efficient option.	Gain access to groundwater resources much more cheaply compared to conventional mechanical drilling.
Animal Watering	
Auto-refill watering troughs: Water troughs fitted with a small reservoir and low pressure floating valves to enable automated re-filling.	Not only steady and easy to clean, but also re-fill automatically from a small build-in reservoir which minimizes contamination and risk of wastage.
Animal Health	
Vaccination: 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. Very high return on investment.
Antibiotics: Have two main applications in agriculture: 1) To treat infections, which is an important technology but will not be discussed in detail because it is a specialised field that are taken care of by animal health professionals, and 2) 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.	Increased growth rate and resistance against disease in case of routine feeding supplementation, however, the cost to society could be large and devastating.
Farm Energy	
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 pumping, including electricity generation at micro or farm level scale.	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. Less vulnerable to theft compared to solar panels.

Technological Requirements	Function or benefit to farmer
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.	Solar is a renewable form of energy and most areas in South Africa do have sufficient wind development potential.
Biogas fermenters: Biogas can be produced from a variety of on-farm sources, especially animal dung of animals kept in confined areas. Can be used in the same way as conventional petroleum derived or natural gas.	Enable the farmer to become independent of imported and increasingly expensive mineral or natural gas. Especially suitable for intensive livestock, pig and poultry farmers which produce large quantities of animal waste. New techniques enable even small farmers with just a few animals to produce gas in a viable manner.
Farm Protection, Security and Visual Monitoring	
Video and photographical technology: Fixed point photography, security camera systems and remote sensor-triggered photography.	Valuable to monitor veldt condition, effects of grazing or fire control regime, rehabilitation efforts, and to monitor animal or criminal activity in remote parts of the farm. Some systems notify the farmer by SMS of sensed activity and immediately send the footage by MMS or video clips to the farmer's mobile device (in additional to conventional recording and storage of images or video).
Apps for Mobile Phones and Tablets	
THE MERCK VETERINARY MANUAL: Mobile App, available for both Android and Apple. It contains guidelines for the diagnosis, treatment, and prevention of animal disorders and diseases.	Comprehensive animal health and reproduction reference not only to vets but to farmers as well.
Layer Farm Manager: Poultry management software to monitor commercial egg production performance. Provides a comprehensive analysist egg production performance against breeding standard and among the other farms.	Concise overview of the layer industry.
Poultry: The app helps you to learn all about poultry farming. This is a complete guide with tools to run a successful poultry farm. The app also has a question, answer tab, to get clarifications from experts.	Good tool for the new or prospective farmer to gain a better understanding of the poultry industry from a general production perspective.
Online and mobile information portals	
Agri-Suite Online: Internet based agricultural information system developed and maintained for farmers. Provide a variety of general agricultural information directly to farmers.	The system can be accessed on a PC or Mac, on tablets and smartphones, in the office or on the farm. Contains the most essential, useful and concise information in a very simple and user-friendly format.

The goal of the Agri-Park model is to uplift the small scale farmers in South Africa so they can compete with commercial farmers in future. For the small scale farmer to competitive it is important that they have the latest technologies available. It is thus necessary that the above mentioned technology be considered for the Agri-Park.

8.3.7 Demand and Needs Analysis

The most important marketing channels and channel related opportunities include custom processing arrangements with poultry abattoirs combined with contract farming directly for government institutions, hospitality industry and especially large retailers.

Gaps in the market for processed chicken products are mainly limited to simple value adding techniques, including improved slaughtering, portioning, branding (huge scope for further development), packaging and freezing, and to some degree market development for chicken offal products. Extensive processing is not recommended during the establishment phase due to global competition and high capital expenditure.

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.

TABLE 51: ESTIMATED DEMAND FOR WHITE MEAT

Area of demand	Demand per Capita	Population	Estimated demand (tonnes)
South Africa	36kg	54 723 280	1 970 038
KwaZulu-Natal	36kg	10 819 015	389 485
iLembe	36kg	568 563	20 468
eThekwini	36kg	3 724 133	134 069
Ugu	36kg	766 053	27 578
uMhlatuze	36kg	354 735	12 770
uMgungundlovu	36kg	1 050 772	37 828

Source: Quantec, 2015

At an average per capita consumption of white meat at 36kg (2015), there is a clear demand for chicken in South Africa. Demand for chicken, or white meat, on a national level, is approximately 2 million tons. In KZN, the demand for chicken is approximately 20% of the total demand – a clear indicator that producers within KZN have a market that which has potential for growth and development.

8.3.8 Socio-Economic (Job Creation)

Amongst the objectives of the Agri-Parks Model is to create opportunities for employment within the agricultural sector. Employment, however, may not necessarily be a result of expanding primary production, but also the value adding activities that may occur through the value chain.

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 broiler production industry, i.e. the number of the job opportunities created at different levels for every additional 1 ton that that is brought into production.

TABLE 52: BROILER POTENTIAL EMPLOYMENT

Commodity	Direct Multiplier	Indirect Multiplier	Total
Poultry	0.0222	0.0143	0.0365

Direct Multipliers – 0.0222: The direct multiplier measures the direct impact emanating from a particular sector on itself. For instance, the direct multiplier will measure how an increase in the production of a particular sector will affect employment within the same sector. These direct impacts are very closely related to the sector and, as such, are probably the most important impacts from a strategic planning point of view. The multiplier of 0.0222 suggests that an additional 45 tons of broilers would need to be produced to create an additional one permanent job.

Indirect Multipliers – 0.0143: Indirect multipliers reflect the impacts that a particular sector will have on all other industries that supply inputs (materials) for the operations taking place in the relevant sector. These 'backward linkages' are important as they measure the broader impact that changes in the direct sector will have on the economy. Frequently, these indirect impacts are significant, and may even exceed the direct impacts themselves. The indirect multiplier (or linkages multiplier) of 0.0143 suggests that an additional 70 tons of broilers would need to be produced to create an additional one permanent job.

The broiler industry is typically not very labour intensive given the availability of labour saving technologies, but it is the size of the industry that contributes too much labour absorption.
The following table indicates a variety of opportunities that could potentially be created by developing the commodity value chain of red meat. As such the benefits will be presented in the table below:

TABLE 53: SOCIO-ECONOMIC BENEFITS

Socio-Economic Benefit	Description
Job Creation	The poultry enterprise in the Agri-Park will create sustainable employment opportunities from the inception of the project, construction and through to the operation of the Agri-Park. Jobs created during the construction phase of the project will not be sustainable due to the limited duration of the construction period. The poultry value-chain process will improve the business profitability and therefore operations, similarly the need to increase efficiency and the need capacity additional human resources to operate machines, transportation and food handling. The accessibility of the Agri-Park and the poultry products could

	increase demand for poultry products, thus increasing the number people required for logistics, quality assurance, international relations officer for export and imports, trade and merchandising.
Developing skills	Environmental, consumer, and animal health are the most important statutory requirements in food production, management, and standardization. To continually produce healthy, sufficient food products and become profitable one must comply with the rules of the game, therefore developing the skills of the workers, management, and stakeholders to adhere to the standards of the industry and of the Agri-park as contemplated in the service charter will go a long way. Therefore, historically disadvantaged South Africans, women, disabled and the youth will have to be taught and trained in necessary skills (bookkeeping, call center management, Safety and Health management, Hygiene). Managers will have to be trained in financial, marketing, production and strategic agri-business management courses. Technicians will have to be trained in food quality and safety, equipment calibration techniques and butchers and meat handlers will need to know how to classify carcass, label, washing and cutting.
Spin-off opportunities	The livestock enterprise has many potential spin-offs extending beyond the borders of the Agri-park. This includes creating opportunities for packaging material manufacturers; transport industry for efficient transport systems, arts and crafts makers will have access to cheap inputs leather material. The existence of the Agri-park itself contributes the most to the communities around the areas, the transfer of communication and technologies, roads, water and sanitation infrastructure and related services.
Support to emerging farmers	The Agri-Park will need to ensure that sufficient quantities and quality meat is supplied at all times. Therefore, will require the department to improve and expand on their extension services to assist local farmers with information, priority needs, and guidance. This relates to issuing of climate change and variability cold temperature, drought signals, water management guidelines and financial support to an extent.

Handling, slaughtering, washing, portioning, grading, packing, packaging, labelling and transporting are all important practices aimed at preserving the quality of the produce, and presenting it to the best advantage. Prices achieved, and thus differences in income obtained, can be greatly affected by the emphasis placed on these practices. They must, therefore, be considered as important elements in the agro-processing and marketing strategies.

The iLembe AP could potentially produce the following products from broilers, all of which can be made available fresh or frozen. The table below highlights a few of the products that can be developed through agro-processing.

TABLE 54: AGRO-PROCESSING OPPORTUNITIES FOR BROILERS

Primary Product	Processing Opportunity	Final Product
Broiler	o Slaughtering, portioning, filleting, de boning, mincing, brining, flavouring, packaging (incl. branding), chilling and freezing. o Freezing and packaging of slaughtered meat cuts o Canning/bottling and pickling o Salting and possibly smoking of chicken meat.	o Whole bird carcass and retail chicken cuts incl. breast fillets, drumbeat sticks, leg quarters, minced chicken, mixed portions, chicken strips, schnitzel, single packs, thighs, wings, drums sticks, forequarters etc. o Frozen whole bird carcase or cut packs o Canned/bottled and pickled chicken o Cured and smoked chicken incl. chicken ham.

	○ Grinding fully/partially cooked and/or cured chicken meat, blend with seasoning and possibly binders, and force into a casing (or cook/cure afterwards). ○ Mincing, mixing with seasoning and binders, shaping, possibly crumbling, packaging (incl. labelling) and freezing. ○ Offal cleaning, packaging (incl. branding), chilling, freezing and marketing. ○ Rendering	○ Cooked and possibly smoked chicken sausages including Bologna (chicken polony) and chicken frankfurter. ○ Chicken burger patties, meatballs, nuggets and sticks/fingers (frozen) ○ Various offal products (some of which having potential to be marketed as high value products) incl. chicken feet, fat, skin, gizzards, necks, hearts, liver, bones, tails, intestines etc. ○ Rendering products originating from slaughter waste

The above table displays all the main products that can be produced by the Agri-Park poultry abattoir. Chicken cuts and offal can be packaged according to weights similar to that found within the current market. The main chicken cuts can be packaged according to weight and specifications (for example, skin removed vs. skin intact). All forms of offal can be packaged in 500 gram tubs. Chicken bones can be sold in 1 kilogram packages, bones are typically used to make chicken broth/stock.

Critical points for agro-processing are the generally high quality specifications, chemical residue tolerances, possible pre-chilling or cooling requirements, specific packaging requirements, high transport costs (particularly air transport), the prevailing demand for the product and expected prices, specific market needs, and sales agents.

8.3.9 New Entrants

This subsection indicates the potential emerging farmers that can benefit from the development red meat as a commodity. The names of these farmers are presented in the appendix A. The small scale and emerging farmers indicated in the table well represented throughout the whole of the iLembe. The list clearly indicates is the viability of using red meat as commodity due to the number of emerging farmers that already farm in the area with cattle, sheep and pigs. It is further anticipated that as the value chain is further developed, more will benefit from the Agri-Park development.

8.3.10 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 the table below.

TABLE 55: REGULATORY REQUIREMENTS

Regulation	Description and Implications on Agri-Park

Conservation of Agricultural Resources Act, 1983 (Act No. 43 Of 1983)	This Act provides for control over the utilisation of natural agricultural resources in order to promote the conservation of soil, water sources and vegetation, and the combat of weeds and invader plants. **Implication:** The AP will be required to implement policies that will maintain and monitor best agricultural practices to ensure the conservation of soil and vegetation, and also combat invader plant species.
Animal Diseases Act, 1984 (Act No. 35 Of 1984)	The Act provides for control measures for the prevention of diseases and parasites and for schemes to promote animal health. **Implication:** The AP needs to be aware of various animal diseases and the relative prevention measures necessary. The AP will be required to implement an animal health and monitoring programme to ensure the health of the broilers.
Abattoir Hygiene Act, 1992 (Act No. 121 Of 1992)	This Act provides for the maintenance of proper standards of hygiene in the slaughtering of animals and in the handling of meat and animal products. **Implication:** The AP will be required to implement a hygiene and monitoring programme to ensure hygiene standards are met in the abattoir facility.
Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 Of 1947)	The Act regulates the registration of fertilizers, stock feeds, agricultural remedies, stock remedies, sterilising plants and pest control operators. Provision is also made for control over the acquisition, disposal, sale and use of fertilizers, farm feeds, agricultural remedies and stock remedies. **Implication:** The Agri-Park, specifically through the farmer support units will need to have a programme in place that will monitor the acquisition, sale and disposal of various agricultural inputs. The programme will be necessary to ensure compliance.
Livestock Brands Act, 1962 (Act No. 87 Of 1962)	The Act regulates the registration of a brand in the name of an owner of livestock for the purpose of identifying the livestock. **Implication:** It will be the responsibility of the AP management to register a brand in the name of the Agri-Park in order to identify livestock within the programme.
Agricultural Credit Act, 1966 (Act No. 28 Of 1966)	The Act provides for a system of assistance to persons carrying on or undertaking to carry on farming operations, and control in respect of assistance rendered. **Implication:** The iLembe AP management should provide a service to its producers in the way of easing access to credit. The AP should, on behalf of the producers, assist in accessing credit for agricultural production purposes. Access to credit will allow producers access to the relevant inputs for agricultural production purposes and, as such, produce necessary products for the AH (marketing point)
Marketing Act, 1968 (Act No. 59 Of 1968)	The Act provides for the introduction of a system of control over the marketing of agricultural products and regulates the quantitative control over the import or export of these products. **Implication:** Given the system of control over marketing of products, it is recommended that the AP establishes programmes that will manage the marketing of its own products that meet the requirements of the Act.
Subdivision Of Agricultural Land Act, 1970 (Act No. 70 Of 1970)	The Act regulates the subdivision of agricultural land and its use for purposes other than agriculture. **Implication:** Subdivision and portioning of land for production will be an important aspect in leasing/making land available to producers. This Act is only critical in the event that land is subdivided for the use of production purpose.
Livestock Improvement Act, 1977 (Act No. 25 Of 1977)	The Act regulates the collection and sale of semen and ova and the artificial insemination and inoculation of certain animals, establishment of a system for the evaluation and certification of the performance of certain animals, quality control with regard to the importation and exportation of certain animals, semen, ova and eggs, incorporation of livestock breeders' societies and the maintenance of the legal personality of livestock breeders' societies, and granting of certain exclusive powers relating to the registration of pedigrees of certain livestock to the South African Stud Book and Livestock Improvement Association. **Implication:** Improving livestock, in particular broilers, is integral in terms of production efficiency. It is thus recommended that the AP establishes committees and programmes that address issues of livestock improvement in order to maintain standards as set out by the Act.
Designated Areas Development Act,	The Act provides for measures for the promotion of the density of population and of farming activities in certain areas designated by the Minister for the purpose.

1979 (Act No. 87 Of 1979)	**Implication:** It will be the responsibility of the Agri-Parks management to ensure that development of agricultural activities is done in areas zoned specifically for agricultural production.
Co-Operatives Act, 1981 (Act No. 91 Of 1981)	The Act regulates the formation, registration, management and functioning of various types of cooperatives and winding-up and dissolution of co-operatives. **Implication:** Cooperatives have already been established within the iLembe, but it is likely that new ones develop and participate in the APs system. AP management should be responsible for the establishment and registration of auxiliary cooperatives that will participate in the Programme.
Veterinary and Para-Veterinary Professions Act, 1982 (Act No. 19 Of 1982)	This Act provides for the establishment, powers and functions of the South African Veterinary Council, registration of persons practising veterinary and para-veterinary professions and control over the practising of veterinary and para-veterinary professions. **Implication:** The APs animal health programme will be required to ensure veterinary services are provided and comply with the requirement as set out in
Perishable Products Export Control Act, 1983 (Act No. 9 Of 1983)	This Act provides for the control of perishable products intended for export from the Republic of South Africa and for the continued existence of a statutory board to bring about the orderly and efficient export of perishable products from the Republic. **Implication:** In the event of export, it is imperative that the AP establishes and maintains control over the export products. It is the onus of the AP to establish a team that is responsible for food health and safety regulations.
Agricultural Pests Act, 1983 (Act No. 36 Of 1983)	The Act introduces measures for the prevention and combatting of agricultural pests. **Implication:** Best agricultural practices will be necessary to maintain control over pests. APs management should develop programmes/schedules to ensure the control of pests.
Agricultural Product Standards Act, 1990 (Act No. 119 Of 1990)	This Act provides for control over the sale and export of certain agricultural products and other related products, with a view to the maintenance of certain standards regarding the quality of products and the packing, marking and labelling thereof. **Implication:** Food and food products will go through various agro-processing activities before being a marketable product. To maintain quality assurance it is recommended that the AP establishes a team that will be responsible for carrying out activities that will meet the requirements of the Act.
Agricultural Produce Agents Act, 1992 (Act No. 12 Of 1992)	This Act provides for the establishment of an Agricultural Produce Agents Council (AAC) and fidelity funds in respect of agricultural produce agents, and for the control of certain activities of agricultural produce agents. This Act has not been brought into operation in its entirety but will eventually replace the Commission for Fresh Produce Markets Act, 1970 (Act No. 82 of 1970), and the Agricultural Produce Agency Sales Act, 1975 (Act No. 12 of 1975). **Implication:** The AP should play and intermediary role in moving produce from farm to market. As such, it is important that marketing activities are managed and monitored according to the standards set out by the Act.
South African Abattoir Corporation Act, 1992 (Act No. 120 Of 1992)	This Act provides for the privatisation of the South African Abattoir Corporation. At the incorporation of the Corporation as a company the Abattoir Industry Act, 1976 (Act No. 54 of 1976) will be repealed. **Implication:** The chicken abattoir is likely to be privatised through the farmer ownership model.
Societies for The Prevention of Cruelty to Animals Act, 1993 (Act No. 169 Of 1993)	The Act provides for control over societies for the Prevention of Cruelty to Animals. **Implication:** It is the onus of the APs management to ensure that the animals are treated fairly through best agricultural management practices.
Agricultural Development Fund Act, 1993 (Act No. 175 Of 1993)	This Act provides for the establishment of and control over an agricultural development fund for the handling of money received for development. **Implication:** Funding is a fundamental cornerstone to the development of the AP and its stakeholder. The AP management should play an intermediary role in accessing and use of such funding.

NAFTA Anti-Dumping Policy

The imported amount of broiler meat exceeded the demand due to the dumping of certain parts of broiler meat from Brazil and United States of America. South Africa imposed anti-dumping duties to USA and increased the general tariff on all imported broiler meat to minimize imports from Brazil as this dumping was posing a threat to local producers.

8.3.11 Substitute Products

The products in this section have been classified as direct meat substitutes and poultry alternatives.

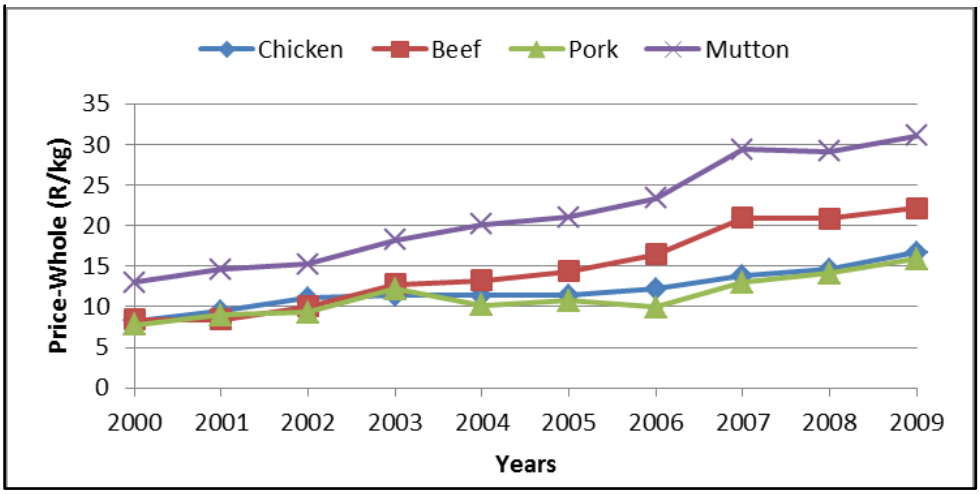
8.3.11.1 Direct Meat Substitutes

The following meat substitutes to chicken were analysed:

- Beef (24% demand)
- Pork (10% demand)
- Mutton (6% demand)

The figure below depicts the price of chicken as well as its substitute products from 2000 – 2009.

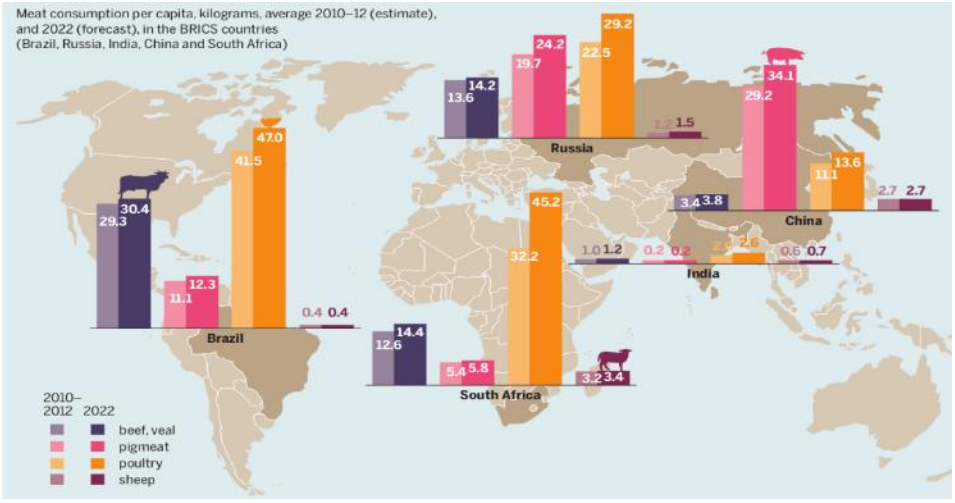
FIGURE 58: SOUTH AFRICAN MEAT PRICES, 2002 - 2009



Source: IMAFA, 2011

From the figure above, it is clearly depicted that mutton is the most expensive meat option, thus demand growth for this commodity is anticipated to grow slower in comparison to beef, pork and chicken. At R30/kg mutton is twice the price of chicken and pork and 150% more expensive than beef.

FIGURE 59: DEMAND FOR MEAT PRODUCTS, 2012 - 2022



Source: Meat Atlas, 2012

Beef and Chicken are anticipated to experience the highest demand growth at 1.4% and 4.0% per annum, while Pork grows at 0.7% and Sheep at 0.6%.

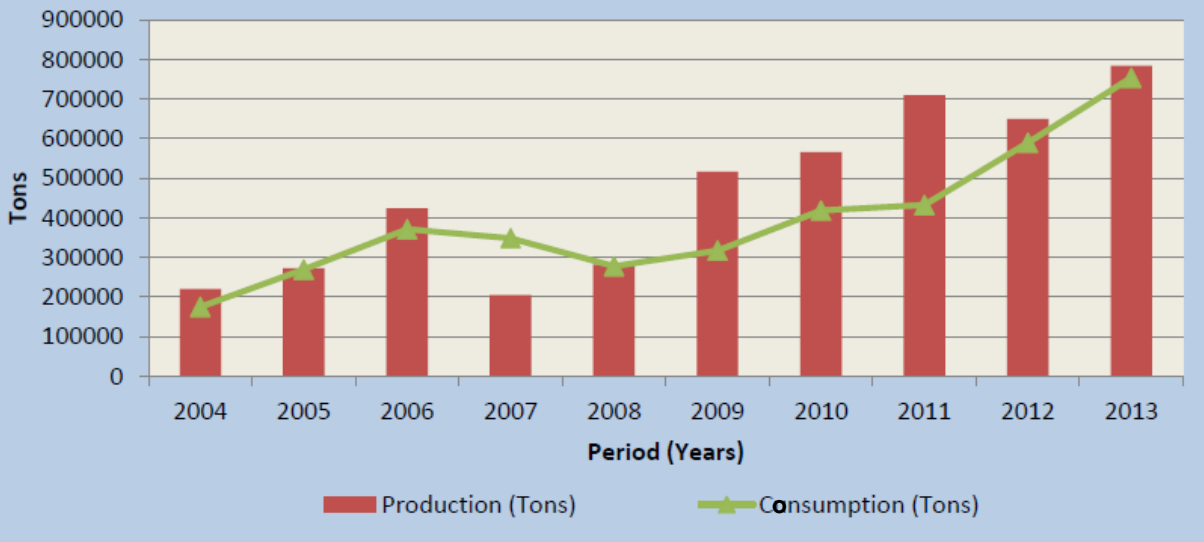
8.3.11.2 Meat Alternatives

With the changing lifestyles witnessed presently, a large amount of the population has been transitioning towards healthy living, part of this cause results in the elimination of meat from

ones diet. The net effect is that the demand for meat alternatives with protein sources has risen quite rapidly over the past decade.

The figure below illustrates that local soybean production was well above the domestic consumption needs for the most part of the period under review. 2007 is the only exception where local consumption was greater than soybean production, implying that there was a shortage of soybean in South Africa during that year. It is also important to note that from 2009 to 2013, the production of imported broiler meat to minimize imports from Brazil as this dumping was posing a threat to local producers.

FIGURE 60: SOYA BEAN CONSUMPTION VS PRODUCTION



Source: DAFF, 2014

The increase in demand for meal and soybean oil is mainly as result of rising income levels as well as the improved crushing capacity. Higher demand for livestock products as a result of rising incomes (per capita GDP) and population also leads to increased demand for soybean, this is because the demand for animal feed increases as the production of livestock rises to meet the ever increasing food demand. As such the demand for oilseed meal also rises as more protein feed is being demanded. Likewise, rising incomes and populations will also lead to a greater consumption of vegetable oils as the demand for cooking oils and dairy products increases. However, the use of soybean oil in cooking and other food preparation activities is relatively lower compared to other vegetable oils.

8.3.12 Societal and Cultural Trends

Societal and cultural trends are trends that relate to the social and cultural values and practices within a society, or culture. These are long term trends (at least two to five years) that

explain why people behave the way they do. The South African food industry's direction is the growing influence of demographics, especially with respect to societal and cultural trends.
The South African food industry's direction is the growing influence of demographics, especially with respect to societal and cultural trends. As such, it is important that the AP positions itself to take advantage of such trends by meeting the demands of society through the processing of relevant products. The following, chicken specific, cultural and societal trends have been identified and described.

The trend in rising incomes within South Africa has provided the local consumer with increased purchasing power and, therefore, the ability to increase demand for food. Increased purchasing power has also allowed the consumer increased access to a variety of food, including processed, packaged and frozen vegetables (or convenience foods as described below).

Convenience foods or also known as time-saving foods as they are partially, or complete prepared are increasing in demand as consumers spending power increases and more value is given to time-saving. Poultry specific convenience foods include microwave meals and ready prepared chicken dishes for the oven. The increasing demand of quick-food has increased the number of quick-food items available to consumers in the last two decades. The most likely consumers to buy these items include modern families (families that lead an individualistic lifestyle and do not sit down to as many traditional meals), middle- to high-income families, and younger families.

Within South Africa poultry (white meat) is seen as the healthier choice to red meat and form part of people's daily diet. They are an important part of healthy eating and contain less cholesterol, saturated fats and is low fat if eaten without the skin. Eaten chicken can help reduce the risk of cancer, lower cholesterol, reduce blood pressure and lose weight. There has been a growing trend in terms of purchasing organically grown and free range food. Organically grown poultry provides consumers with produce free of:

- Less fat;
- More flavour;
- No GMO (Genetically Modified Organism);
- No hormones, antibiotics and drugs;
- Preserves ecosystem;
- Keeps children and future safe.

Organic chicken is growing in popularity. Organic chicken contains no GMO and a variety of health risk have been attributed to GMO, such as organ damage, fertility and tumours. There are public concerns regarding GMO in terms of food safety, regulation, and labelling as well

as environmental impact. Genetically modified crops grown in South Africa are predominantly white maize, yellow maize, cotton and soya.

8.3.13 SWOT Analysis

The following table summarises vegetables in terms of its strengths, weaknesses, opportunities and threats within iLembe.

TABLE 56: SWOT ANALYSIS FOR BROILERS

Strengths	**Weaknesses**
• Highly nutritive products • Contributor to food security • Proximity to major market • Maximal soil usage • Vertically integrated • Growing consumer purchasing power • Access to transport routes for transport in and out • Growing urban consumer population • Relatively low energy costs • Extension services • Relatively good infrastructure (roads, water, power, rail access) • Unused capacity for expansion • Relatively cheap protein source	• Shortage of skilled workers • Poor farming practices • Non-standard of product • Lack of Good Agricultural Practice (GAP) principles • Small-scale production not competitive • Lack of access to market • Few parent stock operations • Sourcing feed ingredients • High cost of capital • Old technology in some enterprises • Technical staff need training • Information systems require strengthening • Weak association • Weak technical know-how • Weak information systems • Access to adequate laboratory testing facility
Opportunities	**Threats**
• Major economic advantages • Intensive production • Free range production • Local labelling (food labelling) • Employment opportunities • Change in consumer preference • Cooperative farming • Technological advancement • Investment in new technologies • Consumer education • Industry promotion - demand • Reducing day-old-chick costs • Public financing available • Possibility to lower costs through improved management systems • Export potential to neighbouring countries	• Increasing input costs • Market limitations • Consumer habit • Competition • Extreme weather conditions (drought, hail, frost) • Pest problems • Disease: Avian Influenza scare lowers demand • Barriers to entry • Food safety issues • Regional competition • Retailer consolidation (preference toward particular producers) • International feed ingredient price fluctuations

There are a variety of strengths and opportunities for poultry (broilers) within iLembe, which if realised correctly, could prove beneficial to the success of the Agri-Park. However, as much as there are strengths and opportunities to play on there are still weaknesses and threats which could prove detrimental to the success of the Agri-Park. These weaknesses and threats could impact the potential for economic gain and poultry (broilers) production, as well as the loss of opportunities for small scale and emerging black farmers

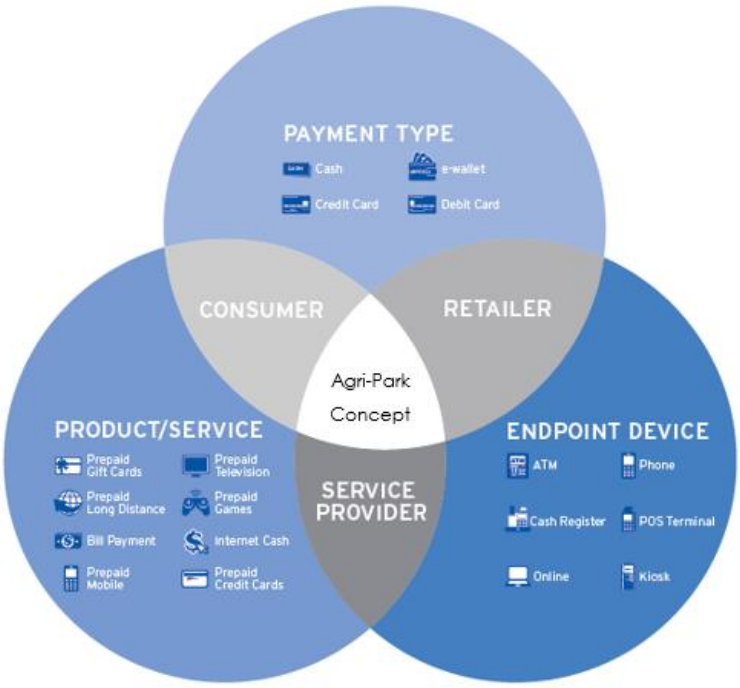
8.4 Technology

Growth in ICT penetration rates differ noticeably between "plain old" telephones and the new digital information technologies. Lethargic growth in telephone penetration was experienced in exporting as well as importing countries during the period 1995 to 2009. Penetration rates for mobile phones and internet access, in contrast, exploded with annual penetration growth rates ranging from 21% to over 26%. Telephone penetration rates appear to have reached their peak far below saturation level, mobile phones penetration everywhere are in excess of 100% penetration. Suggesting that all traders in the supply chains are likely to be mobile phone users whereas in comparison to fixed line telephones. Internet penetration has not yet reached mobile phone penetration levels but internet penetration rates in both exporting and importing countries are significantly greater than telephone penetration rates. Given the rapid fusion of internet and mobile phone technology, it is expected that internet penetration rates will reach mobile phone penetration rates within a matter of time.

All three ICT penetration rates are lower in exporting than in importing countries. This reflects the fact that exporting countries are not remotely highly industrialised countries where ICT penetration rates are particularly high.

The figure below represents a joint and harmonised model of how technology can be integrated successfully into the Agri-Park value chain, to the benefit of all known stakeholders.

FIGURE 61: AGRI-PARK TECHNOLOGICAL REQUIREMENTS



Source: Vendtek Systems, 2016

8.5 New Entrants

The farming of Sub-Tropical Fruit has for the longest duration been an informal and cyclical activities, with retail markets utilising numerous suppliers to supplement sales.

The market demand has since grown and warranted the inclusion of informal markets and road side sales. The need for formalised collaboration to harmonise the "fruits" of labour has resulted in the formation of fruit farms and organisations which tend to be specialised in purpose. One such development which facilitates collective farming and sales in a common area is the Litchi Orchard.

The aim of the Litchi Orchard is to allow locals and tourists to experience the taste of locally produced organic litchis and witness first-hand how the litchis are picked, sorted and packaged for sale. Litchi season traditionally kicks off in the December holiday period and runs for a few short weeks into January. During this time the fresh litchis are available on-site, direct to the public. The orchard also offers a night market to facilitate the development of the wine and food tasting industry.

9 Agri-Park Concept Development

9.1 Introduction of the Agri-Park concept

Investment strategies for the development of Agri-Parks generally imply the use of a wide range of partnerships, approaches, and tools in order to integrate the production chain and collaborate accordingly. In developing and emerging economies, the concept of Agri-Parks has gained momentum as innovative attempts aimed at apply spatial planning principles and have begun to yield positive results.

In order to boost economic activities such as agriculture and agro-processing in specific spatial areas, the use of "economic corridors" are important. An "economic corridor" is defined as a conceptual and programmatic model used for structuring socio-economic and physical responses to develop an area which builds upon a collection of economic activities and people in co-operation with transport infrastructure (Nogales, 2014).

The Agri-Parks concept makes use of economic corridors, in this section the Agri-Parks concept will be evaluated along with the Agri-Parks alignment to economic corridors. The section will also cover the proposed number of FPSUs as well as the proposed provincial location for the RUMC for iLembe and the product flows for each of the selected commodities.

The Agri-Park concept consists of four elements, namely: primary production (which consists of small-scale/emerging farmers and commercial farmers), Farmer Production Support Units (FPSUs), the Agri-Hub, and the Rural-Urban Marketing Centre (RUMC).

In order to state how many FPSUs and Agri-Hubs are required per district, it must be noted that there will only be one RUMC per province to be located in eThekwini. It is important to identify whether or not a particular district is considered an area of low or high population density. An area which has more than 150 individuals per km^2 is considered to be a high density area, an area which has 100-150 individuals per km^2 is considered to be a medium density area while an area that has less than 100 individuals per km^2 is considered to be a low density area. iLembe is therefore considered an area of high population density with approximately 174 individuals per km^2. Thus, the proposed catchment area for the FPSUs, Agri-Hubs, and RUMC in areas of high population density are as follows:

- FPSUs catchment area: 10km
- Agri-Hubs catchment area: 60km
- RUMC catchment area: 150km

iLembe has an area of approximately 3 269 km^2 and taking into consideration the proposed catchment areas, as a suggestion, iLembe will need approximately:

4 FPSU's: Located in Mandeni (2), Maphumulo (1) and Ndwedwe (1),

- An Agri-Hub located in the heart of iLembe (Stanger-KwaDukuza), and
- A RUMC: The proposed location of the RUMC will be eThekwini.

The key role and function of the FPSU is to provide to the farmers input supplies; extension support; mechanisation support; local logistics support; primary produce collection; limited grading; and through-put to Agri-Hubs. The core focus of their support should be on small-scale/emerging farmers. The FPSUs will have limited sorting, packaging, storage, and processing for local markets with through-put of excess products to Agri-hubs. The proposed development concepts for each of the selected commodities are discussed in the flowing section.

9.1.1 Proposed Development Concept for Sub-Tropical Fruit Production

Production Flow	Smallholder farmers (SHF)	Commercial Farmers (CF)	FPSU	AH	RUMC
Key Role & Function	The core role of the SHF would be the Primary fruit production.	To provide support to SHF, guidance and training with regards to farming activities.	Input (pre-prodction) supplies, training and extension support, mechanisation support, local logistics support, limited sorting of fruits, some packaging, some storage, and processing for local markets, through-put of excess products to Agri-Hubs.	Training and skills development, logistics, Agro-Processing, commodity sensitive storage and warehousing and packaging facilities.	Market intelligence, providing SHF and CF with assistance and processors in managing a multitude of contracts and optimising value chains to become revenue orientated.
Location	All SHF involved in fruit production within iLembe, especially those in Mandeni and KwaDukuza where primary production is more concentrated.	The Litchi Orchard is based in Seaforth Drive, Umhlali.	Although, fruit farmers will be supported by all the FPSU's to be situated in iLembe, it is proposed that the major FPSU for fruit production be located within the Mandeni and Maphumulo LM's, close proximity to the Agri-Hub and primary production areas.	As proposed by the province, the Agri-Hub is to be located in KwaDukuza LM within iLembe.	The proposed location of the RUMC will be in eThekwini. It should be selected on the basis of the following criteria: • Accessibility • Infrastructure (electricity/ water) • Agglomeration • ICT • Urban environment

Human Resources	SHF currently in the farming of vegetables aligned to the Agri-Parks programme and selected by the DRDLR and DARD to be SHF representatives. (DAPOTT farming representatives).	Very labour intensive, requires a number of pickers, oackagers and distributors – large network.	The FPSU will provide the following HR personnel and facilities; • Agricultural extension officer (2) / support officers; • Local mechanisation centre and workshop with (2) machine operators; • Agronomist (soil testing) (2) • Researchers (2) • Extension officers • Agronomist • Seasonal staffs (harvest labour) • Commercial farmers to mentor SHF.	The AH will provide the following HR; • Administrative manager (2) • Quality control personnel (2) • Agro-Processing facility operators • Research, Development and Training personnel (2)	The RUMC will provide the following HR; • IT expert/personnel (1) • Administrative manager (1) • Training personnel • Marketing agents (linkage and contract facilitation with wholesalers and retailers. Price sensitive information communicated to the AH and FPSU.
Training	SHF to be trained on: • Best farm practices, use of tools and equipment • Market interpretation and ICT. • Extension officers that are conversant with vegetable production • Extension officers through the DAFF can also organise Agri-shows, where training can be provided.	CF to train SHF on fruit farming through a mentorship programme.	One of the key functions of the FPSU would be to provide the SHF with training and extension support on various farm practices.	Some training would also be required at the hub: • Training of processing staffs on how to handle and operate various processing equipment. • Training on best practices, based on changing demand and supply. • Training on new innovations as they surface.	Training of training personnels on how to disseminate information to the SHF, AH and the FPSU.
Key products/ activities	The core activities are: • Land preparation (land clearing, soil preparation, pest control) • Fruit Harvesting and Picking • Logistics and packaging	• Mentoring of SHF's • Educating SHF's of the most productive and efficient practices.	The core activities are: • Collection of fruit from the SHF • Transportion of fruit to the packhouses within the FPSU premises • Quality inspections • Cleaning, sorting and grading	The core activities are: • Cleaning and Sorting fruit received from the FPSU; • Further Quality control • Fruit processing including canning and preserving; • Storage of products ;	The core activities are: • Collection of final products from the AH • Marketing and distribution of final products to different wholesalers and major retail outlets • Exporting of final products

	• Fruit farming (planting, fertilisation, disease control, irrigation)		• Packaging, mainly fruit for local market and small retail outlets (80% of total production) • Transportation of processed fruit directly from farm to the AH. (20% of production)	• Local marketing; • Transportion of products to RUMC.	• Bulk storage of final products
Infrastructure/ Equipment	The SHF and CF may require the following equipments, which can be hired from the FPSU: • Tractor • Bed former • Trailers and bins. • Solid set irrigation equipment • Planter/fertiliser applicator • Fertiliser equipment (spreader) • Spray equipment • Digger/harvester (single and double row) • Windrower, wagons, wheel barrows, carriage ***Note: SHF's smaller tha 2ha in size, joint farming will necessitate support.***		Equipments/infrastructure: • Transport • Fruit cleaning, sorting, grading, weighing and packaging machines • Local pack house • Processing and sorting facility • Storage facility	Equipment/infrastructure: • Administrative facilities • Rental facilities • Agro-Processing facilities (preserving) • Packaging facilities • Quality control facilities • Training centre • Logistics and transport facility	Equipment/infrastructure: • Large warehouses/ holding facilities • Cold storage facilities • Administrative facilities/ information centre • Agricultural input distribution and sales centre • Retail facility
Logistics	SHFs should be organised into groups. Whereby the appointed farmer representatives should report to the FPSU. **Harvesting** : Certain days of the week should be assigned for harvesting of fruit (weather dependant) during the harvest seasons. Farmers intending to harvest on certain days to notify the FPSU. For SHFs with less than 2ha of land, fruit to be harvested and collected from multiple	Commercial fruit farmers do not feature amongst iLembe, due to the key difficulties of obtaining economies of scale, whereas small-holder farmers will be profitable in developing a multitude of fruit within the area, minimal support in this commodity will thus be sought. Fruit is also noted to be time and temperature sensitive thus it needs to be near the source of export (Durban) or its local market	The FPSU should organise for Primary logistics collection centre in the form of pack houses where vehicles would collect fruit from various farms and convey it to these packhouses. Cold storage transport should also be arranged for distribution to the various marketing channels and the RUMC. ***Note: some of these transport facilities will be used to deliver farm inputs to the collection centres, after which collective***	Transport will be used to collect the fruit from the FPSU to the AH for processing. Indictating that the transport facilities would serve multiple purposes.	The same cold storage transport will be used for distribution of final products to wholesalers and retailers.

	SHF's[1]. For farmers with more than 2ha, harvesting would be done **mechanically[2]** and fruit to be transported to the FPSU.	(Stanger). No commercial farmers have been identified within iLembe for this section.	***SHFs can collect inputs at the FPSU***.		
Technology/ ICT	In order to boost their production efficiency, the SHF and CF would require: • Modern tools, • Mobile devices for subscription to Apps. to enable SHFs to receive information from the RUMC on weather forecast, disease control and news updates which may affect crop productivity.		Tracking devices on all vehicles to increase security and prevent misuse. Also, the FPSU would require subscription to certain Apps from the RUMC to remain up to date with commodity prices. ***Note: the same transport facilitities would be used to service all the basic units of the Agri-Park, therefore, all the Transportation facilities would have these tracking devices.***	In order to remain conversant with the current prices fetched on the global, national and local market, so as to be able to strategically supply fruitproducts to the markets, the RUMC would also require subscription to certain Apps from the RMUC. This will enable the AH to remain informed.	The RUMC will provide an Information Data base that all the various basic units of the Agri-Park can subscribe to.
Job Creation (Estimates)	***It is estimated that the iLembe Agri-Park will provide 1920 new jobs for fruit production. (Based on 720ha farming area).***				

[1] Semi-Manual harvesting involves the removal and hand-picking of fruit, placed into boxes and baskets for sorting and grading.

[2] Mechanical harvesting involves the use of harvester and a trailer which runs alongside with the harvester and collects the harvested fruit in bulk.

****The amount of labour required is dependent on the level of mechanisation on the farm.***

****Average yield per hectare for fruit production in South Africa is about 6 tons per hectare (6 000kg/ha)***

****Per capita consumption is estimated to be 81kg per annum***

****Approximately 30-40% of national production goes for processing, while 60-70% are destined for local fresh produce markets***

9.1.2 Proposed Development Concept for Vegetable Production

Production Flow	Smallholder farmers (SHF)	Commercial Farmers (CF)	FPSU	AH	RUMC
Key Role & Function	The core role of the SHF would be the Primary production of fresh vegetables.	To provide support to SHF, guidance and training with regards to farming activities.	Input (pre-prodction) supplies, training and extension support, mechanisation support, local logistics support, limited sorting of fresh vegetable, some packaging, some storage, and processing for local markets, through-put of excess products to Agri-Hubs.	Training and skills development, logistics, Agro-Processing, commodity sensitive storage and warehousing and packaging facilities.	Market intelligence, providing SHF and CF with assistance and processors in managing a multitude of contracts and optimising value chains to become revenue orientated.
Location	All SHF involved in vegetable production within iLembe, especially those in Mandeni and KwaDukuza where primary production is more concentrated.	Romac is based in uMhlali (Brettenwood Coastal Estate).	Although, vegetable farmers will be supported by all the FPSU's to be situated in iLembe, it is proposed that the major FPSU for vegetable production be located within the Mandeni, Maphumulo and Ndwedwe LM's, close proximity to the Agri-Hub and primary production areas.	As proposed by the province, the Agri-Hub is to be located in KwaDukuza LM within iLembe.	The proposed location of the RUMC will be in eThekwini. It should be selected on the basis of the following criteria: • Accessibility • Infrastructure (electricity/ water) • Agglomeration • ICT • Urban environment

Human Resources	SHF currently in the farming of vegetables aligned to the Agri-Parks programme and selected by the DRDLR and DARD to be SHF representatives. (DAPOTT farming representatives).	Current staff complement comprises of Directors, Scientists, Researchers, Engineers and Operational Staff.	The FPSU will provide the following HR personnel and facilities; • Agricultural extension officer (2) / support officers; • Local mechanisation centre and workshop with (2) machine operators; • Agronomist (soil testing) (2) • Researchers (2) • Extension officers • Agronomist • Seasonal staffs (harvest labour) • Commercial farmers to mentor SHF.	The AH will provide the following HR; • Administrative manager (2) • Quality control personnel (2) • Agro-Processing facility operators • Research, Development and Training personnel (2)	The RUMC will provide the following HR; • IT expert/personnel (1) • Administrative manager (1) • Training personnel • Marketing agents (linkage and contract facilitation with wholesalers and retailers. Price sensitive information communicated to the AH and FPSU.
Training	SHF to be trained on: • Best farm practices, use of tools and equipment • Market interpretation and ICT. • Extension officers that are conversant with vegetable production • Extension officers through the DAFF can also organise Agri-shows, where training can be provided.	CF to train SHF on vegetable farming through a mentorship programme.	One of the key functions of the FPSU would be to provide the SHF with training and extension support on various farm practices.	Some training would also be required at the hub: • Training of processing staffs on how to handle and operate various processing equipment. • Training on best practices, based on changing demand and supply. • Training on new innovations as they surface.	Training of training personnels on how to disseminate information to the SHF, AH and the FPSU.
Key products/ activities	The core activities are: • Land preparation (land clearing, soil preparation, pest control) • Vegetable farming (planting, fertilisation, disease control, irrigation)		The core activities are: • Collection of fresh vegetables from the SHF • Transportion of vegetables to the packhouses within the FPSU premises • Quality inspections • Cleaning, sorting and grading	The core activities are: • Receiving of vegetables including cleaing and sorting from the FPSU; • Further Quality control; • Vegetable Processing into frozen mixed vegetables;	The core activities are: • Collection of final products from the AH • Marketing and distribution of final products to different wholesalers and major retail outlets • Exporting of final products

	• Harvesting of Vegetables • Logistics and packaging		• Packaging, mainly fresh vegetables for local market and small retail outlets (80% of total production) • Transportation of processed vegetables directly from farm to the AH. (20% of production)	• Storage of products ; • Some marketing; • Transportion of products to RUMC.	• Bulk storage of final products
Infrastructure/ Equipment	The SHF and CF may require the following equipments, which can be hired from the FPSU: • Tractor • Bed former • Trailers and bins. • Solid set irrigation equipment • Planter/fertiliser applicator • Fertiliser equipment (spreader) • Spray equipment • Digger/harvester (single and double row) • Windrower, wagons, wheel barrows, carriage ***Note: SHF's smaller tha 2ha in size, joint farming will necessitate support.***		Equipments/infrastructure: • Transport • Vegetable cleaning, sorting, grading, weighing and packaging machines • Local pack house • Processing and sorting facility • Storage facility	Equipment/infrastructure: • Administrative facilities • Rental facilities • Agro-Processing facilities (peeler, slicer, fryer) • Packaging facilities • Quality control facilities • Training centre • Logistics and transport facility	Equipment/infrastructure: • Large warehouses/ holding facilities • Cold storage facilities • Administrative facilities/ information centre • Agricultural input distribution and sales centre • Retail facility
Logistics	SHFs should be organised into groups. Whereby the appointed farmer representatives should report to the FPSU. **Harvesting** : Certain days of the week should be assigned for harvesting of vegetables (weather dependant) during the harvest seasons. Farmers intending to harvest on certain days to notify the FPSU. For SHFs with less than 2ha of land, vegetables to be		The FPSU should organise for Primary logistics collection centre in the form of pack houses where vehicles would pick up vegetables from various farms and convey it to these packhouses. Cold storage transport should also be arranged for distribution to the various marketing channels and the RUMC. ***Note: some of these transport facilities will be used to deliver farm inputs to the collection centres, after which collective***	Transport will be used to collect the vegetables from the FPSU to the AH for processing. Indictating that the transport facilities would serve multiple purposes.	The same cold storage transport will be used for distribution of final products to wholesalers and retailers.

	harvested and collected from multiple SHF's[1]. For farmers with more than 2ha, harvesting would be done **mechanically[2]** and vegetables to be transported to the FPSU.		***SHFs can collect inputs at the FPSU.***		
Technology/ ICT	In order to boost their production efficiency, the SHF and CF would require: • Modern tools, • Mobile devices for subscription to Apps. to enable SHFs to receive information from the RUMC on weather forecast, disease control and news updates which may affect crop productivity.		Tracking devices on all vehicles to increase security and prevent misuse. Also, the FPSU would require subscription to certain Apps from the RUMC to remain up to date with commodity prices. ***Note: the same transport facilitities would be used to service all the basic units of the Agri-Park, therefore, all the Transportation facilities would have these tracking devices.***	In order to remain conversant with the current prices fetched on the global, national and local market, so as to be able to strategically supply vegetable products to the markets, the RUMC would also require subscription to certain Apps from the RMUC. This will enable the AH to remain informed.	The RUMC will provide an Information Data base that all the various basic units of the Agri-Park can subscribe to.
Job Creation (Estimates)	***It is estimated that the iLembe Agri-Park will provide 1810 new jobs for vegetable production. (Based on 720ha farming area).***				

[1] Semi-Manual harvesting involves the removal of foliage 24hrs before harvesting, with the use of harrow, which clears the foliage from the area to facilitate the final harvesting. After foliage is removed, a plough is used to expose the tubers after which the vegetables are hand-picked.

[2] Mechanical harvesting involves the use of harvester and a trailer which runs alongside with the harvester and collects the harvested vegetables in bulk.

****The amount of labour required is dependent on the level of mechanisation on the farm.***

****Average yield per hectare for vegetable production in South Africa is about 25 tons per hectare (25 000kg/ha)***

****Per capita consumption is estimated to be 67kg per annum***

****Approximately 30-40% of national production goes for processing, while 60-70% are destined for local fresh produce markets***

9.1.3 Proposed Development Concept for Poultry Production

Production Flow	Smallholder farmers (SHF)	Commercial Farmers (CF)	FPSU	AH	RUMC
Key Role & Function	The core role of the SHF would be the farming of poultry.	To provide support to SHF, guidance and training with regards to farming activities.	Input (pre-production) supplies, training and extension support, mechanisation and broiler support, local logistics support, limited sorting of chickens, packaging, storage and processing for local markets, throughput of excess products to Agri-Hubs.	Training and skills development, logistics, Agro-Processing, commodity sensitive storage and warehousing and packaging facilities.	Market intelligence, providing SHF and CF with assistance and processors in managing a multitude of contracts and optimising value chains to becom revenue orientated.
Location	All SHF involved in poultry or associated production within iLembe, areas where primary production are more concentrated.	Rainbow	Poultry farmers will be supported by all the FPSU's situated in iLembe, it is proposed that the major FPSU for poultry production be located within the Mandeni LM, close proximity to the Agri-Hub and primary production areas.	As proposed by the province, the Agri-Hub is to be located in KwaDukuza LM within iLembe.	The proposed location of the RUMC will be in eThekwini. It should be selected on the basis of the following criteria: • Accessibility • Infrastructure (electricity/ water) • Agglomeration • ICT • Urban environment

Human Resources	SHF currently in poultry farming of aligned to the Agri-Parks programme and selected by the DRDLR and DARD to be SHF representatives. (DAPOTT farming representatives).	Current staff complement comprises of Directors, Scientists, Researchers, Engineers, Marketing Agents and Sales Promotion and Operational Staff (Well established).	The FPSU will provide the following HR personnel and facilities; • Agricultural extension officer (2) / support officers; • Local mechanisation centre and workshop with (2) machine operators; • Agronomist (soil testing) (2) • Researchers (2) • Extension officers • Agronomist • Seasonal staffs (harvest labour) • Commercial farmers to mentor SHF.	The AH will provide the following HR; • Administrative manager (2) • Quality control personnel (2) • Broiler production facility operators • Research, Development and Training personnel (2)	The RUMC will provide the following HR; • IT expert/personnel (1) • Administrative manager (1) • Training personnel • Marketing agents (linkage and contract facilitation with wholesalers and retailers. Price sensitive information communicated to the AH and FPSU.
Training	SHF to be trained on: • Best farm practices, use of tools and equipment • Market interpretation and ICT. • Extension officers that are conversant with vegetable production • Extension officers through the DAFF can also organise Agri-shows, where training can be provided.	CF to train SHF on poultry farming through a mentorship programme.	One of the key functions of the FPSU would be to provide the SHF with training and extension support on various farm practices. • Broiler production; • Marketing; • Animal diseases; • Phytosanitary requirements; • Feeding.	Some training would also be required at the hub: • Training of processing staffs on how to handle and operate various processing equipment. • Training on best practices, based on changing demand and supply. • Training on new innovations as they surface.	Training of training personnels on how to disseminate information to the SHF, AH and the FPSU.
Key products/ activities	The core activities are: • Land preparation (land clearing, shed preparation, pest control) • Poultry farming (rearing, disease control) • Culling of Poultry	SHF assistance and training	The core activities are: • Collection of fresh broilers from the SHF • Transportion of chicken carcasses to packhouses within the FPSU premises • Quality inspections • Cleaning, sorting and grading. Into chicken	The core activities are: • Receiving of broiler (prepared) chicken from the FPSU; • Further Quality control; • Processing of fresh chicken such as: Frozen and fresh chicken, breast	The core activities are: • Collection of final products from the AH • Maketing and distribution of final products to different wholesalers and major retail outlets • Exporting of final products

	• Logistics and packaging		breasts, whole chicken and offals. • Packaging for local market and small retail outlets (80% of total production) • Transportation of fresh live poultry directly from farm to the AH. (20% of production) • An incubator/hatchery should be provided on site to chicken rearing from eggs to day old chicks.	chicken, livers, giblets, drumsitcks and nuggets; • Storage of products ; • Limited marketing; • Transportion of products to RUMC.	• Bulk storage of final products
Infrastructure/ Equipment	The SHF and CF may require the following equipments, which can be hired from the FPSU: • Broiler houses; • Feed silos; and • Water systems. • Feeders, scale and thermometer ***Note: SHF's smaller tha 2ha in size, joint farming will necessitate support.***		Equipments/infrastructure: • Transport • Poultry cleaning, sorting, grading, weighing and packaging machines • Local pack house • Processing and sorting facility • Storage facility Transport (e.g Bakkie or pick-up vehicles); • Weighing andpackaging equipment (crates); and • Retail outlet. • Incubation chambers and hatecheries with Infrared and white lamps.	Equipment/infrastructure: • Administrative facilities • Rental facilities • Agro-Processing facilities (peeler, slicer, fryer) • Packaging facilities • Quality control facilities • Training centre • Logistics and transport facility	Equipment/infrastructure: • Large warehouses/ holding facilities • Cold storage facilities • Administrative facilities/ information centre • Agricultural input distribution and sales centre • Retail facility
Logistics	SHFs should be organised into groups. Whereby the appointed farmer representatives should report to the FPSU. **Harvesting** : Certain days of the week should be assigned for broiler production (weather dependant) during the	Commercial farmers for Poultry are highly unlikely to feature amongst iLembe, due to the key difficulties of obtaining economies of scale, whereas small-holder farmers will be profitable in developing a multitude of poultry within the area,	The FPSU should organise for Primary logistics collection centre in the form of pack houses where vehicles would pick up poultrys from various farms and convey it to these packhouses. Cold storage transport should also be arranged for distribution to the	Transport will be used to collect the poultrys from the FPSU to the AH for processing. Indictating that the transport facilities would serve multiple purposes.	The same cold storage transport will be used for distribution of final products to wholesalers and retailers.

	harvest seasons. Farmers intending to harvest on certain days to notify the FPSU. For SHFs with less than 2ha of land, poultrys to be harvested and collected from multiple SHF's[1]. For farmers with more than 2ha, harvesting would be done **mechanically**[2] and poultrys to be transported to the FPSU.	minimal support in this commodity will thus be sought. Rainbow is the only established commercial farmer identified in this study.	various marketing channels and the RUMC. ***Note: some of these transport facilities will be used to deliver farm inputs to the collection centres, after which collective SHFs can collect inputs at the FPSU**.		
Technology/ ICT	In order to boost their production efficiency, the SHF and CF would require: • Modern tools, • Mobile devices for subscription to Apps. to enable SHFs to receive information from the RUMC on weather forecast, disease control and news updates which may affect crop productivity.		Tracking devices on all vehicles to increase security and prevent misuse. Also, the FPSU would require subscription to certain Apps from the RUMC to remain up to date with commodity prices. ***Note: the same transport facilitities would be used to service all the basic units of the Agri-Park, therefore, all the Transportation facilities would have these tracking devices.***	In order to remain conversant with the current prices fetched on the global, national and local market, so as to be able to strategically supply broiler products to the markets, the RUMC would also require subscription to certain Apps from the RMUC. This will enable the AH to remain informed.	The RUMC will provide an Information Data base that all the various basic units of the Agri-Park can subscribe to.
Job Creation (Estimates)	***It is estimated that the iLembe Agri-Park will provide 370 new jobs for poultry production. (Based on 360ha farming area).***				

[1] Semi-Manual harvesting involves the removal of inedible body parts by hand, most processes are done by hand and butcher utensils.

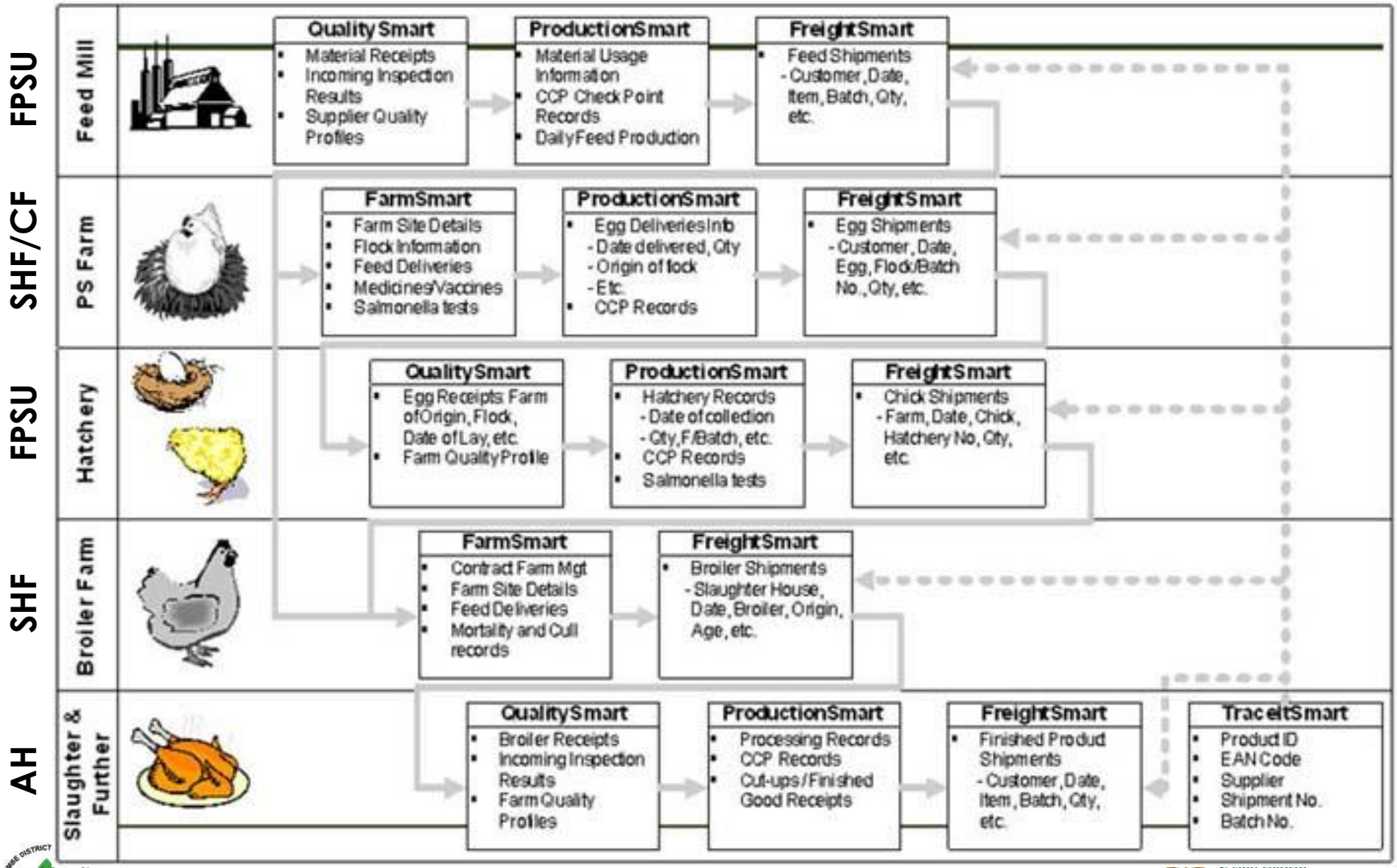
[2] Mechanical harvesting involves the cleaning and preparing (de-feathering, washing, draining, boiling) of broiler chicken for sale.

***The amount of labour required is dependent on the level of mechanisation on the farm.**

***Maximum yield per hectare for poultry production in South Africa is about 6 tons per hectare (6 000kg/ha) – (1500 chickens/ha @ 4kg each)**

***Per capita consumption is estimated to be 35kg per capita annually**

***Approximately 30-40% of national production goes for processing, while 60-70% are destined for local fresh produce markets**


FPSU
SHF/CF
FPSU
SHF
AH
Feed Mill
PS Farm
Hatchery
Broiler Farm
Slaughter & Further
QualitySmart
Material Receipts
Incoming Inspection Results
Supplier Quality Profiles
ProductionSmart
Material Usage Information
CCP Check Point Records
Daily Feed Production
FreightSmart
Feed Shipments - Customer, Date, Item, Batch, Qty, etc.
FarmSmart
Farm Site Details
Flock Information
Feed Deliveries
Medicines/Vaccines
Salmonella tests
ProductionSmart
Egg Deliveries Info - Date delivered, Qty - Origin of flock - Etc.
CCP Records
FreightSmart
Egg Shipments - Customer, Date, Egg, Flock/Batch No., Qty, etc.
QualitySmart
Egg Receipts Farm of Origin, Flock, Date of Lay, etc.
Farm Quality Profile
ProductionSmart
Hatchery Records - Date of collection - Qty, F/Batch, etc.
CCP Records
Salmonella tests
FreightSmart
Chick Shipments - Farm, Date, Chick, Hatchery No, Qty, etc.
FarmSmart
Contract Farm Mgt
Farm Site Details
Feed Deliveries
Mortality and Cull records
FreightSmart
Broiler Shipments - Slaughter House, Date, Broiler, Origin, Age, etc.
QualitySmart
Broiler Receipts
Incoming Inspection Results
Farm Quality Profiles
ProductionSmart
Processing Records
CCP Records
Cut-ups / Finished Good Receipts
FreightSmart
Finished Product Shipments - Customer, Date, Item, Batch, Qty, etc.
TraceItSmart
Product ID
EAN Code
Supplier
Shipment No.
Batch No.

9.2 Combined Agri-Park concept for the District

The following development concept summarises the above concepts to form a single, streamlined concept that draws on the main elements and activities of each of the role-players. The following concept provides a broader overview of the Agri-Park development in comparison to the individual concepts, and therefore excludes precise detail.

Production Flow	SHF/CF	FPSU	AH	RUMC
Key Role & Function	The major role for the SHF and CF's is production management that is to ensure that all produce reaches maturity and is in saleable condition. Quality control is of high importance for farmers to guarantee higher returns on their produce.	Agricultural input supplies, extension, mechanisation and local logistics support, primary produce collection, and throughput to Agri-Hubs. The FPSUs will have limited sorting, packaging, storage, and processing for local markets with through-put of excess products to Agri-Hubs.	The Agri-Hub has a major function as a processor of agricultural produce and distribution centre. Other auxiliary functions for the Agri-Hub include: • Training • Logistics • Storage/warehousing • Packaging • Labelling • Product distribution	The RUMC is to provide market intelligence and assist farmers, and processors in managing contracts with large warehousing and cold storage facilities to enable market management
Location	These farmers will be dispersed throughout iLembe. In addition to these farmers, state owned land can be allocated for the production of broilers.	Given that the iLembe has a relatively high population density, it is recommended that only four FPSU's are established. These 4 FPSU's are to be located in Mandeni (2), Maphumulo (1) and Ndwedwe (1).	The Agri-Hub is to be located in Mandeni.	The proposed location of the RUMC will be in eThekwini. It should be selected on the basis of the following criteria: • Accessibility • Infrastructure (electricity/ water) • Agglomeration • ICT • Urban environment
Human Resources & Job Creation Estimates	On farm personnel required to manage production include: • Farm managers • Farm workers/labour • Administrators	The FPSU will provide the following HR/HR facilities: • Agricultural extension officers/ support officers;	The AH will provide the following HR: • Administrative staff • Quality control personnel • Processing/floor staff	The RUMC will provide the following HR: • IT expert/personnel • Administrative staff • Training personnel • Marketing personnel

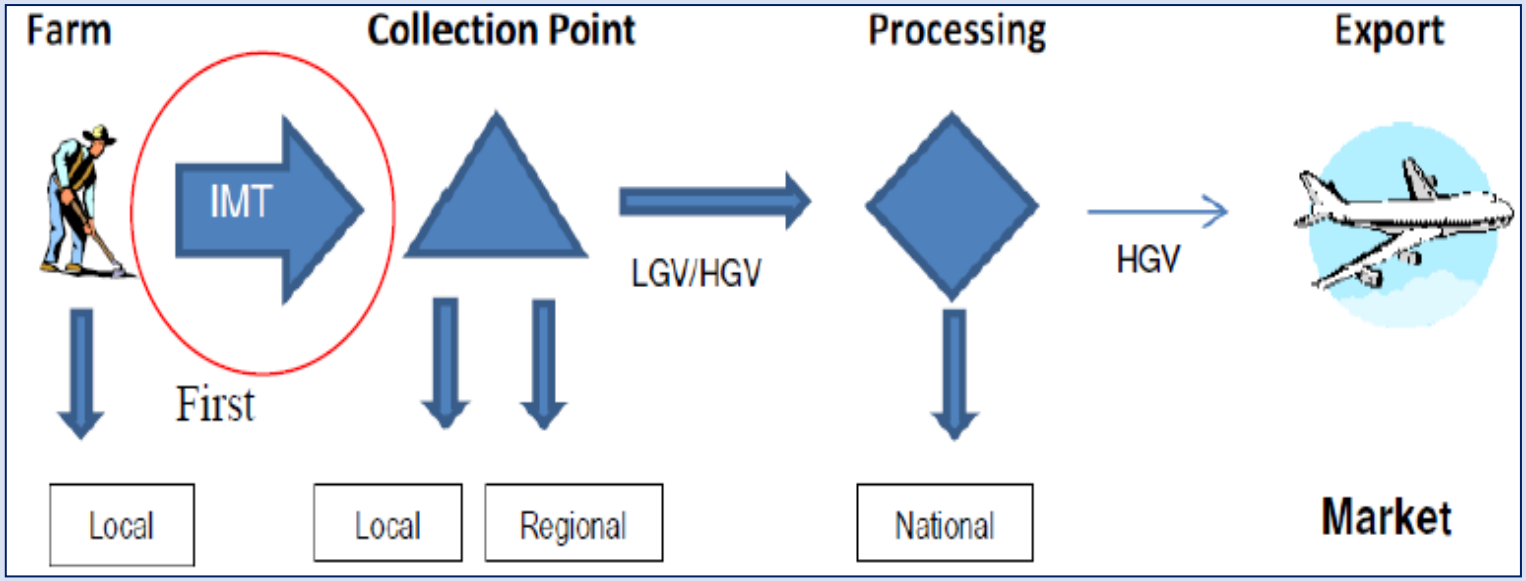
	Primary production, in total, has the potential to create between 130 – 1 800 employment opportunities amongst SHF.	• Machine operators/ Local mechanisation centre and workshops; • Agronomists • Researchers • Voluntary/Established commercial farmers In total, each FPSU has the potential to create between 580 - 830 employment opportunities and between 2 322 – 3 324 in total (4 FPSU's).	• Research and demonstration personnel • Training personnel In total, the Agri-Hub has the potential to create approximately 1 548 – 2 216 employment opportunities.	The location of the RUMC will be based within KZN, this area is to be defined at Provincial level (PAPOTT).
Training	The on farm personnel will require training in their respective fields of production. Training of such personnel should include: • Production practices • Business administration • Marketing	A key function of the FPSU would be to provide training and extension support for the various types of production practices to farmers, including: • Best management and production practices • Data interpretation • Marketing • Crop cultivation • Animal husbandry • Business administration In order for the FPSU to have the ability to train on farm personnel, they will need training in the various fields themselves. Trianing is available at various agricultural training institutions.	Staff within the Agri-Hub will require training in various processing best practices. Training programmes for such personnel should include: • Training of processing staff. • Training on best practices, based on changing demand and supply. • Training on new innovations as they surface.	Personnel that are actively particpating in the RUMC should be trained in the following fields: • Data collection/collation • Data interpretation and • Data dissemination
Key Products & Services	Key products: • Fresh fruit and vegetable • Live chickens and by-products Key Services:	Core Services: • Logistics • Training • Input supply • Extension services	Core Services: • Collection of produce • Processing of product • Packaging and labelling • Storage	Core Services: • Dissemination of information • Maketing and distribution of final products to different

	• Preparation of the facilities • Field preparation • Cultivation • Animal husbandry	• Production planning/scheduling • Farmer production management	• Marketing • Transportion of products to the markets.	wholesalers and major retail outlets
Infrastructure & Equipment	Infrastructure & equipment requirements include: • Broiler houses • Feed silos • Water systems • Irrigation systems • Greenhouses • Refrigerated Storage	The FPSU would require the following equipment & infrastructure: • Transport (e.g Bakkie or pick-up vehicles) • Storage facilities • Weighing and packaging equipment (crates) • Retail outlet for the local market	The AH would require the following equipment/ infrastructure: • Administrative facilities • Agro-Processing facilities • Packaging facilities • Quality control facilities • Agricultural input distribution and sales centre • Retail facility • Training centre • Student and staff housing • Logistics and transport facility • Large warehouses/ holding facilities • Cold storage facilities • Administrative offices	The RUMC would require to put in place the following equipment/infrastructure: • Office facilities/ information centre • ICT
Financial Support	The Small Holder Farmers require financial support in order to support their farming ventures. The recommendation for a Development Land Bank was made where by these Small Holder and Emerging Farmers will be able to obtain loans at discounted rates and repay them as Crop Production and Sales materialise.	The FPSU is the proposed location for the Development Land Bank as FPSU access is further reaching than the Agri-Hub and more conveniently located than the RUMC. Alternatively subsidised items should be factored into the appelants loan and reduced against any support received by the FPSU.	It is not recommended that the Agri-Hub be selected for such a facility and that activities should be mainly of a processing and manufacturing nature.	It is not recommended that the RUMC be selected for such a facility however in the absence of an FPSU in KwaDukuza, such development may be necessary to increase market access.
Logistics Plan	The focus of the logistics plan is to develop a strategy to move farm produce to market as smallholder and emerging farmers seek to become important players in the emerging food supply chain in South Africa. The logistics plan draws on challenges and opportunities faces by the farmers that are likely to participate within the APs programme, while the focus remains on recognising the importance that transport plays in the emerging farmer value chains. **Understanding the logistics chain**			

It is important that the transport segments in the emerging agricultural sector are understood. The segments include the primary, intermediate and final transport route segments, described in further detail below:

1. The primary transport segment, also known figuratively as the first mile, is the segment in which product moves from farm to a consolidation/collection point that are found on primary roads where collection is typically easier. The key role-players in this segment are the farmers who move the produce from their farm to the consolidation/collection point.
2. The intermediate transport segment realises the movement of produce from the primary consolidation, or collection point to an intermediate point, or in this case an AH. The key role-players at this point are larger, commercial farmers, or transporters.
3. The final transport segment will move product from the intermediate point to the final market, or destination.

These segments are exemplified in the following figure:



The above figure is a generic emerging, or small-scale farmer's logistics chain that contains the farm, consolidation/collection points, intermediate processing points and the final markets for the product. The first mile, in general, is the most important segment since it can be the most expensive segment of the logistics chain. It is often the case that product quality is compromised through bruising and ageing in this segment.

Recommended Logistics Strategy:

Unlike commercial, large-scale farming, small-scale and emerging farmers produce smaller quantities and farms are spread over a wide spatial territory. As such, it is of high importance that consolidation points are developed in order to collect produce in viable volumes, while coordination with intermediaries and transporters is crucial so that the farmers jointly are able to create economies of scale. Consolidation points should therefore be developed at strategic locations on easy access roads and a well-structured approach is required in order to assist the farmers in produce consolidation. This is exemplified in the following logistics plan:

In order to do this, appropriate infrastructure is required at the consolidation points along with organised transport coordination (exploiting ICT) that will reduce value deterioration at the farm gate and consolidation/collection points. The following recommendations can be used in order to develop the logistics plan for the Agri-Park:

1. Locate and demarcate specific areas of production that will participate in the APs programme.
2. Develop an inventory of what will be produced in the given demarcated areas.
3. Determine quantities to be produced in the demarcated areas.
4. Determine the total value of production that will be produced my small-scale farmers.
5. Determine and map the spatial location and spread of farms that will be producing within the programme.
6. Determine the location of the consolidation/collection points and what facilities should be made available.
7. Assess the potential perishability of the produce/value of the post-harvest losses.
8. Plan for the availability and reliability of transport services to collect produce.
9. Assess the quality of transport infrastructure in the location.
10. Determine the key market locations/destinations in the given area.
11. Develop, or enhance farmers' organisations and support groups.

The above process will assist in providing a better understanding of how to move produce from farm to market, while a comprehensive and integrated logistics management system can be employed to improve the efficiency in which produce can be moved to market taking into account rural infrastructure, consolidation management and collection services. The ability to understand the product movement will provide a foundation from which a logistics plan can be developed.

The following steps provide a broad outline toward the logistics plan, in which all elements of the Agri-Park including the farmers, FPSU, AH and RUMC are integrated:

1. Demarcate farmer groups within a given production area.
2. Determine a central location of the consolidation/collection point for the produce in each of the demarcated areas.
3. Implement a logistics management system and programme through the FPSU and RUMC that will assist in moving farmers produce to the consolidation points.
4. Implement a logistics management system and programme through the FPSU and RUMC that will move product from the consolidation points to the Agri-Hub.
5. Implement a logistics management system and programme through the RUMC that will move product from the Agri-Hub to the market/final product destination.

	The specific roles and functions of the farmers, the FPSU, Agri-Hub and RUMC are specified as follows: • The farmers may either opt to transport their produce to the collection point themselves, or make use of FPSU transport. • The FPSU will be responsible for the movement/transport of the product from farms to the Agri-Hub • The Agri-Hub can opt to collect produce from the FPSU, or have it delivered by the FPSU. The Agri-Hub should also transport final products to the market, or RUMC • The RUMC will provide the market intelligence and therefore the timing of the movement of the product. The RUMC will play an important role in planning, implementing and managing the logistics programme.
Technology/ICT	To develop the efficiency required to manage the Agri-Park in a successful and meaningful way, an integrated technology/ICT approach is necessary to keep all participants'/role players in the system well informed. Each role-player is required to understand the needs and requirements of the previous, or next role-player within the value chain. For example, the FPSU will be required to understand the production capacity and timing of the farmers, while also needing to know what the demands of the Agri-Hub are in the way of produce. The ability to know this will assist in the FPSU being able to meet the demands of the AH. Technology and ICT is, thus, a key input to the value chain in coordinating activities between role-players. Specific technologies that can assist for the individual entities and the entire value chains are detailed below: • ***Production management software***: assisting farmers' and the FPSU in production coordination and management. • ***Logistics management software***: integrated throughout the value chain in order to assist the coordination of logistical activities and move product from farm to fork in the most efficient manner. • ***Weather apps***: Can assist farmers' and the FPSU in production. • ***Market apps***: Understanding the market conditions is integral to making production based decisions (market driven activities). Importantly, technologies and ICT within the Agri-Park project need to be integrated in order to inform all role-players, understand the supply and demand conditions within the programme, and inform each of the role-players of the actions that need to be made in order to complement one another.

9.3 High-level costing (CAPEX)

The following section provides a summary, and commentary on the projected capital expenditure for the iLembe Agri-Park. The figures were based on estimated bulk connections, building and machinery requirements. The total estimate is for that of a period of ten (10) years, and not an annual capital requirement.

The accompanying capital expenditure projection/estimate is intended solely for the information and use of this strategy and is not intended to be ,and should not be, used for any other purpose. The estimated capital expenditure have been compiled by the Professional Economist and not by a registered Accountant or Auditor. These estimates may contain materiality as it was not compiled in accordance with the Generally Accepted Accounting Principles (GAAP) or International Financial Reporting Standards (IFRS). Materiality is a concept that is judged in light of the expected range of reasonableness of the information; therefore, users should not expect prospective information (information about events that have not yet occurred) to be as precise as historical information.

TABLE 57: CAPITAL EXPENDITURE BREAKDOWN

FPSU Total Cost - Mandeni			**R 53 307 709**
FPSU Total Cost – Maphumulo			**R 42 688 280**
FPSU Total Cost – Ndwedwe			**R 35 692 911**
FPSU Total Cost			**R 131 688 900**
AH Total Cost			**R 62 971 000**
District Agri-Park Total	**Quantity**	**Cost**	**Total Cost**
FPSU	1	R 131 688 900	R 131 688 900
Agri-Hub	1	R 62 971 000	R 62 971 000
Grand Total			**R 194 659 900**

The above estimate is based on a projected 13 FPSUs and one Agri-Hub within the iLembe. The total estimate for the FPSUs is approximately R 131 688 900 or R 32 922 225 each. The FPSUs are to be implemented over an 8-10 year period and the estimated capital expenditure should be allocated as such.

It is estimated that the Agri-Hub would cost in the region of R 62 971 000 to construct, including three different processing lines for vegetables, poultry and maize. The budget includes the estimated turnkey solutions (all-inclusive costs) for each of the processing lines within the Agri-Hub. This construction and expansion of the Agri-Hub will be implemented over a number of years and, as such, the budget should be allocated accordingly.
The implementation plan that follows makes it clear the time periods for implementation. The total estimated budget for the Agri-park is R 194 659 900for a 10 year period.

9.4 Conclusion

The above concepts address the conceptual roles of each of the actors within the Agri-Park with key role and function, location, human resources, training, key products and services, infrastructure and equipment, logistics and technology being addressed for each one. The concepts indicate the level of interaction between the role-players which illustrate a holistic and integrated development approach that is required to bring to the Agri-Park efficiencies.

It is important that functions are complementary and coordination between the role-players is coordinated in a fashion that streamlines product flow. The ability to do this will ensure that a quality product is moved from farm to the final market and then the consumer. Integration of the system will further allow one role-player to understand the function of the previous, or next role-player and, thus, the ability to meet the expectations, or demands of that role-player.

Most important are the management systems that are implemented in the programme to ensure coordination between role-players is done effectively and timeously. The logistics functions and technology/ICT that is used are therefore integral to the success s of the system.

A total of R 213 million will be required for investment into the iLembe Agri-Park, of this:

- R 33 million on average will be allocated towards each FPSU, R 132 million in total (4),
- R 63 million will be allocated towards the Agri-Hub, and

A total of 1 870 employment opportunities will be created through the iLembe Agri-Park, 810 Agricultural operations jobs and 1 060 temporary construction opportunities):

TABLE 58: EMPLOYMENT CREATED AND FACILITY LOCATIONS

	Employment Opportunities Created		Proposed Location
Smallholder Farmers	308 jobs (Operational)	-	iLembe
Farmer Production Support Units	363 jobs (Operational)	767 jobs (Construction)	1. Mandeni x 2 2. Maphumulo x 1 3. Ndwedwe x 1
Agri-Hub	108 jobs (Operational)	228 jobs (Construction)	Mandeni

*It must be noted that the rapid urbanisation of KwaDukuza in terms of residential and retail development as well as the development of manufacturing industries render it unsuitable for locating the **Agri-Hub**, however since most sales are made within Stanger (KwaDukuza) as this is perceived to be a sales hub, it is thus recommended that the Rural Urban Market Centre be located in KwaDukuza. The Agri-Parks Programme has a responsibility to develop areas which are regarded as rural, therefore abiding by this notion the above decision was rendered.

The following resolutions were guided by the DAPOTT in deciding the **Farmer Production and Support Unit** locations of the above facilities, the following factors were taken into account:

- The number of Government led Support Programmes and Projects in the area
- The topography, Arability and Suitability of the land for the predetermined commodity
- Inclusive of Soil Potential which determined the overall Agricultural Potential
- Rural and Urban nodes as well as Transport Linkages
- Proximity to Small Holder Farmers
- Proximity to Basic Resources (Electricity, Water)

Facility Locations were selected on the basis that:

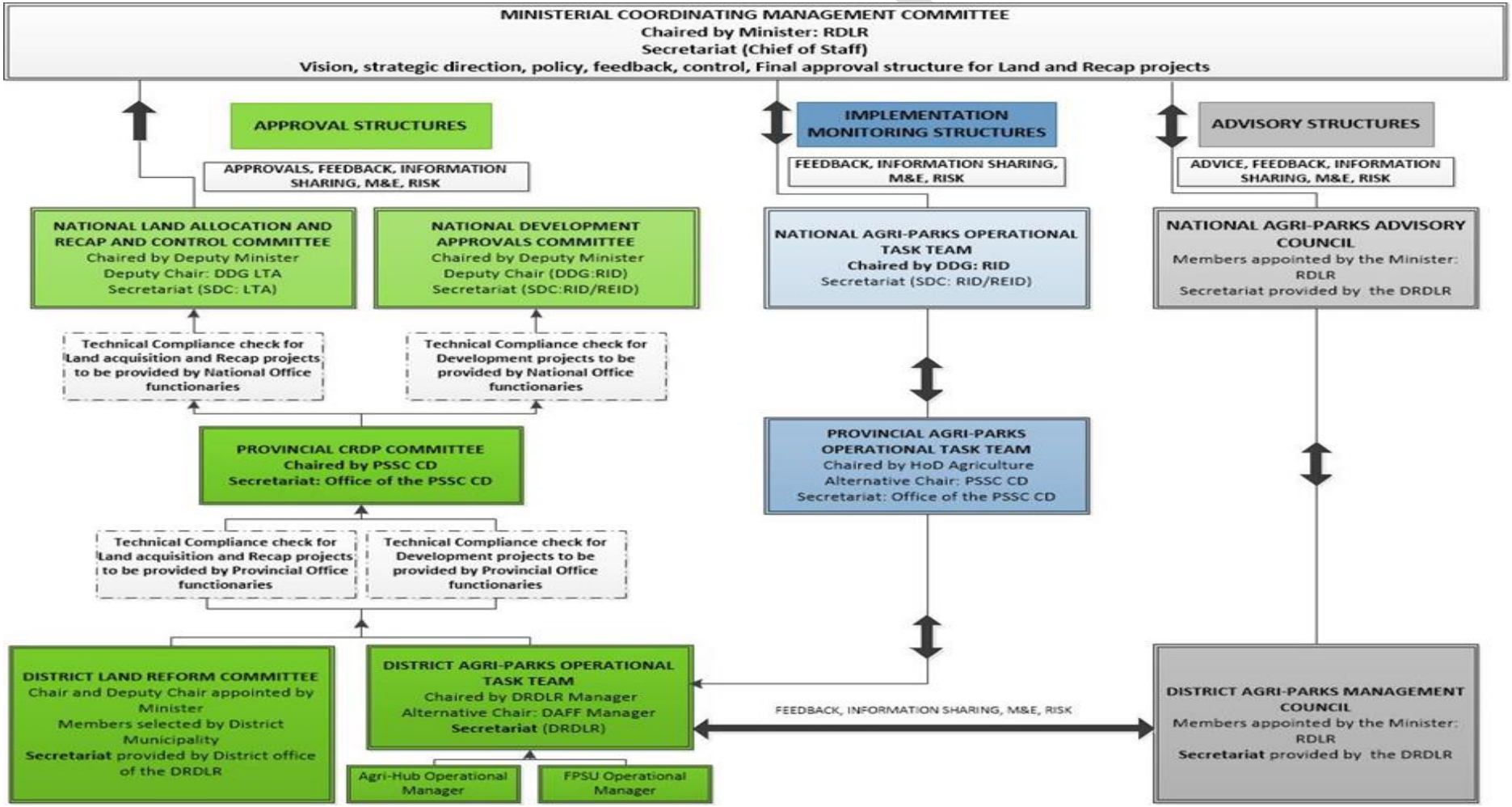
TABLE 59: FACILITY LOCATIONS JUSTIFIED

	Mandeni	KwaDukuza	Maphumulo	Ndwedwe
FPSU	2 – Best Soil and Land Conditions for all 3 Commodities.	0 – Availability of Land is poor – earmarked for urban development	1 – Large number of vegetable and poultry support programmes already in place.	1 – Large number of vegetable support programmes already in place.
AH	Perfect Road Linkages, close to N2 corridor. Large amounts of potential land available for transformation.	No available space large enough earmarked for Agriculture. (Focus: Urbanisation)	Poor transport linkages - inappropriate	Poor transport linkages - inappropriate

10 Agri-Parks Organisational Structure

To explain the organisational structure of the Agri-Parks the following schematic is used:

FIGURE 62: ORGANISATIONAL STRUCTURE FOR ILEMBE AGRI-PARK



In explaining the organisational structure, there are three sub structures that form part of the Agri-Parks: 1. Advisory Structures, 2. Approval Structures and 3. Implementation monitoring structures.

10.1 Advisory Structures

The main functions of the advisory structures within the Agri-Parks organisational structure are to give advice to the approval structures. The advisory structures that are currently identified are the National Agri-Parks Advisory Council (NAAC) and District Agri-Parks Management Council (DAMC). It is important to note that the advisory structures' member primarily comprise of stakeholders and interested party.

10.1.1 The NAAC

This council reports directly to the minister and consists of elected representatives of various organisations. Functions of the NAAC may include (as stipulated in *Circular 9 of 2016*):

- *To solicit, co-ordinate and advise the Executive, on issues and concerns of the implementation of the Agri-parks Programme;*
- *To encourage public awareness and education of the Agri-parks Programme;*
- *To review studies, plans and proposals as may be referred by the Executive and District Agri-parks Management Councils (DAMCs) and the National Agri-parks Operational Task Team, and to provide comments and advice thereon;*
- *To provide advice on policies, legislation and programmes from the Department of Rural Development and Land Reform (DRDLR) that impact on the Agri-parks Programme;*
- *To initiate advice on the Agri-parks Programme and implementation of the business plans as referred to by the DAMCs;*
- *To liaise with the Executive, the Management of the DRDLR, the DAMCs and any other stakeholder involved in the Agri-parks Programme as required; and*
- *To mediate disputes arising from the DAMCs concerning its operation and/or advice provided to the Department or other bodies that are implementing the Agri-parks programme in a district.*

10.1.2 The DAMC

The District Agri-Parks Management Council, also referred to as the "voice" of the stakeholders/interested parties in Agri-Parks. The DAMCs like the NAAC consist of representatives from various organisations. The DAMCs main function is to communicate advice from the council members to the NAAC as well as DAPOTT (District Agri-Parks

Operational Task Team). Further functions of the DAMC include, but are not limited to the following:

- *Assist in identifying new business opportunities within an Agri-park;*
- *Provide advice on the implementation of the business plans;*
- *To advise on regulatory compliance with applicable policies and legislation;*
- *To advise on the alignment with the National Development Plan, Agricultural Policy Action Plan, Provincial Growth and Development Strategies and other development frameworks; and*
- *To assist in the identification, evaluation and monitoring of risks related to projects.*

10.2 Approval structures

These structures are responsible for approvals, feedback, information sharing, monitoring and evaluation regarding land reform activities and Agri-Park project approval. To explain the functioning of the approval structure it essential to understand that in terms of the Agri-Parks organisation the project approval process is started on the district level.

The approval structures that form part of the Agri-Parks include the DAPOTT, District Land Reform Committee, Provincial CRDP (Comprehensive Rural Development Programme) Committee, National Development Approvals Committee (NDAC) and the National Land Allocation and Recapitalisation Control Committee (NLARCC).

Note: It is understood that both the DLRCs and DAMCs can recommend projects/producers to be considered to be part of Agri-Parks.

10.2.6 Agri-Hub Operational Manager

The Main function of the Agri-hub operational manager is to oversee the processing and distribution of agricultural produce. Auxiliary duties include:

- Coordination of necessary training for all staff
- Organising and overseeing the logistics for collection of produce from SHFs and FPSUs
- Overseeing distribution and marketing of agricultural produce from the Agri-hub
- Managing storage, processing, packaging and quality control procedures for all agricultural produce.

10.2.7 Farmer Production Support Unit Operational Manager

Organisation of agricultural input supplies and management of extension support services, mechanisation and local logistics support. Other duties will include production planning and scheduling based on market knowledge, coordination of SHF produce and local agronomic research.

10.3 DAPOTT

The DAPOTT as part of the Agri-Parks Approval Structure receives advice from the DAMC as well as information from PAPOTT and NAPOTT. DAPOTT appears to have the role to interpret all the information and acting as a monitoring agent to advise on projects and land reform beneficiaries to be included in the Agri-Parks. Some of the functions of the DAPOTT include but are not limited to:

- *To provide technical support and guidance for implementation;*
- *To provide oversight of the implementation of the district Agri-parks business plan;*
- *To monitor expenditure against the district Agri-parks business plan;*
- *To identify all district projects that contribute to the district Agri-parks business plan and to compile a district project register (all DRDLR branches);*
- *To monitor project implementation against the approved project plan and district Agri-parks business plan;*
- *To participate in the identification and packaging of local development projects in support of the mandate of the Department of Rural Development and Land Reform;*
- *To advise on proposals that should be submitted to the Provincial CRDP Committee; and*
- *To provide an oversight function and monitor the implementation of the Government's Rural Development Programmes.*

10.4 DLRC

The District Land Reform Committees (DLRCs), are primarily concerned with land reform in general. However, the DLRCs have additional functions linked to Agri-Parks:

- To identify the district projects contributing to Agri-Parks business plans; and
- To align projects and beneficiaries with the identified sites for Agri-Parks.

The abovementioned functions are however secondary to the following main functions:

- *Identify farms suitable for acquisition by Government (the target is 20% of agricultural land per district);*
- *Identify and interview potential candidates for farm allocation;*

- *Advise the Minister on the strategic support needs of identified farms and support needs of recommended candidates; and*
- *Advise the Minister on resolving land rights conflicts, as might be referred to a DLRC by him/her.*

Note: Projects and or beneficiaries identified by the DLRCs and DAPOTT, are subjected to technical compliance checks before being passed onto the PCRDP

10.5 PCRDP

The PCRDP functions as the provincial approval structure that passes projects/beneficiaries identified by the DLRCs and DAPOTTs onto the National Government structures. Regarding this specific structure within the Agri-Parks organisational structure the name of this structure may have changed to the PJSC (unknown) as suggested in a different schematic (see below). The projects/beneficiaries identified are then catalogued into a Provincial Project Register that contributes to the formulation of a provincial spatial target plan. The functions of the PCRDP include:

- *To provide inputs to assist in the compilation of the provincial spatial targeting plan, as provided by the districts;*
- *To recommend all development, land acquisition and tenure projects in line with a Delegation of Authority Framework to the NLARCC and NDAC through its technical committees; and*
- *To provide an oversight function in relation to the work of the Provincial Technical Committees and District CRDP Committees, to eliminate disjuncture and to ensure alignment of projects and funding at a provincial level.*

The PCRDP can also include specialists if specialist skills are required to inform decisions to be made regarding project selection.

Projects and or beneficiaries chosen by the PCRDP are subjected to technical compliance checks before being passed onto the NLARCC and the NDAC

10.6 The NLARCC

The function of the NLARCC is to recommend land acquisition and recapitalisation projects to the MCM (Ministerial Coordinating Management committee). The full list of functions of the NLARCC is as follows:

- *To provide inputs to assist in the compilation of the national spatial targeting plan as provided by the provinces;*
- *To identify all national projects as per operational plans and compile a national project register*
- *To approve land acquisition, tenure and recapitalisation and development projects in line with a delegation of authority framework; and*

- *To provide an oversight function in relation to the work of the National Technical Committee and Provincial Committees, to eliminate disjuncture and to ensure alignment of projects and funding at a national level.*

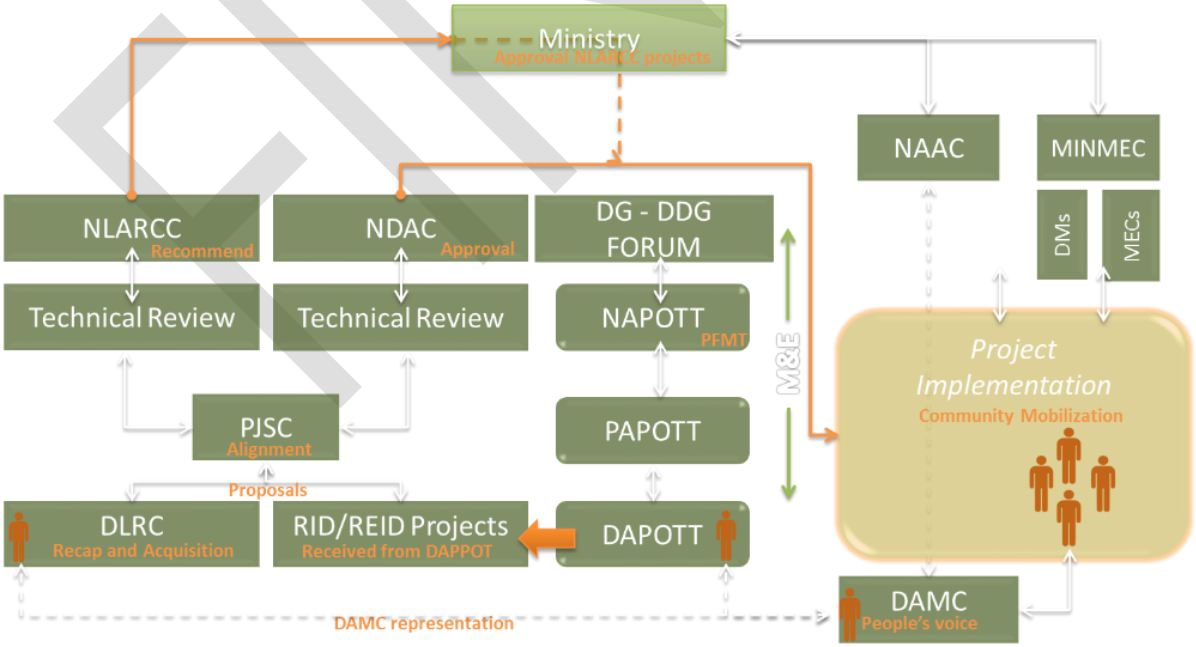
Looking at the above function, the NLARCC and PCRDP have the same functions but only on different levels within the government.

10.7 The NDAC

The main function of the NDAC is to approve all the national development projects and to give oversight to the PCRDP committees and the National Technical Committees (NTCs part of the land reform approval process). The functions of the NDAC are almost the same as the functions of the NLARCC, but the NDAC does not play a role in the identification of projects or the approval land acquisition, tenure recapitalisation and development projects.

10.8 Implementation and Monitoring Structures

Currently there are only two structures within the Agri-Parks organisational structure that are solely dedicated to implementation and monitoring, the PAPOTT (provincial Agri-Parks Operation Task Team). PAPOTT and NAPOTT are however not exclusively dedicated to Agri-Parks, these two structures also play a role in the monitoring and implementation of other programmes that can influence the Agri-Parks programme.



10.9 NAPOTT

The NAPOTT has various functions that are focussed towards the operation of Agri-Parks both in terms of implementation and on-going operation. These functions include but are not limited to:

- *Developing the National Agri-Parks Plan;*
- *Contributing to the development guidelines of Agri-Parks;*
- *Monitoring provincial business plans against the abovementioned guidelines;*
- *Monitoring budget alignment as set out in the business plans;*
- *Giving inputs to assist in the compilations of provincial Agri-Park business plans; and*
- *Managing project roll out of Agri-Parks in line with approved project plans nationwide.*

10.10 PAPOTT

The main functions of the PAPOTT is to coordinate and facilitate integrated implementation of Agri-Parks by providing technical support regarding planning and implementation, giving inputs to the compilations of Agri-Parks Business plans etc.

Note: PAPOTT will only remain operational until the Agri-Parks programme has reached a sustainable level, then PAPOTT will be integrated with the PCRDP.

11 Implementation Guidelines

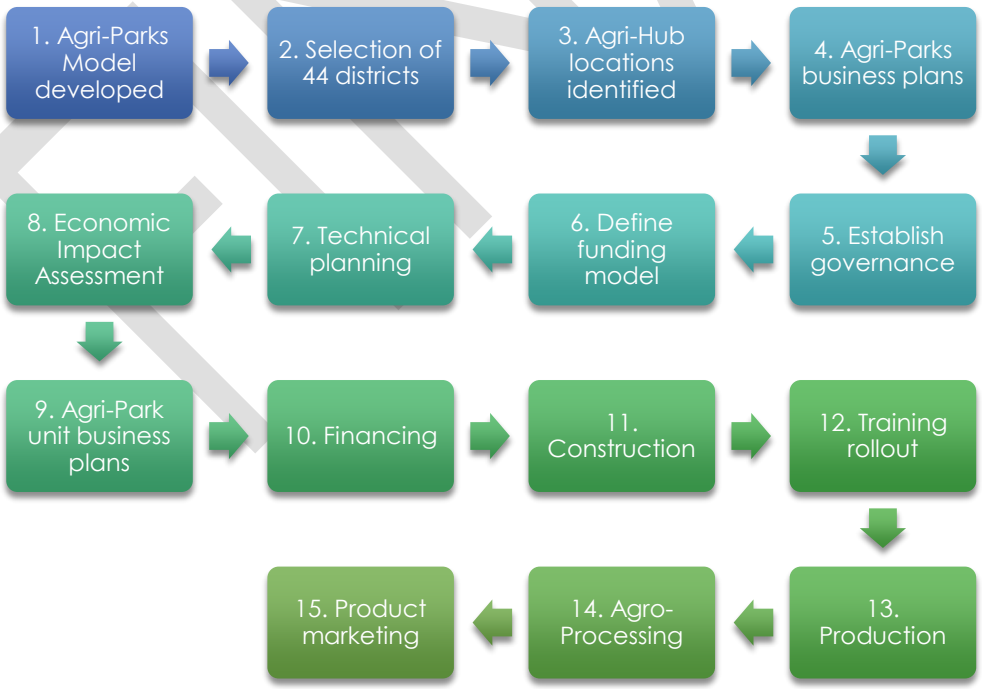
The following **implementation guidelines** provide an overview of what should be achieved in order to successfully implement the Agri-Parks programme within iLembe. The implementation guidelines provide valuable information about:

- Understanding the implementation process and what is required for the process;
- How to align the implementation of the Agri-Parks programme with various government initiatives in developing agriculture;
- Recommendations that will streamline and assist the development of the Agri-Parks programme; and
- Steps to be taken in developing the Agri-Park in the form of a roll-out plan.

This final chapter lays out the implementation guidelines and planning required to implement the iLembe District Municipality's Agri-Parks programme, starting with the implementation process.

11.1 Implementation Process

The above guidelines are used to develop the following implementation process for the rollout of the iLembe DM Agri-Park. The process follows the following 14 steps:



1. **Agri-park model:** The Agri-Parks model has been developed by the DRDLR and has been adopted as the model of preference nationally.
2. **Selection of the 44 Districts Municipalities:** The Agri-Parks model is to be implemented across 44 districts nationally over a 10 year period.

3. **Agri-Hub location selection:** The DRDLR along with technical partners have identified locations for the Agri-Hubs in each of the given districts. The Agri-Hub forms the heart of the Agri-Parks programmes, where significant agro-processing takes place.
4. **Master Agri-Park Business Plan:** The Master Agri-Parks Business plans were developed for the Agri-Parks. This plan identified specific commodities that agriculture would be developed around within the districts. The plan further outlines challenges and opportunities for each of the Agri-Parks.
5. **Governance:** Strategic bodies and plans will be formed, including the defining of ownership and management structures.
6. **Funding model:** A financial gearing plan will be developed for each Agri-Park once all costs for implementation are established. The plan will also assist in developing investment memorandums to attract investors.
7. **Technical planning:** The technical aspect of the Agri-Park will entail, mainly, the planning of the physical construction of the Agri-Park along with related infrastructure and technologies.
8. **Detailed business plans:** The different units of the Agri-Park (i.e. FPSUs, AH and RUMC) as well as the farmers will have specific detailed business plans developed.
9. **Financial close:** Funding will be sourced from various financial institutions, government bodies and private investment, depending on the funding model.
10. **Construction:** The construction of the Agri-Park's units and other related infrastructure will start.
11. **Training Programmes Rollout:** Training programmes will commence through the FPSUs and other partners.
12. **Farmer Production**: FPSUs will be set-up and run in order to make assistance available for farmers to start production through the Agri-Park.
13. **Agro-Processing**: Once primary production has taken place, and products are ready, agro-processing activities will commence through the Agri-Park's Agri-Hub.
14. **Market**: Completed products will be distributed and sold to relevant markets through assistance of the RUMC. Moreover, the RUMC will responsible for providing information to producers for production purposes.

Importantly the 14 step implementation process should align to current projects that take place in a district context in order to avoid duplication of any existing programmes/projects/campaigns, while also continuing with them to avoid redundancies. Various programmes/projects/campaigns are identified and described in the following sub-section.

11.2 Alignment with Government Programmes, Projects and Campaigns

Alignment with public programmes is key, the following programmes which require alignment are tabulated below:

TABLE 60: CURRENT INCENTIVE PROGRAMMES

Programme/Project /Campaign	Description	Agri-Parks Alignment
Agricultural Programmes		
Agricultural Broad-Based Black Economic	The implementation of Agri-BEE is based on the commodity value chain approach. The approach is	✓ The Agri-Park will focus on the development of the value chains

Empowerment (Agri-BEE)	fundamental in creating partnerships, linkages, and networks for balanced, mutually benefiting results for all concerned. The Agri-BEE is expected to ensure enhanced competitiveness and sustainable development with expansion of the existing businesses, rehabilitation of agricultural business that are performing poorly and expanded entry for new businesses in the sector. Agri-BEE also encourages partnerships between established agricultural enterprises and emerging farmers and entrepreneurs.	for each of the identified commodities. ✓ In developing the value chain there needs to be a focus on integration of all stakeholder to be involved. ✓ Integration of the value chain will create partnerships and linkages that will be mutually beneficial for all stakeholder involved and enhance the competitiveness of the Agri-Park. ✓ Stakeholder engagement is required to encourage partnerships that are beneficial from farmers to markets.
Comprehensive Agricultural Support Programme (CASP)	The programme provides agricultural support to land and agrarian reform projects, which contributes towards food security, job creation and poverty alleviation. CASP is also involved in the development of a number of policies, strategies and projects that are geared toward the development of the agricultural sector. These include: • Agricultural finance lending • Co-operatives establishment • Access to markets • Value chain development • Improvement policies • Production guidelines • Agro-logistics planning • Early warning climate systems	✓ The Agri-Park should work closely with CASP projects to support the initiatives set out within CASP. ✓ Policy alignment is key to achieve a common set of goals. ✓ The Agri-Park should focus on job creation through various initiatives, especially primary agriculture where there is potential for many job opportunities. ✓ The Agri-Park should investigate initiatives to extend credit to farmers. ✓ The Agri-Park needs to encourage and manage the establishment of co-operatives. ✓ Management practices need to be implemented at various stages of the value chain in order to ensure consistent production and product quality. ✓ Information technology should inform all stakeholders within the value chain.
Integrated Food Security and Nutrition Programme (IFSNP)	This programme was initiated by the Food and Agricultural Organisation (FAO). The core goal of this initiative was to reduce hunger and food insecurity. To take further steps toward achieving this objective, the Special Programme for Food Security (SPFS) will be expanded to all nine provinces (DAFF, 2016). The SPFS and CASP have collaborated, and as a result 10% of the total CASP budget will also be aligned to projects that contribute directly towards food security (DAFF, 2016).	✓ A major objective of the Agri-park is to improve food security. ✓ Primary production should be a key focus of the Agri-Park. ✓ The Agri-Park will therefore be required to improve access to markets through engaging the markets and meeting the requirements of the market procurement policies.
Research and Development (R&D)	The programme encourages research and development within the realm of agriculture and involves all stakeholders within the national agricultural research system.	✓ Training forms part of the Agri-Parks many roles. ✓ Training requires research and development initiatives that should align with R&D programmes set out by government.

		✓ R&D is required throughout the value chain and will be required to evolve as technologies do.
National Regulatory Services (NRS)	The increased trade in regulated agricultural products has required the development of the NRS that regulates and promotes international trade. This includes inspections of agricultural produce and bilateral negotiations. In addition, the NRS promotes awareness with respect to agricultural produce health matters.	✓ The Agri-park should implement policies that enforce international standards on production and processing that will allow the programme access to international markets.
LAND and AGRARIAN REFORM PROJECT (LARP)	The objectives of LARP are the redistribution of land, increased black entrepreneurship, promoting access to agricultural support services, increased agricultural production, and increased agricultural trade. The programme builds on lessons that have been learnt from previous land reform projects, reviews, the Land Summit and implementation reforms.	✓ The Agri-Park forms part of the market for farmers and will therefore encourage production. ✓ Models are to be developed to distribute state own land and ensure land tenure is in place for producers. ✓ Access to the market through the Agri-Park will further encourage land that was previously not in production to produce.
LandCare	The LandCare programme was established to promote productivity through the sustainable use of natural resources, to improve food security and create employment, therefore encouraging South Africans to use sustainable methods of cultivation, livestock grazing and harvesting of natural resources in order to limit land degradation.	✓ Access to the market through the Agri-Park will further encourage land that was previously not in production to produce. ✓ The Agri-Park is to encourage the sustainable use of land and resources.
Small Holder Farmer Evaluation	The programme focuses on the integration of smallholder farmers into the greater agricultural value chain. The programme works in conjunction with other programmes and provides strategic agricultural support.	✓ The Agri-Park will manage and encourage smallholder production, a primary objective of the Agri-park. ✓ Logistics and management plans are key to the success of integration of smallholder farmers.
Rural Development Programmes		
Comprehensive Rural Development Programme (CRDP)	The CRDP is in place to create decent work and sustainable livelihoods. The programme ensures sustainability, communal ownership and effective contribution toward the objectives of developing rural areas. The overarching objective of the CRDP is social cohesion and integrated development through participatory approaches and partnerships with all sectors of society.	✓ The Agri-park encourage primary production. ✓ Will have support mechanisms in place to ensure best production methods. ✓ Create jobs in primary agriculture. ✓ Ownership models encourage social cohesion, integration and participation from all stakeholders.
National Rural Youth Service Corps programme (Narysec)	Narysec is a youth skills development and employment programme that also forms part of the CRDP. The programme also provides character building programmes, soft and hard skills training and dispatches youth to rural areas for	✓ The Agri-Parks programme will encourage youth to participate in agriculture by creating viable and attractive agricultural enterprises.

	rural development projects. The programme further transforms the youth of rural areas, from being job seekers to being job creators.	
Rural Enterprise and Industrial Development (REID)	REID is in place to facilitate poverty reduction, social organisation, youth development and the development of cooperatives, rural enterprises and industries.	✓ The Agri-park encourage primary production. ✓ Will have support mechanisms in place to ensure best production methods. ✓ Create jobs in primary agriculture. ✓ Ownership models encourage social cohesion.
GDARD Agri-Hubs Development	The GDARD seeks to develop Agri-Hubs that will result in the growth of the local agricultural sector through integrated agricultural value chains.	✓ Similarities in the programmes are complementary and will align accordingly.

11.3 Specific recommendations

The below table provides a list of recommendations that should be considered for the development of the Agri-Park in iLembe:

TABLE 61: SPECIFIC RECOMMENDATIONS FOR THE ILEMBE AGRI-PARK

Key Areas	Recommendations
Infrastructure	• Unsurfaced (gravel) roads around the proposed location of the Agri-Hub should be upgraded and developed, to facilitate easy access to and from the AH; • The road network that will link to the various market centres (fresh produce market) must be carefully considered and upgraded where necessary; • Tap into rail roads for the transportation of large and heavy agricultural produce to long distances; • Capitalise on all already existing initiatives and infrastructure for the establishment of the Agri-Park. There should be upgrading and revitalisation of any existing infrastructure that can be used to support the Agri-Park process; and • Establishing infrastructure that will aid the recycling of water.
Natural Resources	• Considering that the entire district is water scarce, more work should be done in determining water availability for agricultural production around the proposed location of the Agri-Hub, FPSU(s) and around all the major areas where primary production potentials is huge as well as areas where the available water sources can be used to support primary production; • District should also look into water allocations and the existing irrigation schemes in the major production areas and maximise the use of these existing infrastructures; and • A further recommendation is that small scale farmers should have rain harvesters (e.g. JoJo Tanks) on their farms. This would serve as water reservoirs in the absence of rainfall.
Agri-Park commodities	• Efforts should be made in ensuring that Products processing and packaging (value –addition) comply with international standards, to enhance products' suitability for the export markets; and • Although, the initial phase of the project will support the development of the value-chain of the three (3) pre-dominant commodities in iLembe, it is recommended that processing facilities should be expanded in subsequent

Key Areas	Recommendations
	phases to accommodate the production of crops that will be produced during the period of crop rotation.
Technology	• Although, statistics show that the majority (88.7%) of households in iLembe already have access to cell phones, it is recommended that the telecommunication services should be upgraded (e.g. erection of cell towers) in areas that are currently underserviced, particularly in the rural areas, since most of the farmers that would be targeted are located in these Areas; • It is also recommended that Government should subsidise telecommunication services (e.g. provision of free Wi-Fi) in some of these rural areas to enable them overcome the cost barrier associated with their low levels of connectedness; • A further recommendation is that all the technologies that are to be adopted (particularly in the area of farm mechanisation) throughout the Agri-Park process should be those that will not lead to a decline in the number of job opportunities; and • The ICT to be adopted or introduced to the farmers should be user friendly and not be too complex, since some of the users may have little or no form of education.
Training	• It is recommended that the FPSU should establish partnership with certain research institutions for research and development, and also to facilitate training programmes. Partnership should also be established with commercial farmers in this regard; • It is also recommended that practical manuals and information packages should be developed for the small scale and emerging farmers to assist them in their production processes. These manuals and information packages should cover aspects relating to: regulatory requirements, information on support programmes, production guidelines, etc. Where possible, manuals should be developed in language of choice to enhance easy understanding; and • A further recommendation is that farmers should be provided with training that are specifically targeted at helping them change their perception about farming or agricultural production as a whole. E.g. Training on educating farmers on how to see the business angle to agriculture rather than as a sign of wealth.
Agri-Park Units	• The proposed location of the RUMC will be in eThekwini. • The FPSU(s) should be strategically located around productive farms and areas with huge potentials for primary production; • The group of farmers that would be earmarked for production, for the Agri-Park, should be identified as part of the kick-off programme; and • It is a further recommendation that business plans should be developed for each of the basic units of the Agri-Park as well as the farmers that would participate in the Agri-Park process.
Logistics	• It is recommended that a comprehensive logistic plan should be developed as a separate document that would guide the implementation of the Agri-Park process; • It is recommended that smallholder farmers with small production capacities should be encouraged to work in joint ventures in order to participate in supplying the Agri-Park; • A further recommendation is that internal transport facilities (e.g. long buses) should be arranged for the purpose of transporting tourist visiting the Agri-Parks. This transport facility can also be used as staff buses. This will serve as a source of revenue for the Agri-Park; and • District should develop a committee that will look into stakeholders' engagement.

Key Areas	Recommendations
Policy Environment	• Also, cross-border relationships and partnerships should be encouraged or formed with neighbouring districts, where infrastructure and resources can be shared, should the district be short of or have excess of certain resources. • The establishment and management of committees and structures contribute to maintaining the AP's principles and drive its development. • It is also recommended that the district should develop a strategic plan that can be reviewed after a certain short term period, to allow for the normative context of the AP to be upheld, and also to allow for the evaluation of the AP development.
Funding /investment	• District should develop funding mechanisms that would encourage and attract foreign investments. • Investment policies that would encourage more investments on agricultural land should be established.
Integrated Development	• Considering that iLembe is a favourite destination for tourist and people visiting the KZN Province, the structures within the RUMC and the AH should be developed in such a way that it will allow for Agro-tourism e.g. school excursion, visits by tourist, etc.
Market	• More programmes that would be directed towards establishing market linkages should put in place. • District should form partnership with some of the existing main players in the various industries to enable them penetrate the international market.
Incentive programme	• Incentive programmes and packages that would make agriculture more attractive, (especially to the youths) should be developed. For example, awarding scholarships that would encourage young individuals study in the field of agriculture, creating a youth centre within the Agri-Park, to help the underprivileged youth in a way such that they render services to the Agri-park, while they get taken care of in return.
Comprehensive Farmer Database	• Creation of an accessible, informative database of all the farmers in iLembe, stating the type of commodity farmed, the size of the farming area and yield per hectare. This will promote the successful locating of future projects and programmes within designated areas.

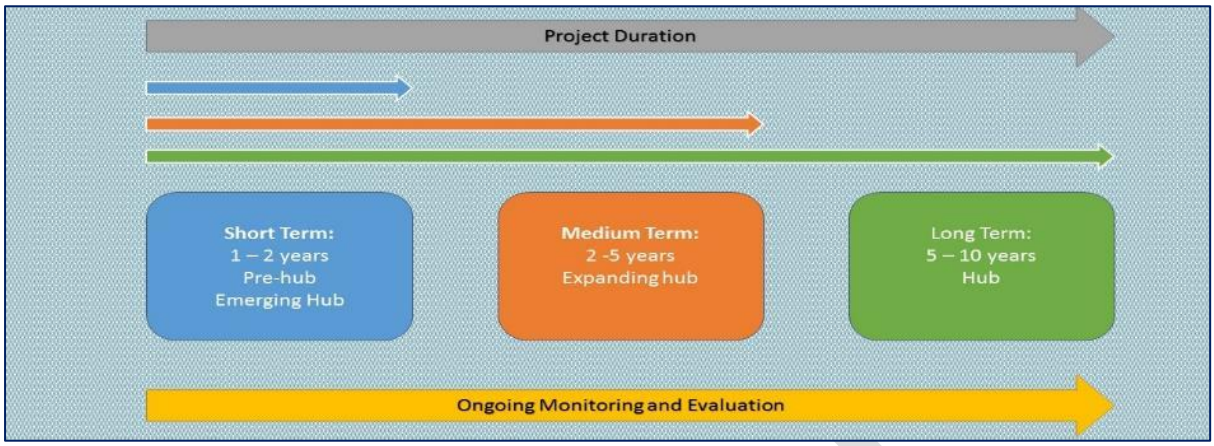
These recommendations are based on the analysis done on the economic infrastructure, socio-economic analysis and consultations with district stakeholders.

11.4 Rollout Plan

Implementation is a crucial element in any strategy and needs to be adhered to realistic timeframes and role-players. This subsection focusses on the implementation actions for the elements as discussed within this document. The implementation plan is structured in a way that it follows a phased approach in order to prioritise the necessary actions that will help in facilitating an enabling environment for the establishment of the Agri-businesses within the Agri-Park.

The best approach for the Agri-Hub formulation is in a phased manner, this implies that there are short, medium and long term actions that need to be implemented in order to bring the Agri-Hub from identification to implementation. These actions or goals are structured in accordance with the theoretical foundations to the formation stages of a hub. These stages

are illustrated in the figure below and show the actions of the three terms over the project duration. The main implementation actions associated with each term will be discussed with their details thereafter.



11.4.1 Pre-hub Formation (Short Term)

The pre-hub formation process is the action that are necessary as a foundation for the other phases to flourish. These actions need to be conducted over the short-term and forms the foundation on which the agri-businesses within the Agri-Hub will develop. This step revolves around creating and/ or providing the foundation before the agri-businesses can be established. This is the first phase in the iLembe Agri-Hub formation process.

The following actions need to be adhered in order to facilitate the development of the agri-businesses within the Agri-Hub.

- Approval and adoption of the development application by local, regional and national decision makers;
- Adoption of the development application and subsequent institutional and statutory requirement processes;
- Develop a site layout and detailed architectural and engineering plans for the different infrastructure components necessary on site;
- Site preparations: Install the necessary infrastructure and bulk services that will be required for the formation of the iLembe Agri-Hub and the agri-businesses that was analysed and assessed within this document;
- Engage with different stakeholders to incorporate different roles and contributions that will attribute to the formation of the Agri-Hub;
- Training facilities: Start building training facilities in order to fast track the training of the local communities and workers that will work within the agri-businesses and the supporting services, such as the emerging farmers;
- Start the process to identify emerging farmers that will form part of the supplier's base for businesses within the iLembe Agri-Hub;
- Necessary legislative arrangements for the establishment of the agri-businesses within the hub's ownerships models; and
- Policy development frameworks surrounding different stakeholder's involvement, contributions and allocation of resources coupled with the projected costing structures for all said activities.

11.4.2 Emerging Hub Format (Short- Term)

The next phase in the hub formation process is that of the emerging hub and is also short term. At this stage the required primary infrastructure and statutory requirement process have either been established or set in process. The focus should be on implementing the actions required for the formation of the emerging hub as the basis for the development of the hub which was laid out in the previous phase.

During this phase the core Agri-Hub businesses should be established within the hub and the focus should start shifting towards forming linkages with other agro-processing functions, such as private investors, emerging farmers and supporting services in not only the hub but the larger iLembe District. This phase is centralised around the establishment of the agri-businesses within the hub to form the anchor around which can be developed.

The following key actions are towards the implementation and formation of the iLembe Agri-Hub.

- Build additional required infrastructure and bulk services that might be required to facilitate the Agri-Hub development;
- Appoint service providers that can either form part of the workers trusts or private sector trust that can facilitate the operational management of these agri-businesses;
- Identify local skills capacity for each of the agri-businesses and sync training activities with the lack of skills to capacitate the local skills base;
- Appoint service provider that can provide training to the local communities, emerging farmers and larger public to facilitate skills development and the creation of an enabling environment for the Agri-Hub;
- Ensure that the agri-businesses start processing functions within the hub and ensure a working monitoring and evaluation system is in place to address potential challenges in advance;
- Start companies and trusts for the agri-businesses with the necessary legal requirements, constitutions, etc;
- Formation of the Agri-Hub forum with the necessary legislative framework, constitutions and affected stakeholders;
- Identify emerging farmers and their capacity to supply the different agri-businesses, assess the capacity of the farms to see what the capacity of the farms are for production;
- Provide the emerging farmers with the necessary infrastructure, training and livestock to be able to provide for the abattoir;
- Approach farmers that can act as suppliers to the Agri-Hub, farmers should be both commercial and emerging farmers which can form part of the supply line operations;
- Establish contracts with the suppliers in order to establish a supply base that can provide the Agri-Hub businesses with the necessary inputs for operation;
- Identify private investors and show areas where they can become part of the project and the gains that can be achieved; and
- Identify suitable markets and develop marketing approaches for the products from the iLembe Agri-Hub.

11.4.3 Expanding Hub Formation (Medium Term)

The expanding hub is when the hub has reached a stage when it is starting to operate at full capacity and the potential for spin-off opportunities or expansion of existing practices are present within the hub. At this stage the agri-businesses within the iLembe functions start operating at a profit and can start depending less on the help of government and more on solidifying operations, supply lines and target markets. Linkages are starting to be established and the opportunities for new linkages are formed.

The following actions should form part of the implementation process in order to stabilise and solidify actions within this formation phase.

- Spin-off opportunities for the local communities should be identified in order to further local economic opportunities and create more enabling and sustainable economic base for not only the hub but the larger regional communities with the iLembe Agri-Hub;
- The role of FSPU should be expanded and spin-off opportunities should be expanded towards these areas in order to widen the scope and influence the agro-processing activities;
- The training and provision of business and financial training for local entrepreneurs and SMME's to improve the local capacity for economic development and growth;
- Further establishment and solidification of markets for products will be needed in order to make the agri-businesses within the iLembe Agri-Hub truly sustainable, independent and profitable;
- Expansion of emerging farmers' capacity to produce adequate supply for agri-businesses, this should be incorporated with committed local mentors and continuous training programmes to increase the farmers and co-operative management skills;
- The agri-businesses should now be fully operational and the suppliers' base should be expanded and improved in order to provide a consistent supply of inputs for the agri-businesses and that the quality of the agricultural sector within the iLembe District is improved; and
- Upgrading and expansion of infrastructure and related facilities, these include warehouses, logistics and distribution facilities. It also includes maintenance checks and improvements on existing infrastructure not only within the hub but also the surrounding suppliers' operations.

11.4.4 Hub Formation (Long Term)

This is a long term phase and is for when the iLembe Agri-Hub reaches maturity. The focus of this phase should be on improving and furthering efficiency within the Agri-Hub and larger iLembe District and the identification of areas for further improvements and development opportunities. The agri-businesses are now beginning to form strong linkages, each exploiting economic advantages and the formation of linkages with smaller firms, functions and services is established.

The following actions form part of this process and is envisaged that these action will:

- Revisit the core activities, production cycles and distribution functions of the iLembe Agri-Hub. Expand strategic approaches to further growth and address potential challenges within the whole value chain;
- Further solidifying of markets, with further market assessments in order to facilitate the expansion of the new markets as a steadily formed supply has been established throughout the previous transformation phases;
- Diversifying of products in order to meet clients' needs and address changing trends within the market;
- Identifying of backward and forward linkages that can further the formation of other endeavours at the hub of economic growth;
- DRDLR steadily retracts duties and involvement from the hub and the agri-business in order for sustainability to take place towards year 10 of the hub;
- Expanding of agri-businesses within the hub and their suppliers base to form a conglomerate or cluster of additional agro-processing activities; and
- Networking and further agglomeration opportunities locally, with other Agri-Parks and Agri-Hubs across the country and introduction of import substitution practices to create more localised economic growth opportunities within the wider manufacturing sector.

11.4.5 GANTT Chart

The rollout plan is illustrated below.

Project / Action	Description / Plan	Time Frame (Years)									
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
STEP 1: Agri-Park Model	1. Development of policy framework for the Agri-Parks										
	2. Approval of policy framework for the Agri-Parks										
	3. Establishment of national Agri-Park project support facility to support and coordinate district base operational teams										
	4. Development of detailed plan and design of a prototypical Agri-Park that is adaptable, based on commodity types.										
	5. Selection of district municipalities and Status Quo analysis/report for the selected district municipalities										
	6. Establishment of NAPOTT, PAPOTT AND DAPOTT										
	7. Appointment of District Agri-parks Advisory Councils (DAAC's)										
STEP 2: Agri-Hub Location Selection	1. Development of a site selection methodology and location criteria										
	2. Initial site identification together with the generation of site specific maps with district specific narratives and selection criteria.										
	3. Property selection process										

Project / Action	Description / Plan	Time Frame (Years)									
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
	4. Sign-off of final Agri-Park sites by each district municipality										
STEP 3: Master Agri-Park Business Plan	1. Appointment of service providers to develop Master Agri-park Business Plans for each district municipality										
	2. Stakeholder consultations										
	3. Commodity identification										
	4. Policy and strategy alignment										
	5. Identification of major role-players										
	6. Development of an industry report										
	7. Feasibility assessment of three prioritised commodities										
	8. Concept development										
	9. Development of an implementation plan										
	10. Economic advisory services										
STEP 4: Governance	1. Establishment of Agri-Park Working - Group/ Implementation structure										
	2. Development of an ownership structure										
	3. Development of an institutional structures										
	4. Ongoing Policies and procedures: Establishes design and content of policy manuals and associated procedures that will ensure frequency of reporting and communication on the progress of the programme.										
	5. Monitoring and evaluation: defines scorecards, measures, and metrics to track performance.										

Project / Action	Description / Plan	Time Frame (Years)									
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
STEP 5: Funding Model	1. Development of a funding model for the establishment of Agri-Parks programme										
	2. Identification and analysis of Development Financial Institutions in South Africa										
	3. Identification and analysis of incentives in South Africa										
	4. Identification and analysis of commercial funding organisations in South Africa										
	5. Run a financial model based on various scenarios on project gearing										
	6. Conduct a sensitivity analysis										
STEP 6: Technical Planning	1. Design of Agri-park specific incentive schemes										
	3. Identification of potential Public Private Partnership's										
	2. Secure private investors / technical partners										
	3. FPSU - Role should be expanded and spin-off opportunities should be expanded towards these areas in order to widen the scope and influence the agro-processing activities;										
	4. Agri-Hub - core activities, production cycles and distribution functions of the Agri-Hub should be evaluated.										
	5. RUMC - Investigate market intelligence										
	6. Identification of land parcels related to farming areas (mapping)										

Project / Action	Description / Plan	Time Frame (Years)									
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
	7. Consultations with technical specialists										
	8. Development of the Agri-parks Monitoring and Evaluation Framework										
STEP 7: Detailed Business Plans	1. Development of detailed business plans for each Farmer Production Support Unit										
	2. Development of a detail business plan for the Agri -hubs										
	3. Development of a detail business plan for the RUMC's										
	4. Development of a detail business plan for small holder farmers										
	5. Development of a detail business plan for the Agri-park logistics										
STEP 8: Financing	1. Selected targeted financial institutions to apply for financing										
	2. Determine the minimum requirements of each financial institutions										
	3. Prepare application pack										
	4. Apply for financing										
	5. Project financial close										
STEP 9: Construction	1. Finalise the project designs and drawings										
	2. Conduct a bill of quantities										
	3. Prepare tender documentation										
	4. Tender evaluation and selection process										
	5. Site preparation										
	6. Construction Facilities & upgrade of existing infrastructure										

Project / Action	Description / Plan	Time Frame (Years)									
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
	7. Site handover										
STEP 10: Primary Production	1. Identify emerging farmers and their capacity to supply the different agri-businesses, assess the capacity of the farms to see what the capacity of the farms are for production.										
	2. Provide the emerging farmers with the necessary infrastructure, training, and livestock to be able to supply the adequate level of products.										
	3. Production of the identified commodities										
	4. Training of personnel at the FPSU that will assist farmers with various activities such as, for example, seeding, fertiliser spreading, and harvesting.										
STEP 11: Training Programmes Roll-Out	1. Training, if required, of small-scale and emerging farmers at the FPSU.										
	2. Training of personnel at the Agri-Hub that will participate in the processing and value-adding of commodities.										
	3. Training of personnel at the RUMC that will conduct market research and utilise various technologies.										
	4. Identify local skills capacity for each of the agri-businesses and sync training activities with the lack of skills or/ and capacitate local skills base.										
	5. Engage and develop partnerships with training institutions.										

Project / Action	Description / Plan	Time Frame (Years)									
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
	6. Expansion of emerging farmers' capacity to produce adequate supply for agri-businesses, this should be incorporated with committed local mentors and continuous training programmes to increase the farmers and co-operative management skills.										
STEP 12: Agro-Processing	1. Define the product idea, features, availability and benefits to the consumers.										
	2. Product development, which includes all aspects such as packaging, labelling and branding.										
	3. Analyse processing volumes and capacity										
	4. Investigate prospective buyers, possible distribution and marketing channels, possible export destinations										
	5. Design processing facilities/ production lines, taking into consideration procedures to prevent contamination, proper food handling hygiene, sanitation system, pest management system etc.										
	6. Identify product (s) regulations and food safety requirement.										
	7. Develop a comprehensive logistic plan of how products will be received for processing.										
	8. Develop a quality control system										
	9. Purchase of processing equipment, production materials, identification of suppliers location,										

Project / Action	Description / Plan	Time Frame (Years)									
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
	10. Recruit and train employees										
	11. Secondary processing of primary processed products, packaging, labelling, and storage.										
STEP 13: Product Marketing (RUMC)	1. Conduct market analysis to determine: opportunities, available market for the product, distribution channels, what price to set for the product depending, competitors, prospective buyers/consumers, industry analysis, etc.										
	2. Assess the market to determine local, national, regional and international trends, available market information, product market, market size, supply performance, market drivers and constraints, competitors, potential poverty reduction impacts, etc.										
	3. Set market price, depending on cost of production, competition, quality and the target market.										
	4. Engage off-take agreements based on future production in terms of quantity, quality etc.										
	5. Determine promotion and advertising channels that are best suitable to influencing consumers' decision to buy the products.										
	6. Distribute and market products										
	7. Continuous engagement with potential/future clients										
	8. Hosting of Road shows, Trade fair, industry summits, etc.										

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Annexure A

Possible crop/livestock for District	A. Biophysical criteria	Temperature	Water/moisture	Land type, capability and soil	Weed, pest and disease resilience	Adaptability to adverse conditions	B. Enterprise viability criteria	B.1 Transport, market access and demand	Distance to markets and transport cost	Current demand	Future market growth potential	Market openness	B.2 Strategy, payback and profitability	Business strategy and positioning	Payback period	Profitability	B.3 Human, physical and financial capital	Familiarity and local knowledge/skills	Labour cost and productivity	Implements and infrastructure	Ease to finance
Weight→		3	3	2	1	1			3	3	2	1		2	1	3		2	2	1	2
Sub-Tropical Fruit		2	3	2	3	2			3	3	3	3		3	3	2		3	2	2	3
Vegetables		2	3	3	3	2			3	2	3	3		3	3	2		2	2	1	3
Poultry		2	2	3	3	2			2	3	3	2		3	3	2		3	3	3	3
Maize		2	3	3	3	2			2	3	3	3		2	2	2		2	2	1	2
Sugarcane		3	2	2	2	2			2	3	3	1		2	1	2		3	2	1	1
Essential Oils		3	3	3	3	2			1	2	2	3		2	1	3		1	3	1	1
Pork		2	3	3	3	2			1	2	2	2		2	1	1		2	2	2	2
Goat		3	3	3	3	3			1	1	2	3		1	1	3		2	2	2	2

Possible crop/livestock for District	C. Economic development criteria	C.1 Linkages and processing opportunities	Forward and backward economic linkages	Processing opportunities at district level	C.2 Job creation	Direct on-farm job creation	Indirect and induced job creation	Job quality/decency	C.3 Local development	Local opportunities and agglomeration	Agro-intensification and local GDP growth	C.4 Global competitiveness and trade	Global competitiveness	Export potential	Import substitution potential
Weight→			1	3		1	1	1		3	1		3	2	3
Sub-Tropical Fruit			2	2		3	3	2		3	3		2	3	3
Vegetables			2	3		2	2	1		3	2		1	3	3
Poultry			2	2		1	1	2		2	2		1	2	2
Maize			2	2		2	2	2		2	2		1	2	2
Sugarcane			3	1		2	1	1		1	2		1	3	3
Essential Oils			1	3		3	3	3		3	3		1	1	1
Pork			2	3		2	2	2		1	2		1	2	2
Goat			1	1		2	3	2		1	1		1	2	1

Possible crop/livestock for District	D. Political and social criteria	D.1 Political and institutional issues	Government priority including APAP	Shortlisted by the district	Existing successful or planned projects	State/communal land suitability	D.2 Social issues	Acceptability (Local "buy-in")	Income equality	Black smallholder suitability	Crime and vandalism resilience	D.3 Food security and sustainability	Contribution to food security	Sustainability	Sub-totals	Biophysical total	Enterprise viability total	Economic development total	Political and social total	Overall total
Weight→			2	2	1	1		2	3	3	1		3	1						
Sub-Tropical Fruit			3	3	1	2		3	2	3	1		3	3		24	60	49	49	182
Vegetables			3	3	2	3		3	3	3	3		3	2		26	54	45	55	180
Poultry			3	3	3	2		3	2	3	2		3	3		23	59	33	52	167
Maize			3	1	1	1		2	1	1	2		3	1		26	49	35	32	142
Sugarcane			2	2	2	2		2	2	2	2		2	2		23	46	33	38	140
Essential Oils			2	1	1	2		2	1	1	3		1	2		29	41	39	27	136
Pork			1	1	1	1		1	1	2	1		2	2		26	37	35	26	124
Goat			1	1	2	1		1	1	3	1		2	1		30	39	25	29	123